

BELLEVUE COLLEGE
N102Z – NURSING CONCEPT MAP

Clients Initials: A.B.

Age: 70

Student Name: Jacob Lakatua

Date of Admission: 05/24/2016

Resident Day #: 2

Clinical Instructor: Susan Ward

Clinical Week #: 5

Date: 05/25/2016

Admitting Diagnosis: Acute Kidney Injury on CKD3, diastolic CHF, rt sided HF (pulmonary HTN), labs indicate unspecified UTI

Surgical Diagnosis: n/a

Current Vital Signs:

Wed - 1100	BP	125/75	P	71	RR	26	T	96.8 F	O2	96% nc@2
Day 1	BP	103/30	P	70	RR	20	T	95.9 F	O2	98% nc@2
Day 2	BP		P		RR		T		O2	

	PATHOPHYSIOLOGY: Acute Kidney Injury
Pathophysiology:	Kidneys receive blood from from the renal arteries, filter the blood and then reabsorb some substances back into the blood and excrete the waste products as urine. Urine travels from the collecting system through the ureters to the bladder, where it is stored until it is finally excreted through the urethra out of the body. If there is a decrease in blood flow/supply to the kidneys than there is <i>pre-renal</i> injury. If the problem is within the kidneys than it is termed <i>intrarenal</i> . If the problem arises in the collecting system (ureters, bladder, urethra), such as an obstruction by a stone or tumor, than the injury is termed <i>postrenal</i> . Likely, for this client, pre-renal injury is the culprit secondary to right sided heart failure wherein increased pulmonary HTN is not providing enough blood to the left ventricle causing hypoperfusion to the kidneys. (Lewis, 2014, p. 1102)
Etiology and/or risk factors of the pathophysiology:	<i>Pre-renal etiology:</i> hypovolemia (dehydration, hemorrhage, GI losses [D/V], excessive diuresis, hypoalbuminemia, burns), decreased cardiac output (cardiac dysrhythmias, cardiogenic shock, heart failure, myocardial infarction), decreased peripheral vascular resistance (anaphylaxis, neurologic injury, septic shock), decreased renovascular blood flow (bilateral renal vein thrombosis, embolism, hepatorenal syndrome, renal artery thrombosis), <i>Intrarenal etiology:</i> nephrotoxic injury (grugs: aminoglycosides (gentamicin, amikacin), amphotericin B, contrast media, hemolytic blood transfusion reaction, severe crush injury, chemical exposure: ethylene glycol, lead, arsenic, carbon tetrachloride), interstitial nephritis (allergies: antibiotics [sulfonamides, rifampin], nonsteroidal anti-inflammatory drugs, ACE inhibitors, infections: bacterial [acute pyelonephritis], viral [CMV], fungal [candidiasis]), prolonged prerenal ischemia, acute glomerulonephritis, thrombotic disorders, toxemia of pregnancy, malignant hypertension, systemic lupus erythematosus <i>Post-renal:</i> benign prostatic hyperplasia, bladder cancer, calculi formation, neuromuscular disorders, prostate cancer, spinal cord disease strictures, trauma (back, pelvis, perineum) (Lewis, 2014, p. 1102)
S/S of the pathophysiology:	Signs and symptoms: decreased urine output, although occasionally urine output remains normal, fluid retention, causing swelling in your legs, ankles or feet, drowsiness, shortness of breath, fatigue, confusion, nausea, seizures or coma in severe cases, chest pain or pressure
Effect of this pathophysiology on the client:	This client has has edema, fluid retention, SOB, hyperkalemia, metabolic acidosis indicative of elevated CO2 (bicarb), BUN and creatinine levels are both elevated (BUN / Cr ration > 20:1 --> likely prerenal)

Other Significant Health History: Past Medical History

Active problems: morbid obesity (BMI 50, wt 289 lb / ht 5'4"), DMII (A1C 6.2 – 5/12/16), HTN, COPD (chronic mild hypoxia, on home O2), hypotension (presumably d/t over diuresis on Lasix), hyperkalemia / additional Hx – major depression, hyperlipidemia, bilateral cataracts, edema, lung nodule, osteopenia/osteoarthritis. Advance Directives: No Code: FULL
Allergies: cefuroxime (systemic rash), leukocytosis d/t mandibular rash --> pruritus since being on PO cefuroxime starting 5/16/16 d/t UTI, Enterobacter Aerogenes

Currently relevant orders, prescribed medications and therapies		WRITTEN explanation of rationales for each order, prescribed medication and therapies
Diet (type):	Diabetic Regular, thin liquids 1800 Kcal, 2-3 g Na	- the nutrient balance of a diabetic diet is essential for helping maintain blood glucose levels. (Lewis, 2014, p. 1166) - lowering total kcal will help client lose weight (Lewis, 2014, p. 888) - edema associated with HF is often treated with a low sodium diet (Lewis, 2014, p. 777)
Vital signs (frequency):	- VS Q4Hrs - ECG monitoring -strict I/O - daily weights	- Systematic measurement of VS establishes a baseline, shows trends and allows a rapid response for a digression. (policy for Tele pt.) - client presented with AKI and hyperkalemia which can cause changes in T waves, widening QRS complex, and ST segment depression (Lewis, 2014, p. 1104); also patients with HF need continuous ECG monitoring and assessment (Lewis, 2014, p. 772); normal sinus rhythm @76 bpm (rt axis deviation) - with the presentation of AKI strict I/O monitoring serves to predict therapy and daily volume replacement (Lewis, 2014, p. 1106); - for the patient in HF monitoring I/O and daily weight evaluates fluid status and renal perfusion. (Lewis, 2014, p. 773)
Activity (type):	- up with assistance as needed - ambulate in hall Q shift	- client has pitting edema secondary to CHF and is a fall risk - ambulation helps maintains muscle tone, muscle strength, and joint flexibility, it stimulates the respiratory, circulatory, and GI systems to help each one function properly (ATI Nursing Education, 2008)
Diagnostic procedures:	- Urine Culture - Echocardiogram (05/13/2016) - CT chest with contrast - ultrasound, kidney's - BMP - CBC	- urine culture evaluated UTI, kidney function, and assess diabetes. Tests shows bacterial UTI, unspecified. (Mayo Clinic Staff, 2014) - echocardiogram uses ultrasound to evaluate the structures of the heart. (Lewis, 2014, p. 704) Echocardiogram revealed normal LV size, LVEF 65-70%, grade 1 diastolic dysfunction (impaired LV relaxation), RV severely dilated, moderately reduced RVEF, mild TR, moderate pulmonary HTN, RSVP – 65-70 mm/Hg - ultrasound of kidney to evaluate the status and diagnosis of AKI, providing imaging without nephrotoxic contrast agents. (Lewis, 2014, p. 1105); small simple cysts in mid right kidney identified with no signs of hydronephrosis. - BMP evaluates electrolyte levels in relation to AKI, HF, stage 3 CKD, and hyperkalemia. - CBC evaluates WBC count r/t UTI.
Wound Care:	n/a	n/a
Therapies: • PT/OT	- Respiratory – nasal cannula oxygen; give 0-6 L/min of O2 to maintain SaO2 to 88-92%, higher than 92% is unnecessary. Contact physician is greater than 6L/min given. - Sequential Compression Device (SCDs)	- client has COPD, with chronic mild hypoxia, former smoker, and uses O2 @ home, O2 administration allows patient to maintain oxygenation. - low O2 saturation goals d/t client has chronic hypoxia/former smoker; hyper capnia can dull the chemoreceptors in the medulla to elevated CO2 wherein hypoxia stimulates respirations. (Lewis, 2014, p. 1661) - SCDs used to apply gradient pressure to LE so that blood would not accumulate and to help with venous return. (Elsevier Mosby, 2013, p. 591)
IV Fluid • Type • Rate/hour	- sodium chloride 0.9% - continuous – 125 mL/hr	- used to maintain fluid and electrolyte balance (i.e. hyperkalemia) and to provide perfusion to the kidneys to help correct AKI. - replaces sodium and chloride lost from vomiting - maintains patency of the line (Gahart, 2014, p. 1085)

Lab Results:					
	Lab and Results				Rationale
	05/15	05/24	05/25		
Glucose	108 ↑	117 ↑	104 ↑		- trending to hyperglycemia -->possible hypovolemia (but, expect to see other lab values ↑, i.e. Na) - possible infection and stress --> SNS stimulation, inflammatory response releases corticosteroids raises blood sugar level (Lewis, 2014, p. 90) -hyperglycemia s/s: increased thirst, headaches, trouble concentrating, blurred vision, frequent peeing fatigue (weak, tired feeling), weight loss, blood sugar more than 180 mg/dL (Davidson & Moreland, 2013)
Potassium	4.7 n	4.8 n	5.2 ↑		- high potassium levels attributed to over diuresis with Lasix and r/t to AKI and CKD3. - hyperkalemia s/s: muscle fatigue, weakness LE, paralysis, nausea, irritability, abdominal cramping, diarrhea; abnormal heart rhythms (arrhythmias): tall, peaked T wave, prolonged PR interval, ST segment depression, loss of P wave, widening QRS, ventricular fibrillation, ventricular standstill (Lewis, 2014, p. 296)
CO2 (bicarb)	25 n	20 ↓	18 ↓		- the low CO2 compared with the elevated anion gap suggest metabolic acidosis (Lewis, 2014, p. 305)
Anion Gap	19 ↑	18 ↑	19 ↑		
BUN	50↑	90 ↑	97 ↑		- elevated BUN and creatinine levels are indicative of AKI; as glomerular filtration rate decreases the BUN and creatinine levels rise; elevations in BUN contribute to nausea, vomiting, lethargy, fatigue, headaches, and impaired thought processes. (Lewis, 2014, p. 1108)
Creatinine	1.25 ↑	3.42 ↑	3.72 ↑		
Albumin	n/a	n/a	2.9 ↓		- indicative of inadequate nutrition, protein loss but in this case may be due to nephrotic syndrome d/t AKI. Pt is reported to have edema indicative of low albumin levels. She also may have low levels due to excessive diuresis secondary to HF. (Lewis, 2014, p. 1102) nephrotic syndrome: peripheral edema, massive proteinuria, hyperlipidemia, and hypoalbuminemia (Lewis, 2014, pp. G-6)
Phosphorus	n/a	n/a	6.1 ↑		- common result of AKI and CKD altering the kidneys ability to excrete phosphorus (Lewis, 2014, p. 300)
HDL	n/a	n/a	26 ↓		- elevations in these figures relate to diabetes, CAD, morbid obesity – pt is on Zocor for hyperlipidemia which may be effectively lowering LDL levels but not adequately raising HDL levels (Lewis, 2014, p. 700)
Triglycerides	n/a	n/a	170 ↑		
UA appearance	n/a	n/a	hazy		- presence of WBCs, hazy appearance, leukocyte esterase, and bacteria indicates a UTI. (Pagana, 2014, p. 975) - presence of RBCs and hyaline casts indicative of glomerulonephritis, CHF, CKD and other kidney diseases. (Lewis, 2014, p. 1112)
UA bacteria	n/a	n/a	1+		
UA leukocyte esterase	n/a	n/a	small		
UA RBC	n/a	n/a	3-5		
UA squamous epithelium	n/a	n/a	6-10		
UA WBC	n/a	n/a	6-10		
UA hyaline casts	n/a	n/a	3-10		
	5/24	5/25 0827	5/25 1311		
Glucose	119 ↑	103↑	128 ↑		- glucose levels regularly monitored for DMII and insulin administration. (Pagana, 2014, p. 255)

MEDICATION (generic and trade name, drug classification)	Dose, route, range, frequency	MECHANISM OF ACTION	EFFECT(s) ON CLIENT	WHY CLIENT IS TAKING THIS MED	NURSING CONSIDERATIONS (Contraindications, ADE...)
aspirin / Salicylate Therapeutic: antipyretic Pharmacologic: nonopioid analgesic	Range: 50-325 mg per day (TIA prophylactic) pain: 325-1000 mg (not to exceed 4g/day) 81 mg tab – PO daily 0900	Produce analgesia and reduce inflammation and fever by inhibiting production of prostaglandins; decreases platelet aggregation	Decrease in platelet aggregation	Pt has hx of CAD, hyperlipidemia, HTN --> preventative TIA, MI, DVT or CVA	Contraindication: hypersensitivity, NSAID sensitivity, bleeding disorders ADR: GI bleeding, exfoliative dermatitis, Steven-Johnson Syndrome, toxic epidermal necrolysis, anaphylaxis, laryngeal edema, dyspepsia, epigastric distress, nausea Drug Interxn: may ↑ the risk of bleeding with anticoagulants, thrombolytic agents, may blunt the therapeutic response to diuretics, ↑ risk of toxicity c furosemide RN Imp: Pt c asthma/allergies at ↑ risk for developing hypersensitivity rxn Toxicity: monitor for tinnitus, headache, hyperventilation, agitation, confusion, lethargy, diarrhea, sweating Metab & Excr: extensively by the liver; inactive metabolites excreted by the kidneys. Amount excreted unchanged by the kidneys depends on urine pH; as pH ↑, amount excreted unchanged increases from 2–3% up to 80%
calcium citrate-vitamin D3 / Citrical-D Therapeutic: mineral and electrolyte replacements / supplements Pharmacologic: n/a	prevention of hypocalcemia, treatment of depletion, osteoporosis: 1–2 g/day in 3–4 divided doses. 315-250 mg – unit per tablet – PO daily 0900	Essential for nervous, muscular, and skeletal systems. Maintain cell membrane and capillary permeability. Act as an activator in the transmission of nerve impulses and contraction of cardiac, skeletal, and smooth muscle. Essential for bone formation and blood coagulation. Treatment of hyperphosphatemia in end-stage renal disease.	Replacement of calcium in deficiency states. Control of hyperphosphatemia in end-stage renal disease without promoting aluminum absorption.	Pt has hx of osteopenia / osteoarthritis --> ↑ bone strength, prevent hypocalcemia. Also control hyperphosphatemia r/t CKD3	Contraindication: hypercalcemia; renal calculi; ventricular fibrillation Use Cautiously in: pts receiving digitalis glycosides; severe respiratory insufficiency; renal disease; cardiac disease ADR: headache, tingling, calculi, hypercalciuria, N/V, bradycardia, arrhythmias, constipation Drug Interxn: hypercalcemia increases the risk of digoxin toxicity; chronic use with antacids in renal insufficiency may lead to milk-alkali syndrome; ingestion by mouth decreases the absorption of orally administered tetracyclines, fluoroquinolones, phenytoin, and iron salts; excessive amounts may decrease the effects of calcium channel blockers. Decreases absorption of etidronate and risedronate (do not take within 2 hr of calcium supplements). May decrease the effectiveness of atenolol. Concurrent use with diuretics (thiazide) may result in hypercalcemia. May decrease the ability of sodium polystyrene sulfonate to decrease serum potassium. RN Imp: administer with plenty of fluids with or following meals. Toxicity and Overdose: assess pt for nausea, vomiting, anorexia, thirst, severe constipation, paralytic ileus, and bradycardia; contact HCP if signs of hypercalcemia occur Lab Test Considerations: monitor serum calcium or ionized calcium, chloride, sodium, potassium, magnesium, albumin, and (PTH). Metab & Excr: mostly in the feces; 20% eliminated by the kidneys.

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cetirizine / ZyrTEC Therapeutic: allergy, cold, and cough remedies, antihistamines Pharmacologic: piperazines (peripherally selective)	Range: 5–10 mg given once or divided twice daily 10 mg tablet – PO daily 0900	Antagonizes the effects of histamine at H1-receptor sites; does not bind to or inactivate histamine. Anticholinergic effects are minimal and sedation is dose related.	Decreased symptoms of histamine excess (sneezing, rhinorrhea, ocular tearing and redness, pruritus)	No hx of environmental allergy in record --> likely pt taking for allergic reaction to cefuroxime for pruritus	Contraindication: hypersensitivity to cetirizine, hydroxyzine or any component ADR: dizziness, drowsiness, fatigue Drug Interxn: Additive CNS depression may occur with alcohol, opioid analgesics, or sedative/hypnotics RN Imp: Assess allergy symptoms (rhinitis, conjunctivitis, hives); assess lung sounds and character of bronchial secretions; maintain fluid intake: 1500-2000 mL/day Lab Test Considerations: may cause false-negative result in allergy skin testing. Metab & Excr: primarily unchanged by the kidneys.
diphenhydramine / Benadryl Therapeutic: allergy, cold, and cough remedies, antihistamines, antitussives Pharmacologic: N/A	Antihistaminic/antiemetic /antivertiginic—25– 50 mg q 4– 6 hr, (not to exceed 300 mg/day. mg/day). Sedative/hypnotic—50 mg 20– 30 min before bedtime. 25-50 mg – tablet – PO PRN, nightly	Antagonizes the effects of histamine at H1-receptor sites; does not bind to or inactivate histamine. Significant CNS depressant and anticholinergic properties.	Decrease symptoms of histamine excess (sneezing, rhinorrhea, nasal and ocular pruritus, ocular tearing and redness, urticaria). Relief of acute dystonic reactions. Prevention of motion sickness. Suppression of cough.	No hx of environmental allergy in record --> likely pt taking for allergic reaction to cefuroxime for pruritus	Contraindication: acute attacks of asthma; Lactation; known alcohol intolerance (some liquid products) ADR: drowsiness, anorexia, dry mouth, Drug Interxn: risk of CNS depression with other antihistamines, alcohol, opioid analgesics, and sedative/hypnotics. anticholinergic effects with tricyclic antidepressants, quinidine, or disopyramide. MAO inhibitors intensify and prolong the anticholinergic effects of antihistamine RN Imp: May ↓ skin response to allergy tests. Discontinue 4 days before skin testing. Assess sleep patterns. Metab & Excr: 95% by liver
heparin / Porcine Therapeutic: anticoagulants Pharmacologic: antithrombotics HIGH ALERT	Range: Subcut (Adults): 5000 units q 8–12 hr 5000 unit/mL – subcutaneous Q12hrs 0900 2100	Potentiates the inhibitory effect of antithrombin on factor Xa and thrombin. In low doses, prevents the conversion of prothrombin to thrombin by its effects on factor Xa. Higher doses neutralize thrombin, preventing the conversion of fibrinogen to fibrin.	Prevention of thrombus formation. Prevention of extension of existing thrombi (full dose).	- pt presents w/ Hx of HTN, hyperlipidemia, CHF, being used to prevent thrombus formation (DVT)	- ADR: common: anemia / life threatening: bleeding, HIT, - use cautiously in severe uncontrolled HTN, bacterial endocarditis, hemorrhagic stroke, severe liver or kidney disease, - risk of bleeding increases with: aspirin, NSAIDs - Assess for bleeding gums; nosebleed; unusual bruising; black, tarry stools; hematuria; fall in hematocrit or BP; guaiac-positive stools- monitor aPTT and hematocrit (for subcu draw blood 4-6 hours after injection) - Protamine sulfate is the antidote - Do not administer IM because of danger of hematoma formation Metab & Excr: likely removed by the lymph nodes / spleen

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insulin lispro / Humalog Therapeutic: antidiabetics, hormones Pharmacologic: pancreatic HIGH ALERT	Range: 0.5-1 unit/kg/day 2-10 units, sliding scale subcutaneous 4x daily before meals and at bedtime - complete POC glucose at AC/HS / q4hrs 0900 1300 1700 2100	Lower blood glucose by stimulating glucose uptake in skeletal muscle and fat, inhibiting hepatic glucose production, inhibition of lipolysis and proteolysis, enhanced protein synthesis	Control of hyperglycemia in diabetic pt	Control hyperglycemia, blood glucose levels r/t DMII	Contraindication: hypoglycemia; caution in stress, infxn, renal/hepatic impairment ADR: hypoglycemia, anaphylaxis Drug Interxn: β blockers may mask signs of hypoglycemia; corticosteroids, thyroid supplements may ↑ insulin requirements; Etoh, ACE inhibitors, MAO inhibitors, salicylates may ↓ insulin requirements RN Imp: HIGH ALERT MED; assess for symptoms of hypoglycemia; monitor BGL q 6 h during therapy; rotate injection sites; do not admin until food present; do not confuse c humulin Toxicity: overdose manifested as hypoglycemia; mild may be treated c oral glucose; severe treat c IV glucose, glucagon, epinephrine Metab & Excr: liver, spleen, kidney, and muscle
miconazole (topical) / Micotin Therapeutic: antifungals (topical) Pharmacologic: n/a	Range: apply twice daily Apply 2x daily – cover affected area completely 0900 2100	Affects the synthesis of the fungal cell wall, allowing leakage of cellular contents	Decrease in symptoms of fungal infection	Topical tx of fungal skin infection	Contraindication: hypersensitivity Use Cautiously in: nail and scalp infections ADR: burning, itching, local hypersensitivity reactions, redness, stinging Drug Interxn: not known RN Imp: inspect involved areas of skin and mucous membranes before and frequently during therapy. Increased skin irritation may indicate need to discontinue medication; apply small amount to cover affected area completely; avoid the use of occlusive wrappings or dressings unless directed by health care professional. Metab & Excr: systemic metabolism and excretion not known following local application
NPH insulin (isophane insulin suspension) / HumuLIN N Therapeutic: antidiabetics, hormones Pharmacologic: pancreatic HIGH ALERT	Range: : 0.5–1 unit total insulin/kg/day 10 units – subcutaneous nightly 2000	Lowers blood glucose by: stimulating glucose uptake in skeletal muscle and fat, inhibiting hepatic glucose production. Other actions of insulin: inhibition of lipolysis and proteolysis, enhanced protein synthesis	Control of hyperglycemia in diabetic patients.	Control hyperglycemia, blood glucose levels r/t DMII ----- Toxicity and Overdose: manifested by symptoms of hypoglycemia. Mild hypoglycemia may be treated by ingestion of oral glucose; severe hypoglycemia = life-threatening --> treatment consists of IV glucose, glucagon, or epinephrine.	Contraindication: hypoglycemia; allergy or hypersensitivity to a particular type of insulin Use Cautiously in: stress or infection (may temp. ↑ insulin require.); renal/hepatic impairment (may ↓ insulin require.); concomitant use with pioglitazone or rosiglitazone (↑ risk of fluid retention and worsening HF) ADR: hypoglycemia, lipodystrophy, pruritus, erythema, swelling, allergic reactions: anaphylaxis. Drug Interxn: β blockers may mask signs of hypoglycemia; corticosteroids, thyroid supplements may ↑ insulin requirements; Etoh, ACE inhibitors, MAO inhibitors, salicylates may ↓ insulin requirements Concurrent use with pioglitazone or rosiglitazone may ↑ risk of fluid retention and worsening HF RN Imp: assess pt for hypoglycemia (anxiety; restlessness; tingling in hands, feet, lips, or tongue; chills; cold sweats; confusion; cool, pale skin; difficulty in concentration; drowsiness; nightmares or trouble sleeping; excessive hunger; headache; irritability; nausea; nervousness; tachycardia; tremor; weakness; unsteady gait) Metab & Excr: liver, spleen, kidney, and muscle.

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simvastatin / Zocor Therapeutic: lipid-lowering agents Pharmacologic: HMG-CoA reductase inhibitors (statin)	Range: 80 mg dose should be restricted to patients who have been taking this dose for 12 mo without evidence of muscle toxicity 10 mg tablet – PO nightly 2100	Inhibits 3-hydroxy-3-methylglutaryl-coenzyme A (HMG-CoA) reductase, an enzyme which is responsible for catalyzing an early step in the synthesis of cholesterol	Lowering of total and LDL cholesterol and triglycerides. Slightly increases HDL cholesterol. Slows the progression of coronary atherosclerosis with resultant decrease in coronary heart disease-related events.	Pt presents w/ HTN and hx of hyperlipidemia, morbidly obese - to help lower LDL and increase HDL ----- Lab Test Considerations: evaluate serum cholesterol and triglyceride levels Metab & Excr: extensively by liver, most during first pass; excreted in bile and feces; 13% excreted unchanged by the kidneys.	Contraindication: concurrent use of strong CYP3A4 inhibitors (protease inhibitors, azole antifungals, erythromycin, clarithromycin, telithromycin, nefazodone, boceprevir, telaprevir, or grapefruit juice), gemfibrozil, cyclosporine or danazol (↑ risk of myopathy/rhabdomyolysis); active liver disease or unexplained persistent elevations in AST/ALT Use Cautiously in: hx of liver disease; alcoholism; renal impairment ADR: abdominal cramps, constipation, diarrhea, flatus, heartburn, rashes Drug Interxn: Risk of myopathy and rhabdomyolysis are significantly ↑ with concurrent use of cyclosporine, gemfibrozil, danazol, erythromycin, clarithromycin, telithromycin, protease inhibitors, nefazodone, boceprevir, telaprevir, ketoconazole, itraconazole, voriconazole, or posaconazole; risk of myopathy is ↑ by concurrent use of amiodarone, amlodipine, diltiazem, dronedarone, verapamil, ranolazine, lomitapide, or niacin. May slightly ↑ serum digoxin levels. May ↑ risk of bleeding with warfarin. don't drink grapefruit juice RN Imp: if pt develops muscle tenderness during therapy, CPK levels should be monitored. If CPK levels are markedly ↑ or myopathy occurs, therapy should be discontinued.
traMADol / Ultram Therapeutic: analgesics (centrally acting) Pharmacologic: n/a	Range: immediate-release—not to exceed 300 mg/day in patients 75 yr; ER—use with extreme caution in patients 75 yr. not to exceed 400 mg/day [300 mg in patients 75 yr] 50 mg tablet – PO PRN – Q6hrs	Binds to mu-opioid receptors. Inhibits reuptake of serotonin and norepinephrine in the CNS.	decreased pain	Pt using to manage/treat pain ----- Lab Test Considerations: may cause ↑ serum creatinine, ↑ liver enzymes, ↓ hemoglobin, and proteinuria. Toxicity and Overdose: may cause respiratory depression and seizures; naloxone may reverse some, but not all. Metab & Excr: mostly metabolized by the liver; one metabolite has analgesic activity; 30% is excreted unchanged in urine.	Contraindication: cross-sensitivity w/ opioids may occur; pts acutely intoxicated with etoh, sedatives/hypnotics, centrally acting analgesics, opioid analgesics, or psychotropic agents; pts who are physically dependent on opioid analgesics Use Cautiously in: renal impairment (↑ dosing interval recommended if CCr < 30 mL/min); hepatic impairment (↑ dosing interval recommended in pts w/ cirrhosis); ADR: dizziness, headache, somnolence, constipation, nausea; seizures, serotonin syndrome Drug Interxn: ↑ risk of CNS depression when used concurrently with other CNS depressants, including alcohol, antihistamines, sedative/hypnotics, opioid analgesics, anesthetics, or psychotropic agents; ↑ risk of seizures with high doses of penicillins, cephalosporins, phenothiazines, opioid analgesics, or antidepressants; carbamazepine ↑ metabolism and ↓ effectiveness of tramadol (increased doses may be required). Use cautiously in patients who are receiving MAO inhibitors (↑ risk of adr) RN Imp: monitor pt for seizures; may occur within recommended dose range. Risk is increased with higher doses and in patients taking antidepressants, opioid analgesics, or other drugs that decrease the seizure threshold - monitor for serotonin syndrome, mental-status changes (e.g., agitation, hallucinations, coma), autonomic instability (e.g., tachycardia, labile BP, hyperthermia), neuromuscular aberrations (e.g., hyperreflexia, incoordination) (N/V/D) in patients taking these drugs concurrent.

Medical Diagnoses:	Acute Kidney Injury on CKD3, diastolic CHF, rt sided HF (pulmonary HTN), labs indicate unspecified UTI	
Presenting Symptoms:	<ul style="list-style-type: none"> - morbid obesity (BMI 50, wt 289 lb / ht 5'4") - wt gain of 7lb in last week - aching, throbbing, pain 4 of 10 in BLE (tolerable 0) - impaired vision (bilateral cataracts) / impaired hearing - muscle strength - weak, FWW / SBA - Dorsalis pulses only evident w/ Doppler - generalized pitting edema (+2BUE / +3/+4 BLE) - cap refill LE >3 sec (4 sec) - BP trending low – (110/70, 103/30) - client c/o of being cold and wraps herself tightly in blankets - respirations diminished bilaterally - O2 sats w/out NC ↓ 84% / on NC @2L - systemic rash – reaction to cefuroxime - rash/redness LRQ abdominal fold – client refused miconazole 	<ul style="list-style-type: none"> - former smoker - anxious, tearful with low consecutive low BP - reported were living in a motel for past months since a tree fell on their home - stated, “no one's telling me what is going on.” - stated, “I feel so helpless” when assisting her to lavatory
Lab Tests:	<p>Glucose – (108↑, 117 ↑, 104 ↑) Potassium – (5.2↑, 5.4↑) CO2 (bicarb) – (20↓, 18↓) Anion Gap – (19 ↑, 18↑, 19↑) BUN – (50↑, 90↑, 97↑, 102↑) Creatinine – (1.25↑, 3.42↑, 3.72↑, 3.79↑) Albumin – (2.9↓) Phosphorus – (6.1↑) HDL – 26↓ Triglycerides – 170↓</p>	<p>UA appearance – hazy UA bacteria – 1+ UA leukocyte esterase – small UA RBC – 3-5 UA squamous epithelium – 6-10 UA WBC – 6-10 UA hyaline casts – 3-10</p> <p>- still waiting on results for UTI</p>
Diagnostic Tests:	<ul style="list-style-type: none"> - echocardiogram uses ultrasound to evaluate the structures of the heart. (Lewis, 2014, p. 704) Echocardiogram revealed normal LV size, LVEF 65-70%, grade 1 diastolic dysfunction (impaired LV relaxation), RV severely dilated, moderately reduced RVEF, mild TR, moderate pulmonary HTN, RSVP – 65-70 mm/Hg - ultrasound of kidney to evaluate the status and diagnosis of AKI, providing imaging without nephrotoxic contrast agents. (Lewis, 2014, p. 1105); small simple cysts in mid right kidney identified with no signs of hydronephrosis. 	
Pre-existing medical conditions:	morbid obesity (BMI 50, wt 289 lb / ht 5'4"), DMII (A1C 6.2 – 5/12/16), HTN, COPD (chronic mild hypoxia, on home O2), hypotension (presumably d/t over diuresis on Lasix), hyperkalemia / additional Hx – major depression, hyperlipidemia, bilateral cataracts, edema, lung nodule, osteopenia/osteoarthritis	
Allergies:	cefuroxime (systemic rash), leukocytosis d/t mandibular rash --> pruritus since being on PO cefuroxime starting 5/16/16 d/t UTI, Enterobacter Aerogenes	



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- Creatinine – (1.25↑, 3.42↑, 3.72↑, 3.79↑)
- Potassium – (5.2↑, 5.4↑)
- HDL – 26↓
- Triglycerides – 170↓

Data:

- multiple diagnoses of AKI, Rt side HF, CKD3, DMII
- morbid obesity (BMI 50, wt 289 lb / ht 5'4")
- wt gain of 7lb in last week
- muscle strength - weak, FWW / SBA
- generalized pitting edema (+2BUE / +3/+4 BLE)
- cap refill LE >3 sec (4 sec)
- BP trending low – (110/70, 103/30)
- anxious, tearful with low consecutive low BP
- reported were living in a motel for past months since a tree fell on their home
- stated, "no one's telling me what is going on."
- stated, "I feel so helpless" when assisting her to lavatory
- systemic rash – reaction to cefuroxime
- rash/redness LRQ abdominal fold – client refused miconazole

Data:

- morbid obesity (BMI 50, wt 289 lb / ht 5'4")
- wt gain of 7lb in last week
- aching, throbbing, pain 4 of 10 in BLE (tolerable 0)
- impaired vision (bilateral cataracts) / impaired hearing
- muscle strength - weak, FWW / SBA
- generalized pitting edema (+2BUE / +3/+4 BLE)
- BP trending low – (110/70, 103/30)
- anxious, tearful with low consecutive low BP

1*

Nursing Diagnosis:

Ineffective peripheral tissue perfusion r/t reduction in arterial and venous flow secondary to right sided heart failure aeb by the 7lb weight gain in past week, the generalized pitting edema (+2BUE / +3/+4 BLE), cap refill > 3 sec in BLE, and low BP (110/70, 103/30).

Expected Outcome:

By end of shift patient will have a cap refill of less than <3 seconds with warm skin.

2

Nursing Diagnosis:

Decreased cardiac output r/t altered preload secondary to rt sided HF aeb by the 7lb weight gain in past week, generalized pitting edema (+2BUE / +3/+4 BLE), cap refill > 3 sec in BLE, and consistent low BP (110/70, 103/30).

Expected Outcome:

By end of shift patient will have SBP > 100 and DBP > 50.

3

Nursing Diagnosis:

Anxiety r/t increased feelings of helplessness secondary to progression of HF, COPD, AKI aeb anxious and tearful with low consecutive BP readings, pt reported various stressors such as low BP readings, living in a motel at stating "I feel so helpless" and "no one's telling me what is going on."

Expected Outcome:

By end of shift patient will report an anxiety level of 4 of 10.

4

Nursing Diagnosis:

Risk for falls r/t aching, throbbing pain in BLE w/ +3/+4, pitting edema in BLE, impaired vision (bilateral cataracts), impaired hearing, and weak muscle strength and client uses a FWW

Expected Outcome:

Patient will remain free from falls through out shift.

Interventions:

1. Q2hrs RN student will note skin color and temperature of skin.
2. Q2hrs RN student will assess capillary refill on all distal extremities.
3. RN student will ambulate with patient wearing compression stockings and encourage patient perform active ROM dorsi and plantar-flexion exercises with her feet.
4. RN student will elevate patient's edematous legs and ensure no pressure under the knee and heels to prevent pressure ulcers.



Evaluation

Interventions:

1. When client is out of bed RN student will apply graduated compression stockings and when client is in bed will apply SCDs as ordered.
2. RN student will measure all fluid intake and output including IV fluids.
3. RN student will provide a restful environment by minimizing unnecessary disturbances and grouping interventions.
4. RN student will encourage small, frequent, sodium-restricted, low saturated fat meals and explain to client that sodium-restricted diets will help decrease fluid volume excess.



Evaluation:

Interventions:

1. RN student will provide empathy and encourage the patient to interpret her anxiety as a natural reaction to the amount of life changes she is currently undergoing.
2. RN student will encourage the client to communicate about any irrational thoughts or feelings that may be contributing to the anxiety
3. RN student will encourage client to identify healthy coping and verbalize strategies for dealing with anxiety that have worked in the past.
4. Assess client's level of anxiety using a 0-10 scale while also monitoring physical reactions such as tachycardia, tachypnea, and nonverbal expressions of anxiety.



Evaluation:

Interventions:

1. RN student will adhere to a toileting schedule q 2 hour of assisting the patient to the toilet needs using SBA when using the bathroom.
2. RN student will communicate the importance of using the patient's call light when she needs to get out of bed
3. RN student will assess patients room for any risks to safety including clutter, debris on floor, and bed accessibility.
4. When the patient gets up out of bed RN student will teach her to rise slowly, remain seated for several minutes before standing, flexing feet upward several times while sitting and to make sure she sits down immediately if feeling dizzy.



Evaluation:

CROSSLINKS:

..... – the nursing diagnoses ineffective peripheral tissue and decreased cardiac output essentially share the same data since both they are both being affected by the client's right sided heart failure. Since the heart failure is right sided the poor tissue perfusion is venous with the accompanying pulmonary HTN and edema; since the right side of the heart can't get a sufficient volume of blood to the left ventricle we have a decreased cardiac output.

..... – the client's morbidly obese condition is a factor that precipitates all of the nursing diagnoses presented. The extra weight makes mobility an issue and puts her at risk for falls. This lack of mobility also affects tissue perfusion in the venous return is assisted by muscle contractions during mobility. The added weight also puts strain on the heart. The client is aware of how heavy she is and feels anxious when receiving help from caregivers.

..... – the client's hypotensive state is a factor which involves all four nursing diagnoses. It indicates the poor vascular perfusion and that even though client had enough fluids, those fluids are in the wrong spaces. Not having enough blood in the vascular space makes the heart have to work harder contributing to decreased cardiac output. The client had commented several times over the course of the shift concern over the low BPs. In this hypotensive state the client is apt to become dizzy or lightheaded particularly when ambulating putting her at an increase risk for falls.

Nursing DX #1	INTERVENTION	RATIONALE
1	<ul style="list-style-type: none"> Q2hrs RN student will note skin color and temperature of skin. 	<ul style="list-style-type: none"> Cardiac output was a significant predictor for objectively measured skin temperature. Subjective assessment of skin temperature was significantly related to cardiac output, systemic vascular resistance, and serum lactate. These results support the utilization of skin temperature as a noninvasive marker of cardiac output and perfusion (Schey, Williams, & Bucknall, 2009). (Ackley, 2014, p. 811)
2	<ul style="list-style-type: none"> Q2hrs RN student will assess capillary refill on all distal extremities. 	<ul style="list-style-type: none"> Nail beds usually return to a pinkish color within 1 to 2 seconds after compression; a capillary refilling time greater than 3 seconds is abnormal (Jarvis, 2012). (Ackley, 2014, p. 811)
3	<ul style="list-style-type: none"> RN student will ambulate with patient wearing compression stockings and encourage patient perform active ROM dorsi and plantar-flexion exercises with her feet. 	<ul style="list-style-type: none"> Exercise helps increase venous return, builds up collateral circulation, and strengthens the calf muscles. (Ackley, 2014, p. 812)
4	<ul style="list-style-type: none"> RN student will elevate patient's edematous legs and ensure no pressure under the knee and heels to prevent pressure ulcers. 	<ul style="list-style-type: none"> Elevation increases venous return, helps decrease edema, and can help heal venous leg ulcers (Longo et al, 2011). (Ackley, 2014, p. 812)

Nursing DX #2	INTERVENTION	RATIONALE
1	<ul style="list-style-type: none"> When client is out of bed RN student will apply graduated compression stockings and when client is in bed will apply SCDs as ordered. 	<ul style="list-style-type: none"> A study that assessed effects of ISPC on healthy adults found that there were significant increases in cardiac output, stroke volume, and ejection fraction due to increased preload and decreased afterload (Bickel et al, 2011) (Ackley, 2014, p. 181)
2	<ul style="list-style-type: none"> RN student will measure all fluid intake and output including IV fluids. 	<ul style="list-style-type: none"> In clients with decreased cardiac output, poorly functioning ventricles may not tolerate increased fluid volumes and patient is on cont. NS at 125 mL/hr (Ackley, 2014, p. 181)
3	<ul style="list-style-type: none"> RN student will provide a restful environment by minimizing unnecessary disturbances and grouping interventions. 	<ul style="list-style-type: none"> Rest helps lower arterial pressure and reduce the workload of the myocardium by diminishing the requirements for cardiac output (Fauci et al, 2008). (Ackley, 2014, p. 182)
4	<ul style="list-style-type: none"> RN student will encourage small, frequent, sodium-restricted, low saturated fat meals and explain to client that sodium-restricted diets will help decrease fluid volume excess. 	<ul style="list-style-type: none"> A study that compared HF symptoms with dietary sodium intake found that those with sodium intakes greater than 3 grams per day had more HF symptoms (Son et al, 2011). (Ackley, 2014, p. 182)

Nursing DX #3	INTERVENTION	RATIONALE
1	<ul style="list-style-type: none"> • RN student will provide empathy and encourage the patient to interpret her anxiety as a natural reaction to the amount of life changes she is currently undergoing. 	<ul style="list-style-type: none"> • <i>The way a nurse interacts with a client influences his/her quality of life. Providing psychological and social support can reduce the symptoms and problems associated with anxiety (Wagner & Bear, 2009).</i> (Ackley, 2014, p. 138)
2	<ul style="list-style-type: none"> • RN student will encourage the client to communicate about any irrational thoughts or feelings that may be contributing to the anxiety 	<ul style="list-style-type: none"> • <i>Avoid and suppress painful emotions, thoughts, and sensations, and limit their involvement in meaningful activities (Hayes-Skelton et al, in press).</i> (Ackley, 2014, p. 138)
3	<ul style="list-style-type: none"> • RN student will encourage client to identify healthy coping and verbalize strategies for dealing with anxiety that have worked in the past. 	<ul style="list-style-type: none"> • <i>Methods of coping with anxiety that have been successful in the past are likely to be helpful again. Listening to clients and helping them to sort through their fears and expectations encourages them to take charge of their lives (Fishel, 1998).</i> (NAANDA, 2014)
4	<ul style="list-style-type: none"> • Assess client's level of anxiety using a 0-10 scale while also monitoring physical reactions such as tachycardia, tachypnea, and nonverbal expressions of anxiety. 	<ul style="list-style-type: none"> • <i>Anxiety is a risk factor for major adverse cardiac risk events in persons with stable coronary artery disease (Frasure-Smith & Lesperance, 2008).</i> (Ackley, 2014, p. 138)

Nursing DX #4	INTERVENTION	RATIONALE
1	<ul style="list-style-type: none"> • RN student will adhere to a toileting schedule q 2 hour of assisting the patient to the toilet needs using SBA when using the bathroom. 	<ul style="list-style-type: none"> • <i>A study found that falls were most commonly associated with toileting, especially falling on the way from bed or chair to the bathroom (Tzeng, 2010).</i> (Ackley, 2014, p. 334)
2	<ul style="list-style-type: none"> • RN student will communicate the importance of using the patient's call light when she needs to get out of bed 	<ul style="list-style-type: none"> • <i>A client who is at risk for falls who receives assistance from care providers is less likely to have a fall.</i>
3	<ul style="list-style-type: none"> • RN student will assess patients room for any risks to safety including clutter, debris on floor, and bed accessibility. 	<ul style="list-style-type: none"> • <i>Clients suffering from impaired mobility, impaired visual acuity, and neurological dysfunction, including dementia and other cognitive functional deficits, are at risk for injury from common hazards. These recommendations were shown to be effective to reduce falls (Tinetti, 2003).</i> (Ackley, 2014, p. 336)
4	<ul style="list-style-type: none"> • When the patient gets up out of bed RN student will teach her to rise slowly, remain seated for several minutes before standing, flexing feet upward several times while sitting and to make sure she sits down immediately if feeling dizzy. 	<ul style="list-style-type: none"> • <i>Always have the client dangle at the bedside before trying standing to evaluate for postural hypotension. Watch the client closely for dizziness during increased activity. Postural hypotension can be detected in up to 30% of elderly clients. These methods can help prevent falls as well as maintain adequate fluid intake (Tinetti, 2003).</i> (Ackley, 2014, p. 335)

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