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Nursing of the Critically Ill

During my shift, the patient's vital signs were blood pressure of 112/62, MAP of 82, heart rate 84, respiratory rate 21, FiO2 50%, O2 94%, and 99.8° F. Patient had a foley catheter draining adequate amounts of clear yellow urine. The vital signs were normal at this point because the patient was stable and recovering. The ventilator settings, such as the SIMV, suggest that the patient is being weaned off of the ventilator and that he is contributing to breathing which implies recovery. The head to toe assessment findings during my shift included:

HEENT & NEURO: Patient is alert and oriented x4, but cannot talk at this time d/t tracheostomy. Patient lip speaks and writes out concerns/questions. Pupils are round, equal and reactive to light—each 3mm. Glasgow coma scale of 15. Mucous membranes moist & pink. An 8 mm Bivona tracheostomy in place in neck. Patient follows commands.

MUSCULAR: Hand grasps present bilateral. Moves all extremities.

CARDIO/PULMONARY: Skin pink, warm, dry, and intact. Bilateral breath sounds clear & decreased. O2-Ventilator SIMV mode. Occasional non-productive cough. Sinus rhythm. S1 & S2 present. Braden score is 15. Skin is pink, warm and dry except head/face which shows diaphoresis. Radial pulses +1 bilateral. Left pedal pulse +1. Right pedal pulse +2. Capillary refill < 3seconds. Generalized edema +2. Left lower extremity edema +3. Left radial harvest has small serosanguinous drainage, dressing dry & intact. Pt. has temporary pacemaker and is paced at 70/12 AAI.

GI/GU: Abdomen is obese, extremely distended, and firm. Bowel sounds are hypoactive. NG tube in place with low intermittent suction. Indwelling urinary catheter draining clear yellow urine.

H.K. is a sixty-seven year old Caucasian white male who was admitted for outpatient heart catheterization. He has a history of coronary artery disease, ischemic cardiomyopathy with

an ejection fraction of only 25%, hypertension, hyperlipidemia, sleep apnea, morbid obesity (303 lbs), chest pain, shortness of breath, and previous coronary artery bypass graft (CABG). After his heart catheterization on February 27th 2012, the patient underwent redo CABG surgery x3 (he had OTHER previous CABG surgery prior to this one about 20 years ago after an acute myocardial infarction). Signs and symptoms that led to the patient's admission included: feeling fatigued recently, had chest pain for the last month and noticed that his chest was feeling heavy, so his cardiologist performed a cardiac catheterization which showed three-vessel coronary disease and moderate disease in his Left Internal Mammary Artery (LIMA), which was his *only* open graft. This is what led to the redo CABG surgery x3.

Currently, H.K. is not in any discomfort but he has complained of some crampy abdominal discomfort. He is on ventilator support, as mentioned previously, with a tracheostomy tube in place. His abdomen is much distended and firm at this point so a CAT scan of his abdomen and pelvis was ordered and done to see what was going on in his belly and to rule out any occult surgical issues. The CAT scan showed a large amount of air/gas in his abdomen, so the physician ordered a rectal suppository of Bisacodyl 10 mg every day until the patient passes formed stool and gas, although he is most likely going to have a decompression colonoscopy due to all of the air in his belly. The NG feeding was eventually discontinued and TPN was ordered and started instead. Discontinuing the NG feeding tube was a good idea because his abdomen is already full of gas. Continuing NG feedings could probably complicate the condition by adding more air into the patient's stomach.

The patient's chest pains, fatigue, and shortness of breath before his admission are major symptoms of his history of coronary artery disease. The reason for his chest pain is because of his blockage which caused a lack of oxygen to the myocardium. In return there was ischemia

which caused his chest pain. While at the hospital, H.K. also experienced EKG changes and went into Atrial Fibrillation, which is why one of his medications was Amiadorone, for treatment of Atrial Fibrillation and to help suppress arrhythmias. Patient also has a temporary pacemaker in place to help with this. He was also cardioverted, since they knew when the patient went into this atrial dysrhythmia. Although the patient quit smoking about 20 years ago, he was a 4 pack-a-day smoker for 30 years prior to that. Besides his tobacco use, H.K. has many other risk factors which put him at risk for coronary artery disease such as his obesity, hyperlipidemia, hypertension, and his gender. The patient has been living a very risky life because he is living off of one artery—his LIMA. (I can't believe he has survived this long!)

It makes sense that most of his pulses are a little thready. This is possibly due to his recent surgery (redo CABG) and to his impaired cardiac function (ejection fraction of only 25%). Since his heart is not pumping enough blood which is needed by the rest of this body, the pulses can become weak. His capillary refill is still good so it seems like the tissues at the capillary level are still receiving enough oxygen and getting perfused. Honestly, I was thinking his capillary refill would be worse. The patient's abdomen is large, firm, and extremely distended because we soon found out he is filled with gas/air. Possible explanations for H.K.'s extremely low cardiac output may be due to inadequate left ventricular ejection where the heart cannot get rid of the normal amount which should be pumping out. Several factors which cause this to happen are his hypertension, and especially his coronary artery disease which causes left ventricular ischemia and infarction.

The patient's red blood cells, albumin, hemoglobin and hematocrit are low due to surgery, where he lost blood. His white blood count is high because he has an active infection and his immune system cells are defending his body against this infection. His blood cultures

are positive for Gram(+) Cocci in cluster. H.K.'s glucose is a little high, although he has no previous history of diabetes mellitus, he became hyperglycemic postoperatively needing an insulin drip. The low calcium level could have been associated with the patient's cardiac dysrhythmia. His chloride level is a little high most likely due to the potassium chloride infusion and tablets he receives 2 times daily. His BUN and Creatinine levels are also elevated which is probably due to older age and impaired cardiac function. If the heart cannot pump adequate amounts of blood out of the heart, other organs, such as the kidney, will not receive sufficient perfusion and therefore will not filter out the normal amounts of waste.

The patient is receiving the medication Zosyn to help treat his infection. He is also taking Lipitor to help control his high cholesterol and Lisinopril to help control his hypertension. It is very important that he keeps these two problems under control because they are huge risk factors for his coronary artery disease. He is also taking Coreg to help control his hypertension and improve his cardiac output. Although he is older, it is important that from now on he follows his recommended regimen because his heart is in a critical condition and he is living off of only one artery.

I think the nursing interventions implemented are very important for his specific patient and his condition because poor perfusion to the rest of the body is very serious and can be fatal in his condition. Besides the nursing interventions listed below, it is also important to watch his heart rhythm and watch out for any sudden changes since he did go into Atrial Fibrillation before. Another thing which concerned me is his high risk for infection after CABG surgery and the fact that he already has an active infection. Getting rid of this infection will help minimize further potential complications.

ORDER Drug Name (generic&trade) Dosage Frequency Route	**DRUG CLASSIFICATION/THERAPEUTIC USES** 1. Identify pharmacologic/therapeutic classification 2. Describe mechanism of action for the drug & the END RESULT of that action 3. Describe how <u>your patient</u> will benefit from this drug *Insulin-include onset, peak, duration	**PATIENT-SPECIFIC NURSING RESPONSIBILITIES** 1. Identify your specific nursing responsibilities of this medication to your patient. 2. Include all patient specific data relevant to this drug
IV-Piperacillin/Tazobactam (Zosyn) @ 100mL/hour	1. Anti-infectives; extended spectrum penicilins 2. Binds to bacterial cell wall membrane, causing cell death. Inhibits beta-lactamase, an enzyme that can destroy penicilins = death of susceptible bacteria. 3. Attack infection d/t pt.'s positive blood cultures of Gram(+) Cocci in Cluster	1. Assess for infection & observe for signs of anaphylaxis 2. WBC 14.8↑, 99.8°F, positive blood cultures of Gram(+) Cocci in Cluster
Oral-Alprazolam (Xanax) (0.5 mg tablet) 0.5 mg Q 8hrs	1. Antianxiety agents; benzodiazepines 2. Acts at many levels in the CNS to produce anxiolytic effect. May produce CNS depression 3. To help ↓ patient's anxiety	1. Assess anxiety and mental status. Assess for drowsiness, dizziness. Monitor CBC & liver and renal function. 2. Patient shows a lot of anxiety and worries a lot. AST/ALT normal.
IV-Hydromorphone HCl (Dilaudid) 2 mg PRN	1. Opioid analgesics 2. Binds to opiate receptors in the CNS. Alters the perception of and response to painful stimuli while producing generalized CNS depression. 3. Control pt.'s pain	1. Assess BP, Pulse, RR, bowel function. Assess pain type, location, and intensity 2. Patient rates pain of 5, on a scale of 1-10
SQ-Fondaparinux Sodium (Arixtra) 2.5 mg Q day	1. Anticoagulants 2. Binds selectively to antithrombin III. This binding potentiates the neutralization/inactivation of active factor X. 3. Prevent DVT/pulmonary embolism	1. Assess for signs of bleeding, hemorrhage, evidence of thrombosis, monitor neuro status. Monitor platelet count, CBC, aPTT. 2. Bilateral knee-high SCDs, redo-CABGX3, Platelet count 252 Normal
Oral-Carvedilol (Coreg) 6.25 mg twice daily w/ meals	1. Antihypertensives; beta blockers 2. Blocks stimulation of beta1 and beta2-adrenergic receptor sites. Also has alpha1 blocking activity, which may result in orthostatic hypotension. 3. ↓BP, Improve CO	1. Monitor BP & Pulse. Monitor I/O, weight, assess for fluid overload 2. Hx. of CAD, HTN, EF 25%, ↑Cholesterol, redo-CABGX3, BS 190
Oral-Atorvastatin (Lipitor) 80 mg at bedtime	1. Lipid-lowering agents 2. Inhibits 3-hydroxy-3-methylglutaryl-coenzyme A reductase, an enzyme which is responsible for catalyzing an early step in the synthesis of cholesterol. 3. Help manage pt.'s ↑ Cholesterol by reducing lipids/cholesterol	1. Obtain diet hx with regard to fat consumption. Evaluate serum cholesterol & triglyceride levels. Monitor AST/ALT, Bilirubin 2. Hx. of CAD, HTN, ↑Cholesterol, Bilirubin total 2.1↑, AST/ALT normal

Rectal Suppository-Bisacodyl (Dulcagen, etc) 10 mg every day PRN	1. Laxatives 2. Stimulates peristalsis. Alters fluid and electrolyte transport, producing fluid accumulation in the colon. 3. Pt. has not had BM, trying to get Pt to pass gas & produce stool d/t CAT scan showing large amount of gas	1. Assess pt's abdominal distention; make sure it is not getting worse. Assess BS & bowel function. Assess the stool produced. 2. No BM; Abdomen extremely distended, Hypoactive BS
IV-Hyperalmentation-Total Parenteral Nutrition 70mL/hr		
PO-Amiodarone HCl (Cordarone) 400 mg 2Xdaily	1. Antiarrhythmics 2. Prolongs action potential & refractory period. Inhibits adrenergic stimulation. Slows the sinus rate, increases PR & QT intervals, and decreases peripheral vascular resistance. 3. Pt was in AFib, suppress arrhythmias.	1. Monitor ECG, HR & rhythm, PR prolongation, slight QRS widening. Assess for signs of pulmonary toxicity & neurotoxicity 2. AFib, Temp. Pacemaker,
PO-Lisinopril (Prinivil/Zestril) 2.5 mg q 12 hrs	1. Antihypertensive; Ace inhibitor 2. Angiotensin-converting enzyme (ACE) inhibitors block the conversion of angiotensin I to the vasoconstrictor angiotensin II. Net result is systemic vasodilation. 3. Pt. is taking to control his HTN; help with his survival since he has had MIs before.	1. Monitor BP & pulse -Assess for signs of angioedema (dyspnea, facial swelling) -Monitor renal function, may increase BUN & serum creat. May cause elevated AST, ALT, alkaline phosphatase 2. Hx of HTN, BP 112/62, CAD, Hx of MI, EF 25%
*Davis' Drug Guide, 2011		

<table>
<tr>
<td>Medications
(see attached)</td>
<td>Student Name: Julia Apostolescu Client Initials: H.K. Date: 04-05-12

Age: 67 Gender: M Room #: SCU-03-01 Admit Date: 02/23/12

CODE Status: Full Allergies: Contrast Media, Optiray 160

Diet: Tube Feeding(Changed to TPN) Activity: Bed Rest

Braden Score: 15 Weight: 303 lbs/137kg</td>
<td>Lab Values
Chloride-111↑
Glucose-128↑
BUN-40↑
Creatinine-1.30↑
Ca-7.5↓
Albumin-2.4↓
WBC-14.8↑
RBC-3.19↓
Hgb-9.0↓
Hct-28.9↓
*labs 3/4/12
PO2-68↓</td>
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<tr>
<td>IV Sites, Fluid, Rates

-Left IJ MAC 2 with D5W 20 KCl @ 80mL/hr & NS @ 10mL/hr & TPN @ 70mL/hr</td>
<td>Chief Complaint: Patient was admitted for outpatient heart catheterization

Admitting Diagnosis(es): CAD</td>
<td>Treatments

-PEG Tube Feed @ 40 mL/hr
-Changed to TPN @ 70mL/hr
-Albuterol Inhalation 4Xday for SOB
-ET tube
-Vent mode-SIMV 10, FiO2 50%, TV 600, PS 13, PEEP 7.5
-SCDs</td>
</tr>
<tr>
<td>Monitoring
-5 Lead ECG
-BP q hr
-(+) Blood Culture for Gram(+) Cocci in</td>
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cluster -Temporary Pacemaker -Stool for C-Diff(-) -Ventilator -CT scan shows a lot of air/gas in abdomen		
ECG Interpretation (see attached) Sinus Rhythm, (was in AFib)		
Past Medical/Surgical History -CAD - Ischemic cardiomyopathy -EF 25%↓↓ -CABG & Redo CABG -Morbid Obesity -HTN -Hyperlipidemia -Sleep Apnea -SOB -Chest Pain		
Primary Nursing Diagnosis with Relational Statement Ineffective cardiopulmonary tissue perfusion R/T decreased myocardial oxygen supply and increased myocardial oxygen demand	**Short Term Goal Relevant to Nursing Diagnosis** The client will have adequate tissue perfusion as evidenced by warm, dry skin, peripheral pulses, and adequate urine output of at least 30mL/hr during my shift.	

AEB: -Fatigue -(+1) pulses, (+)3 edema -↑BUN and Creatinine -Obesity -CAD (Ischemic Cardiomyopathy) -Sedentary lifestyle -Hypertension -Hyperlipidemia -EF 25% -Chest pain -CABG & redo CABG -EKG rhythm changes	**6 Nursing Diagnosis with Relational Statement** 1. Risk for Infection R/T sternotomy incision and obesity 2. Noncompliance R/T increasing disease-related symptoms despite adherence to advised regimen 3. Impaired gas exchange R/T ventilation/perfusion mismatch 4. Fear R/T present status and potential for complications 5. Acute Pain R/T surgical incisions, immobility secondary to lengthy surgery 6. Activity Intolerance R/T cardiopulmonary dysfunction	
Definition (State definition & source) "Decrease in oxygen resulting in failure to nourish tissues at the capillary level and at risk for a decrease in cardiac tissue perfusion" (Carpenito-Moyet, 2010).	**Interventions** 1. Monitor patient's color and temperature of the skin every two hours. Cool, pale skin is indicative of decreased peripheral tissue perfusion. **Patient's skin assessment including color and temperature and Braden score was assessed every two hours with complete head-toe assessments during my shift. 2. Assess and monitor the patient's peripheral pulses every two hours. Decreased pulses are indicative of decreased tissue perfusion from vasoconstriction of the vessels. **Patient's pulses were assessed at least every two hours during my shift. They were thready and documented as "+1" which is indicative of possible decreased tissue perfusion. 3. Monitor urine output and urine color every hour. Make sure it is at least 30mL/hour. Decreased perfusion to the kidneys may result in oliguria. **Urine output was checked and documented every hour. Patient was putting out clear yellow urine at about 60mL/hr 4. Elevate extremity above the level of the heart at all times. **Patient's head of bed was elevated 30° at all times during my shift. He even made a request to raise his head of the bed a little higher. **Outcome Criteria** 1. Patient will maintain an adequate urine output of at least 30mL/hr during my shift. **Outcome met. Client's urine output maintained at about	

	60mL/hr during my shift. 2. Patient will have "good" peripheral pulses of "+2" when assessed and charted throughout my shift. **Outcome not met. Client's pulses were mostly thready when assessed and charted as "+1" rather than "+2/Normal. This possibly indicates decreased perfusion. 3. H.K.'s skin will be warm and dry when assessed throughout my shift. **Outcome met. J.W.'s skin remained pink, warm, and dry during my shift, indicating good perfusion.	
	What I Would Do Differently If I could do something differently I would have started my head-to-toe assessments more in advance from when they were "due". The reason for this is because although my patient was intubated and could not talk, he was indeed a very needy individual. Every time I was in his room he would mouth things like he wanted suctioned or his fan moved closer to his face. While I was more than happy to help him and answer his requests, I didn't realize how much of my time it actually took up. This was also because it took me a couple of minutes to understand his requests. I should have just asked him to write it out on paper, as he did for the student nurse before me.	

Reference

Carpenito-Moyet, L. J. (2008). *Nursing diagnosis: Application to clinical practice*. (13 ed., pp. 1-1006). Philadelphia, PA: Lippincott Williams & Wilkins.

Urden, L.D., Stacy, K.M., & Lough, M.E. (2010). *Critical care nursing: Diagnosis and management* (6th ed.). Mosby-Elsevier: St. Louis, MO.