

Medications

Aspirin (Bayer)
 Pharmacological Classification: Salicylate
 Therapeutic Classification: NSAID
 Reason for client taking: Patient is given a chewable aspirin to treat for suspected MI, to speed up the anti-blood clotting effects of the aspirin (Jones & Bartlett Learning Staff, 2022).

Atorvastatin (Lipitor)
 Pharmacological Classification: HMG-CoA reductase inhibitor
 Therapeutic Classification: Antihyperlipidemic
 Reason for client taking: Patient has high cholesterol and Atorvastatin helps control lipid levels (Jones & Bartlett Learning Staff, 2022).

Finasteride (Proscar)
 Pharmacological Classification: 5-alpha reductase inhibitor
 Therapeutic Classification: Benign prostatic hyperplasia agent and hair growth stimulant
 Reason for client taking: This medication treats symptomatic BPH or reduces the risk of symptomatic progression of BPH (Jones & Bartlett Learning Staff, 2022). An enlarged prostate gland can cause difficulty starting/stopping urinating and a weak urine flow. The patient has not been diagnosed with BPH but has had decreased urine output while being in the hospital and decreased GFR also suggesting kidney damage which can come from CHF or BPH.

Lactated ringer's solution (Diflex)
 Pharmacological Classification: Produces a metabolic alkalizing effect
 Therapeutic Classification: Fluid replenisher
 Reason for client taking: Patient is on Lactated ringer's to supplement water and electrolyte loss while avoiding fluid overload (Mayo Clinic Staff, 2023a).

Metoprolol succinate (Toprol XL)
 Pharmacological Classification: Beta₁-adrenergic blocker
 Therapeutic Classification: Antihypertensive
 Reason for client taking: Patient has hypertension. Metoprolol succinate manages hypertension (Jones & Bartlett Learning Staff, 2022).

Tamsulosin (Flomax)
 Pharmacological Classification: Alpha-adrenergic antagonist
 Therapeutic Classification: Benign prostatic hyperplasia (BPH) agent
 Reason for client taking: This medication treats BPH. The patient has not been diagnosed with BPH but has had decreased urine output while being in the hospital and decreased GFR also suggesting kidney damage which can come from CHF or BPH. The medication can help improve the rate of urine flow and reduce the symptoms of BPH (Jones & Bartlett Learning Staff, 2022).

Warfarin (Coumadin)
 Pharmacological Classification: Coumarin derivative
 Therapeutic Classification: Anticoagulant
 Reason for client taking: Patient is taking Warfarin to prevent any blood clots from forming, which he is at high risk for since he has CFH and has a history of CAD (Jones & Bartlett Learning Staff, 2022).

Lab Values/Diagnostics

CO₂ Venous: 32 mmol/L Normal: 22 – 30 mmol/L
 Reason: An elevated CO₂ level can suggest kidney failure, which can be indicative of the decreased GFR level being caused by CHF or even BPH (National Library of Medicine, 2022).

Creatinine, Blood: 1.42 mg/dL Normal: 0.70 – 1.30 mg/dL
 Reason: Increased levels of serum creatinine can be caused by reduced renal blood flow, which would be a factor for this patient specifically due to his CHF diagnosis (Pagana et al., 2020).

GFR, Estimated: 48 Normal: ≥ 60
 Reason: A common complication of Congestive Heart Failure (CHF) can lead to kidney damage, which will lead to a decreased GFR number (Cleveland Clinic Medical Professional, 2023).

Glucose: 142 mg/dL Normal: 70 – 99 mg/dL
 Reason: Elevated glucose levels can be caused by most IV fluids, since they contain dextrose, which the body quickly converts to glucose (Pagana et al., 2020). The patient is receiving a solution of lactated ringer's for one of his medications. The patient is also diabetic which can affect his glucose levels too.

GFR, Est. Non-African: 47 Normal: ≥ 60
 Reason: A common complication of Congestive Heart Failure (CHF) can lead to kidney damage, which will lead to a decreased GFR number (Cleveland Clinic Medical Professional, 2023).

GFR, Est. African: 57 Normal: ≥ 60
 Reason: A common complication of Congestive Heart Failure (CHF) can lead to kidney damage, which will lead to a decreased GFR number (Cleveland Clinic Medical Professional, 2023).

INR: 3.0 Normal: 0.8 – 1.1
 Reason: The patient is taking Warfarin for his diagnosis of CHF and the INR goal for patient's who are on Warfarin is typically 2.0 – 3.0 (Crader et al., 2023).

Protime-Patient (Prothrombin time): 35.6 seconds Normal: 10.1 – 13.1 seconds
 Reason: Oral anticoagulants is one medication that can cause the PT to be elevated (Pagana et al., 2020). The patient is taking 5 mg of Warfarin.

X-Ray Chest Single View Portable
 Reason: Cardiomegaly and CHF with pulmonary vascular congestive changes.

Demographic Data

Date of Admission: 9/15/23
Admission Diagnosis/Chief Complaint: Congestive Heart Failure (CHF)
Age: 85 yrs. old
Gender: Male
Race/Ethnicity: White/Caucasian
Allergies: None
Code Status: Full Code
Height in cm: 182.9 cm
Weight in kg: 94 kg
Psychosocial Developmental Stage: Integrity vs. Despair
Cognitive Developmental Stage: Formal Operational Stage
Braden Score: 19 (no risk)
Morse Fall Score: 69 (high)
Infection Control Precautions: Standard Precautions

Admission History

Patient is an 85-year-old male who came into the ED on 9/15/23 with dyspnea, nausea, and dizziness. Patient reports that the dyspnea began suddenly two days prior to going to the ED, 9/13/23, and the nausea and dizziness followed shortly after. The dyspnea has subsided however, the client is still experiencing some nausea and dizziness. The patient reported that there were no aggravating symptoms and no relieving factors for his symptoms either. Patient did not try any home remedies/treatments for symptoms, he just came straight to OSF. Patient rated his pain a 4 out of 10 at the peak.

Medical History

Previous Medical History: Congestive Heart Failure (CHF), diabetes mellitus, hypertension, high cholesterol, complete heart block, and coronary artery disease (CAD)

Prior Hospitalizations: Urinary tract infection (UTI) 5/30/23, Urinary retention 5/4/23, and UTI 8/20/21.

Previous Surgical History: Pacemaker insertion (1996), upgraded to biventricular ICD (2016), and cardiac surgical procedure unlisted

Social History: Quit smoking cigarettes 39 years ago. Denies the use of alcohol, smokeless tobacco, and drugs.

Pathophysiology

Disease process:

This patient has CHF, but more specifically he has an abnormally high systolic number for his blood pressure leading to a more accurate diagnosis of systolic heart failure. In systolic heart failure, the heart is weakened, and the left ventricle has an issue with ejecting adequate amounts of blood out of the chamber. Due to the weakness of the left ventricle that causes the stroke volume and cardiac output to decrease. Decreased cardiac output causes blood to accumulate and eventually causes a backup of hydrostatic pressure into the left atrium, which eventually backs up into the pulmonary veins and capillaries leading to pulmonary edema (Capriotti, 2020). Over time the decreased cardiac output can put tremendous burden on the kidneys, lungs, and SNS, worsening heart failure in the patient.

S/S of disease:

Signs and symptoms of heart failure can vary with the client and the specific type of heart failure. Typical signs and symptoms of systolic heart failure can include the following: dizziness, chest pain, fatigue or weakness, irregular or rapid heartbeat, lack of appetite, nausea, frequent coughing or wheezing, dyspnea, and sudden unexpected weight gain (Mayo Clinic Staff, 2023c). As systolic heart failure progresses fluid buildup can lead to edema in various parts of the body.

Method of Diagnosis:

The physician will look at the client's medical history to see if they have any risk factors that increase their risk of heart failure. Those risk factors could include hypertension and coronary artery disease. The physician might also listen to the client's heart and lungs for any abnormal sounds. Lab tests and diagnostic tests that can be ran for heart failure includes a BNP, chest X-ray, EKG, echocardiogram, ejection fraction, stress test, CT scan of the heart, cardiac MRI, coronary angiogram, and a myocardial biopsy (Mayo Clinic Staff, 2023b).

Treatment of disease:

There are several different options to treat systolic heart failure. The one treatment that is most obvious is lifestyle changes such as eating healthy, exercising, quit smoking, monitor weight, and blood pressure, control diabetes, and limit alcohol consumption. The other treatments include medication that treat systolic heart failure and medication that lessen the symptoms of systolic heart failure and surgery being the most invasive treatment option (Mayo Clinic Staff, 2023c).

Active Orders

Diet & Nutrition: CHO (consistent carbohydrate & renal diet) to control diabetes.
Consult: Nutrition education for Warfarin diet teaching.
CMP: Used to monitor the patient's diabetes and kidney function.
CBC: Checking to make sure the patient is on the right dose of blood thinner medication by checking the hemoglobin which could suggest occult bleeding.
Magnesium: Monitoring magnesium levels is especially crucial in cardiac patients because magnesium is closely tied together with calcium and potassium to maintain a neutral electrical charge (Pagana et al., 2020).
PT/INR daily: These tests are used to monitor the clotting effect of the Warfarin medication.
Urinalysis Reflex if indicated by abnormal results: Rule out UTI and evaluate kidney function.
Inpatient Cardiac Rehab for Education Only: For heart failure management and medication reinforcement.
OT Evaluate & Treat Discharge Planning: For generalized weakness
PT Evaluate & Treat Discharge Planning: For generalized weakness
Oxygen Therapy: 2L nasal canula to maintain O₂ Sat. between 90 – 95%.
Pulse Oximetry: Checking for abnormal pulse oxygen level.
Admission Weight: Used to determine medication dosage, retrieve at time of admission.
Reason for No VTE Prophylaxis: Already on antithrombotic medication.
Ambulate Patient: 3 times a day with assistance to wear the muscles and prevent blood clots.
Bladder Scan: If bladder scan residual is greater than 300 mL, notify physician and place a straight catheter.
Cardiac monitoring: To monitor heart while transporting and while bathing.
Daily Weights (CHF): To monitor any weight gain or loss to indicate if there is fluid retention.
Fluid Restriction (CHF): Limit fluid intake to monitor I/O and watch for fluid retention.
Blood Sugar of 70 mg/dL or less: Monitoring for hypoglycemia.
Insert and/or maintain Indwelling Urethral Catheter (Foley): Management of acute urinary obstructions.
Insert/Maintain Peripheral IV: For ongoing medications.
Intake & Output (every 8 hrs.): Note number of voids and stools.
Notify Physician of: Critical POTC glucose or serum glucose less than 50 mg/dL; abnormal vitals; bleeding and/or signs of bleeding; if INR changes by more than 1 in the last 48 hrs. or if the INR is above target range; and when prior to admission medication review has been completed.
Perform POC Blood Glucose 4x's daily before meals and at bedtime: To monitor blood glucose to make sure it does not exceed 400 mg/dL.
Post hypoglycemia treatment & blood sugar greater than or equal to 80 mg/dL: To prevent hypoglycemic shock feed a snack like 2 Tbsp of peanut butter.
Pulse Oximetry: Checking for abnormal pulse oxygen level.
Strict Intake & Output (every 8 hrs.): Note number of voids and stools.
Telemetry monitoring: To monitor patient that is a high risk for cardiac/respiratory arrest.
Up with assistance: To prevent the patient from any falls that may occur if he tried getting up by himself.
Vital signs per unit routine: Check vitals for abnormal values
Wound care: To prevent infection in any potential wound sites.

Physical Exam/Assessment

General: Patient is alert and oriented to person, place, and time. Patient is in no acute distress. Pain is 2/10. Patient is well groomed and in normal hospital attire.

Integument: Skin color is creamy white. Skin is warm, dry, and intact throughout entire body. A few lesions on both left and right forearms that looked like it could be from his medical history of having carcinoma. Skin turgor is normal, returning to normal shape quickly.

HEENT: Head and neck are symmetrical, trachea is midline without deviation, thyroid is not palpable, no nodules or lymphadenopathy noted. Bilateral sclera white, bilateral cornea clear, conjunctiva is pink, and no visible drainage from eyes bilaterally. Eye lids are moist and pink with no discharge or lesions noted bilaterally. PERRLA and EOMs are intact bilaterally. No visible or palpable deformities, lumps, or lesions on auricles bilaterally. Septum is midline, turbinates are a moist and pink bilaterally and no visible signs of bleeding or polyps. Bilateral frontal and maxillary sinuses are nontender to palpation. Dentition overall is good, patient has upper and lower sets of dentures. Oral mucosa is moist and pink without lesions noted. Uvula is midline. Unable to assess hard palate since the upper dentures were covering it. Soft palate rises and falls symmetrically and tonsils are moist and pink without any exudate. Tonsil size was 2+.

Cardiovascular: Clear S1 and S2 sounds without any gallops, murmurs, or rubs. PMI palpable at the 5th intercostal space at the midclavicular line. Normal rate and rhythm noted. Pulses are 2+ bilaterally throughout the entire body. Capillary refill less than 3 seconds in upper and lower extremities bilaterally. No edema noted throughout the body.

Respiratory: Clear lung sounds, no wheezes, crackles, or rhonchi. Normal rate and rhythm of respirations noted, respirations are symmetrical and patient is in no respiratory distress.

Genitourinary: Urine is clear and dark yellow. No pain noted. Patient mentioned his frequency of urinating has decreased while being in the hospital. Patient has a foley catheter in place.

Gastrointestinal: No distention of the abdomen is noted, it is soft and nontender to palpation. Bowel sounds were hyperactive in all four quadrants. Patient admitted that his last bowel movement was on 9/15/23 (4 days ago).

Musculoskeletal: All extremities have full range of motion; patients' movement is slow but still capable. Hand grips and pedal pushes and pulls demonstrate normal and equal strength bilaterally. Patient currently walks with a walker and needs one assist. He said, "it's too difficult for me to get up right now". He had been complaining of feeling nauseous and dizzy that morning. Due to his response his gait was unable to be assessed.

Neurological: Patient is alert and oriented to person, place, and time. The patient's speech was clear. Cranial nerves 1 - 12 are intact. He said, "I can still hear but my hearing is slowly declining".

Most recent VS (include date/time and highlight if abnormal):

9/19/23 at 7:30am: **Temperature:** 97.5°F **RR:** 16 bpm **HR:** 61 bpm **Blood Pressure:** 197/77 mm Hg **O₂ Sat.:** 98%

9/19/23 at 11:05am: **Temperature:** 97.6°F **RR:** 16 bpm **HR:** 60 bpm **Blood Pressure:** 168/79 mm Hg **O₂ Sat.:** 99%

Pain and pain scale used: Pain: 2/10 Pain Scale: Numerical (Pain was reported 2/10 at both 7:30 am and 11:05 am vitals)

<p align="center">Nursing Diagnosis 1</p>	<p align="center">Nursing Diagnosis 2</p>	<p align="center">Nursing Diagnosis 3</p>
<p>Decreased cardiac output related to CHF diagnosis as evidenced by the client’s abnormally high systolic values for blood pressure, resulting in a decline in stroke volume.</p>	<p>Excess fluid volume related to CHF diagnosis, as evidenced by the decline in stroke volume, caused the client to have shortness of breath.</p>	<p>Impaired gas exchange related to CHF diagnosis, as evidenced by the client experiencing dyspnea because of fluid buildup in the lungs.</p>
<p align="center">Rationale</p> <p>While I was taking the client’s vitals at 0730 and again at 1105, his systolic number for his blood pressure reading was abnormally high. Dysfunction in either the systolic pressure or diastolic pressure, or even the combination of the two can indicate a decline in stroke volume which leads to decreased cardiac output.</p>	<p align="center">Rationale</p> <p>On 9/15, the day the client was admitted, one symptom he came in complaining of was dyspnea. The client’s declined stroke volume causes less blood to be pumped throughout the body, which can cause shortness of breath.</p>	<p align="center">Rationale</p> <p>While I was taking the client’s vitals at 0730 and again at 1105, he complained of feeling dizzy and nauseous. An imbalance of gases in the body can cause dizziness and nausea.</p>
<p align="center">Interventions</p> <p>Intervention 1: “Inspect for pedal or sacral edema to detect venous stasis and reduced cardiac output” (Phelps, 2022). Intervention 2: “Teach patient and family about reportable symptoms of possible cardiac problems: dizziness, indigestion, nausea, retrosternal pain, shortness of breath, and unusual fatigue and weakness” (Phelps, 2022).</p>	<p align="center">Interventions</p> <p>Intervention 1: “Give fluids, as ordered. Monitor IV flow rate carefully because excess IV fluids can worsen the patient’s condition” (Phelps, 2022). Intervention 2: “Have the dietician see the patient to teach or reinforce dietary restrictions” (Phelps, 2022).</p>	<p align="center">Interventions</p> <p>Intervention 1: “Place the patient in a position that best facilitates chest expansion to enhance gas exchange” (Phelps, 2022). Intervention 2: “Teach patient relaxation techniques to reduce tissue oxygen demand” (Phelps, 2022).</p>
<p align="center">Evaluation of Interventions</p> <p>Inspection and palpation don’t reveal edema in the pedal or sacral regions of the body (Phelps, 2022). Patient is able to describe signs and symptoms of decreased cardiac output, such as fatigue, dyspnea, dizziness, clammy skin, and syncope (Phelps, 2022).</p>	<p align="center">Evaluation of Interventions</p> <p>The patient’s intake and output of fluid remain within set limits (Phelps, 2022). The patient decides own menu and chooses appropriate foods that are low in sodium and potassium. Patient follows dietary restrictions (Phelps, 2022).</p>	<p align="center">Evaluation of Interventions</p> <p>The patient’s respiratory rate remains within predetermined limits (Phelps, 2022). The patient successfully performs the relaxation techniques every four hours (Phelps, 2022).</p>

References (3) (APA):

Capriotti, T. (2020). *Davis advantage for pathophysiology: Introductory concepts and clinical perspectives* (2nd ed.). F.A. Davis Company.

Cleveland Clinic Medical Professional. (2023, March 10). *Congestive heart failure*. Cleveland Clinic. <https://my.clevelandclinic.org/health/diseases/17069-heart-failure-understanding-heart-failure>

Crader, M. F., Johns, T., & Arnold, J. K. (2023, May 1). *Warfarin drug interactions*. National Library of Medicine. <https://www.ncbi.nlm.nih.gov/books/NBK441964/>

Jone's & Bartlett Learning Staff. (2022). *2023 Nurse's drug handbook* (22nd ed.). Jones & Bartlett Learning.

Mayo Clinic Staff. (2023a, April 1). *Lactated ringer's (intravenous route)*. Mayo Clinic. <https://www.mayoclinic.org/drugs-supplements/lactated-ringers-intravenous-route/side-effects/drg-20489612?p=1#:~:text=Descriptions,pH%20level%20of%20the%20body.>

Mayo Clinic Staff. (2023b, April 20). *Heart failure: Diagnosis and treatment*. Mayo Clinic. <https://www.mayoclinic.org/diseases-conditions/heart-failure/diagnosis-treatment/drc-20373148>

Mayo Clinic Staff. (2023c, April 20). *Heart failure: Symptoms and causes*. Mayo Clinic. <https://www.mayoclinic.org/diseases-conditions/heart-failure/symptoms-causes/syc-20373142>

National Library of Medicine. (2022, August 3). *Carbon dioxide (CO₂) in blood*. Medline Plus. <https://medlineplus.gov/lab-tests/carbon-dioxide-co2-in-blood/>

Pagana, K. D., Pagana, T. J., & Pagana, T. N. (2020). *Mosby's diagnostic and laboratory test reference* (15th ed.). Mosby.

Phelps, L. (2022). *Nursing diagnosis reference manual* (12th ed.). Wolters Kluwer.

