

Demographic Data

Date of Admission: 10/7

Admission Diagnosis/Chief Complaint: Congestive heart failure exacerbation

Age: 46 years old

Gender: Male

Race/Ethnicity: Caucasian

Allergies: N/A

Code Status: Full

Height in cm: 177.8 cm

Weight in kg: 119.5 kg

Psychosocial Developmental Stage: Generativity vs. stagnation

Cognitive Developmental Stage: Formal Operational

Braden Score: 20

Morse Fall Score: 45

Infection Control Precautions: Contact precautions

Active Orders

- Place in observation with telemetry - To monitor patient heart rate and rhythm because patient has CHF and HFREF. Patient is in the hospital for a CHF exacerbation. Telemetry can monitor the patient for life threatening dysrhythmias.
- Incentive spirometer - Patient reported SOB, dyspnea, and sharp pain in the lungs with deep breathing during admittance into the hospital. Patient has a history of pulmonary embolism and pulmonary hypertension. The incentive spirometer can help prevent pulmonary complications. Patient is also inactive during his hospital stay and an incentive spirometer can ensure the patient's lungs do not get weak during this time.
- Cardiac monitoring - Patient's heart needs to be continuously monitored to be aware of irregular heart rates and rhythms.
- Education heart failure - Education can help to prevent readmissions and can improve patient self-care when he is sent home.
- Pulse oximetry continuous - Patient presents with SOB and dyspnea and has a history of pulmonary embolism and pulmonary hypertension. Continuous pulse oximetry can ensure the patient is getting enough oxygen and does not need supplemental oxygen.
- Ambulate - It is important for the patient to stimulate circulation and prevent the development of pulmonary embolism.
- Heart failure nutrition therapy - This patient is on diuretics and is at risk for electrolyte imbalance as well as vitamin and nutrient deficiencies. Adequate nutrition is important for this patient's health.
- Pulmonary function test - This test can help to evaluate how well the patient's lungs are working. This test was ordered due to the patient's history of pulmonary embolism and pulmonary hypertension.
- Aerosol treatment - This treatment will help treat the patient's symptoms of SOB and dyspnea
- Respiratory therapy - Can help prevent serious complications caused by low oxygen levels and SOB.
- Daily weight - This patient has CHF and is retaining water. A daily weight can help to show the severity this patient is retaining water as well as monitoring progress.
- Consult to cardiology - A consult to cardiology ordered because this patient's chief complaint is CHF exacerbation. A cardiologist can help to construct a plan of care.
- Consult to dietary - An assessment of eating habits and dietary care is important for this patient to ensure he is knowledgeable on what he is eating and his nutritional needs.
- CHF education - Educating this patient can help prevent readmission and can improve self-care when he is discharged.

Lab Values/Diagnostics

- Glucose 115
 - Normal: <100 mg/dL
 - Patient has type II diabetes.
 - D-dimer 4.17
 - Normal: 0-0.62 mcg/mL
 - Patient has a history of pulmonary embolism.
 - Troponin 0.031
 - Normal: 0-0.030 ng/mL
 - Patient has CHF and his EKG showed a possible recent anterior MI.
 - pCO₂ venous 38.5
 - Normal: 39-45 mmHG
 - Patient has a history of pulmonary embolism and pulmonary hypertension as well as CHF and reduced ejection fraction. Oxygen levels in the blood are affected by these conditions.
 - Venous oxygen hgb 66.9
 - Normal: 70-80%
 - Patient has low cardiac output which is not enough to meet tissue oxygen needs.
 - Carbon monoxide 2.9
 - Normal: 0-2.3%
 - Patient is a type II diabetic and also has a history of pulmonary edema and pulmonary hypertension.
 - CO₂ 20
 - Normal: 23-29 mEq/L
 - Patient is a type II diabetic and also has a history of pulmonary edema and pulmonary hypertension.
 - Alkaline phosphatase 141
 - Normal: 34-104 IU/L
 - Patient has congestive heart failure which can be hard on the liver and deprive it of the blood it needs to work. Fluid buildup is also difficult on the liver.
 - BNP 1772
 - Normal: 0-100 pg/mL
 - Patient has a history of pulmonary embolism which can elevate right sided heart pressure and increase BNP. The heart cannot pump the way it should do to CHF.
 - Hgb 12.8
 - Normal: 13.2-15.2 g/dL
 - Level of red blood cells is indicative of the blood's ability to carry oxygen throughout the body.
 - MCV 76.4
 - Normal: 80-100 fl
 - Low levels of oxygen in the blood and stress on the kidneys from CHF.
 - MCH 23.8
 - Normal: 27.5-33.2 picograms
 - Low levels of oxygen in the blood and stress on the kidneys from CHF.
 - MCHC 31.2
 - Normal: 32-36 g/dL
 - Low levels of oxygen in the blood and stress on the kidneys from CHF.
 - RDW 20.4
 - Normal: 11.8-14.5%
 - Increased RDW may be from impaired bone marrow function or increased red cell destruction caused by inflammation and damage to the kidneys.
- Diagnostics
- CT angiogram chest - showed unchanged right lower lobe pulmonary embolism, signs of dilated cardiomyopathy, bilateral lower lobe mild patchy ground glass infiltration
 - EKG - sinus tachycardia, incomplete bundle branch block, right ventricular hypertrophy, anterior myocardial infarction

Admission History

Patient onset of symptoms started on 10/3, four days prior to the patient coming into the emergency department. Patient had SOB and dyspnea in both lungs. Patient's pain and symptoms are constant. Patient decided to come into the hospital because his SOB was not going away after four days. Patient characterizes pain in lungs as "sharp" with deep inhalation. Movement is an aggressor of the patient's SOB. Patient finds relief from pain and SOB in sitting and resting. Patient used their albuterol inhaler at home to treat symptoms.

Medical History

Previous Medical History: The patient has a past medical history of HFrEF, morbid obesity, right pulmonary embolism, hypertensive cardiovascular disease, pulmonary chorce BLE edema, MRSA, neuropathy, CHF, type two diabetes, pulmonary HTN, COVID-19, sick sinus syndrome, OSA, COPD, and methamphetamine use.

Prior Hospitalizations: 12/14/2020 - 12/18/2020 for SOB, bradycardia, right pulmonary embolism, and positive COVID-19

7/1/2021 - 7/4/2021 for CHF

Previous Surgical History: 2003 - Right index finger operation, right foot operation, adenoidectomy, tonsillectomy

Social History: Patient denies use of alcohol or smokeless tobacco. Patient is a former smoker and states, "I smoked about a half a pack of cigarettes a day for twelve years". Patient stopped smoking cigarettes in 2018. Patient is a current methamphetamine user and states he uses, "three or four times a week since I quit smoking cigarettes in 2018".

Medications

- **albuterol sulfate (Proventil HFA) 90mcg/inh inhalation aerosol PRN**
 - Pharmacological class: beta-2 adrenergic agonist
 - Therapeutic class: bronchodilators
 - Use: This medication works by opening breathing passages and relaxing muscles in the airway. This patient is suffering from shortness of breath and has a history of pulmonary embolism and pulmonary hypertension.
 - Assessments prior to administration: Monitor respiratory rate, oxygen saturation, and lung sounds before and after administration. Assess heart rate, ECG, and heart sounds and report any rhythm disturbances.
- **sacubitril-valsartan (Entresto) 24 mg tablet PO BID**
 - Pharmacological class: angiotensin II receptor antagonist
 - Therapeutic class: Neprilysin inhibitor/ARB combination
 - Use: This medication relaxes blood vessels so that blood can flow more easily which allows the heart to pump blood more efficiently and improves ejection fraction. This patient has CHF and HFrEF, this medication will improve his ejection fraction.
 - Assessments prior to administration: Entresto is contraindicated with ACE inhibitors, keep this medication at room temperature, monitor renal function.
- **Budesonide-formoterol (Symbicort) 160 mcg/inh inhalation aerosol BID**
 - Pharmacological class: Adrenal glucocorticoid
 - Therapeutic class: corticosteroids
 - Use: This medication reduces irritation and swelling of the airways. This patient is taking it to relieve symptoms of shortness of breath and dyspnea.
 - Assessments prior to administration: Assess for possible contraindications. Perform a physical exam to get baseline data. Assess respirations and adventitious sounds.
- **Furosemide (Lasix) 40 mg tablet PO daily**
 - Pharmacological class: loop diuretics
 - Therapeutic class: cardiovascular agent
 - Use: Eliminate water and salt from the body. The patient retains water due to his CHF.
 - Assessments prior to administration: Assess fluid status, monitor weight daily, monitor intake and output ratios, edema, lung sounds, skin turgor, and mucous membranes. Monitor blood pressure and pulse before administering.
- **budesonide-formoterol (Perforomist) 20 mcg nebulizer solution inhalation BID**
 - Pharmacological class: long acting beta agonists
 - Therapeutic class: bronchodilator
 - Use: Relaxes and opens air passages in the lungs to make it easier to breathe.
 - Assessments prior to administration: Monitor cardiovascular status using ECG, BP, and HR. Assess respirations and adventitious lung sounds

(Jones & Bartlett Learning, 2020).

Pathophysiology

Disease process: Congestive heart failure occurs when the heart muscle does not pump blood adequately. This can cause blood to back up into the lungs which causes shortness of breath (Hinkle & Cheever, 2018). This patient suffered from shortness of breath and fine crackles anteriorly and posteriorly throughout all lobes.

S/S of disease: Shortness of breath, weakness, fatigue, swelling of lower extremities, persistent cough, wheezing, fluid retention, abdominal swelling, chest pain, nausea, and loss of appetite are signs and symptoms of congestive heart failure (Hinkle & Cheever, 2018). Patient had shortness of breath and fine crackles anteriorly and posteriorly throughout all lobes upon assessment.

Method of diagnosis: Heart failure is diagnosed using a physical exam, blood tests, chest X-ray, ECG, echocardiogram, stress test, CT scan, MRI, coronary angiogram, and myocardial biopsy are used to diagnose heart failure (Mayo Foundation for Medical Education and Research, 2021). Patient had a CT angiogram and an EKG to assess his severity of CHF.

Treatment of disease: Heart failure is a lifelong disease that will need continuous management. Treatment involves relief of symptoms and strengthening of the heart muscle. Surgical repair of a heart valve can reverse heart failure if it has been caused by a faulty valve. Controlling tachycardia can also reverse heart failure (Mayo Foundation for Medical Education and Research, 2021).

Physical Exam/Assessment

General: Patient is alert and responsive, A&Ox4 to person, place situation, and time, and appears to be in no distress. The patient is appropriately dressed and well groomed.

Integument: The patient's skin is warm, dry, and color is usual for ethnicity. Patient had red, dry patches on the abdomen. Patient's skin turgor is elastic. Patient has bruising on right and left foot and right and left lower extremities. No drains or rashes noted.

HEENT: Normocephalic head, no tracheal deviation and thyroid rises and falls with swallowing, PERLA, tympanic membranes pearly gray. No drainage or blood from patient's mouth, nose, eyes, or ears, Patient does not use glasses or assistive devices. Ears are bilaterally placed with no abnormalities. Mucous membranes were pink, moist, and firm. Bilaterally equal and patent nares with no pain upon palpation of the sinuses.

Cardiovascular: S1 and S2 heard with normal sinus rhythm, bilateral dorsalis pedis and bilateral radial pulses +3. Capillary refill less than 3 seconds in upper and lower extremities. 0 pitting edema in upper or lower extremities.

Respiratory: Respiratory rate and pattern regular, fine crackles heard anteriorly and posteriorly throughout all lobes. No use of accessory muscles.

Genitourinary: bowel sounds are active in all 4 quadrants. Last BM on 10/6. No abdominal distention noted. No pain, massesss, or tenderness noted upon palpation, Patient's urine was clear, yellow, and had a 200 mL of output. Patient is not experiencing pain with urination.

Musculoskeletal: Active range of motion, +5 strength with active motion against full resistance. Patient is stand by assist x1, Patient has a Morse Fall score of 45. Patient's capillary refill is less than 3 seconds, and extremities are warm.

Neurological: MAEW, PERLA, A&Ox4 to person, place, situation, and time, normal cognition, speech is clear, patient is alert, awake, and answering questions appropriately. Equal strength in bilateral upper and lower extremities.

Most recent VS (include date/time and highlight if abnormal): 10/7/21 at 0745 Temp: 36.8, HR: 90, RR: 22, O2: 96, BP: 118/88

Pain and pain scale used: At 0800, patient rated his pain a 0/10 on the numeric pain scale.

<p>Nursing Diagnosis 1 Decreased cardiac output related to reduced ejection fraction as evidenced by patient being diagnosed with heart failure with reduced ejection fraction and congestive heart failure.</p>	<p>Nursing Diagnosis 2 Risk for activity intolerance related to generalized weakness and prolonged bed rest as evidenced by weakness, fatigue, and dyspnea</p>	<p>Nursing Diagnosis 3 Excess fluid volume related to congestive heart failure as evidenced by abnormal breath sounds.</p>
<p>Rationale I chose this nursing diagnosis because the patient's heart is failing to pump enough blood to meet the</p>	<p>Rationale I chose this nursing diagnosis because a lack of physical activity and lack of oxygen resulting from</p>	<p>Rationale I chose this nursing diagnosis because heart failure causes compensatory mechanisms to cause salt and water</p>

<p>metabolic needs of the body. The blood flow to the heart is also decreased and so a decrease in cardiac output occurs. There are then insufficient amounts of blood to circulate to all parts of the body causing alterations in heart rate and rhythm as well as weakness.</p>	<p>congestive heart failure causes physical deconditioning and exercise intolerance. Worsening cardiac function also leads to activity intolerance. Performing activities of daily living may get difficult for the patient as they continue to feel fatigued.</p>	<p>retention. This retention causes an increase in blood volume. This increase in fluid volume puts the heart's already failing ventricles under severe stress.</p>
<p>Interventions Intervention 1: Administer Entresto as prescribed to increase ejection fraction. Intervention 2: Administer inhalation medications as prescribed to increase oxygen level.</p>	<p>Interventions Intervention 1: Have the patient take a walk around the unit. Intervention 2: Have patient perform activities of daily living.</p>	<p>Interventions Intervention 1: Administer Lasix as prescribed to stabilize fluid volume. Intervention 2: Educate patient on dietary and fluid restrictions.</p>
<p>Evaluation of Interventions Patient demonstrated adequate cardiac output which is evidenced by vital signs in acceptable limits, control of dysrhythmias, and no symptoms of heart failure. Patient is still reporting shortness of breath and has an abnormal respiratory rate of 22.</p>	<p>Evaluation of Interventions Patient tolerated a walk around the unit and showed reduced fatigue and weakness. Patient participated in their own self-care needs.</p>	<p>Evaluation of Interventions Patient presented with fine crackles anteriorly and posteriorly throughout all lobes. Patient does not demonstrate clear breath sounds. Patient also had an abnormal respiratory rate of 22. Patient does demonstrate an absence of edema. Patient was receptive to dietary and fluid restriction education and the teach back method was used to ensure a thorough understanding.</p>

References (3) (APA):

Hinkle, J. L. &. Cheever, K. H. (2018). *Brunner & Suddarth's textbook of medical-surgical nursing* (14th ed.). Wolters Kluwer

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