

Medications

Ipratropium Bromide

- Pharmacological: "Anticholinergic" (Nurse's Drug Handbook, 2021, p. 702).
- Therapeutic: "Bronchodilator" (Nurse's Drug Handbook, 2021, p. 702).
- The patient is taking this medication to widen the airway and make breathing easier.
- Before administering ipratropium bromide, vital signs and auscultation of the lungs need to be assessed.

Benzonatate

- Pharmacological: "Antitussives" (Drug Bank, 2023).
- Therapeutic: "Non-Narcotic" (Drug Bank, 2023).
- The patient is taking this medication to thin the mucus and make breathing easier.
- Before administering benzonatate, vital signs and auscultation of the lungs need to be assessed.

Guaifenesin

- Pharmacologic: "Expectorants" (Drug Bank, 2023).
- Therapeutic: "Cold Medicine" (Drug Bank, 2023).
- The patient is taking this medication to thin the mucus and make breathing easier.
- Before administering guaifenesin, vital signs and auscultation of the lungs need to be assessed.

Demographic Data

Date of Admission: 2-22-23

Admission Diagnosis/Chief Complaint: Shortness of breath

Age: 72 years old

Gender: Female

Race/Ethnicity: White

Allergies: Multiple Allergies noted in chart

Code Status: DNR

Height in cm: 160.02 cm

Weight in kg: 102.900 kg

Psychosocial Developmental Stage: Integrity vs Despair

Cognitive Developmental Stage: Formal Operational Stage

Braden Score: 15

Morse Fall Score: 85

Infection Control Precautions: Standard Precautions

Pathophysiology

Disease process:

My patient came in due to shortness of breath. Upon arrival to the ED, her oxygen saturation was 88%. When the EMTs arrived at Odd Fellows Nursing Home, it was 69%. "Dyspnea is a sensation of running out of air and being unable to breathe fast enough or deeply enough" (Hashmi et al., 2022). There are three groupings of neurons in the brain of the respiratory center: the dorsal medulla, ventral medullary, and pontine. The dorsal medulla is in charge of inhalation, while the ventral is in order of exhalation (Hashmi et al., 2022). "The pontine grouping further classifies into the pneumotaxic and apneustic centers (Hashmi et al., 2022). These groups work together to control the pace of the respirations. "Mechanoreceptors located in the airways, trachea, lung, and pulmonary vessels exist to provide sensory information to the brain's respiratory center regarding the volume of the lung space" (Hashmi et al., 2022). Two types of mechanoreceptors signal the vagus nerve to increase the rate of breathing, the volume of breathing or to stimulate errant coughing patterns caused by the irritants in the airway (Hashmi et al., 2022). Peripheral chemoreceptors consist of the aortic and carotid arteries. "Once stimulated by hypoxia, they send a signal to the cranial nerve to the nucleus tractus solitarius in the brain, which, in turn, stimulates excitatory neurons to increase ventilation" (Hashmi et al., 2022). Central chemoreceptors have the most control over the respiratory drive. "As the areas of the central chemoreceptors become more acidic, sensory input is generated to stimulate hyperventilation, and carbon dioxide within the body is reduced through the increased ventilation" (Hashmi et al., 2022). The medulla oblongata and pons with respiratory centers within the brainstem are responsible for the baseline respiratory rhythm (Hashmi et al., 2022). The neural signal is sent to the muscles of respiration, the diaphragm, external intercostals, and scalene muscles, along with other minor muscles of respirations (Hashmi et al., 2022). The body systems involved with shortness of breath start with the respiratory system. The longer the body goes without a good oxygen supply, the organs will start shutting down due to decreased oxygen saturation.

S/S of disease: The signs and symptoms that occur with shortness of breath are chest tightness, anxious, feeling of force to breath deep, tachypnea. Other symptoms can include increased heart rate and wheezes or stridor when auscultating the lungs (Cleveland Clinic, 2023). The patient was experiencing all these symptoms upon arrival to the ED.

Method of Diagnosis: There aren't methods to diagnosing shortness of breath, but there are methods to diagnosing what is causing the shortness of breath. These methods include chest x-rays, CT scans, lung function tests, and cardiopulmonary exercise tests. The method that is used the most and what was used on my patient was the arterial blood tests (Cleveland Clinic, 2023).

Treatment of disease: There are a couple ways to treat shortness of breath. The methods that were used in the clinical setting for my patient were medications and oxygen therapy. Bronchodilators are used to open up the airways and to relieve the pain causing shortness of breath. Another method that could be used is relaxation techniques to get proper oxygen to the lungs (Cleveland Clinic, 2023).

Lab Values/Diagnostics

Patient's CO2 was 34 mmol/L with normal range being 21-31 mmol/L. Patient's labs are high due to the kidney and lungs being unable to excrete the CO2 properly due to patients CHF (Capriotti & Frizzell, 2020).

Patient's BUN is 28 mg/dL with normal range being 7-25 mg/dL. Patient's CHF causes a decrease in renal blood flow resulting in decreased glomerular filtration rate over time (Capriotti & Frizzell, 2020).

Patient's creatinine is 1.87 mg/dL with normal range 0.60-1.20 mg/dL. Patient's CHF causes a decrease in renal blood flow resulting in decreased glomerular filtration rate over time (Capriotti & Frizzell, 2020).

Patient's RBC is 3.75 10⁶/mcl. with normal range being 3.80-5.41 10⁶/mcl. Anemia is common in patients with CHF due to bone marrow depression (Capriotti & Frizzell, 2020).

Patient's hemoglobin is 11.2 g/dL with normal range being 11.3-15.2 g/dL. Anemia is common in patients with CHF due to bone marrow depression (Capriotti & Frizzell, 2020).

Patient's hematocrit is 32.6% with normal range being 33.2%-45.3%. Anemia is common in patients with CHF due to bone marrow depression (Capriotti & Frizzell, 2020).

The patient had an electrocardiogram on 2-22-23. On the electrocardiogram it showed the patient was in sinus tachycardia with premature supraventricular complexes. The electrocardiogram shows us the hearts electrical activity and heart rhythms the patient is experiencing.

The patient also has a transthoracic echocardiography because of the abnormal ECG on 2-22-23. The results showed the patient has congestive heart failure. This test allows us to view the heart valves and the blood flow through the heart.

Admission History:

Patient was admitted to the Emergency Department for shortness of breath. When asked about aggravating factors, the patient expressed feeling shortness of breath with the slightest movement. Patient was put on oxygen upon EMS arrival at nursing home due to oxygen saturation being 69%. Upon arrival to ED her oxygen saturation was at 88%. Oxygen relieved the feeling. She has been treated before due to diagnosis of congestive heart failure. No other treatment besides oxygen was used during the process.

Medical History

Previous Medical History: CHF, Parkinsonism, Fibromyalgia, Hypertension, Type II Diabetes, depressive disorder, degenerative joint disease of lumbar spine, & coronary atherosclerosis.

Prior Hospitalizations: Patient has been hospitalized several times in the past but does not remember when it was and what it was for.

Previous Surgical History: Bilateral salpingo-oophorectomy (2010), Cholecystectomy (2001), Hysterectomy (1984), Tonsillectomy & adenoidectomy (1955), Placement of stent (date unknown), & skin biopsy (date unknown).

Social History: Patient uses Marijuana 1-2 times per month and is a current everyday smoker. She smokes a ½ pack per day. The patient verbalized she does not use alcohol.

Active Orders

Patient is on pulse oximetry continuous due to low oxygen saturation and shortness of breath on admission (Capriotti & Frizzell, 2020).

Patient is on I&O restriction with 1500 mL/day. Patient suffers from CHF allowing fluid to collect around the heart which allows for dyspnea (Capriotti & Frizzell, 2020).

Patient is also on a heart healthy diet due to CHF. This allows her to restrict sodium intake leaving for better results of oxygen saturation due to fluid loss (Capriotti & Frizzell, 2020).

Patient is on a BiPAP machine at night. Patients' oxygen drops to around 65% during the night which makes patient at risk for respiratory distress (Capriotti & Frizzell, 2020).

Patient is on aerosol treatment QID. This treatment is a bronchodilator allowing oxygen to reach the lungs. This helps manage symptoms of CHF (Capriotti & Frizzell, 2020).

Physical Exam/Assessment

General: Patient is alert and oriented to person, place, situation, and time. Patient appears to be in no acute distress and appearance is appropriate for the setting.

Integument: Patients' skin color is appropriate for ethnicity. Skin is warm and dry upon palpation. No rashes, bruising, and lesions noted bilaterally on upper and lower extremities. There are no wounds or drains present. Nails are without clubbing or cyanosis. Skin turgor is non-tenting. Capillary refill is less than 3 seconds bilaterally on fingers and toes. **Patient scores a 15 on the Braden scale which results in a high risk for pressure ulcers.**

HEENT: Head and neck are symmetrical, trachea is midline without deviation, thyroid is not palpable, no nodules noted. Bilateral carotid pulses are palpable and 2+. There is no lymphadenopathy noted in the head or neck. Sclera bilaterally white, cornea bilaterally clear, bilaterally conjunctiva clear. There is no visible drainage from the eyes. Lids are moist and pink without lesions bilaterally. PERRLA is intact bilaterally. EOMs are intact bilaterally. Auricles have no palpable lumps or lesions bilaterally. Septum is midline, frontal sinuses are nontender to palpation bilaterally. Nasal condition is patent without discharge. Tonsils are not present with +0. Uvula is midline; soft palate rises and falls symmetrically. Hard palate intact. **Patient is missing all of her teeth;** oral mucosa overall is moist and pink without lesions noted.

Cardiovascular: Clear S1 and S2 without murmurs, gallops, or rubs. PMI palpable at 5th intercostal space at midclavicular line. Normal rate and rhythm. Pedal pulses are 3+ bilaterally. Radial pulses 3+ bilaterally. Capillary refill is less than 3 seconds bilaterally on toes and fingers. There is no neck vein distention or edema noted.

Respiratory: The patient had a regular respiratory pattern. There was a regular rate of respirations. Respirations were non-labored, lungs are clear anterior/posterior bilaterally, no wheeze, crackles, or rhonchi noted. Lung aeration is equal bilaterally. There is no ET tube noted.

Genitourinary: The patient's urine is yellow and clear. Patient intake was 240 mL and voided 150 mL. Patient stated there is no pain with urination. There is no catheter present. Patient is not on dialysis.

Gastrointestinal: Diet at the nursing home and hospital is supposed to be a heart healthy diet with a 1500 fluid restriction. Patient has expressed she is not compliant with her diet or fluids. Patient weighs 102.900 kg and height of 63 inches. Bowel sounds are hyperactive in all four quadrants. Abdomen is soft, nontender, no organomegaly or masses noted upon palpation. Last bowel movement was 3-5-22. There is no distention, incisions, scars, drains, or wounds noted. There is no ostomy, nasogastric, or feeding tube noted. **Patient expressed she had nausea toward end of the shift.**

Musculoskeletal: Upper and lower extremities have a full active range of motion. Patient has an unsteady gait. **Strength is +4 in upper and lower extremities due to weakness.** Capillary refill is less than 3 seconds bilaterally. Extremities are warm and dry bilaterally. There is no cyanosis or clubbing noted bilaterally. Patient uses a wheelchair at all times for an unsteady gait. **Patient scored a 85 on Morse Fall Risk scale which indicates a high risk for falling. Patient is not independent. Patient does need assistance with equipment and needs support to stand and walk.**

Neurological: Patient is oriented to person, place, situation, and time. Patient has normal cognition. Speech is clear. Patient is awake and answers questions appropriately. Patient moves the upper and lower extremities well. PERRLA is intact. Hands grips and pedal pushes and pulls demonstrated normal and equal strength for upper extremities. Cranial nerves intact. Sensory is intact.

Most recent VS (include date/time and highlight if abnormal): Vital signs taken at 1055. Pulse-90 bpm, **Blood pressure: 169/74 mmHg, Oxygen Saturation: 88% on room air, Respirations: 22 breaths per minutes,** and Temperature: 36.9 C.

Pain and pain scale used: Numeric Scaled. **Patient verbalized a 4/10 due to nausea.**

<p style="text-align: center;">Nursing Diagnosis 1</p> <p>Impaired gas exchange related to congestive heart failure as evidenced by decreased oxygen saturation.</p>	<p style="text-align: center;">Nursing Diagnosis 2</p> <p>Deficient knowledge related to insufficient interest in learning as evidenced by the patient taking off her nasal cannula repeatedly throughout the shift.</p>	<p style="text-align: center;">Nursing Diagnosis 3</p> <p>Impaired walking related to insufficient muscle strength as evidenced by impaired balance.</p>
<p style="text-align: center;">Rationale</p> <p>The patient's oxygen saturation stayed between 81%-88% during the shift.</p>	<p style="text-align: center;">Rationale</p> <p>Every time I entered the patient's room the patient had her nasal cannula off her face. The patient expressed several times that she did not want to wear the nasal cannula and did not need oxygen.</p>	<p style="text-align: center;">Rationale</p> <p>The patient expressed muscle weakness when trying to walk due to being confined to a bed from 2-22-23.</p>
<p style="text-align: center;">Interventions</p> <p>Intervention 1: “Perform bronchial hygiene, as ordered including coughing, percussion, postural drainage, and suctioning” (Phelps, 2020, p. 253).</p> <p>Intervention 2: “Administer and monitor oxygen therapy” (Phelps, 2020, p. 253).</p>	<p style="text-align: center;">Interventions</p> <p>Intervention 1: “Negotiate with patient to develop goals for learning” (Phelps, 2020, p. 349).</p> <p>Intervention 2: “Identify patients' level of cognitive, physical, linguistic, and perceptual development to establish appropriate learning goals” (Phelps, 2020, p. 349).</p>	<p style="text-align: center;">Interventions</p> <p>Intervention 1: “Perform a range of motion exercises for joints of affected limbs unless contraindicated at least once per shift” (Phelps, 2020, p. 663).</p> <p>Intervention 2: “Provide progressive emulation up to limbs imposed by a patient's condition to maintain muscle tone and prevent complications associated with immobility” (Phelps, 2020, p. 663).</p>
<p style="text-align: center;">Evaluation of Interventions</p> <p>The patient responded well to the goals and verbally acknowledged the status of the goals and outcomes.</p>	<p style="text-align: center;">Evaluation of Interventions</p> <p>The patient responded well to the goals and verbally acknowledged the status of the goals and outcomes.</p>	<p style="text-align: center;">Evaluation of Interventions</p> <p>The patient responded well to the goals and verbally acknowledged the status of the goals and outcomes.</p>

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