Medications (Continued on pg 4)
Gabapentin; Dose: 100mg **Route:** Oral **Frequency:** Three times a day
Pharmacological class: I -amino -methyl- cyclohexaneactic acid
Therapeutic class: anticonvulsant
Key Nursing assessment prior to administration: Renal function as dosage may need adjusted, and vital signs (Jones & Bartlett, 2019).
Patient is taking to prevent or control seizures.
Budesonide Nebulizer; Dose: 500mcg **Route:** Inhalation/Nebulizer **Frequency:** Twice a day
Pharmacological class: corticosteroid
Therapeutic class: anti-asthmatic, anti-inflammatory
Key nursing assessment prior to administration: Vital signs, as hypertension is an adverse effect (Jones & Bartlett, 2019).
Patient is taking due to increased shortness of breath
Ipratropium-albuterol nebulizer; Dose: 3ml **Route:** inhalation via nebulizer **Frequency:** Four times a day
Pharmacological class: anticholinergic
Therapeutic class: bronchodilator
Key nursing assessment prior to administration: Vital signs such as respirations, pulse and oxygen saturation (Jones & Bartlett, 2019).
Patient is taking due to increased shortness of breath and wheezing
Aspirin; Dose: 81mg **Route:** Oral **Frequency:** Daily
Pharmacological class: Salicylate
Therapeutic class; NSAID (anti-inflammatory, anti-platelet, antipyretic, non-opioid analgesic)
Key nursing assessment prior to administration: Assess for pain, patient's vitals such as if the patient has a fever (Jones & Bartlett, 2019).
Patient is taking to manage and relieve pain
Lisinopril; Dose: 10mg **Route:** Oral **Frequency:** Daily
Pharmacological class: Angiotensin-converting enzyme (ACE) inhibitor
Therapeutic class: Antihypertensive
Key nursing assessment prior to administration: Vital signs, as it can cause hypotension (Jones & Bartlett, 2019).
Patient is taking to manage and treat hypertension
Metoprolol succinate; Dose: 25mg **Route:** Oral **Frequency:** Daily
Pharmacological class: beta1-adrenergic blocker
Therapeutic class: Antianginal, antihypertensive
Key nursing assessment prior to administration: Vital signs, can result in bradycardia (Jones & Bartlett, 2019).
Patient is taking to treat and manage her hypertension
Atorvastatin; Dose: 40mg **Route:** Oral **Frequency:** Nightly
Pharmacological class: HMG-CoA reductase inhibitor
Therapeutic class: Antihyperlipidemic
Key nursing assessment prior to administration: Assess patient's vital signs, monitor lipid levels (Jones & Bartlett, 2019).
Patient is taking to reduce the risk of acute cardiovascular events such as a MI, angina, and to reduce the risk of congestive heart failure since she has coronary artery disease (Jones & Bartlett, 2019).
Doxycycline hyclate; Dose: 100mg **Route:** Oral **Frequency:** twice a day
Pharmacological class: Tetracycline
Therapeutic class: Antibiotic
Key nursing assessment prior to administration: Vital signs, as it can cause hypertension. Monitor for any complaints of headache, or blurred visions (Jones & Bartlett, 2019).
Patient is taking for a possible infection
Fluoxetine; Dose: 40mg **Route:** Oral **Frequency:** Daily
Pharmacological class: selective serotonin reuptake inhibitor (SSRI)
Therapeutic class: Antidepressant
Key Nursing assessment prior to administration: Vital signs as hypotension can occur and how they are feeling as suicidal ideation is an adverse effect (Jones & Bartlett, 2019).
Patient is taking to treat depression.

Lab Values/Diagnostics

Glucose; 70-99 mg/dL, 110 mg/dL, corticosteroid therapy can cause elevated glucose levels in which the patient is taking a corticosteroid, Budesonide (PhD Rn & Facs, 2021).

PCO2: 41-51 mmHg, 33 mmHg, the patient is experiencing hypoxia which can result in a low pCO2 (PhD Rn & Facs, 2021).

MCV; 82-96 fL, 81.0 fL, low MCV values tend to be related to anemia's caused by iron deficiency or chronic illnesses (PhD Rn & Facs, 2021).

HCT; 36-47.0%, 33.7%, can be related to the patient's past medical history of rheumatoid arthritis as rheumatoid arthritis is known to cause decreased hematocrit levels (PhD Rn & Facs, 2021).

Hgb; 12.0-15.8 g/dl, 11.0 g/dl, could be due to a nutritional deficiency or possible anemia relating to her current illness as these are two causes for decreased hemoglobin levels (PhD Rn & Facs, 2021).

MPV; 9.7-12.4 fL, 8.9 fL, decreased levels are usually related to aplastic anemia, however it doesn't show that the patient has a past medical history of anemia (PhD Rn & Facs, 2021).

Neutrophils; 47.0-73.0%, 79.2%, elevated neutrophil counts are usually related to infections caused by bacteria but can also be caused by medications such as corticosteroids (PhD Rn & Facs, 2021).

Lymphocytes; 18.0-42.0%, 14.9%, decreased lymphocyte counts can be related to a viral or bacterial infection (PhD Rn & Facs, 2021).

XR Chest 2 Views (9-29-22);
Findings; Lungs: normal, no infiltrates seen, Hila: normal, Heart is normal in size, Mediastinum is within normal limits, Bones are normal, no fractures seen.
Impression; No acute disease

XR Chest Single View (10-01-22);
Findings; hyperinflation of both lungs. No focal infiltrate, consolidation, pneumothorax, or effusion is identified. Calcified granulomas in the right lower lung. Heart size and pulmonary vascularities are within normal limits. No significant mediastinal or hilar enlargement. Calcification in the thoracic aorta. Bony thorax is unremarkable.
Impression; hyperinflation of both lungs with old granulomatous disease in the right lung. No significant change since previous chest X-ray from 9-29-22. No acute cardiopulmonary abnormality is demonstrated.

Demographic Data

Date of Admission: 9-29-22
Admission Diagnosis/Chief Complaint:
- Admitting Diagnosis: Acute respiratory failure with hypoxia
- Chief Complaint: Shortness of breath, wheezing

Age: 64 years old
Gender: Female
Race/Ethnicity: Caucasian
Allergies: N/A
Code Status: Full code
Height in cm: 157.5 cm
Weight in kg: 61 kg
Psychosocial Developmental Stage: Generativity vs Stagnation
Cognitive Developmental Stage: Formal operational stage
Braden Score: 20
Morse Fall Score: 0, no fall risk
Infection Control Precautions: N/A; No precautions

Admission History

E.D is a 64 year old female who presented to the emergency room on 9-29-22 with a chief complaint of shortness of breath, productive cough, and wheezing. Patient states that her symptoms began on 9-27-22, in which she was prescribed a Z pack by her primary care physician. By Sunday 9-29-22, her symptoms still were not improving so she contacted her primary care physician in which she was advised to go to the emergency room. Upon arrival to the emergency room patient was hypoxic and heavily wheezing. Patient denies any known exposure to illnesses and denies any fever.

Medical History

Previous Medical History: Sleep apnea, hypertension, coronary artery disease, arthritis, Chronic obstructive pulmonary disease (COPD), depression, Myocardial infarction
Prior Hospitalizations: N/A; No prior hospitalization
Previous Surgical History:
- Cardiac catheterization (3/3/20)
- Tubal ligation (date unknown)
- Coronary angioplasty with stent placement (date unknown).

Social History: Patient is a tobacco user and reports smoking ½ a pack of cigarettes a day for the past 25 years.
N/A; Denies any alcohol or recreational drug usage

Pathophysiology
Disease process: Acute respiratory failure develops when the lungs are unable to exchange O2 and CO2 adequately (Swearingen, 2018). Respiratory failure is classified as hypoxemic or hypercapnic, in which our patient's type of respiratory failure was unspecified in the diagnosis but she is experiencing hypoxia (Capriotti, 2020). Hypoxia occurs when oxygen levels in the blood are not sufficient enough for the tissues needs (Capriotti, 2020). Hypoxemic respiratory failure occurs when the pressure in arterial blood is lower than 60 mmHg with a normal arterial carbon dioxide level (Capriotti, 2020). Hypercapnic respiratory failure occurs when carbon dioxide in arterial blood is greater than 50 mmHg (Capriotti, 2020). Common causes of hypercapnia include COPD and asthma, which our patient has COPD but is currently not experiencing hypercapnia (Capriotti, 2020).
S/S of disease: The patient's symptoms can be thoroughly described through the mnemonic OLDCART, it is important to obtain an oldcart from each patient to assess if dyspnea is present or a chronic cough as these can indicate which disorder it could be correlated to (Capriotti, 2020). For example in our patients old cart she states that she is experiencing some increased shortness of breath, a productive cough, and wheezing. A chronic cough can be associated to her diagnosis of COPD (Capriotti, 2020). Some early indicators of acute respiratory failure are restlessness, changes in mental status, anxiety, headache, fatigue, increased blood pressure, tachycardia, and cardiac dysrhythmias. While some other signs and symptoms that may occur later on are confusion, increased agitation, and a need for increased oxygen requirements due to decreased oxygen saturations (Swearingen, 2018). We saw the need for increased oxygen requirements in our patient since her O2 saturation was hypoxic on room air with her before being admitted she was placed on 2 L of oxygen via nasal cannula which increased her O2 saturation 96% in her recent vital check at 1100.
Method of Diagnosis: There are two types of diagnostic testing that may be done to diagnose acute respiratory failure. An ABG analysis may be performed to assess the adequacy oxygenation and effectiveness of ventilation. The typical results from the ABG analysis are a PaO2 of 60 mmHg or less, PaCO2 of 45 mmhg or more, and a pH less than 7.35 are indicative of severe respiratory acidosis. Another diagnostic test that may be performed is a chest x-ray as we seen in our patient's completed diagnostic testings (Swearingen, 2018).
Treatment of disease: The main goal of treatment for respiratory failure is to get oxygen back into the lungs and other organs while removing carbon dioxide from the body. Some common treatment options include oxygen therapy through a nasal cannula, which is a treatment that our patient is receiving currently to help treat her respiratory failure (MedlinePlus, 2020). Other treatment options include a tracheostomy, ventilator, fluids, and breathing treatments. We see multiple treatment options mentioned being used in the patient, such as the use of multiple nebulizer treatments such as ipratropium-albuterol, budesonide, and the use of bronchodilators and corticosteroids to help relieve and treat her symptoms (MedlinePlus, 2020).

Active Orders

DIET; Cardiac
Elevated Head of Bed 30°; routine until discontinued
Incentive spirometry; Routine; every hour while awake
Intake & Output; Routine, every 8 hours
Vital signs per unit routine; Routine
Insert/Maintain peripheral IV
Up as tolerated; Routine, PRN
Oxygen therapy; 2L via nasal cannula to maintain 92-96%
Walk for home evaluation; Complete on 10/5/22 in the morning to prepare for discharge
Acapella; every two hours while awake
Aerosol nebulizer; Four times a day
MDI treatment; daily
For blood sugar < 70 mg/dl or less; give 15g of carbohydrates according to the patient's current diet.
Restrictions; 4oz juice, 8 saltine crackers, 3 graham crackers, or 8oz milk. In Patient's with renal disorders; glucose or apple juice. In patient's with intake restrictions; 4 oz cranberry juice for a clear liquid diet and 4 oz milk or juice for a full liquid diet.
Post hyperglycemia; once conscious give the patient a snack
Sequential compression device; To be left on at all times unless ambulating or bathing.

Physical Exam/Assessment

General: Patient is alert and oriented x 4 (person, place, time, and situation), well-groomed and appears to be in no apparent distress

Integument: Patient skin is warm, dry, and intact. No visualized edema or cyanosis. There are no observed rashes on the skin, minimal bruising observed on the abdomen where the patient is receiving injections.

HEENT:

- Head and neck are symmetrical, trachea is midline, no deviation, or JVD noted.
- Eyes: Bilateral sclera white, conjunctivae are pink and clear without drainage, Pupils are equal and reactive to light.
- Nose: Septum is midline
- Mouth: Pharynx is pink and moist, dentation is good, mucosa is pink and moist with no lesions.

Cardiovascular: S1 and S2 are present, no murmurs or gallops noted. Palpable peripheral pulses 3+, capillary refill is normal at < 2 seconds, extremities are warm and well perfused bilaterally throughout.

Respiratory: respirations are regular and even without laboring. Respirations are regular at 18 per minute. Lungs are clear to auscultation bilaterally with occasional wheezes noted in the bilateral lower lobes of the lungs, with a regular depth and pattern.

Genitourinary: Urine observed is a yellow and clear. Patient denies any complaints of urinary pain at this time. No decreased urination or blood in the urine noted.

Gastrointestinal: Patient is on a normal diet at home and her current diet in the hospital is a cardiac diet. The patient is 157.5 cm tall and weighs 61 kg. Bowel sounds are active and heard throughout all quadrants. Abdomen is soft, non-tender, and non-distended with no incisions, scars, drains, or wounds noted, minimal bruising observed on the abdomen where she is receiving her medication injections.

Musculoskeletal: Patient is independent when ambulating and is able to perform ADLs such as eating and brushing her teeth with a little to no assistance. Patient has a normal steady gait. Full range of motion in bilateral upper and lower extremities. Capillary refill < 2 seconds, radial and brachial pulses 3+ bilaterally. No evidence of pitting edema noted. Femoral, popliteal, dorsalis pedis, and posterior tibial pulses 3+ bilaterally. Equal sensation and 5/5 strength in the bilateral upper and lower extremities.

Neurological: Patient is alert and orientated x 4 (person, place, time, and situation). Speech is clear with no stutters or no facial droop noted. Opens eyes simultaneously, pupils are equal, round and reactive to light. PERRLA and EOMI's intact. 5/5 strength throughout bilateral upper and lower extremities, sensation is intact.

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

0700; BP: 156/62 mmHg Right Arm, **Pulse:** 70 bpm, **Temperature:** 98.1 ° F temporal, **O2:** 93% on 2L via nasal cannula

1100; BP: 131/56 mmHg Left Arm, **Pulse:** 84 bpm, **Temperature:** 97.8 ° F temporal, **O2:** 96% on 2L via nasal cannula

Pain and pain scale used:

0700; Pain: 0, **Scale:** Numeric**, Denies the presence of pain or discomfort**

1100; Pain: 0, **Scale:** Numeric, **Denies the presence of pain or discomfort**

References (3) APA:

Nursing Diagnosis 1	Nursing Diagnosis 2	Nursing Diagnosis 3
Impaired gas exchange related to patient's altered oxygen supply as evidenced by the need for supplemental oxygen	Ineffective airway clearance related to shortness of breath with COPD as evidenced by cough and wheezes in the lung bases	Activity intolerance related to imbalance between oxygen supply and demand secondary to inefficient work of breathing as evidenced by complaints of shortness of breath
Rationale Patient is currently admitted for acute respiratory failure with hypoxia, she was placed on 2L of oxygen via nasal cannula to increase her o2 saturations.	**Rationale** Patient has a past medical history of COPD and presented to the hospital with increased shortness of breath, cough and wheezes heard in the lung bases.	**Rationale** Patient has a past medical history of COPD and has a chief complaint of shortness of breath accompanied by a cough and wheezing so activities may increase her shortness of breath.
Interventions **Intervention 1:** Observe and report any signs of respiratory distress such as shortness of breath, tachypnea, and the use of accessory muscles. **Intervention 2:** Monitor and document patients vital signs, especially oxygen saturation and pulse.	**Interventions** **Intervention 1:** Assess the rate, rhythm, and depth of respirations. Chest movement and whether there is use of accessory muscles. **Intervention 2:** auscultate the lung fields and note any areas of decreased or absent airflow and adventitious breath sounds such as crackles and wheezes.	**Interventions** **Intervention 1:** Monitor patients respiratory rate for an increased respiratory rate and depth, dyspnea, and the use of accessory muscles. **Intervention 2:** gradually increase activity starting off with ROM exercises, increasing to sitting, then to standing, and finally to ambulating for her home walk evaluation
Evaluation of Interventions The patient's o2 is stable and within parameters of the doctors orders at 96% on 2L via nasal cannula at her last vital check at 1100. Patient has no complaints of shortness of breath at this time and is not currently using accessory muscles with respirations.	**Evaluation of Interventions** Patients breath sounds were assessed periodically throughout the shift, wheezes still noted in bilateral lung bases. Respirations were assessed with the patients vitals, respirations are currently at 18 breaths per minute with equal chest rise and fall and no use of accessory muscles.	**Evaluation of Interventions** Patient's respiratory rate maintained normal throughout activities at a rate of 18 breaths per minute with equal chest rest and fall without the use of accessory muscles. Patient was able to successfully complete her home evaluation without getting short of breath. Patient verbalized any complaints of dyspnea during activities.

Capriotti, Theresa M. "Davis Advantage for Pathophysiology: Introductory Concepts and Clinical Perspectives" 2nd ed. (2020). F.A Davis Company.

Jones & Bartlett Learning. (2019). 2020 Nurse's Drug Handbook (19th ed.). Jones & Bartlett Learning.

MedlinePlus. (2020, August 19). Respiratory failure | Lung Disease | Lung Problems. MedlinePlus. Retrieved September 12, 2022, from https://medlineplus.gov/respiratoryfailure.html

Orenstein GA, Lewis L. Eriksons Stages of Psychosocial Development. [Updated 2021 Nov 14]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK556096/

PhD Rn, P. K. D., & Facs, M. T. P. J. (2021). Mosby's Diagnostic and Laboratory Test Reference (Mosby's Diagnostic & Laboratory Test Reference) (15th ed.). Mosby.

Swearingen, P. L., & Wright, J. (2018). All-in-One Nursing Care Planning Resource: Medical-Surgical, Pediatric, Maternity, and Psychiatric-Mental Health (5th ed.). Mosby.

Medications continued:

Guaifenesin; Dose: 600mg **Route:** Oral **Frequency:** Twice a day

Pharmacological class: Glyceryl guaiacolate

Therapeutic class: Expectorant

Key nursing assessment prior to administration: Vital signs, monitor for complaints of nausea and vomiting, and any sign of a rash (Jones & Bartlett, 2019).

Patient is taking to promote a productive cough

Insulin Lispro; Dose: 2-12 units **Route:** Subcutaneous **Frequency:** Four times a day with meals and nightly

Pharmacological class: Human insulin

Therapeutic class: Anti-diabetic

Key nursing assessment prior to administration: Blood glucose levels, medications interactions such as insulin interacts with ACE inhibitors which the patient is taking a ACE inhibitor (Jones & Bartlett, 2019).

Patient is taking to lower her blood glucose levels

Montelukast; Dose: 10mg **Route:** Oral **Frequency:** Nightly

Pharmacological class: leukotriene receptor antagonist

Therapeutic class: anti-allergen, anti-asthmatic

Key nursing assessment prior to administration: Vitals signs, allergies, and how the patient is feeling as suicidal ideation is an adverse effect of this medication (Jones & Bartlett, 2019).

Patient is taking to prevent and treat asthma as she is having increased shortness of breath and wheezing

Heparin; Dose: 5,000 units **Route:** Subcutaneous **Frequency:** Every 8 hours, three times a day

Pharmacological class: Anticoagulant

Therapeutic class: anticoagulant

Key Nursing assessment prior to administration: Previous injection site as you should alternate sites, patient's hematocrit and platelet count, vital signs

Patient is taking to prevent a peripheral arterial embolism, pulmonary embolism since they have coronary artery disease.

Methylprednisolone sodium succinate; Dose: 40mg **Route:** Iv **Frequency:** Every 12 hours

Pharmacological class: Glucocorticoid

Therapeutic class: Corticosteroid

Key nursing assessment prior to administration: Vital signs such as blood pressure as this medication can cause hypotension.

Patient is taking to treat immune and inflammatory disorders

Roflumilast; Dose: 500 mcg **Route:** Oral **Frequency:** Daily

Pharmacological class: selective phosphodiesterase 4 inhibitor

Therapeutic class: Antipulmonic obstructive agent

Key nursing assessment prior to administration: Monitor patient's weight and notify provider if significant weight loss has occurred (Jones & Bartlett, 2019). Vital signs

Patient is taking to reduce the risk of a COPD exacerbation

Solifenacin; Dose: 5mg **Route:** oral **Frequency:** Daily

Pharmacological class: antimuscarinic

Therapeutic class: Bladder antispasmodic

Key nursing assessment prior to administration: Vital signs as this medication can cause tachycardia and a prolonged QT interval

Patient is taking to treat overactive urinary bladder since she has a past medical history of incontinence.