

# Pathophysiology

Student Name:

**Disease process:** "Acute respiratory failure occurs when your lungs cannot release enough oxygen into your blood, which prevents your organs from properly functioning. It also occurs if your lungs cannot remove carbon dioxide from your blood." (Cattamanchi, 2023). The patient was experiencing a sudden onset of shortness of breath with wheezing, a productive cough, and yellowish-green sputum.

**S/S of disease:** "People with low oxygen may experience shortness of breath, bluish discoloration on lips, fingertips, or toes, drowsiness, and difficulty performing routine activities, like dressing climbing stairs due to extreme tiredness." (Cattamanchi, 2023). The patient was experiencing a sudden onset of worsening shortness of breath associated with wheezing and productive cough with yellowish-green sputum in everything she did, whether sitting, walking, dressing, etc. She also had left-sided chest pain that got worse with coughing and exertion.

**Method of Diagnosis:** "A doctor may diagnose a patient by performing a physical exam, asking questions about personal or family health history, checking their oxygen and carbon dioxide level with a pulse oximeter and having an ABG's test completed, and ordering a chest x-ray of their lungs." (Cattamanchi, 2023). The patient had a physical exam on her arrival at the emergency department, was asked about her health history, has a continuous pulse oximetry device, and had a chest x-ray completed.

**Treatment of disease:** "A doctor can treat a patient in multiple ways, such as, if they are in pain or having difficulty breathing, the doctor can prescribe them pain medication or medication to help them breathe better. If patients can adequately breathe on their own and their hypoxemia is mild, they may need supplemental oxygen from an oxygen tank to help them breathe better." (Cattamanchi, 2023). The patient was prescribed methylprednisolone sodium succinate (SoluMEDROL), a steroid, to help open her bronchioles so that her lungs could release enough oxygen into her blood. She is currently on 3 liters of oxygen and continuous bipap, which she uses at night.

## Admission History

Patient is a 67-year-old female that presented to the emergency department on 2/21/2023 with onset of worsening shortness of breath associated with cough and wheezing for the past week past week that she's had sudden onset of worsening shortness of breath associated with wheezing and yellowish-green sputum. Patient stated that she decided to come to the emergency department to breathe comfortably while sitting. She complains of left-sided chest pain which gets worse with exertion. Patient also had complained of lower extremity pain and swelling. The patient stated that there was no trauma. She tried to treat symptoms by using her nebulizer daily, albuterol, Pulmicort, and revefenasin but described the severity as "it felt like someone had a plastic bag over my head" and that she was unable to breathe.

## Medical History

**Previous Medical History:** AAA (abdominal aortic aneurysm) without rupturing; abnormal uterine bleeding; actinic keratosis; arthritis; asthma; BMI 40.0-44.9, adult; carcinoma; chronic low back pain; compulsive disorder; COPD (chronic obstructive pulmonary disorder); dyslipidemia; epigastric pain; fall; ganglion cyst of finger of right hand; generalized abdominal pain; GERD (Gastroesophageal reflux disease); gross hematuria (6/13/2019); H/O malignant melanoma; hematuria; history of nonmelanoma skin cancer; hypertension; intractable nausea and vomiting; migraines; neoplasm of ureter; non-recurrent inguinal hernia of right side with obstruction and without gangrene; Parkinson's disease; RLS (restless leg syndrome); seizures; total knee replacement status; uterine mass; ventral hernia without obstruction or gangrene

**Prior Hospitalizations:** 10/9/2022- post concussion headache; 11/28/2022- acute vertigo with vomiting and inability to stand; 12/9/2022- shakiness; 12/25/2022- community acquired pneumonia of right lower lobe of lung

**Previous Surgical History:** dilation and curettage of uterus; orthopedic surgery; appendectomy; tonsillectomy (3/1968); cholecystectomy; total knee arthroplasty; upper GI endoscopy, exam (7/12/2018); biopsy of skin lesion; laparoscopic hysterectomy (N/A, 10/31/2019); cystoscopy (N/A, 10/31/2019); hysterectomy (10/31/2019); carpal tunnel release (right, 5/7/2021); wrist ganglion excision (right, 5/7/2021); hc dmh endo carpal tunnel kit dyonics (5/7/2021); hernia repair

**Social History:** Patient reports that she quit smoking about 6 years ago. The patients' smoking use included cigarettes. She has a 9.50 pack-year smoking history. She has never used smokeless tobacco, she does not currently use alcohol, and she does not use drugs.

Physical Exam Summary

**General:** Patient is alert and oriented to person, place, time, and situation. No acute distress. Patient is well-groomed.

**Integument:** Skin is normal for ethnicity. Patient has skin tears on both wrists, also has several bruises on both arms. Recovery scars on both lower extremities (legs) from knee replacements. Prominent veins in right and left foot from mid ankle down. Skin turgor is of normal elasticity/mobility. Braden Score: 42- medium risk.

**HEENT:** Head is normocephalic and atraumatic. Neck is symmetrical, trachea is midline without deviation, thyroid is not palpable, no nodules. Bilateral carotid pulses are palpable and 2+. No lymphadenopathy in the head or neck. Bilateral sclera white, bilateral cornea clear, bilateral conjunctiva pink, no visible drainage from eyes. Bilateral lids are moist and pink without lesions or discharge. PERLLA bilaterally. EOMs intact bilaterally. No drainage or ear wax, hearing intact, bilateral auricles, no visible or palpable deformities, lumps, or lesions. Nose has no drainage, lumps, rashes, lesions, or deformities. Septum is midline. Oral mucosa pink and moist with good dentition.

**Cardiovascular:** Clear S1 and S2 without murmurs, gallops, or rubs. Normal rate and rhythm. Pulses are +2 bilaterally throughout. Capillary refill is less than 3 seconds in fingers and toes bilaterally. No edema noted.

**Respiratory:** Normal rate and pattern of respirations, symmetrical and non-labored. Coarse sounds in front lobes of lungs, clear sounds in back lobes of lung.

**Genitourinary:** Urine is yellow and clear. No pain with urination. Patient is continent, within normal limits, adequate output. No catheter. Genitals are of standard appearance.

**Gastrointestinal:** Diet at home- regular. Current diet- cardiac. Bowel sounds present in all four quadrants. No organomegaly found. No rashes, lesions, lumps, or deformities. Last bowel movement was 2/27/2023, formed, and brown. Abdomen is soft, no tenderness, and no masses. Bruises on abdomen from LovenoX injections. No distention. No incisions. No drains. No scars. No wounds.

**Musculoskeletal:** All extremities have full range of motion (ROM). Patient does use a walker. Hand grips, pedal pushes, and pulleys demonstrate normal and equal strength. Fall Score: 96- higher risk.

**Neurological:** The patient is alert and oriented to person, place, time, and situation. The patient's cognition status is adequate. The patient has adequate sensory, was tested on the legs and arms. The client is alert and awake, has clear speech, and answers questions that are asked appropriately. Full level of consciousness.

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

**Time:** 1100 **Blood Pressure:** 119/72 **Temperature:** 97.5 **Heart Rate:** 97 **Respiratory Rate:** 20 **O2:** 98 **Pain:** 0

**Pain and pain scale used:** Patients rated pain 0/10. A 0-10 numerical scale was used on patient.

## Demographic Data

**Date of Admission:** 2/21/2023

**Admission Diagnosis:** Acute respiratory failure

**Chief Complaint:** Sudden onset worsening shortness of breath

**Age:** 67 years old; **DOB:** 8/3/1955

**Gender:** Female

**Race/Ethnicity:** Caucasian- Non-Hispanic or Latino

**Allergies:** Augmentin (Amoxicillin-pot Clavulanate); Avelox (Moxifloxacin); Clarithromycin; Carbamazepine; Dexamprone; Ethynonine; Levamisole; Penicillin

<p align="center"><b>Nursing Diagnosis 1</b></p> <p>At risk for ineffective breathing pattern related to respiratory muscle fatigue as evidence by the patient having a history of COPD. (Phelps, 2020)</p>	<p align="center"><b>Nursing Diagnosis 2</b></p> <p>At risk for injury related to loss of muscle control as evidence by the patient having a history of seizures. (Phelps, 2020)</p>	<p align="center"><b>Nursing Diagnosis 3</b></p> <p>At risk for anxiety related to narrowing of airways/decreased lung expansion as evidence by the patient having a history of asthma and difficult of breathing. (Phelps, 2020)</p>
<p align="center"><b>Rationale</b></p> <p>The patient has a history of COPD, which can lead to her having an ineffective breathing pattern especially because the patient refuses to wear bipap at home.</p>	<p align="center"><b>Rationale</b></p> <p>The patient has had a history of seizures in the past and is currently prescribed medication to help prevent seizures.</p>	<p align="center"><b>Rationale</b></p> <p>The patient has had a history of asthma and has frequent occurrences of difficulty breathing, the patient is also on medications to help with the shortness of breath.</p>
<p align="center"><b>Interventions</b></p> <p><b>Intervention 1:</b> Auscultate breath sounds at least every 4 hours. (Phelps, 2020)  <b>Intervention 2:</b> Observe for signs of respiratory distress. (Phelps, 2020)</p>	<p align="center"><b>Interventions</b></p> <p><b>Intervention 1:</b> Ensure a patent airway. (Phelps, 2020)  <b>Intervention 2:</b> Do not restrain, monitor closely. (Phelps, 2020)</p>	<p align="center"><b>Interventions</b></p> <p><b>Intervention 1:</b> Teach patient relaxation techniques to be performed when having episode of difficulty breathing. (Phelps, 2020)  <b>Intervention 2:</b> Observe and record triggers of asthma, so that in the future it can be avoided. (Phelps, 20220)</p>
<p align="center"><b>Evaluation of Interventions</b></p> <p>The patient will wear bipap at home and continue to take medications that help with her breathing to prevent ineffective breathing pattern.</p>	<p align="center"><b>Evaluation of Interventions</b></p> <p>The patient will continue to take medications to prevent seizures and not abruptly stop her medications.</p>	<p align="center"><b>Evaluation of Interventions</b></p> <p>The patient will keep their medication on them at all times in case of an asthmatic episode and monitor the expiration date on medications.</p>

**MEDICATIONS CONT'D:**

**paroxetine (PAXIL)**

**Pharmacological Class: Selective serotonin reuptake inhibitors**

**Therapeutic Class: Antidepressants**

**Reason for client taking: to treat obsessive compulsive disorder**

**Nursing Assessment: “Assess patient for signs and symptoms of bipolar disorder with detailed psychiatric history, including family history of suicide, bipolar disorder, and depression prior to starting therapy.” (Jones & Bartlett Learning, 2022)**

**phenytoin (DILANTIN) 200mg**

**Pharmacological Class: Hydantoin derivative**

**Therapeutic Class: Anticonvulsant**

**Reason for client taking: to prevent seizures throughout the day**

**Nursing Assessment: “Advise patient to take drug with meals to avoid stomach upset.” (Jones & Bartlett Learning, 2022)**

**ropinirole (REQUIP)**

**Pharmacological Class: Nonergot alkaloid dopamine agonist**

**Therapeutic Class: Antiparkinsonian**

**Reason for client taking: to treat symptoms of restless leg syndrome**

**Nursing Assessment: “Instruct patient that smoking may decrease the effectiveness of ropinirole.” (Jones & Bartlett Learning, 2022)**

**tamsulosin (FLOMAX)**

**Pharmacological Class: Alpha adrenergic antagonist**

**Therapeutic Class: Benign prostatic hyperplasia (BPH) agent**

**Reason for client taking: to help with urinary retention**

**Nursing Assessment: “Encourage patient to increase fluid intake, if not contraindicated at times when having diarrhea.” (Jones & Bartlett Learning, 2022)**

**warfarin (COUMADIN)**

**Pharmacological Class: Coumarin derivative**

**Therapeutic Class: Anticoagulant**

**Reason for client taking: long term therapy for DVT (prevention of clots)**

**Nursing Assessment: “Monitor INR, and assess for therapeutic effects, as prescribed.” (Jones & Bartlett, 2022)**

**Phenytoin (DILANTIN) 300mg**

**Pharmacological Class: Hydantoin derivative**

**Therapeutic Class: Anticonvulsant**

**Reason for client taking: to prevent seizures throughout the night**

**Nursing Assessment: “Advise patient to take drug with meals to avoid stomach upset.” (Jones & Bartlett Learning, 2022)**

**References (3) (APA):**

Cattamanchi, A. (2023, January 4). *Acute Respiratory Failure: Causes, Symptoms, and Diagnosis*. Healthline. Retrieved March 3, 2023, from <https://www.healthline.com/health/acute-respiratory-failure#treatment>

Jones & Bartlett Learning, LLC. (2022). *2022 Nurse’s Drug Handbook* (20th ed.).

Pagana, Kathleen. (2019). *Mosby’s Diagnostic and Laboratory Test Reference*, (14<sup>th</sup> ed.). Elsevier.

Phelps, L. L. (2020). *In Spark's & Taylor's Nursing Diagnosis Reference Manual 11th ed. Essay*. Wolters Kluwer.

