

# Nursing Management of Pneumonia

## Pathophysiology:

Pneumonia can be caused by a variety of microorganisms that enter the airway and invade the alveolar space.

The infectious organisms multiply in the alveoli causing white blood cells (WBCs) to migrate to the area. This then causes capillary leak, edema, and exudate. Fluid then collects in and around the alveoli and causes the alveolar walls to thicken. This causes **decreased gas exchange** and **hypoxemia**.

Capillary leak can cause the infection to spread to other parts of the lung.

Red blood cells (RBCs) and fibrin also migrate to the area of infection.

The fibrin and edema also cause the lung to stiffen which decreases the lung's vital capacity.

The collapse of the alveoli (atelectasis) reduces the ability of the lung to oxygenate which results in **hypoxemia**.

Pneumonia can occur as lobar pneumonia with consolidation in segments or as bronchopneumonia with diffusely scattered patches.

Pneumonia is also categorized into community-acquired or health care-acquired. This terminology simply differentiates where the patient was exposed to the infectious agent that caused the pneumonia.

## Risk factors:

- Elderly patients are at higher risk
- Patients with a chronic health condition
- An older adult who has not received the pneumococcal vaccination
- A patient who is on mechanical ventilation
- Patients who smoke cigarettes

## Signs & Symptoms:

- Chest discomfort
- Myalgia
- Headache
- Chills due to infections process
- Fever due to infectious process
- Cough
- Crackles, wheezing due to fluid accumulation and inflammation in the lungs
- Tachycardia
- Dyspnea

- Tachypnea
- Hemoptysis
- Sputum production
- Anxiety due to breathlessness
- Confusion in older patients due to hypoxia
- Increased WBC due to infection process

### **Nursing Interventions:**

Educate patients on prevention of pneumonia

- Patients over the age of 65 and those with chronic health conditions should be given the pneumococcal vaccine. Typically, only given once, but some individuals may be appropriate for another vaccine after 5 years.
- Patients should also receive the flu vaccine yearly (because pneumonia often occurs after influenza infection)
- Teach patients to avoid large crowds during cold and flu season
- Teach patients to perform strict handwashing
- Encourage patients who smoke to consider getting help to stop smoking
- Encourage patients to drink 2-3 L of nonalcoholic fluids every day

If a patient is on a ventilator, then they are at increased risk of developing pneumonia- **ventilator acquired pneumonia (VAP)**. In order to prevent VAP, the “ventilator bundle” should be followed. The bundle consists of

- Hand hygiene
- Oral care
- Head of bed elevation

Administer oxygen therapy to maintain oxygen saturation greater than 90%.

Encourage patients to utilize incentive spirometry. Encourage them to attempt 5-10 breaths every hour while awake.

Assist patients to turn, cough, and deep breathe every 2 hours.

Encourage patients to drink 2 L of fluid every day.

Administer prescribed **bronchodilators** by nebulizer.

Administer prescribed **inhaled or IV steroids** for inflammation.

Administer prescribed anti-infective. The anti-infective that is chosen will depend on the infective micro-organism that caused the pneumonia.

## Nursing Care Plan for Pneumonia

In this section, we will review potential nursing diagnoses and associated nursing interventions for patients with pneumonia. The examples given are based upon what a “typical” patient with pneumonia might look like. *Be sure that when you are creating your nursing care plans that you individualize the nursing diagnoses and the “as evidenced by” to your patient.* If you have any further questions about nursing care plans, you can check out my in-depth post about nursing care plans here.

### Nursing Diagnoses for Pneumonia:

According to NANDA-I, the following are potential nursing diagnoses for a patient with pneumonia:

- Activity Intolerance
- Ineffective Airway Clearance
- Impaired Gas Exchange
- Ineffective Self-Health Management
- Hyperthermia
- Deficient Knowledge
- Imbalanced Nutrition
- Impaired Oral Mucous Membrane
- Risk for Acute Confusion
- Risk for Deficient Fluid Volume
- Risk for Vascular Trauma
- Readiness for Enhanced Immunization Status

Impaired Gas Exchange r/t edema and inflammation in the alveoli AEB acute confusion, decreased oxygen saturation on room air- 85%, need for 2L oxygen via nasal cannula, persistent cough, crackles x5, tachypnea, restlessness

Goal: Adequate Gas Exchange AEB A&O x4 (no confusion), oxygen saturation greater than 90% on room air, absence of cough, lung sounds clear x5

Nursing interventions:

- The nurse will monitor the respiratory rate and depth and monitor for the use of accessory muscles and nasal flaring (*to identify worsening of dyspnea or tachypnea*)
- The nurse will raise the HOB to 45 degrees throughout the shift (*to promote lung expansion*)
- The nurse will administer prescribed bronchodilators according the medication schedule (*to open airways*)
- The nurse will encourage the patient to turn, cough, and deep breathe every 2 hours (*to promote expansion of the lung and expectoration of any sputum*)

- The nurse will encourage patient to utilize incentive spirometry every hour while *awake (to promote lung expansion)*
- The nurse will assess for cyanosis of the skin during each interaction with the patient (*to identify hypoxia*)
- The nurse will encourage the patient to rest and conserve their energy (*to prevent exacerbations of dyspnea*)

Activity Intolerance r/t imbalance between oxygen supply and demand AEB tachypnea and dyspnea during activities, oxygen saturation decreases during activity, patient reports “I get so tired so quickly” during activities of daily living

Goal: Activity Tolerance AEB breath rate between 10-20 respirations during activity, oxygen saturation remains about 90% during activity, patient does not report getting tired quickly during activities of daily living anymore

Nursing interventions:

- The nurse will encourage the patient to rest and conserve their energy (*to prevent exacerbations of dyspnea*)
- The nurse will encourage the patient to use pursed-lip breathing during breathlessness that occurs during activity (*to help decrease the severity of dyspnea*)
- The nurse will monitor the patient’s respiratory response (rate, rhythm, depth) during activity (*to assess for worsening or improvement of activity intolerance*)
- The nurse will provide the patient with the prescribed amount of oxygen therapy during activity and continue to monitor the patient’s oxygen saturation throughout the activity (*to ensure adequate oxygenation*)

Anxiety r/t breathlessness and dyspnea AEB wide-eyed looking during periods of difficulty breathing, restlessness, patient reports feelings of “anxiousness during times when I can’t seem to catch my breath”, patient exhibits reluctance to participate in activities of daily living (such as bathing, range of motion activities, and ambulation) due to activity intolerance

Goal: Reduced Anxiety AEB a calmer look on the patient’s face during period of difficulty breathing, reduced restlessness, patient reports feeling less anxious during dyspnea, patient begins to participate in ADLs

Nursing interventions:

- The nurse will assess the patient’s anxiety during periods of dyspnea. If possible, have the patient rate their feelings of anxiety on a scale of 0-10.
- The nurse will utilize therapeutic communication and listening skills to allow the patient the ability to express their feelings of anxiousness.
- The nurse will educate the patient on anxiety reducing interventions such as guided imagery, music therapy, aromatherapy, yoga etc.

## NCLEX Style Questions for Pneumonia

Here are a few NCLEX style questions for pneumonia to help you assess your comprehension of the information in this post. *(These are NCLEX style questions that I created myself. I am not in any way associated with the NCLEX and have not been trained on how to write NCLEX style questions.)*

Which of the following statements would you include in patient education about pneumonia for a 70-year-old male who has a chronic health condition? **(Select All That Apply)**

- A. The patient should avoid visiting family during cold and flu and season
- B. The patient should drink 2-3 L of nonalcoholic fluids per day
- C. The patient should get the pneumococcal vaccine every year
- D. The patient should get the flu vaccine every year
- E. The patient should begin a smoking cessation program

Which of the following nursing diagnoses is the **priority** diagnoses that the nurse should implement nursing interventions for first?

- A. Deficient knowledge
- B. Impaired gas exchange
- C. Hyperthermia
- D. Imbalanced nutrition

A patient comes to the ER with the following signs and symptoms. Which of the following are **not** related to the primary diagnosis of pneumonia?

- A. Cough with sputum production
- B. Hematuria
- C. Fever of 100.9
- D. Myalgia
- E. Chest discomfort

Which patient is at the **highest** risk of developing pneumonia?

- A. A 3-year-old female with asthma
- B. A 68-year-old male with a history of a chronic health condition
- C. A 55-year-old female who is on a ventilator in the intensive care unit (ICU)
- D. A 40-year-old female with a history of hypertension