# Pneumonia Interventions

Pneumonia is the most common infectious disease leading to death in the United States and is a disease of the lower respiratory tract involving lung parenchyma, interstitial tissues and alveolar spaces. Pneumonia intervention starts with prevention, including consideration of populations at risk, community education on infection prevention and vaccinating against infectious organisms. Non-pharmacologic and pharmacologic (specific to disease process) interventions are important strategies to implement when managing patients with pneumonia.




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## Non-pharmacologic

**Humidified Oxygen**
Wet O2-tank
Delivery of humidified air, either through ambient (“room-based”) or direct reservoir-delivered devices, prevents secretions from becoming inspissated (thickened, dried) and improves expectoration of secretions and airway clearance.

**Deep Breathing Exercises**
Deeply Breathing with Incentive Spirometer
When routinely performed, deep breathing and coughing exercises improve lung expansion, function and airway clearance. Placement of the patient in a semi-fowler position warrants maximal lung expansion for a seated or bed-riddened patient. Instruct the patient to place one hand on their abdomen to feel ventilation rise and fall, inhale deeply and slowly through the nose for 1-3 seconds, and exhale slowly through the mouth. Following 4-6 deep breaths, instruct the patient to cough deeply and aid in the expectoration of sputum. Splinting of the abdomen may be necessary for post-surgical patients to support comfort and decrease the risk of wound dehiscence. Finally, use of an incentive spirometer encourages maximal inspiration and quantitatively demonstrates optimal aeration of the lungs.

**Position of Comfort**
Comfort-inn Position
Encouraging the patient to safely reposition, transfer self and ambulate is a goal toward successful recovery. For the bed or chair dependent patient, support a position of comfort for adequate ventilation, such as a semi-fowler position, or support a position optimal for safe postural drainage and expectoration.

**Increase Fluid Intake**
Up-arrow Fluid Intake
Along with supporting a healthy immunologic response, increasing fluid intake helps thin out lung secretions and promotes expectoration of mucus. A general guideline of hydration for most patients, unless contraindicated, is consumption of 3L of fluid a day.

**Manage Fever**
Managing Fever-beaver with Cold Pack
A systemic response to pneumonia includes the development of a fever (>100.4 degrees Fahrenheit). Complications of an uncontrolled increase in body temperature secondary to a developing fever include loss of body water, increased inspissation (“thickening”) of mucus and increased metabolic demands. Use antipyretic medications and non-pharmacologic interventions, such as removing excess bed linens and clothes and using a cooling fan, to counter risks associated with an uncontrolled fever.

## Pharmacologic

**Antibiotics**
ABX-guy
Pneumonia as a result of bacterial infection may be treated with antibiotics. The patient should be educated to take the full dose as prescribed, and be aware of common side effects and when to notify their provider.

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**Mucolytics**

Mucus-lights

Mucolytics, such as acetylcysteine (Mucomyst), work to reduce the viscosity of tenacious secretions by increasing respiratory tract fluid and breaking up mucus.

**Expectorants**

Expelling-ants in mucus

Expectorants, such as guaifenesin, work to decrease surface tension and allows for mucus to be expelled by increasing the amount or hydration of secretions. The expectorant can also ease a cough, if one is present.

## Considerations

**Pneumococcal Vaccine**

Nude-cock Syringe

The pneumococcal vaccine (Pneumovax, Prevnar-13) is a vaccine against the bacterium Streptococcus pneumoniae, the organism responsible for around ? of all fatal pneumonic cases. Pneumovax targets 23-different pneumococcal serotypes and is recommended for older adults 65 years and older and individuals at specific risk for developing pneumonia. Prevnar protects against 13-different pneumococcal serotypes and is approved for use in adults aged 50 years and over. Further, annual influenza and other vaccinations (e.g. COVID-19, MMR) are recommended for high-risk and general populations to comprehensively protect the transmission of disease to those at greatest risk.

**Sepsis**

Sepsis-snake

Sepsis can result from an infection anywhere in the body, including pneumonia. Be sure to monitor for signs of sepsis which include a fever (>38 degrees C), tachycardia (>90 bpm), tachypnea (>20 breaths), and abnormal white blood cells (>12,000 or <4,000 cells/mL).

**Acute Respiratory Failure (ARF)**

Acute-angle Dead Lungs

Acute respiratory failure is one of the top causes of mortality in patients with severe pneumonia. It occurs as a result of inadequate oxygen passing from the lungs into the blood. Signs and symptoms may include shortness of breath, rapid breathing, air hunger, cyanosis, or confusion.

**Prevention Education**

Prevention Educator

Prevention education targets behavior and populations at risk for infection or complications associated with pneumonia. Populations and population caregivers requiring education and support include older adults living in community settings, individuals who are immunocompromised, and children under the age of 5 years. Primary prevention includes emphasizing healthy lifestyle choices like smoking cessation, infection control (e.g. “hand hygiene”), social distancing and barriers (e.g. “face mask”) to decrease viral transmission of disease, and proper nutrition, sleep and activity.

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