PNEUMONIA

An inflammatory process in the lungs that produces excess fluid and exudate that fill the alveoli

Classified as bacterial, viral, fungal, or chemical

Pneumonia is triggered by infectious organisms or by the aspiration of an irritant, such as fluid or a foreign object

Can be a primary disease of a complication of another disease or condition

Young clients, older adult clients, and clients who are immunocompromised are more susceptible

TYPES OF PNEUMONIA

Ventilator associated pneumonia (VAP):	Occurs 48 to 72 hr after endotracheal intubation
Community acquired pneumonia (CAP):	The most common type and often occurs as a complication of influenza
Health care acquired pneumonia (HAP):	Has a higher mortality rate and is more likely to be resistant to antibiotics. It usually takes more than 48 hr from the time the client is exposed to acquire HAP.

CONTRIBUTING FACTORS

Advanced age	No pneumococcal vaccination within the last 5 years
No influenza vaccine within the last year	Chronic lung disease
Immunocompromised	Mechanical ventilation
Postoperative	Sedation
Opioid use	**Prolonged immobility**
Tobacco use	Enteral tube feeding

EXPECTED FINDINGS

Anxiety	Fatigue
Weakness	Chest discomfort due to coughing

Confusion from hypoxia is a common manifestation of pneumonia in older adult clients

MANIFESTATIONS

Fever	Chills
Flushed face	Diaphoresis
Shortness of breath or difficulty breathing	Tachypnea
Pleuritic chest pain (sharp)	Sputum production (yellow-t-inged)
Crackles	Wheezes
Dull chest percussion over areas of consolidation	Coughing
Decreased oxygen saturation levels	Purulent, blood tinged or rust colored sputum

LABORATORY TESTS

CBC:	Elevated WBC
	(Might not be present in older adult clients)
ABGs:	Hypoxemia
	(PaO2 less than 80 mm Hg)
Blood culture:	To rule out organisms in the blood
Serum electrolytes:	To identify dehydration
Sputum culture and sensitivity:	Obtain specimens before starting antibiotic therapy
	Obtain specimen by suctioning if the client is unable to cough

DIAGNOSTIC PROCEDURES

Chest x-ray:	Will show consolidation (solidification, density) of lung tissue
	Might not indicate pneumonia for a few days after manifestations develop
Pulse oximetry:	Clients who have pneumonia usually have oximetry levels less than the expected reference range of 95-100%

NURSING CARE

Position the client to maximize ventilation (high-Fowler's) unless contraindicated

Encourage coughing or suction to remove secretions

Administer breathing treatments & medications

Adminiter oxygen therapy

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NURSING CARE (cont)

Monitor for skin breakdown around the ears, nose, and mouth from the oxygen device

Encourage deep breathing with an incentive spirometer to prevent alveolar collapse

Determine the client's physical limitations and structure activity to include periods of rest

Encourage fluid intake of 2.5 to 3 L/day to promote hydration and thinning of secretions, unless contraindicated due to another condition

Provide rest periods for clients who have dyspnea

Reassure the client who is experiencing respiratory distress

MEDICATIONS

Antibiotics

Bronchodilators

Anti-inflammatories

ANTIBIOTICS

Antibiotics are given to destroy infectious pathogens.

Commonly used antibiotics include fluoroquinolone, penicillins, and cephalosporins.

Antibiotics are often initially given via IV and then switched to an oral form as the condition improves.

Obtain any culture specimens prior to giving the first dose of an antibiotic. Once the specimen is obtained, the antibiotics can be given while waiting for the results of the culture.

Nursing Actions:	Observe clients taking cephalosporins for frequent stools
	Monitor kidney function, especially older adults who are taking penicillins and cephalosporins
Client Education:	Encourage clients to take penicillins and cephalosporins with food
	Some penicillins should be taken 1 hr before meals or 2 hr after

BRONCHODILATORS

Bronchodilators are given to reduce bronchospasm and reduce irritation.

Short-acting beta2 agonists, such as albuterol, provide rapid relief.

Cholinergic antagonists (anticholinergic medications), such as ipratropium, block the parasympathetic nervous system, allowing for increased bronchodilator and decreased pulmonary secretions.

BRONCHODILATORS (cont)

Nursing Actions (Albuterol):	Increase fluid intake if not contraindicated
	Can cause hypokalemia, insomnia, headache, or nausea
	Monitor for tremors, tachycardia, hypertension, nervousness, palpitations, and dry mouth
Nursing Actions (Ipratropium):	Observe for dry mouth and difficulty with urination
	Monitor heart rate
	Adverse effects can include headache, blurred vision, and palpitations, which can indicate toxicity
Client Education:	Reinforce teaching on how to use a metered-dose inhaler (MDI)
	Encourage clients to suck on hard candies to moisten dry mouth while taking ipratropium
	Encourage increased fluid intake unless contraindicated

ANTI-INFLAMMATORIES

Anti-inflammatories decrease airway inflammation.

Glucocorticosteroids, such as fluticasone (MDI) and prednisone (oral), are prescribed to reduce inflammation.	Monitor for immunosuppression, fluid retention, hyperglycemia, hypertension, hypokalemia, and poor wound healing.
Nursing Actions:	Monitor for decreased immunity function and infection
	Monitor for hyperglycemia
	Monitor for hypertension
	Advise the pt to report black, tarry stools
	Observe for fluid retention and weight gain
	Monitor for electrolyte imbalance

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ANTI-INFLAMMATORIES (cont)

	Monitor the client's throat and mouth for aphthous lesions (canker sores)
Client Education:	Drink plenty of fluids to promote hydration
	Take glucocorticosteroids with food
	Avoid discontinuing glucocorticosteroids without consulting provider
	Use MDI
	Rinse mouth and gargle after inhaled glucocorticoids to reduce the risk of dysohonia and candidiasis

INTERPROFESSIONAL CARE

Consult with respiratory services for inhalers, breathing treatments, and suctioning for airway management.

Consult with nutritional services for weight loss or gain related to medications or diagnosis.

Consult with rehabilitation care if the client has prolonged weakness and needs assistance with increasing level of activity.

CLIENT EDUCATION

Continue medications for treatment of pneumonia

Rest as needed

Maintain hand hygiene to prevent infection

Avoid crowded areas to reduce the risk of infection

Receive immunizations for influenza and pneumonia

Stop smoking

COMPLICATIONS OF PNEUMONIA

Atelectasis:	Airway inflammation and edema lead to alveolar collapse and increase the risk of hypoxemia
	The pt reports shortness of breath and exhibits findings of hypoxemia
	The pt has diminished or absent breath sounds over the affected area

COMPLICATIONS OF PNEUMONIA (cont)

	A chest x-ray shows an area of density
Bacteremia (sepsis):	This occurs if pathogens enter the bloodstream from the infection in the lungs
Acute respiratory distress syndrome:	Hypoxemia persists despite oxygen therapy
	Dyspnea worsens as bilateral pulmonary edema develops that is non cardiac related
	A chest x-ray shows an area of density with a ground-glass appearance
	Blood gas findings demonstrate high arterial blood levels of carbon dioxide (hypercarbia) and pulse oximetry shows decreased saturation

APPLICATION EXERCISES

1. A nurse is monitoring a group of clients for increased risk for developing pneumonia. Which of the following clients should the nurse expect to be at risk? (select all that apply)

A. client who has dysphagia

B. client who has AIDS

C. client who received vaccines for pneumoccocus and influenza 6 months ago

D. client who is ambulatory after receiving a local anesthesia

E. client who has a closed head injury

F. client who has myasthenia graves

2. A nurse is caring for a client who has pneumonia. Data collection findings include temperature 37.8 C (100 F), respirations 30/min, blood pressure 130/76, heart rate 100/min, and SaO2 91% on room air. Which of the following actions is the nurse's priority?

A. administer antibiotics

B. administer oxygen therapy

C. perform a sputum culture

D. administer antipyretic medication to promote client comfort

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