

The Child With Respiratory Dysfunction



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Asthma





Definition

Asthma is a chronic inflammatory disorder of the airways characterized by recurring symptoms, airway obstruction, and bronchial hyperresponsiveness.

A, The normal lung.

B, Bronchial asthma

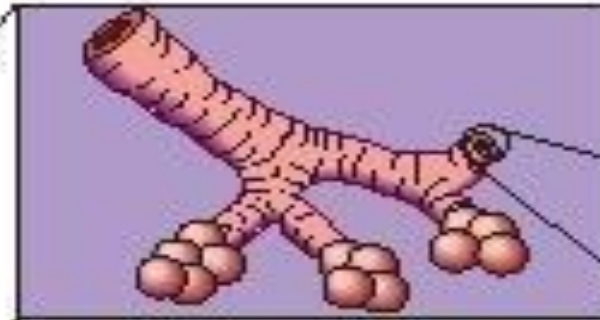
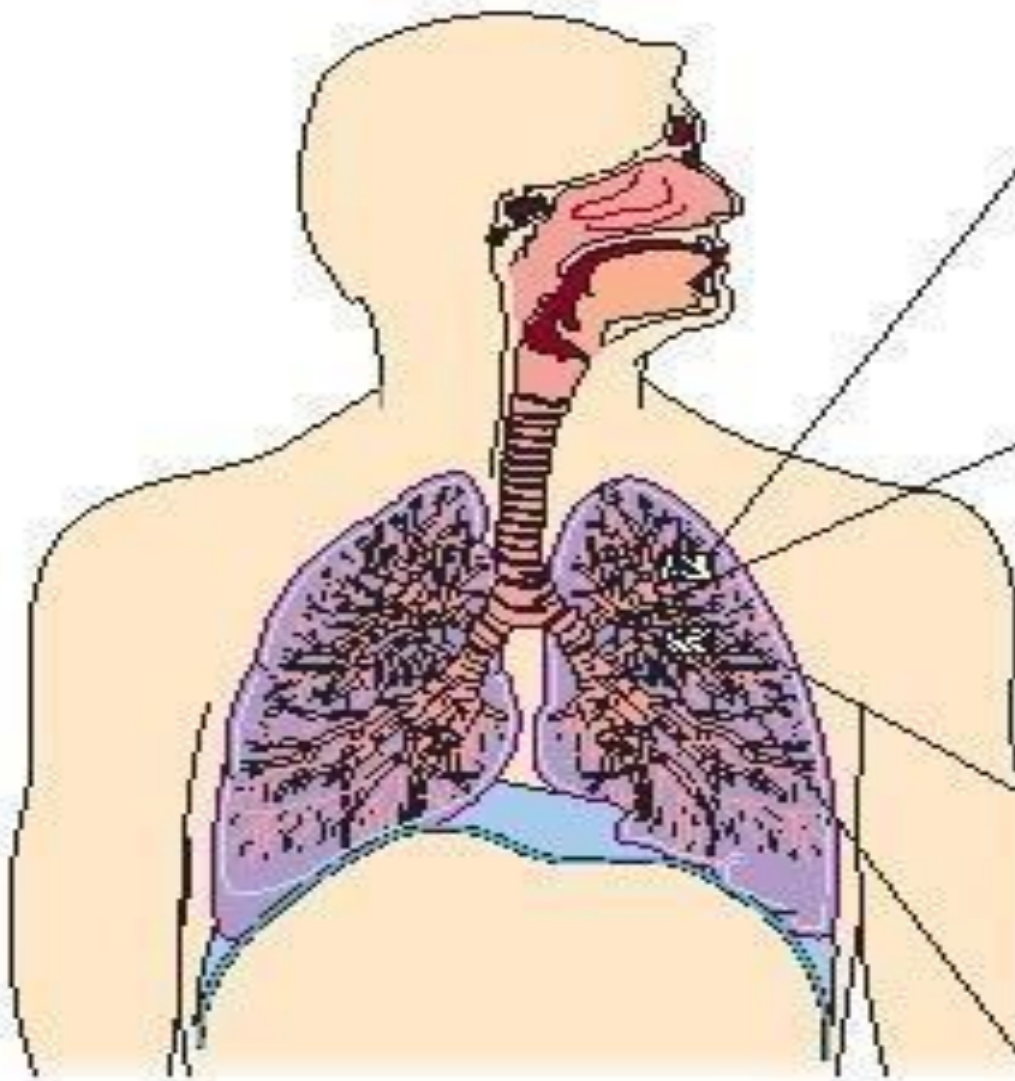
B = Thick mucus, mucosal edema, and smooth muscle spasm causing obstruction of small airways; breathing becomes labored and expiration is difficult.



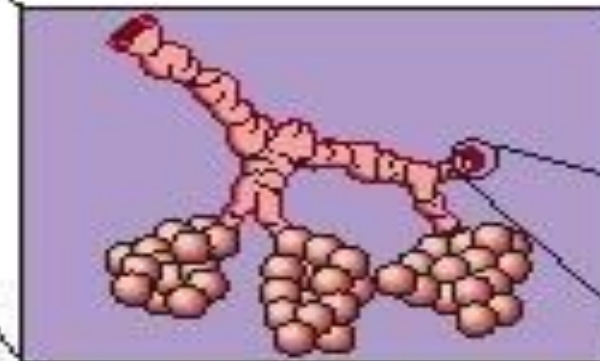
A The normal lung



B Bronchial asthma



In normal bronchioles the airway is open and unobstructed.



During an attack, the bronchioles of an asthma sufferer are constricted by bands of muscle around them. They may be



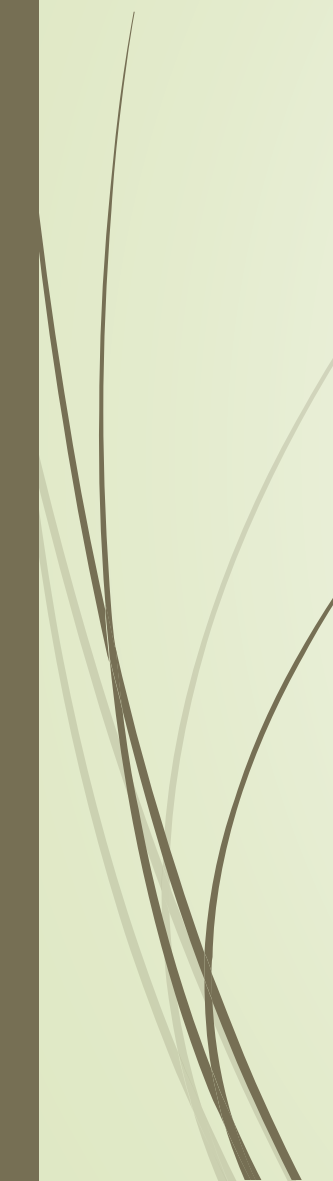
Triggers Tending to Aggravate Asthmatic Exacerbations

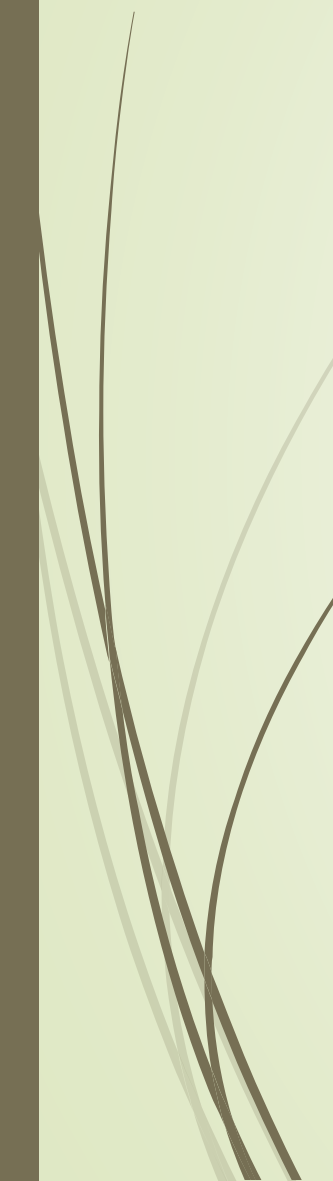
- Allergens:
 - Outdoor—Trees, shrubs, weeds, grasses, molds, pollens, air pollution
 - Indoor—Dust or dust mites, mold
 - Irritants—Tobacco smoke, wood smoke, odors, sprays
 - Exposure to occupational chemicals
- Exercise Cold air Colds and infections
- Changes in weather or temperature
- Environmental change—Moving to new home, starting new school
- Animals—Cats, dogs, rodents, horses
- Medications—Aspirin, nonsteroidal anti inflammatory drugs, antibiotics
- Strong emotions—Fear, anger, laughing, crying
- Conditions—Gastroesophageal reflux, tracheoesophageal fistula
- Food additives—Sulfite preservatives



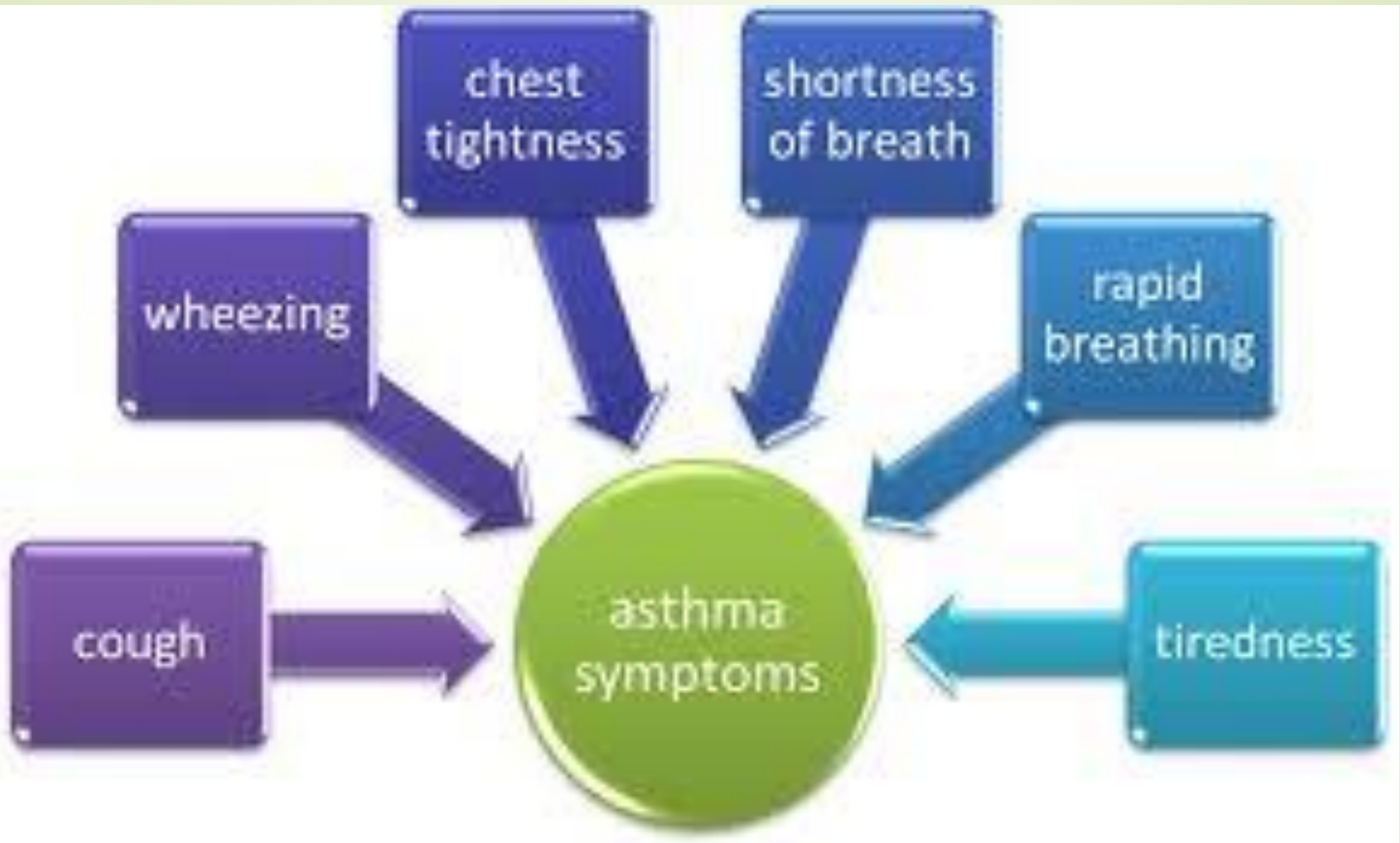
Clinical manifestations:

- A. Onset may be gradual with nasal congestion, sneezing and watery nasal discharge before the attack
- B. Attack may occur suddenly mostly at night with:
 - 1. Wheezing primarily with expiration
 - 2. Anxiety and apprehension
 - 3. diaphoresis

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1. Uncontrollable cough, dry at first then productive (frothy, clear, gelatinous sputum)
 2. Dyspnea with increased effort during expiration
 3. Shortness of breath
 4. Prolonged expiratory phase
 5. Audible wheeze
 6. Pale appearance - but may be flushed cheeks and red ears, and lips deep red color

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- 10. May progress to cyanosis of nail beds and circumoral area**
 - 11. Restlessness - apprehension**
 - 12. Anxious facial expression**
 - 13. Sweating**
 - 14. May sit upright, shoulders in a hunched over position hands on bed or chair**
 - 15. Speaks with short, panting broken phrases**
 - 16. Chest: hyper resonance on percussion**
 - 17. Coarse, loud breath sounds**

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18. Wheezing through out the lung field
 19. Prolonged expiration
 20. Crackles
 21. Generalized inspiratory and expiratory wheezing increasingly high pitched



Diagnosis:

1. History of symptoms. and physical examination
2. Barrel chest- Chest X-Ray shows hyper expansion of airways
3. Pulmonary function tests show air trapping and decreased expiratory flow measurement of forced expiratory volume at one second (FEV1)
4. **Blood: CBC : Easinoiphilia in peripheral blood and nasal secretions**
5. **Routine skin and sputum testing may help determine allergic causes**

Treatment:

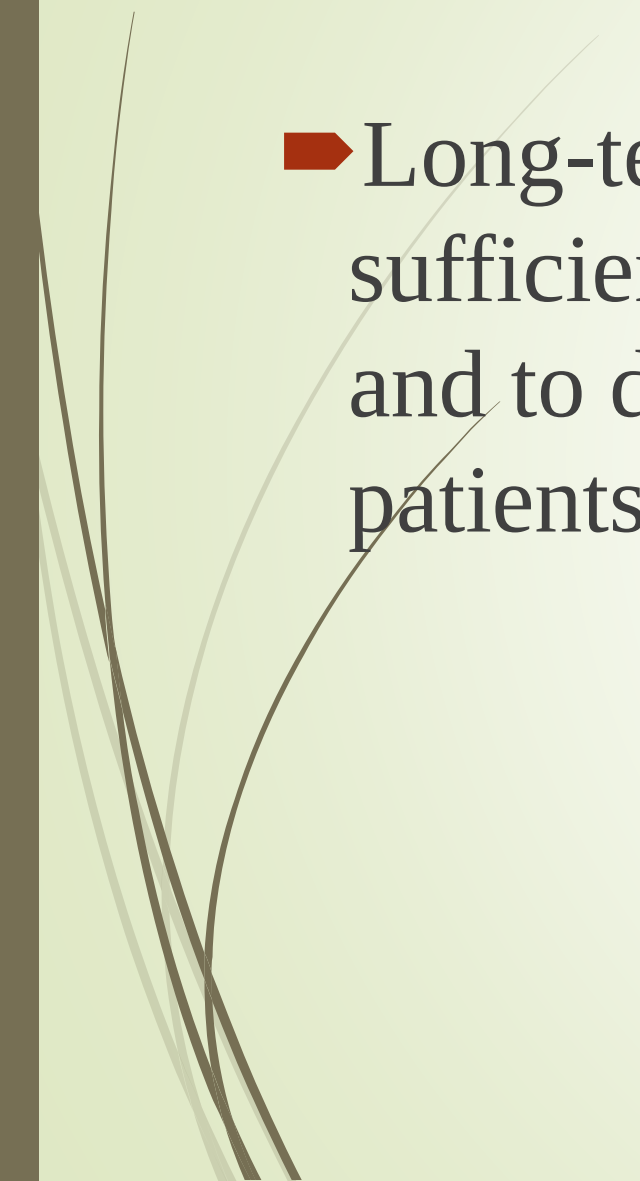
Objective is to relieve symptoms and improve ventilation capacity:

1. Bronchodilators: I.V Aminophylline. S.C Epinephrine.
2. Corticosteroids reduce the inflammatory component of bronchial obstruction, decrease mucus production and mediator release, as well as the late phase (cellular) inflammatory process.
 - Methyl prednisone IV in severe cases
 - May need Reglan if experiencing GI upset
 - PO prednisone – always give with food to decrease GI upset

3. Continuous assessment of respiratory status: Blood gas studies
4. Maintain patent air way and oxygenation, suction of viscous secretions, ensure humidity and position correctly.
5. Re-establish and maintain fluid and electrolyte balance
6. Cardiac monitoring (increased *B/P* & Rt sided heart failure and arrhythmias may develop)

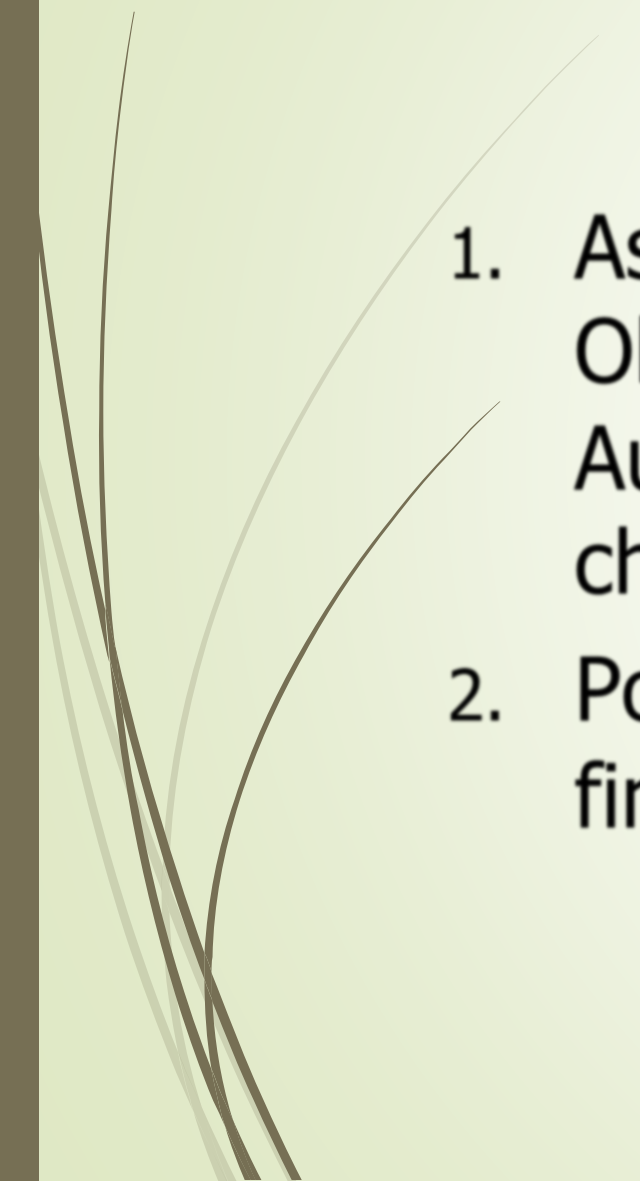


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7. Maintain bed rest and physical comfort
 8. Parental reassurance
 9. Anti-inflammatory agents and expectorants given as indicated
 10. Intubations and ventilation if necessary

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- Long-term daily ibuprofen (NSAID) given in a dose sufficient to achieve a peak plasma concentration and to decrease the need for IV antibiotics in young patients.



Nursing considerations:

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1. Assessment of the respiratory system:
Observation - Inspection Palpation -
Auscultation - Percussion Some physical
characteristics: Chest configuration –
 2. Posturing Breathing assessment and
finger clubbing



Nursing diagnosis

- ← Ineffective breathing pattern R/T allergic response in bronchial tree
- ← Activity intolerance R/T imbalance between oxygen supply and demand
- ← Altered family process R/T having a child with a chronic illness

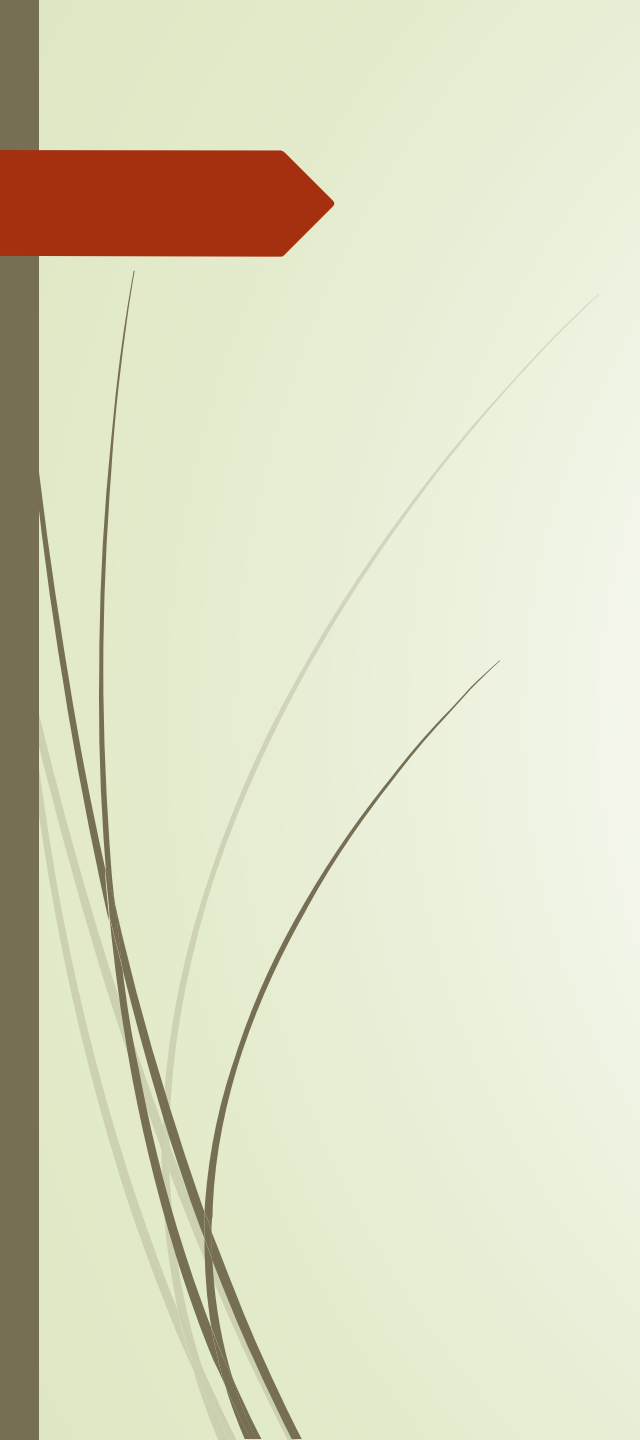
Nursing intervention

- The nursing care of the child with asthma begins with a review of the child's health history; the home, school, and play environment
- In addition, the nurse notes and evaluates physical characteristics of chronic respiratory involvement, including chest configuration

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- avoiding triggers, avoiding allergens, and using medications as needed.
 - Therapy includes efforts to reduce underlying inflammation and relieve or prevent symptomatic airway narrowing.
 - Therapy includes patient education, environmental control, pharmacologic management, and the use of objective measures to monitor the severity of disease
 - Parents and children need to know how to avoid allergens that precipitate asthma episodes.

Additional suggestions include the following:

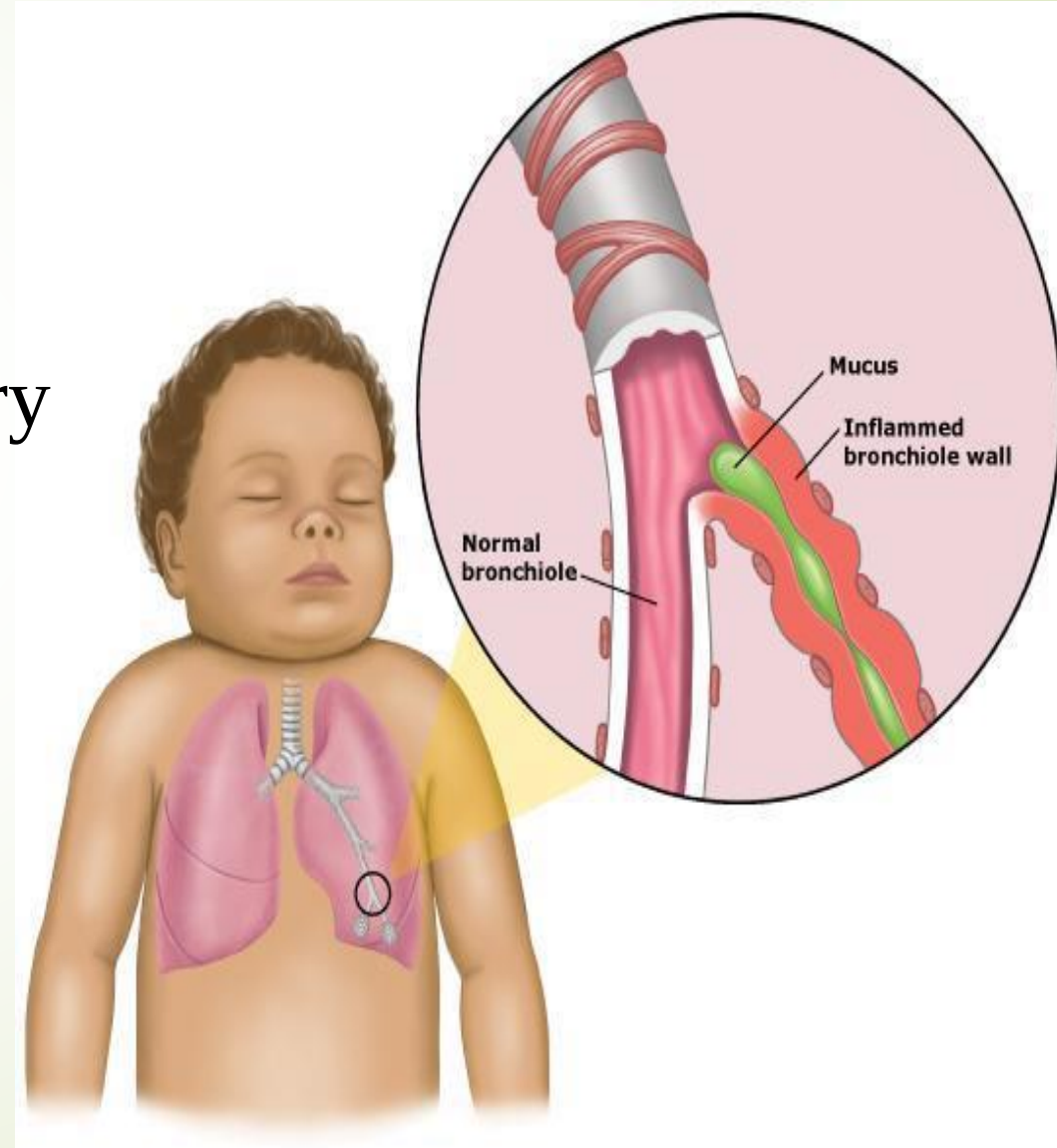
- Cover pillows and mattresses with dustproof covers.
- • Wash bedding in hot water once a week. Dry completely.
- • Keep child indoors while lawn is being mowed
- • Keep windows and doors closed during pollen season; use air conditioner if possible
- • The child should not be present during cleaning activities.
- • Wet-mop bare floors weekly; wet-dust and clean child's room weekly.
- • Limit or prevent child's exposure to tobacco and wood smoke
- • Use air conditioners with high-efficiency particulate air filters.



Bronchiolitis

BRONCHIOLITIS

Acute bronchiolitis is a common viral disease of the lower respiratory tract of infants, resulting from inflammatory obstruction at the bronchiolar level.





Causative agent

- •Respiratory syncytial virus RSV, common in infancy and early childhood .
- •Para influenza virus
- •Influenza virus
- •Adenovirus

Clinical manifestations

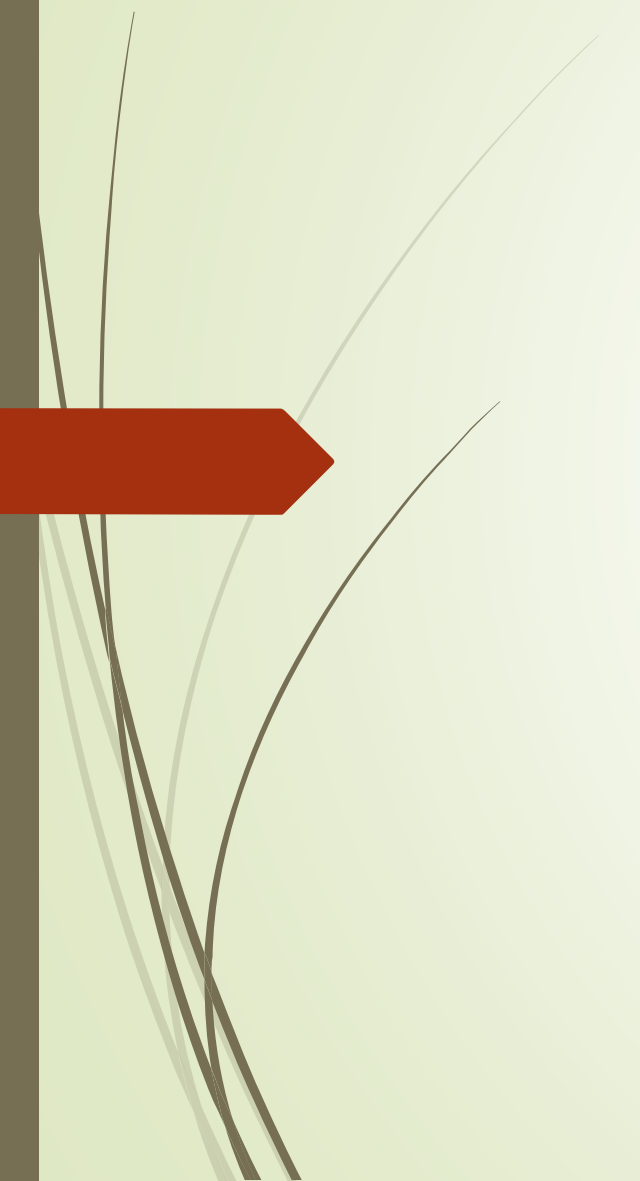
- .Occur several days after nasopharyngeal infection (5-8 days incubation period)
- • Respiratory distress, characterized by:
 1. wheezy cough
 2. Dyspnea and decreased breath sound
 3. Irritability gradually becoming evident
- Increased respiratory rate
- • Fever some times
- • Cyanosis
- • Dehydration

Treatment

- •Antibiotics given until confirmation established
- •Ribavirin antiviral agent for RSV
- •Respiratory syncytial virus Immune globulin used prophylactically to prevent RSV infection in high risk infants

Nursing management

- •Monitoring ABGs
- •Possible ventilator assistance.
- •Maintain Acid -Base & fluid electrolyte and nutrition balance
- •N.G. tube feeding or I. V for several days
- •Keep nasal airway patent
- •Continuous vital signs monitoring, and observe for respiratory acidosis, dehydration & cardiac failure
- •Recemic Epinephrine via intermittent positive pressure breathing (IPPB) may relieve brochospasm
- •Minimal handling to allow undisturbed sleep & rest



PNEUMOMIA

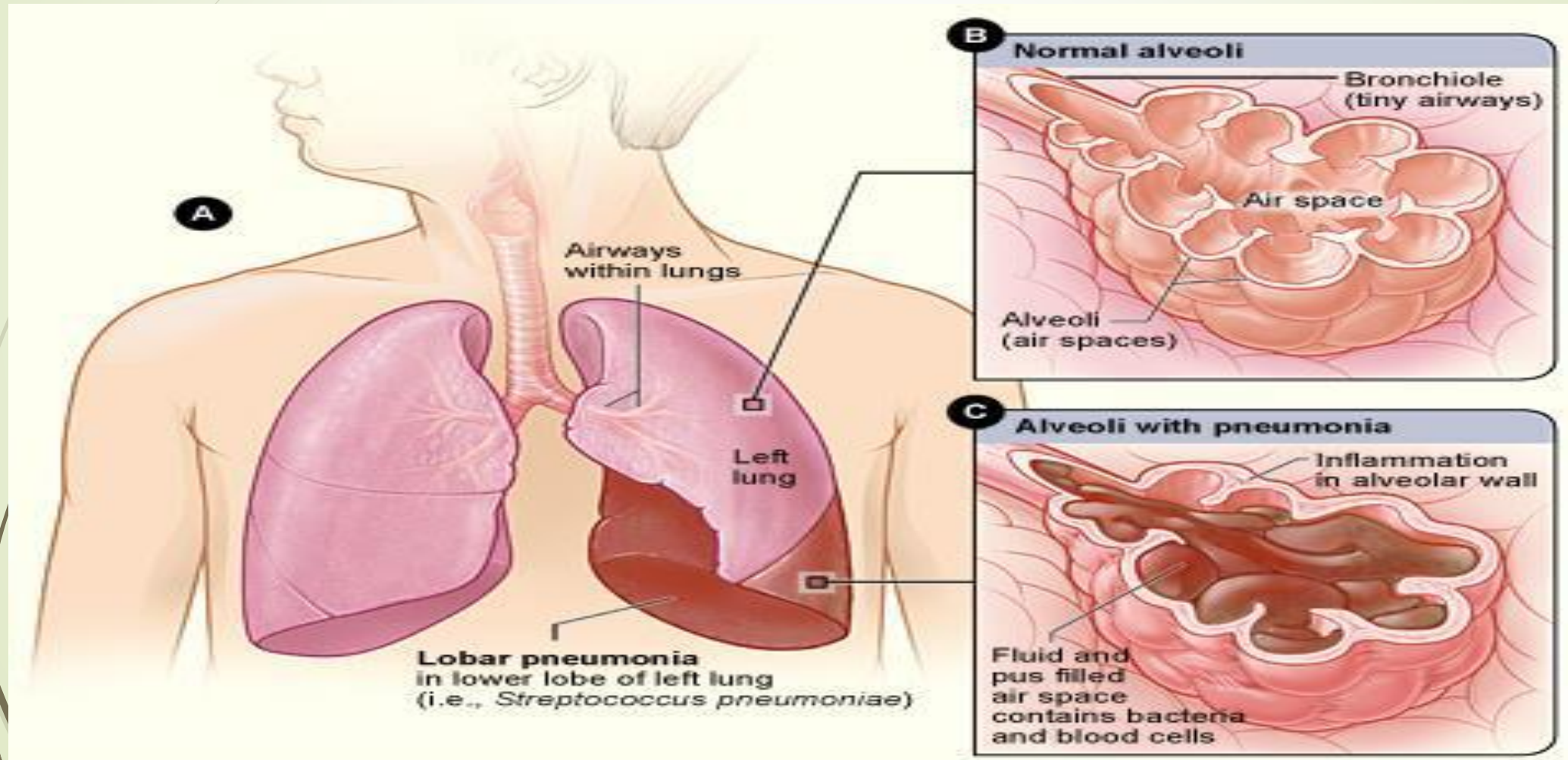
Definition

- **Pneumonia, an inflammation of the pulmonary parenchyma.**
- The lung parenchyma is that portion of the lungs involved in gas exchange. The most prominent structure in this region is the alveolus.
- Pneumonia can be classified according to:-
morphology, etiologic agent, or clinical form.

Morphologically pneumonias are recognized as:

- 1. Lobar pneumonia: all or a large segment of one or more lobes is involved.
- 2. Bronchopneumonia: Begins in the terminal bronchioles progressing to consolidated patches in near by lobules
- 3. Interstitial pneumonia: Inflammatory process is confined within the alveolar walls and interlobular tissues.

Lobar pneumonia





Causative agent

- Viruses
 - Bacteria
 - Aspiration pneumonia due to aspiration of foreign substances.
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Viral pneumonia

- Causative agent: Viral pneumonias occur more frequently than bacterial pneumonias .
- •+++ RSV in infants,
- • Influenza in older children,
- •Para influenza,
- •Influenza adenovirus



Clinical manifestations:

- • acute or insidious
- • mild fever –
- • slight cough and malaise
- • then" high fever, sever cough with or without productive cough of whitish sputum

Treatment and prognosis

- Good prognosis but may become complicated by bacterial infection
- Recovery within 7-10 days with symptomatic treatment,
- one week rest for Convalescence is needed.
- Treatment is usually symptomatic and includes measures to promote oxygenation and comfort, such as oxygen administration, chest percussion and postural drainage, antipyretics for fever management, monitoring fluid intake, and family support. **Antibiotics are reserved for children in whom the presence of a bacterial infection is demonstrated.**

Bacterial pneumonia

➤ Bacterial pneumonia is often a serious infection:

➤ Causative agent :

1. Pneumococcus,

2. Group A streptococcus,

3. Staphylococcus

4. Enteric bacilli

5. Pneumococcal infection & influenza type B, and staphylococcus aureus

Clinical manifestations

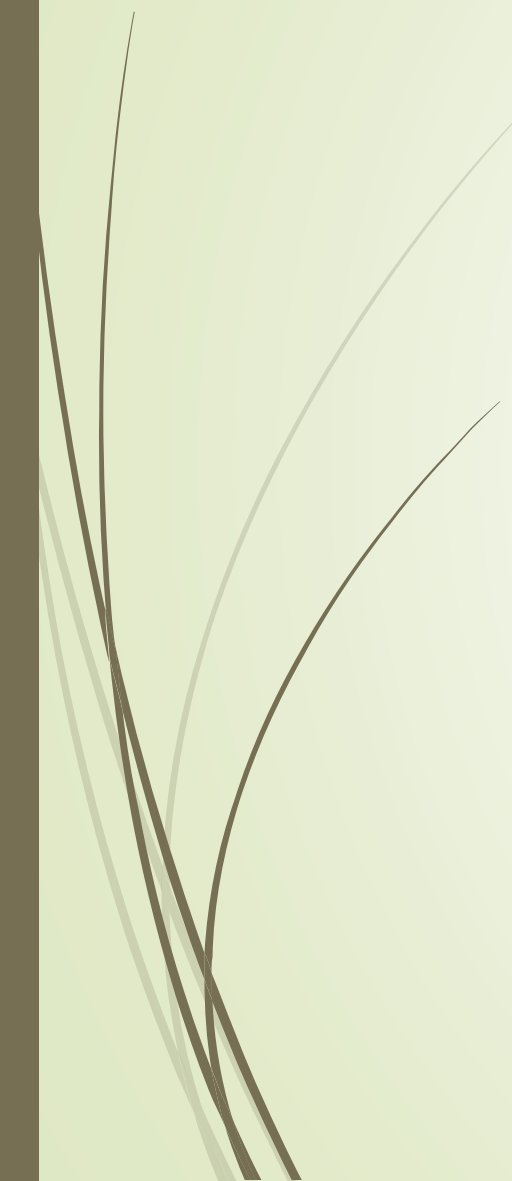
- Acute cases:
- •++ fever
- •In older children: headache, abdominal pain or chest pain some times with respiratory distress
- ••In smaller children: Irritability poor feeding
- •Sudden fever & seizures
- •Respiratory distress with air hunger
- •Tachypnea and circumoral cyanosis

Treatment

- Antibiotic therapy, rest, liberal oral intake of fluids, and administration of antipyretics for fever are the principal therapeutic measures.
- •Penicillin G intramuscular injection for Pneumococcus & streptococcal Pneumonia
- •For staphylococcal type, semi synthetic penicillin is given
- •+++ fluids
- •Antipyretics
- •O₂ if there is respiratory distress
- •Hospitalization for young children & for staphylococcal pneumonia & for complicated condition.

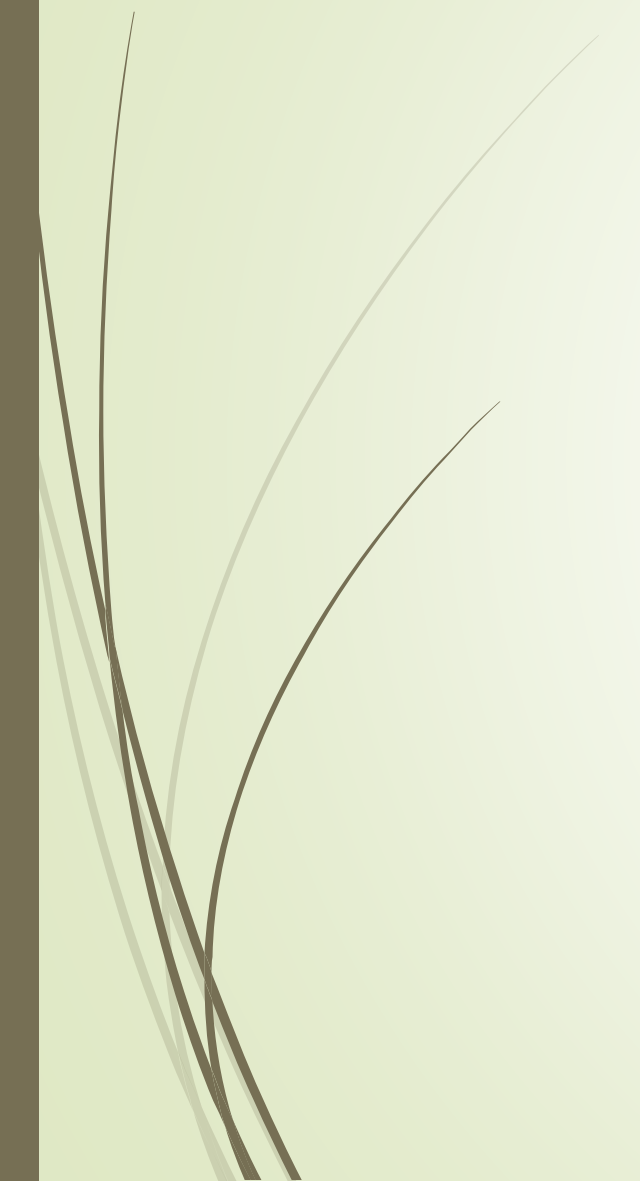


Nursing diagnosis in acute respiratory tract infection

- 1. Ineffective breathing pattern R/T inflammatory process
 - 2. Ineffective airway clearance R/T inflammation, mechanical obstruction, increased secretions
 - 3. Risk for injury R/T infective organism
 - 4. Interrupted family process R/T child's illness, hospitalization, and medical or therapeutic regimen
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Nursing care of pneumonia

- •The child's respiratory rate and status, oxygenation are assessed.
- administration of supplemental oxygen (as required) and antibiotics
- Rest and conservation of energy, encourage relief of physical and psychological stress
- •Disturb as little as possible Increase sleep and rest
- Position: semi sitting or as the child prefers.
- •For fever: cool environment & antipyretic drugs
- If there are secretions & the child is unable to get rid of them, then high humidity & postural drainage & suctioning are needed.
- •Psychological support to the parents and the child



Thank you