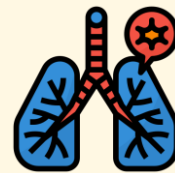




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Nursing Care of Pediatric Patients with Respiratory Problems

Lect. Natthaya Cherngchalard Chooprom
(RN, MSN)
Faculty of Nursing, NPRU





Learning Topics

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Assessment for Respiratory Problems in Children



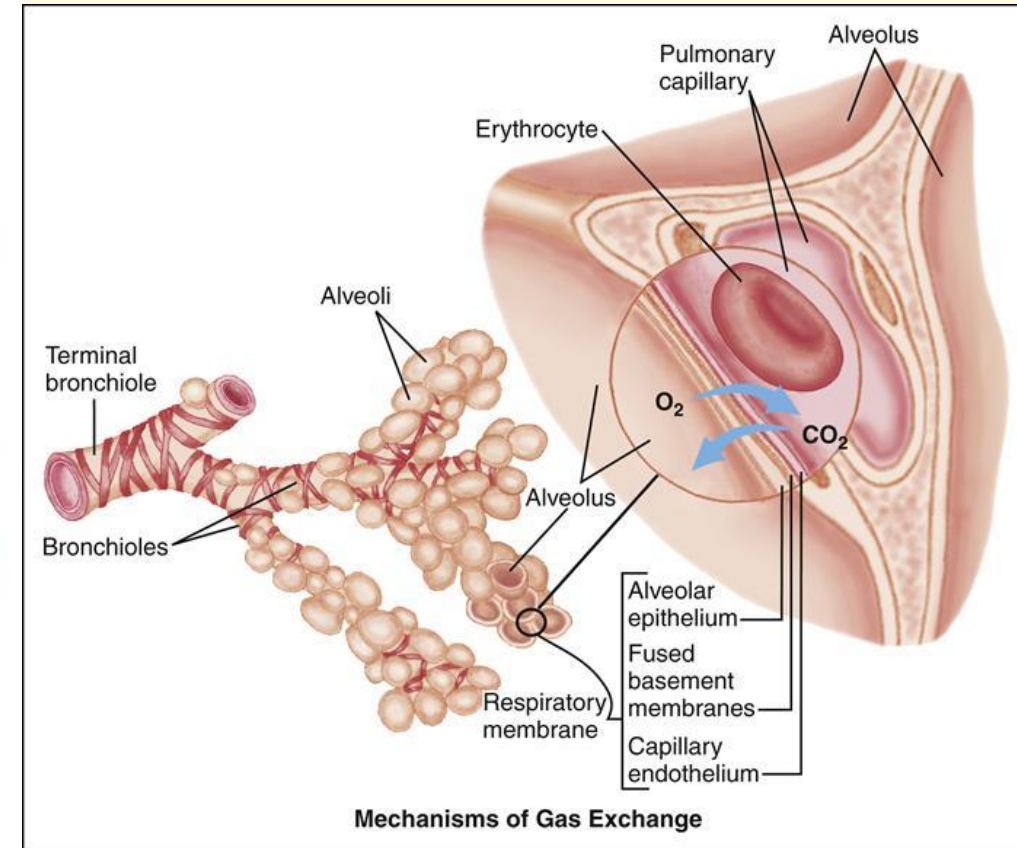
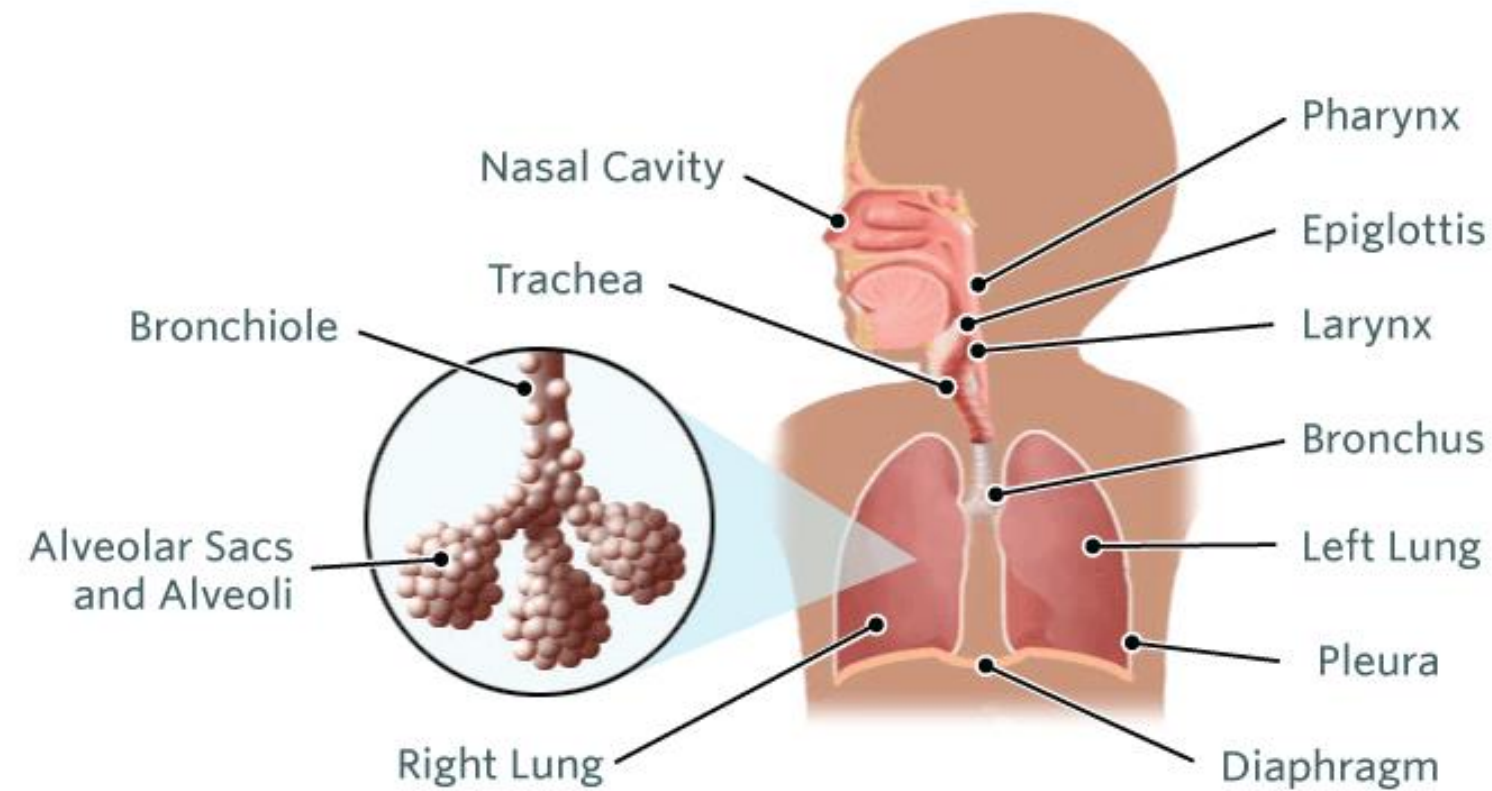
Common Respiratory Problems in Children



Nursing Care for Respiratory Problems in Children






Anatomy of the Respiratory System



Credit:
https://www.chop.edu/sites/default/files/styles/16_9_large/public/respiratory-system-illustration-cmplx-16x9.png?itok=ia_rgUnV

Development of the respiratory system

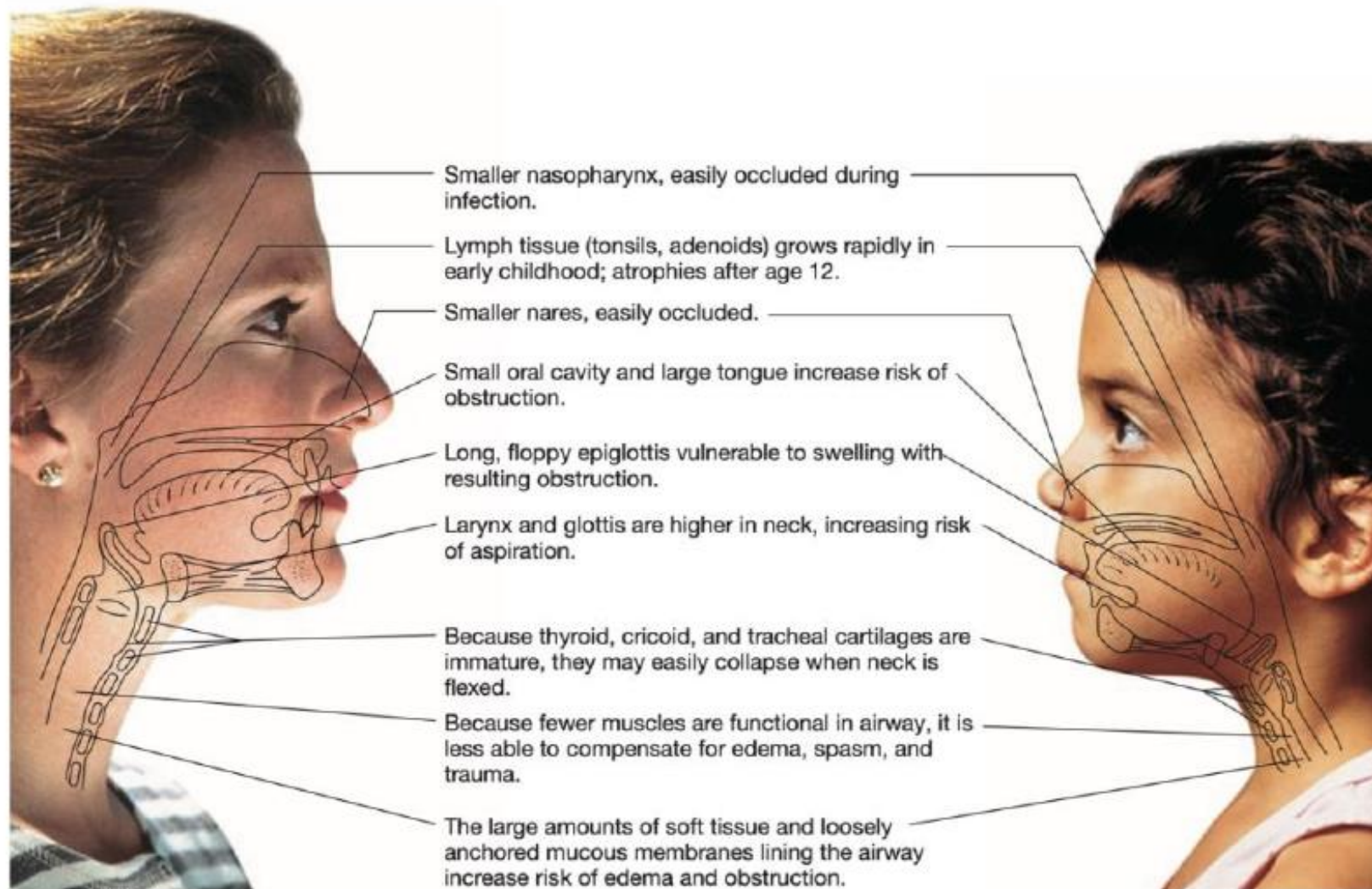
Stage: Age:	Newborn 0-2 mos	Infant/Toddler 2 mos-2 yrs	Young Child 2-6 yrs	School-Age Child 6-12 yrs	Adolescent 12-18 yrs
					
Lung development:	Alveolar development				
	High respiratory rate				
			Increasing lung volume		
Air pollution risks:	Respiratory death				
			Chronic cough and bronchitis		
			Reduced lung function		
			Wheezing and asthma attacks		
		Respiratory symptoms and illnesses*		Respiratory-related school absences	

* Air pollution exposure has also been more recently linked to respiratory symptoms and illnesses in early life including cough, bronchitis, wheeze and ear infections





Anatomical Differences **Child vs Adult**



Credit:

https://d20ohkaloyme4g.cloudfront.net/img/document_thumbnails/5901bae60704dc9336009743358cab72/thumb_1200_1553.png



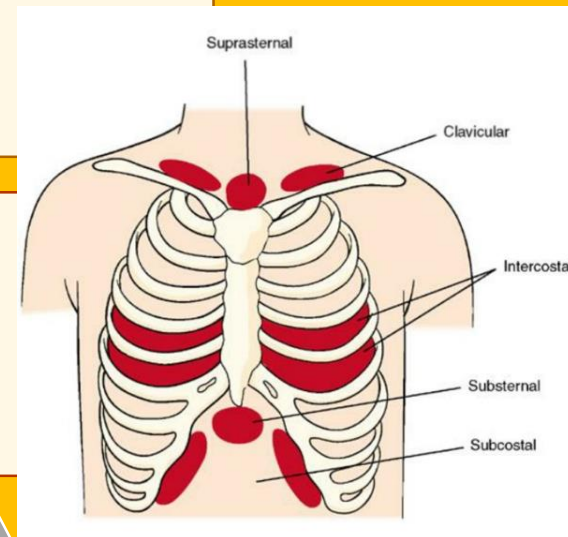
Assessment for Respiratory Problems in Children

**Physical
assessment**

- cough
- rate & depth of respirations
- retractions
- restlessness
- cyanosis
- clubbing of fingers
- adventitious sounds
- chest diameters

**Laboratory
tests**

**Diagnostic
procedures**





Assessment for Respiratory Problems in Children

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**Physical
assessment**

**Laboratory
tests**

**Diagnostic
procedures**

Auscultation

- **CRACKLES:** Coarse or Fine; Related to Fluid in Airway (Pneumonia, CHF)
- **WHEEZES:** Musical Sound Related to Turbulent Airflow in Constricted Airway (Asthma)

DESCRIBE

- Location of Retractions
- Adventitious Airway Sounds; Use **LANDMARKS**



Assessment for Respiratory Problems in Children

**Physical
assessment**

**Laboratory
tests**

**Diagnostic
procedures**

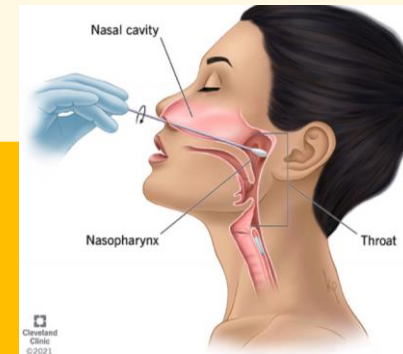
Arterial Blood Gas (ABG) Analysis

Normal Values:

- pH : 7.35 – 7.45
- PaO₂ : 80 – 100 mmHg
- PaCO₂ : 35 – 45 mmHg
- HCO₃ : 22 -26 mmol/L
- BE : -2 - +2
- SaO₂ : 94 – 100%



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- blood gas studies
- pulse oximetry
- transcutaneous oxygen monitoring
- nasopharyngeal culture
- respiratory syncytial virus nasal washings
- sputum analysis

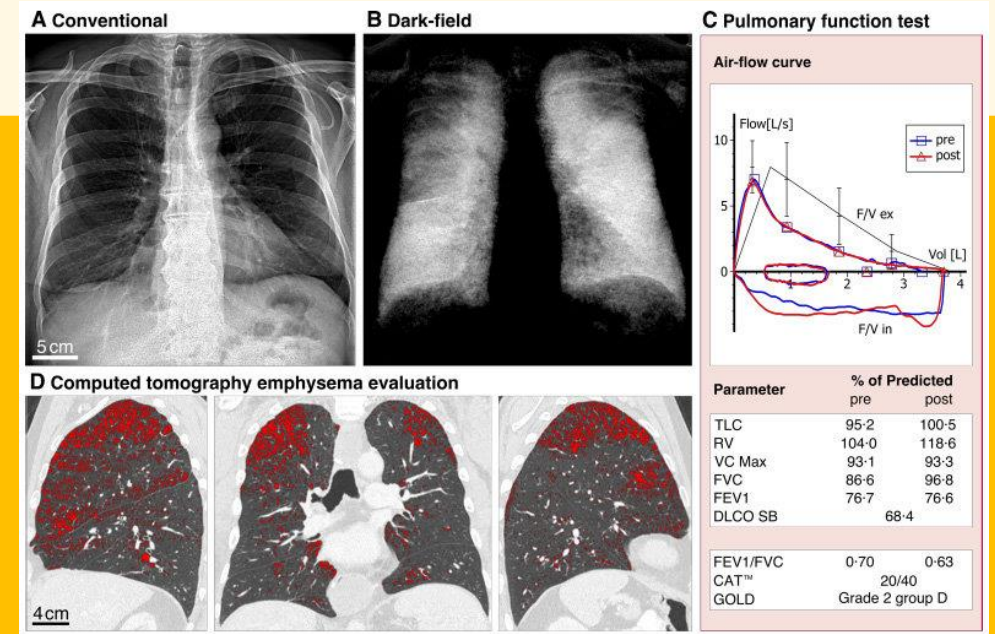


Assessment for Respiratory Problems in Children

Physical
assessment

Laboratory
tests

Diagnostic
procedures



- chest x-ray
- bronchography
- pulmonary function studies



THERAPEUTIC TECHNIQUES USED IN THE TREATMENT OF RESPIRATORY ILLNESS IN CHILDREN

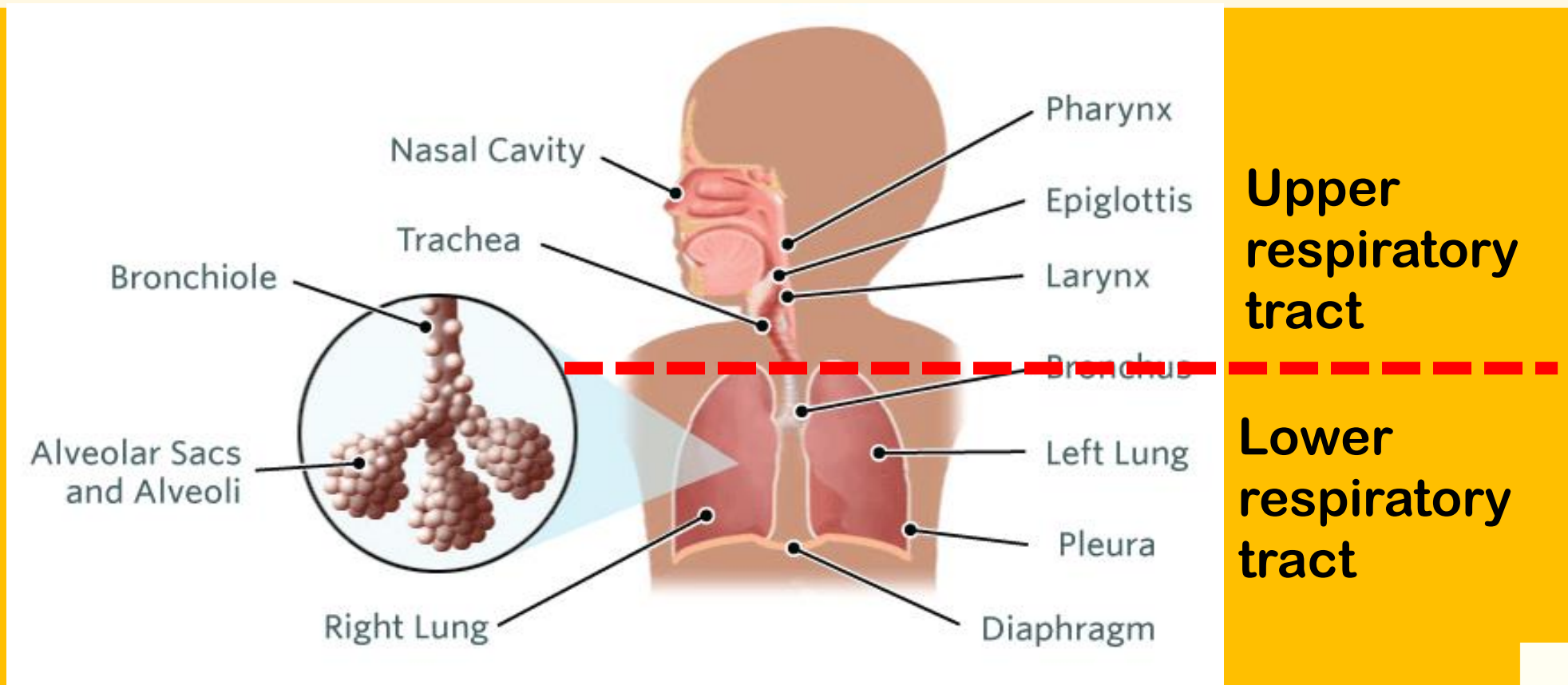
Expectorant therapy

- oral fluid
- liquefying agents
- humidification
- Coughing
- chest physiotherapy
- mucus-clearing device

Therapy to improve oxygenation

- oxygen administration
- pharmacologic therapy
- incentive spirometry
- breathing techniques
- tracheostomy
- endotracheal intubation
- assisted ventilation

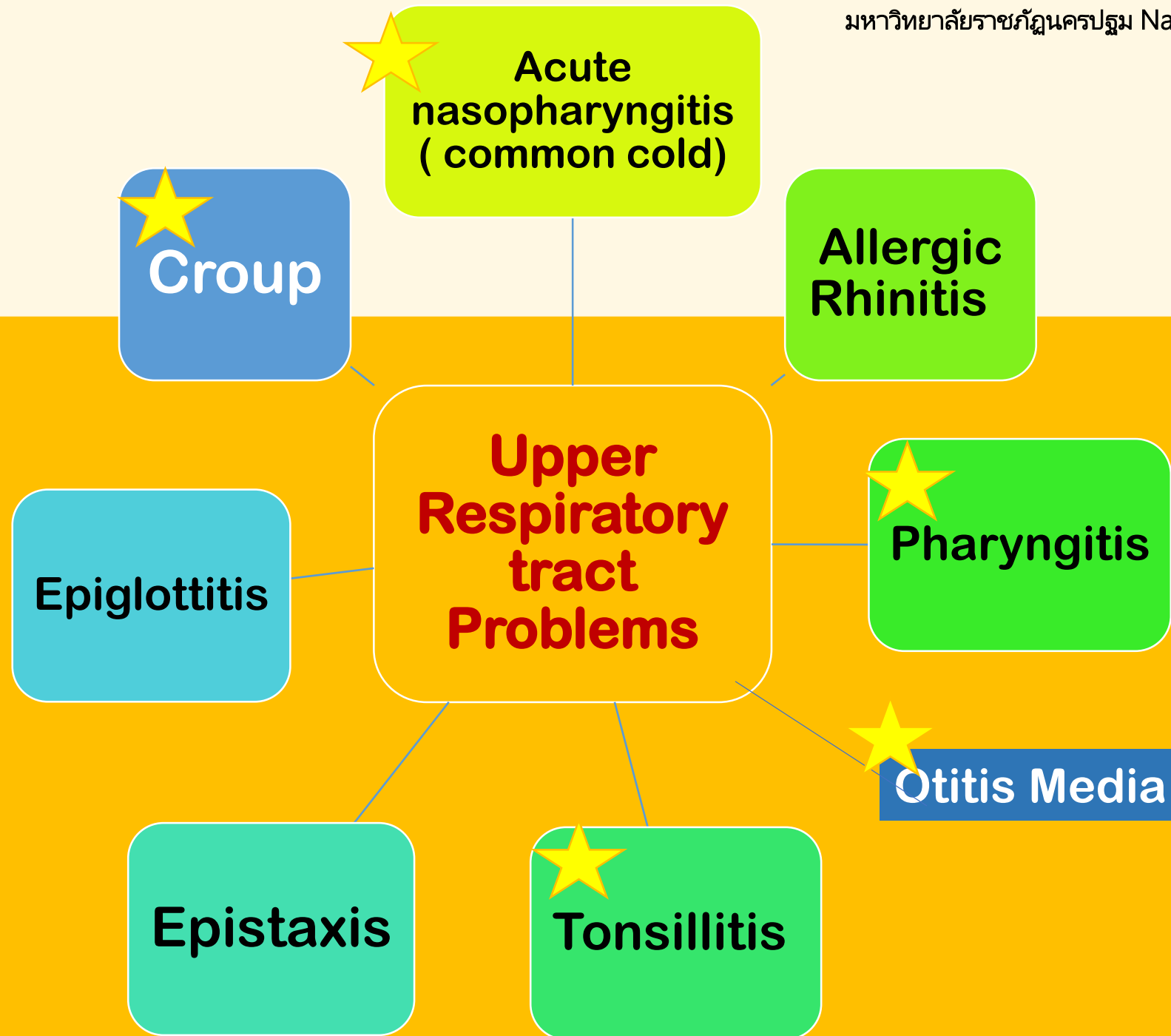
Common Respiratory Problems in Children



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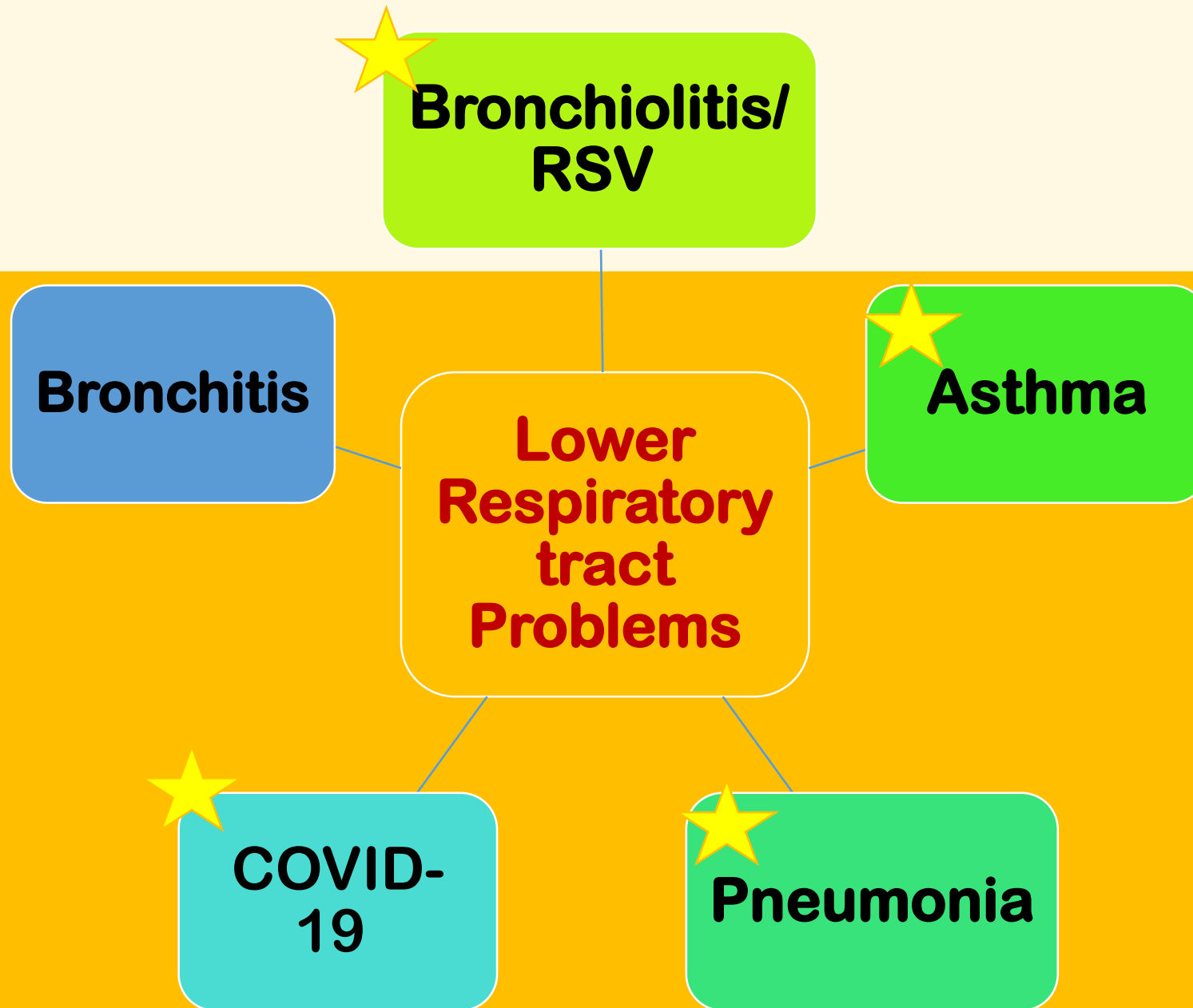


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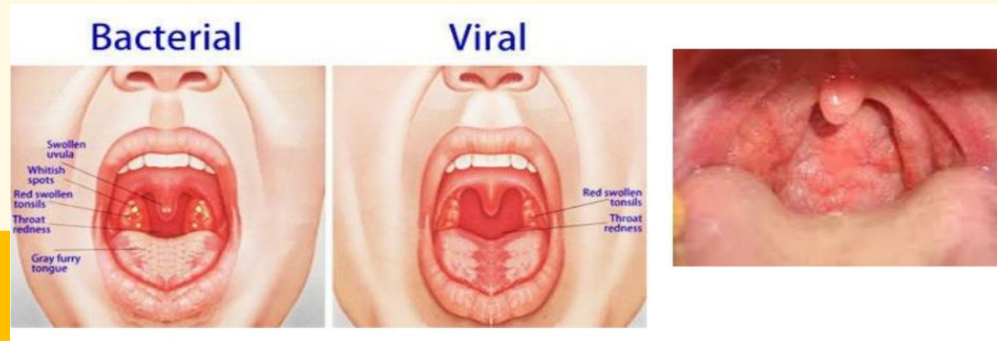


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Acute nasopharyngitis (common cold)



- • **Viral and DOES NOT** need an antibiotic
- • **Fever and green mucus do not necessarily mean bacterial infection**
- • **Treat the symptoms but suppressing a productive cough is not good**
- • **Using a humidifier is good but a vaporizer can be dangerous**



Acute nasopharyngitis (common cold)

Therapeutic management:

- Mostly treated at home , no vaccine, antipyretics for fever.
- Decongestants: nose drops more effective than orally.
- Cough: suppressant.
- Antihistamine are ineffective.
- Antibiotic: usually not indication.

Nursing consideration:

- For nasal obstruction: elevate head of bed, suctioning and vaporization, saline nasal drops.
- Maintain adequate fluid intake to prevent dehydration.
- Avoiding spread the virus.





Pharyngitis

Causes: 80-90% of cases are viral cause, other is group A and B hemolytic streptococci

Clinical manifestation:

- May be mild so no symptoms.
- Headache, fever, abdominal pain exudates on pharynx & tonsils, 3-5 days usually symptoms are subside

Complication if not treated : • Acute glomerulonephritis syndrome in about 10 days.

Diagnostic evaluation: throat culture should be performed to rule out.

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Pharyngitis

Therapeutic management:

- If streptococcal sore throat infection:
oral Penicillin for 10 days ,or IM
Benzathine penicillin G.
- • Oral Erythromycin if the child has
allergy to penicillin.

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Pharyngitis

Nursing consideration:

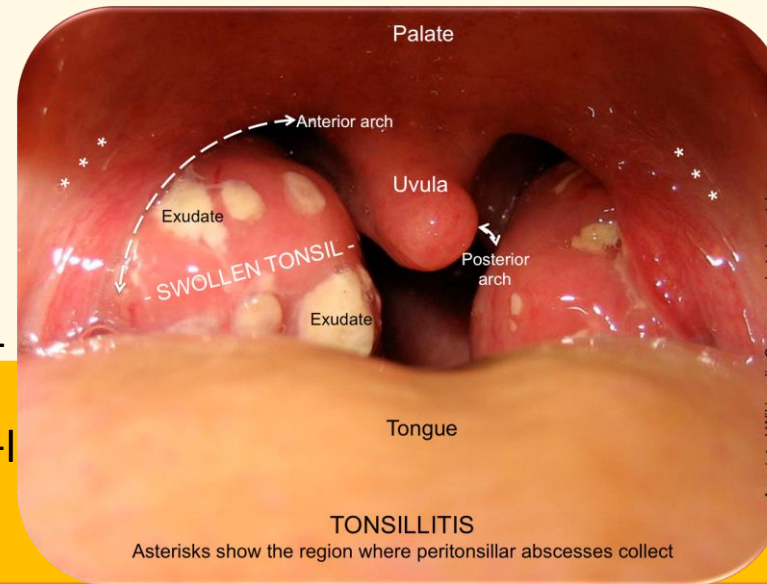
- Obtain throat swab for culture.
- Administer penicillin & analgesic.
- Cold or warm compresses to the neck may provide relief.
- Warm saline gargles.
- Soft liquid food are more acceptable than solid.
- Continue oral medication to complete the course.
- IM injection applied in deep muscle,
- Nurse role to prevent the spread of disease.
- Children are considered non infectious to other 24 hours after initiation of antibiotics therapy.

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Tonsillitis

Credit: <https://images.squarespace-cdn.com/content/v1/5681a0e2d8af1011fc075fca/1451575601796-XN8BL5N6JTKIRDA9QLVQ/Tonsillitis+labelled.png?format=1500w>



Infection and inflammation of the palatine tonsils

Clinical manifestation:

- Sore throat • Drooling • Fever

Management:

- Throat culture to determine the causative agent ,viral or bacterial
- Most common cause is group A beta-hemolytic streptococcus, treated with Amoxil
- If strep negative, assumed to be viral and treated with comfort measures
- Tonsillectomy & adenoidectomy (T&S)



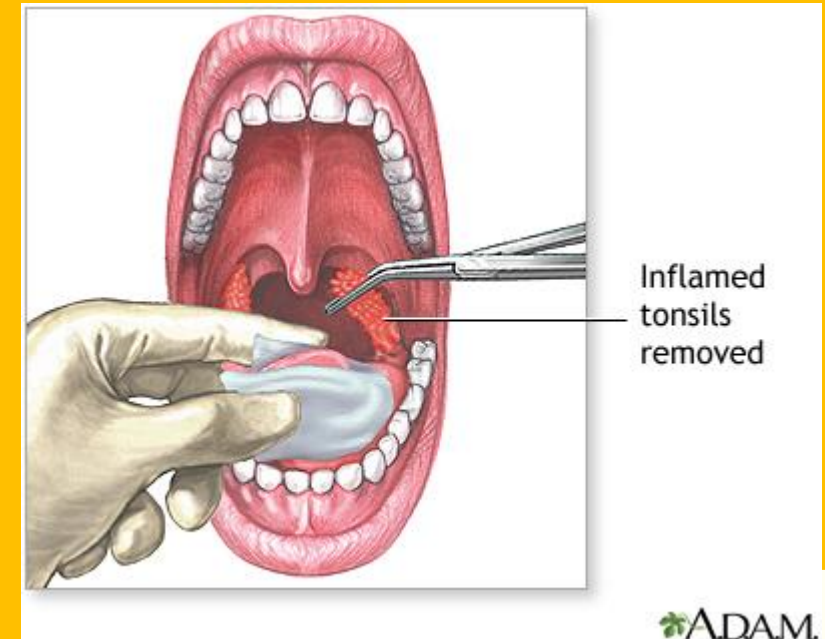
Tonsillitis

Tonsillectomy

- Less common today
- Usually done for three or more cases of Strep throat in six months, mouth breathing, sleep apnea
- **Risk for hemorrhage** is greater because site is cauterized and not sutured
- Observe closely for frequent swallowing, changes in BP
- Don't allow red foods, drinks to be consumed

Credit:

https://medlineplus.gov/ency/presentations/100122_3.htm





Tonsillitis

Nursing Care for Post-op Tonsillectomy

- ✓ Position (place child on abdomen or side).
- ✓ Discourage child from coughing frequently.
- ✓ Some secretion are common as dried blood.
- ✓ Crushed ice & ice water to relief pain.
- ✓ Analgesic may be rectally or IV, avoid oral route.
- ✓ Soft food, milk or ice cream
- ✓ Check post operative signs of Hemorrhage (increase pulse more than 120b/min. pallor. frequent swallowing, vomiting of bright blood, decrease blood pressure
- ✓ Use good light to look direct on site of operation.



Otitis Media (OM)

Credit: <https://emedicine.medscape.com/article/994656-overview?form=fpf>



Inflammation of middle ear.

- **Episode** of acute OM occur in the first 24 month, decrease at 5 years, r/to drainage through the Eustachian tube & inflammatory of Resp. system.

- **Etiology:**

Acute (AOM): streptococcus, Haemophilus influenza, moraxellacatarrhlis, are the most common bacteria.

OM: blocked Eustachian tube from edema of URTI , allergic hypertrophy adenoid.

Chronic (COM): extension of AOM.



Otitis Media (OM)

Diagnostic evaluation:

Assessment of tympanic membrane with otoscope:-

AOM: purulent discolored effusion, bulging, earache, fever, purulent discharge, infant rolls his head from side to side, loss of appetite, crying or verbalized feeling of discomfort (older child).

COM: hearing loss, feeling of fullness, vertigo, tinnitus.

Therapeutic management:

- Antibiotic for 10-14 days e.g. Amoxicillin.
- Myringotomy: surgical incision of eardrum & grommets.
- Hear test after 3 month of AOM.



Otitis Media (OM)

Nursing consideration:

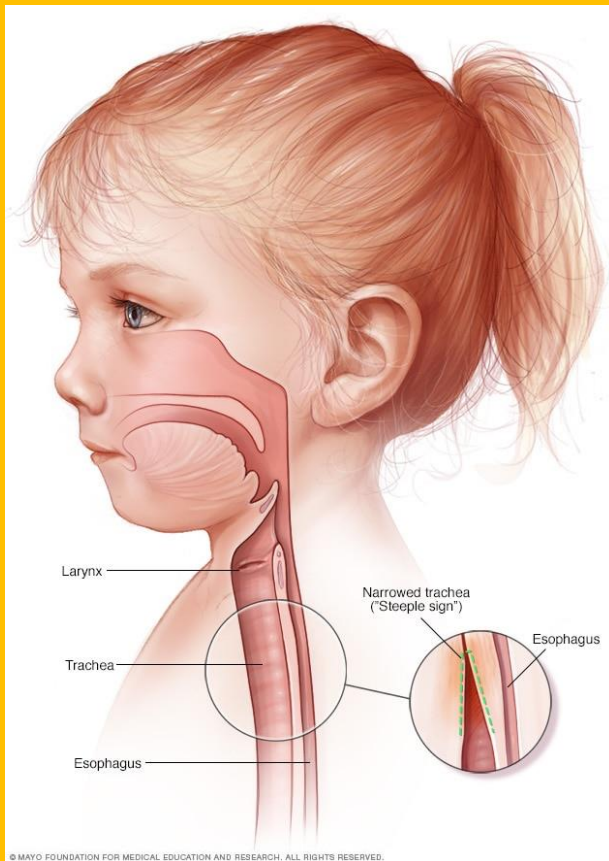
- Relieving pain: analgesic drug +ice bag on ear.
- Facilitate drainage & topical A.Biotics.
- Preventing complication.
- Instruct family to be careful when deal with child. With temporary hearing loss.
- Preventing OM during infant feeding and setting after that.

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Croup:

An infection of the upper airway, which becomes narrow, making it harder to breathe. The condition causes swelling of your child's voice box (larynx) and windpipe (trachea)



Croup often begins as an ordinary cold. If there's enough swelling, irritation and coughing, a child can develop:

- ✓ Loud barking cough that's made worse by crying and coughing, as well as anxiety and distress, setting up a cycle of worsening symptoms.
- ✓ Fever.
- ✓ Hoarse voice.
- ✓ Noisy or labored breathing.
- ✓ Have stridor, which is a raspy, vibrating sound that occurs when your child is breathing in.

Symptoms of croup are often worse at night and usually last for 3 to 5 days.



Croup Score

Parameter	Value		
	0	1	2
Inspiratory sounds	Normal	Snoring	Slow
Wheezing	Absent	Inspiratory	Inspiratory and expiratory
Cough	Absent	Hoarse crying	Barking
Retraction and MNA*	Absent	MNA* and suprasternal retraction	MNA*, subcostal, intercostal and suprasternal retraction
Cyanosis	Absent	Room air	FiO ₂ > 40% [§]

Mild < 4
Moderate 4-7
Severe > 7

* MNA: movement of the nasal ala; § FiO₂: fraction of inhaled oxygen.



Croup

Management and Treatment

Mild croup

- Can usually treat mild croup at home. Home treatment includes using a cool mist humidifier to help soothe dry and irritated airways.
- Treating with an over-the-counter (OTC) medication such as acetaminophen
- Treating with warm, clear fluids to help loosen the mucus on their vocal cords.
- Avoiding smoking in your home, as smoke can worsen cough.
- Observe signs and symptom of trouble breathing

Moderate to severe croup

- Admit to hospital
- Humidified air or oxygen.
- IV fluids for dehydration.
- Monitoring of vital signs, including oxygen levels, breathing and heart rate.
- Croup medication + steroids (glucocorticoids) and nebulized breathing treatments (epinephrine).
- Placement of a breathing tube (if need)

Croup

Nursing Care

- Observe the sound of **cough** (Grunting, Barking cough)
- Assess the use of accessory muscles with nasal flaring
- Vital signs monitoring.
- Advise the parent's to encourage **oral intake** and frozen juice popsicles also can be given to ease throat soreness and to avoid progression of dehydration
- Maintain intravenous fluid as prescribed.
- Place the child elevated in a **semi-Fowler's to high Fowler's position** and reposition the child frequently
- Use a **Cool mist from a humidifier** and/or sitting with the child in a bathroom (not in the shower) filled with steam generated by running hot water from the shower, help minimize symptoms.
- Perform **chest physiotherapy**
- Antipyretics. Treat fever with an antipyretic such as acetaminophen or ibuprofen.
- Decreasing anxiety.



Bronchitis

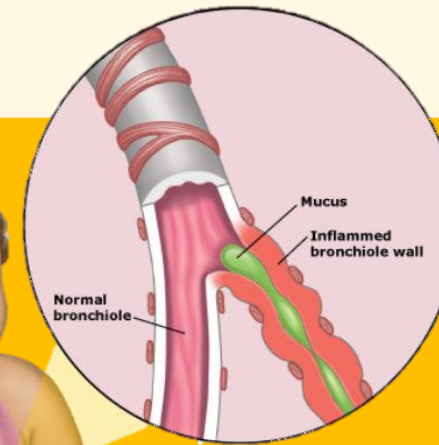
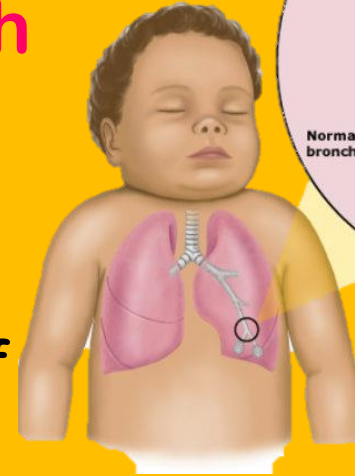
- It is a inflammation of larger air way (trachea and bronchi).
- Causative agents: viruses or mycoplasma pneumonia.
- Signs & symptoms: dry, nonproductive cough that worsens at night then become productive in 2-3 days.
- A mild disease required symptomatic treatment as antipyretic, analgesic and humidity, cough suppressants may be useful at night.

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Bronchiolitis & Resp. Syncytial Virus RSV

It is an acute viral infection with maximum effect at the bronchiolar level

- Rare in children older of 2 years.
- One of the Most Frequent Cause of Hospitalization in Infants
- Virus or Bacteria Causes Inflammatory Response & Obstruction of Small Airways From Edema
- RSV is responsible of 80% of cases during epidemic periods.



Credit: <https://www.kidshealth.org.nz/bronchiolitis>

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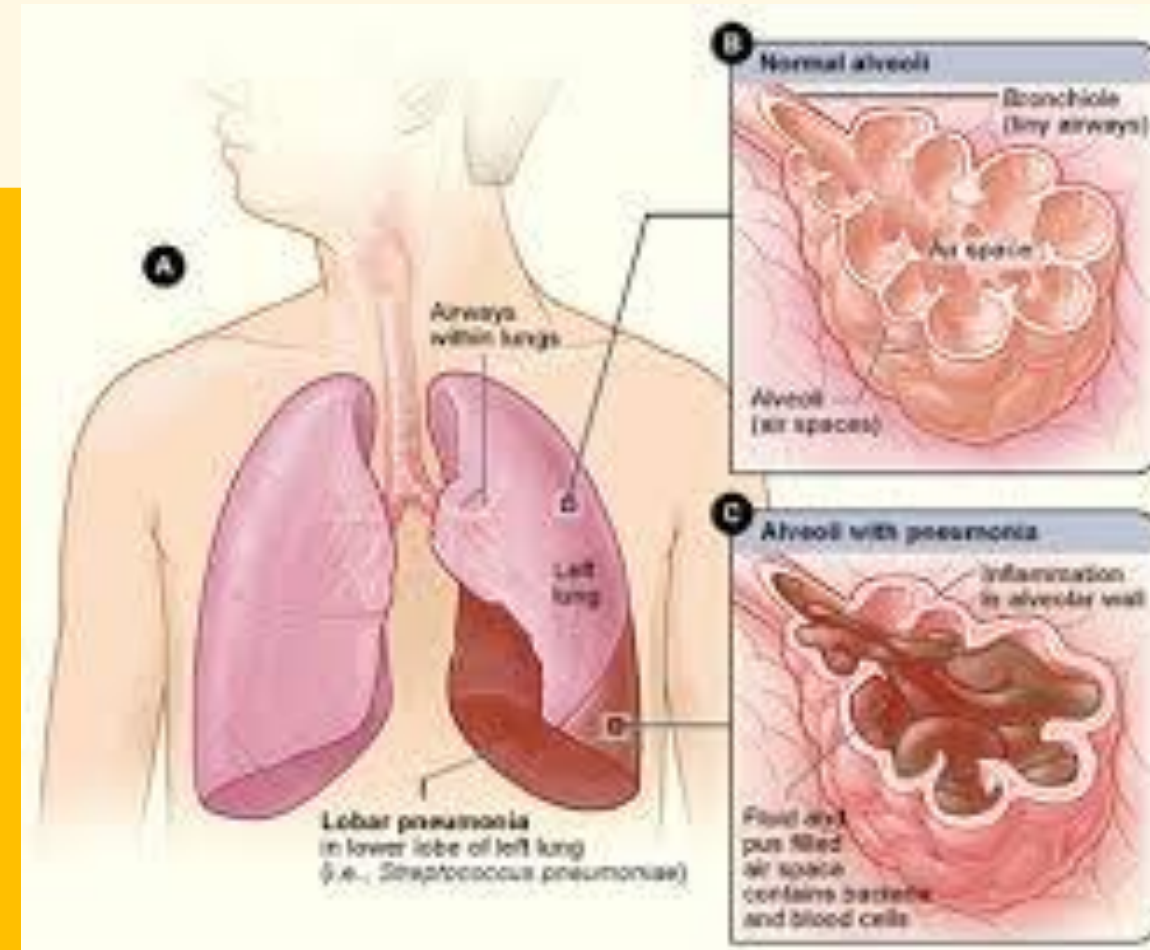
Pneumonia

- It is inflammation of the pulmonary parenchyma.
- Common in children but more frequently occur in infancy & early childhood

Lobar- Pneumonia

Broncho Pneumonia

Interstitial Pneumonia





Pneumonia

Morphology classification:

- viral
- bacterial
- mycoplasma
- aspiration of foreign body
- fungal.

Viral Pneumonia:

Causes: RSV, parainfluenza, influenza, adenovirus, COVID-19

Clinical symptoms: fever, cough, abnormal breath sound; whitish sputum, nasal flaring, retraction, chest pain, pallor to cyanosis, irritable, restless, anorexia, vomiting, diarrhea, abdominal pain.

Treatment: • symptomatic:

- O2 therapy, Comfort.
- Chest physiotherapy and postural drainage.
- Antipyretics.
- Fluid intake
- Family supports.

Bacterial Pneumonia:

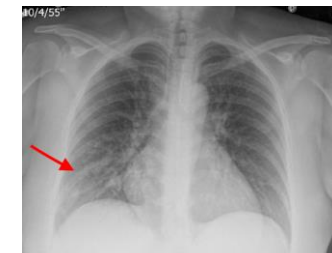
Cause: Streptococcus is the most common cause in children, in infant mainly followed viral infection.

Clinical symptoms: fever, malaise, rapid & shallow respiration, cough, chest pain, abdominal pain
Appendicitis, meningeal symptoms.

Treatment:

need hospitalization when pleural effusion or empyema

- bed rest
- O2 therapy
- Antibiotic, Antipyretic
- fluid intake, I.V fluid
- need hospitalization when pleural effusion or empyema





Pneumonia

Nursing consideration

- Administer of O2 therapy
- Rest
- Humidity.
- Assess vital signs → Resp. status frequently.
- I.V fluid intake.
- Antipyretic & Antibiotic (if need).
- Lying the child on affected side.
- Suctioning by bulb syringe for infant.
- Chest physiotherapy & postural drainage.
- Family support & reassurance.

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Asthma

Allergic triggers

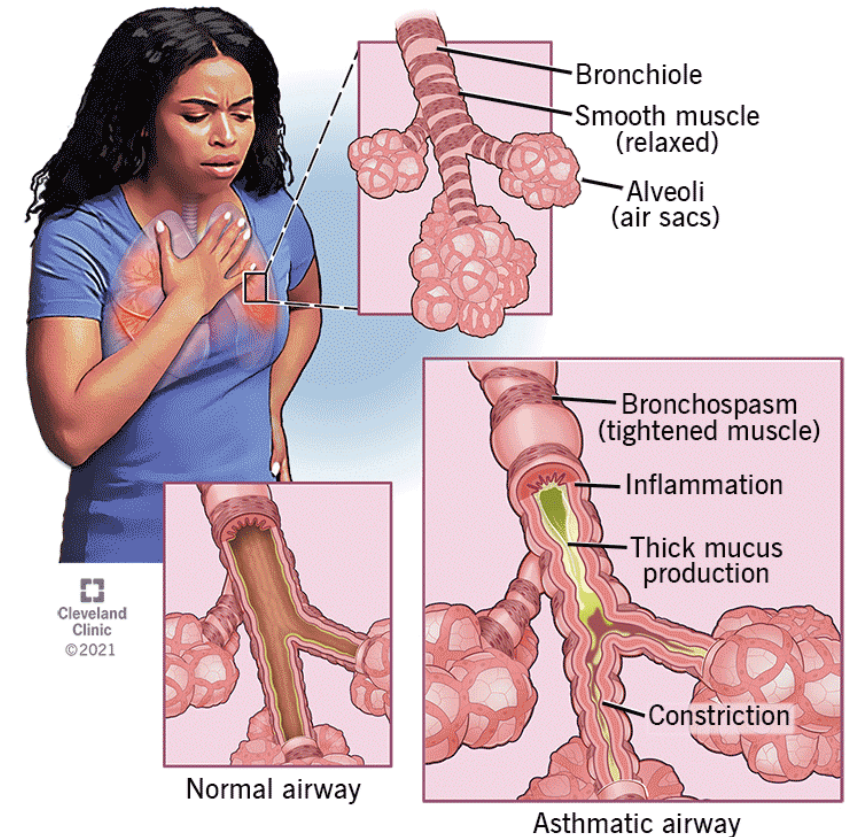
Non-allergic: Exercise, stress, illness and weather

also called bronchial asthma, is a disease that affects lungs. It's a chronic (ongoing) condition

Asthma attack flare up & wheezing

- **Bronchospasm:** The muscles around the airways constrict (tighten). When they tighten, it makes your airways narrow. Air cannot flow freely through constricted airways.
- **Inflammation:** The lining of your airways becomes swollen. Swollen airways don't let as much air in or out of your lungs.
- **Mucus production:** During the attack, your body creates more mucus. This thick mucus clogs airways.

What is an Asthma Attack?





Asthma

Signs and Symptoms

- Chest tightness, pain or pressure.
- Coughing (especially at night).
- Shortness of breath.
- Wheezing.

Management and Treatment

- Bronchodilators
- Anti-inflammatory medicines
- Biologic therapies for asthma
- Avoid triggers
- **Asthma action plan.** This plan tells you how and when to use your medicines

ASTHMA ACTION PLAN



Name: _____ Date: _____
 Doctor: _____ Medical Record #: _____
 Doctor's Phone #: Day _____ Night/Weekend _____
 Emergency contact: _____
 Doctor's signature: _____

The colors of a traffic light will help you use your asthma medicines.

- **GREEN** means Go Zone! Use preventive medicine.
- **YELLOW** means Caution Zone! Add quick-relief medicine.
- **RED** means Danger Zone! Get help from a doctor.

Personal Best Peak Flow: _____

GO	Use these daily preventive anti-inflammatory medicines:		
	MEDICINE	HOW MUCH	HOW OFTEN/WHEN
<p>You have all of these:</p> <ul style="list-style-type: none"> • Breathing is good • No cough or wheeze • Sleep through the night • Can work & play <p>Peak flow: from _____ to _____</p>			
	For asthma with exercise, take:		
CAUTION	Continue with green zone medicine and add:		
	MEDICINE	HOW MUCH	HOW OFTEN/ WHEN
<p>You have any of these:</p> <ul style="list-style-type: none"> • First signs of a cold • Exposure to known trigger • Cough • Mild wheeze • Tight chest • Coughing at night <p>Peak flow: from _____ to _____</p>			
	CALL YOUR PRIMARY CARE PROVIDER.		
DANGER	Take these medicines and call your doctor now.		
	MEDICINE	HOW MUCH	HOW OFTEN/WHEN
<p>Your asthma is getting worse fast:</p> <ul style="list-style-type: none"> • Medicine is not helping • Breathing is hard & fast • Nose opens wide • Ribs show • Can't talk well <p>Peak flow: reading below _____</p>			
	GET HELP FROM A DOCTOR NOW! Do not be afraid of causing a fuss. Your doctor will want to see you right away. It's important! If you cannot contact your doctor, go directly to the emergency room. DO NOT WAIT. Make an appointment with your primary care provider within two days of an ER visit or hospitalization.		

GO	Use these daily controller medicines:		
	MEDICINE	HOW MUCH	HOW OFTEN/WHEN
<p>You have all of these:</p> <ul style="list-style-type: none"> • Breathing is good • No cough or wheeze • Sleep through the night • Can work & play <p>Peak flow: from _____ to _____</p>			
	For asthma with exercise, take:		
CAUTION	Continue with green zone medicine and add:		
	MEDICINE	HOW MUCH	HOW OFTEN/ WHEN
<p>You have any of these:</p> <ul style="list-style-type: none"> • First signs of a cold • Exposure to known trigger • Cough • Mild wheeze • Tight chest • Coughing at night <p>Peak flow: from _____ to _____</p>			
	CALL YOUR ASTHMA CARE PROVIDER.		
DANGER	Take these medicines and call your doctor now.		
	MEDICINE	HOW MUCH	HOW OFTEN/WHEN
<p>Your asthma is getting worse fast:</p> <ul style="list-style-type: none"> • Medicine is not helping • Breathing is hard & fast • Nose opens wide • Trouble speaking • Ribs show (in children) <p>Peak flow: reading below _____</p>			

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Thank You

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*Answer the questions and
give reason of your answer*

Exercise after CLASS

A child has had cold symptoms for more than 2 weeks, a headache, nasal congestion with purulent nasal drainage, facial tenderness, and a cough that increases during sleep. The nurse plans to teach the parents about which treatment regime?

- a. Antihistamine use
- b. Cold washcloths on the face for comfort
- c. Antibiotic treatment with amoxicillin
- d. Referral for a sinuplasty



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Answer the questions and
give reason of your answer

Exercise after CLASS

A child has a chronic, nonproductive cough and diffuse wheezing during the expiratory phase of respiration. What action by the nurse is most appropriate?

Choose matching definition

Prepare to administer a bronchodilator.

Give ordered antibiotics on time.

Provide oxygen via face tent.

Assess the airway for a foreign body.



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Answer the questions and give reason of your answer

Exercise after CLASS

Which intervention is appropriate for the infant hospitalized with bronchiolitis?

Choose matching definition

Position on the side with neck slightly flexed.

Administer antibiotics as ordered.

Restrict oral and parenteral fluids if tachypneic.

Give cool, humidified oxygen.



Answer the questions and give reason of your answer

Exercise after CLASS

A school-age child had an upper respiratory tract infection for several days and then began having a persistent dry, hacking cough that was worse at night. The cough has become productive in the past 24 hours. What home care measure does the nurse educate parents about?

Choose matching definition

Taking the full course of antibiotics

Providing humidity and increased fluids

Treating any fever with aspirin

Isolation from family until symptoms resolve



Answer the questions and
give reason of your answer

Exercise after CLASS

The nurse should assess a child who has had a tonsillectomy for which of the following as the priority?

Choose matching definition

Frequent swallowing

Inspiratory stridor

Swelling of the throat

Abnormal lung sounds



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