



Module 4

Theory material 1: Respiratory Infections and Treatments in Childhood

Content

- General about respiratory infections in children
- Common symptoms and relieving methods
- Respiratory infections, signs and symptoms and treatments
- Laryngitis (croup)
- Obstructive bronchitis
- Bronchiolitis
- Pneumonia
- Otitis

Conclusion: Preventing infections



General about respiratory infections



- Very common in small children, have 5-10 infection in a year
- Immunity system is immature by age of 6 months
- Lots of contacts with other children (group day care), infections spread easily
- Anatomy of airways different from adults (structure and size)
- Most of infections are viral infections , sometimes epidemics (RSV, influenza, SARS-CoV-2)
- Bacterial infections are not common, sometimes developed after viral infections and prolonged symptoms



Causes of respiratory infections

Viruses

- most important viruses causing lower respiratory tract infections are rhinovirus, RS virus, metapneumovirus, adenovirus, parainfluenza viruses, influenza viruses A and B.

Serious ones: pandemic-causing SARS-CoV-2 coronavirus.

-->Rapid diagnostics have no significance in care of child except serious viruses

Bacteria

- Streptococcus pyogenes, Staphylococcus aureus-- otitis, pneumonia
- Streptococcus pneumoniae, Mycoplasma pneumoniae, Chlamydia pneumoniae -- pneumonia

Common symptoms in respiratory infections and relieving methods



•Congestion

-Specially in babies, because they are nose breathers until age of 6 months

--> saline drops/sprays

--> removing mucous (suction equipments)

--> upright position

(steam , not evidence based)

•Cough

--> cough medicines not recommended in small children

--> honey before go to bed >1yr old children

Common symptoms... ctd



- **Fever, uncomfortability, pain**

- > pain killers (paracetamol, anti-inflammatories)

- > comfortable environment, light clothes and covers

- > rest

- **Dehydration**

- > taking care of fluids by offering drinks and food contains fluids

- **Sore throat**

- > warm drinks

- > pain killers

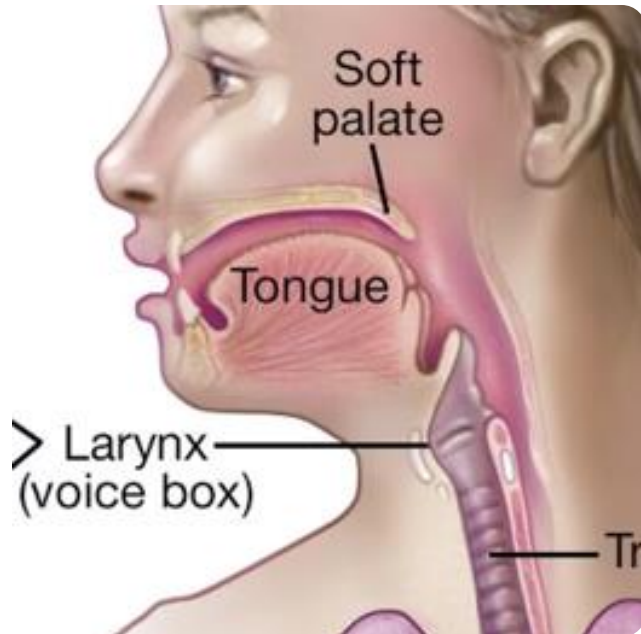
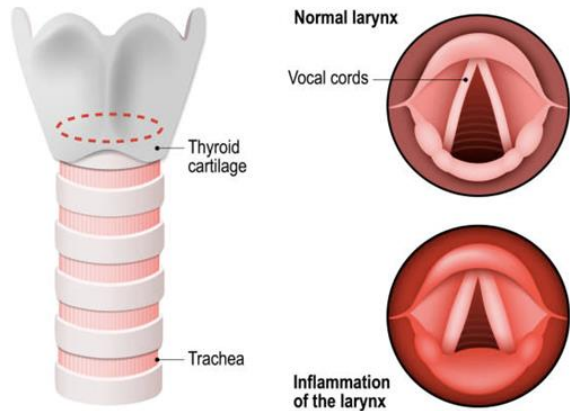
- > throat pastilles

Most common respiratory infections in children

- Laryngitis (Croup)
- Obstructive bronchitis
- Brochiolitis
- Pneumonia
- Otitis media



LARYNGITIS



Laryngitis (Croup)

- inflammation and swelling of the larynx, swollen vocal cords
- commonly caused by a viral infection
- most common in children aged 6 to 36 months

Signs and symptoms

- difficulty in breathing (begins suddenly at night)
- inspiratory stridor (auscultated in the neck)
- barking cough
- hoarseness
- low-grade fever, symptoms of flu
- increased respiratory rate



Laryngitis.... *ctd*

Home care is sufficient in 80-85% of cases

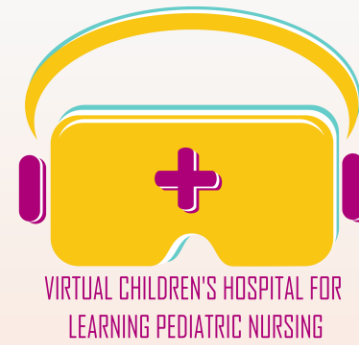
- Upright position might help
- Cool air (open windows)
- Fluids and anti-inflammatories for fever

Admission in doctor`s appointment or emergency unit in severe cases(1%)

- Oral glucocorticoids recommended for milder and severe cases
 - Sometimes inhaled budosemid instead of oral
- Inhaled rasemic adrenaline by nebulizator
 - Effective in relieving symptoms, but short-lived
 - Patients given racemic adrenaline should be monitored for at least 1-2 hours



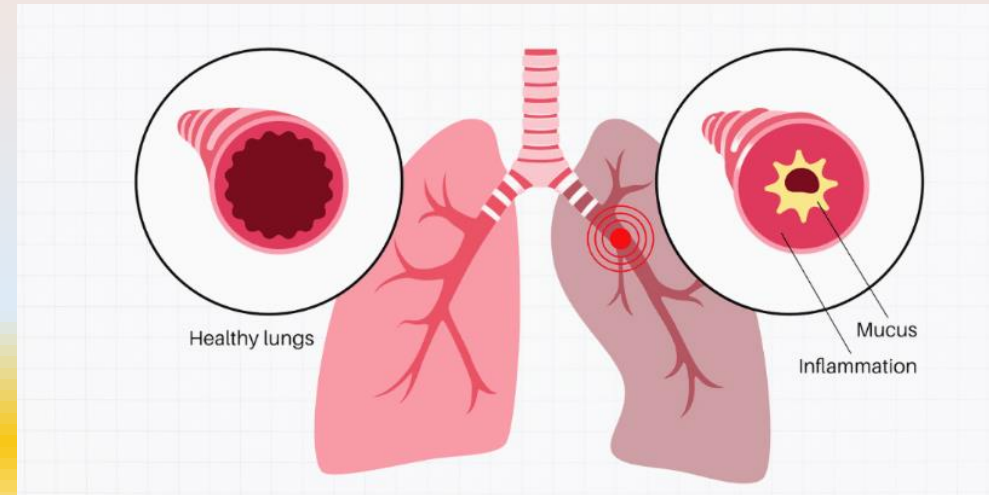
Obstructive Bronchitis



- Inflammation in bronchis, walls are inflammed and narrow , increased production of mucus (astma-like symtoms)
- acute respiratory difficulty triggered by a viral infection, also known as “viral-induced wheezing”
- In children aged 12-36 months, narrow airways cause problems and produce mucus
- good prognosis, 60% of children cease to have respiratory difficulties by age 3
- If symptoms repeated regularly/ continue after 3 yr age or wheezing due to allergens → astma might be diagnosed
→ regular medications

Signs and symptoms

- wheezing , shortness of breath, rapid breathing
- expiratory difficulty
- cough, increased mucus, crackles



Obstructive bronchitis ... ctd

Home care

Most patients can be treated in outpatient healthcare

- Inhaled beta-sympathomimetics may relieve symptoms in acute respiratory difficulty
 - via a spacer seem to reduce symptoms more effectively
 - can be repeated every 2-4 hours

Hospital care

- In severe respiratory difficulty hospital treatment may be required, observing needed
- Inhaled beta-sympathomimetics are given

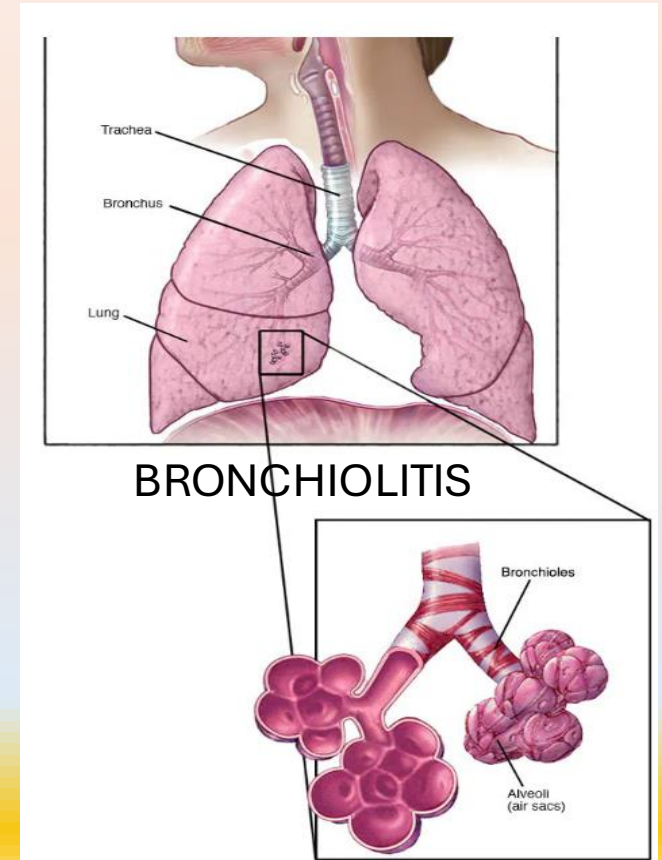


Bronchiolitis

- First episode of breathing difficulty in a child under 12 months of age, up to 23 months old
- An inflammation of the last branches of the bronchi (bronchioles)
- Begins as an upper respiratory infection → can worsen into a life-threatening lower respiratory infection
- Small infants under 3 months are at risk and recommended for pediatrician's assessment
- Main cause is RSV, with annual epidemics beginning in November-December
- Virus also found in lung tissue, includes features of viral pneumonia



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Bronchiolitis ... *ctd*

Signs and symptoms

- Breathing difficulty in a small infant
- Expiratory breathing problem
- Wheezing
- Nasal flaring
- Restriction
- Breathing pauses and respiratory failure during illness
- Tiredness, lethargy

Treatment and prevention

- Hospital care for <3 months old babies
- Oxygen treatment with nasal high flow therapy (heated and humidified gas)
- Assessment of breathing
- Fluids and nutrition (nasogastric tube or i.v)



Optiflow – high flow therapy



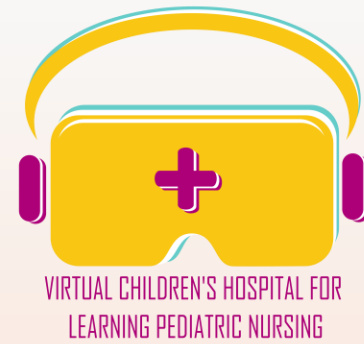
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Pneumonia

- pneumonia in children is an inflammation of the lung tissue (fluid in air sacs)
- can be caused solely by viruses, viruses and bacteria or primarily bacteria
- bacterial pneumonia can cause hospitalization

Signs and symptoms

- fever (sometimes not), cough, and shortness of breath
- lethargy, tiredness, paleness
- abnormal breathing sounds(crackles,diminished breath sounds)
- high CRP or leukocyte count
- if severe case-->X-ray alveolar consolidation



Pneumonia ... *ctd*

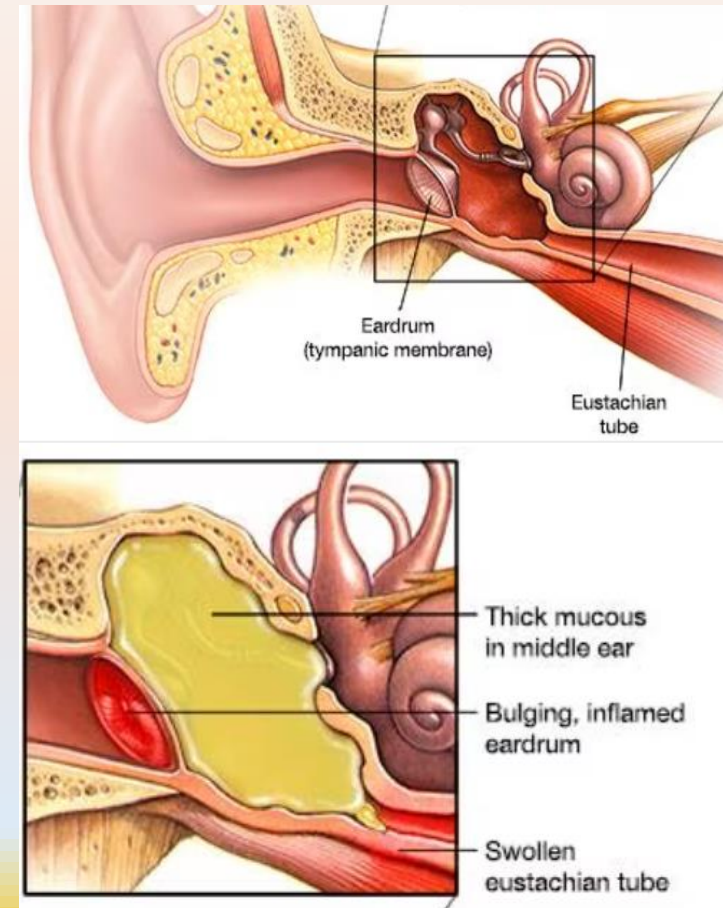


Treatment

- Pneumonia treated with five-day course of oral amoxicillin in homecare
- Mild symptoms suggesting viral infection do not require antibiotics
- Reassessment after 48 hours if fever persists
- Suspected complications result in hospital referral and iv. antibiotics

Acute otitis media

- infection of the middle ear,that filled with fluid or thick secretion
- also it causes bulging, inflamed eardrum (pressure causes pain)
- swollen eaustachian tube (in children eaustachian tube is narrower, shorter and more curved than adults)
- highest incidence in ages of 6-24 months
- symtoms: ear pain, crying, troubles in sleeping and eating, fever
- symtoms appear during or just after upper respiratory infection
- can be caused by viruses or bacteria



Acute otitis media ... ctd

Diagnosis and examinations:

- pneumatic otoscopy
- tympanometry
- Other tests: Crp, secretion of middle ear

Treatments

- Pain killers, sometimes analgesic ear drops, rest
- Antibiotics
- Surgical treatment

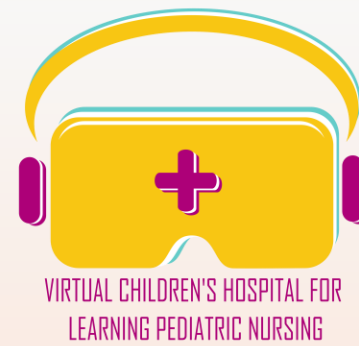
Tube replacement through ear drum for draining middle ear canal

(for chronic otitis)

Sometimes removing adenoids



Pneumatic otoscope



Bulging and inflamed ear drum

Conclusions

- Most of respiratory infections are mild, need enough time in homecare by relieving symptoms and observation a child
- More severe cases/big changes in child condition treated in hospital

Prevention

- Spreading infections is prevented by isolating children from others (absence of day care/school)
- Severe cases can be prevented by vaccinations:

Hib(Hemofilus influenza bacteria) against otitis

Pnemococcal conjugate vaccine against pneumonia

RSV Preventive monoclonal antibody for RSV available for infants at very high risk (prematures)



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