

Respiratory Conditions

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Introduction

- How to diagnose most respiratory conditions.
- Approach to a child with severe respiratory distress in the ER.
- What to do when things aren't working.
- Oxygen – some thoughts.
- Stepwise asthma management

What to do in an emergency:

- Language of sick children: Airway, Breathing, Circulation.
 - This gives a framework for how unwell the child is and allows for good treatment plans based on these.
 - Learn and practice the danger signs.
 1. Is the child at risk of respiratory compromise?
 2. Is the child at risk of shock or dehydration?
- Any of these two present is an indication for admission.

Severe Respiratory Distress

Look	Increased work of breathing; chest indrawing; nasal flaring; use of accessory muscles; head nodding (head movement synchronous with inspiration)
	Fast breathing
	Lethargy (the child is tired from using so much energy to breathe)
	Central cyanosis
	Unable to feed because of respiratory distress
Listen	Gasping; grunting; audible wheeze; stridor; apnoea
Feel	Equal chest movement?
Measure	Respiratory rate SpO ₂
Treat	Give oxygen if SpO ₂ below 95%

Immediate actions:

- Oxygen – according to child's age and size, guided by SpO₂.
- Sit up at 45 degrees.
- Consider next steps to address breathing – need for antibiotics? Need for bronchodilators?
- Fluid management.

Diagnosis

- Respiratory conditions in children are diagnosed largely by 2 factors:
 1. Age
 2. Clinical Findings

Understanding the interplay between these two factors will lead you in the right direction.

Which Diagnosis?

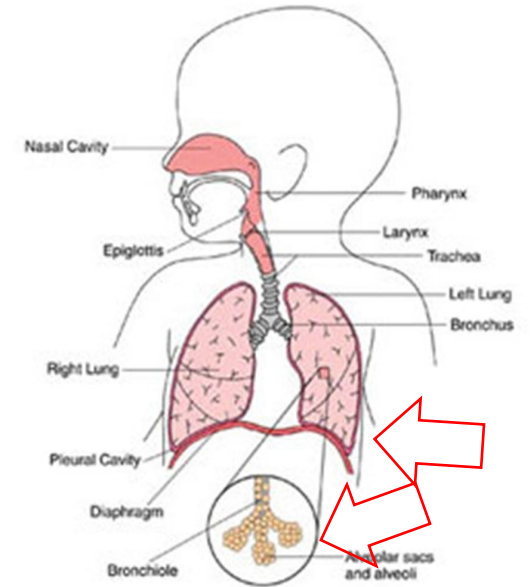
Age	Probable Diagnosis
under 1 year	Bronchiolitis, Pneumonia
1 to 2 years	Viral induced wheeze, Pneumonia
over 2 years	Asthma, Pneumonia

More depth: Pneumonia

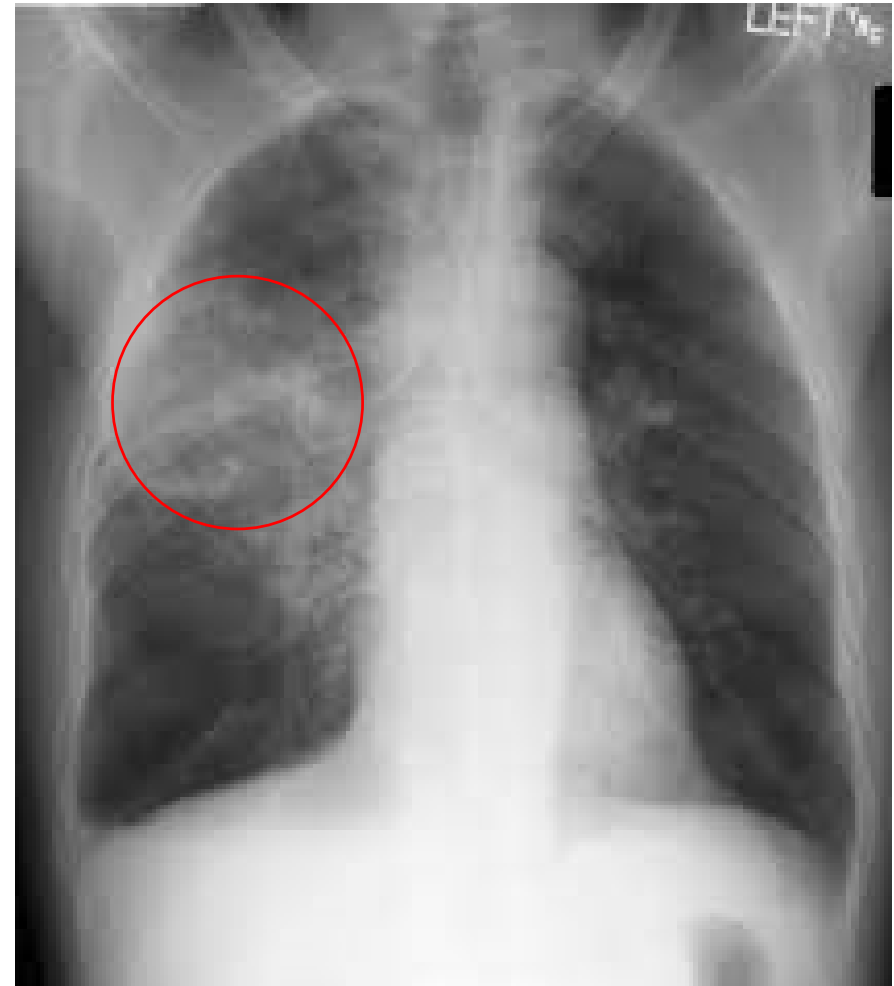
- These children are usually the more unwell.
- May present with classical signs of respiratory distress.
- However there may simply be a pyrexia of unknown origin or poor feeding.
- Worth considering particularly in immunocompromised children or those with pre-existing lung disease.

Pneumonia

- **Age:** All ages
- **Cause:** Infection of lung tissue (alveoli) and airways (bronchopneumonia) by viruses or bacteria
- **History:** Cough, difficulty breathing and respiratory distress, fever, difficulty feeding, vomiting, abdominal pain
- **Look, listen, feel:** Cough, fast breathing, respiratory distress, lower chest wall in drawings, grunting, fever, lethargy







Pneumonia: Classification

Sign or Symptom	Classification	Treatment
Cough or difficulty in breathing with: <ul style="list-style-type: none"> • Oxygen saturation <90% or central cyanosis • Severe respiratory distress • Signs of pneumonia with a general danger sign (not drinking; lethargy; reduced consciousness) 	SEVERE PNEUMONIA	Admit to hospital Give O2 if SpO2 <90% Manage airway as appropriate Give recommended antibiotic Treat high fever if present
<ul style="list-style-type: none"> • Fast breathing: <ul style="list-style-type: none"> • >50bpm in a child 2-11 months • >40bpm in a child 1-5 years • Chest indrawing 	PNEUMONIA	Home care Give appropriate antibiotic Advise the mother to return if symptoms of severe pneumonia Follow up after three days
No signs of pneumonia or severe pneumonia	NO PNEUMONIA: cough or cold	Home care

Treatment Plans in an emergency setting:

- Nurse at 45 degrees/ upright
- Antibiotic therapy
 - **Severe pneumonia:** Ampicillin 50mg/kg IV QID and Gentamicin 7.5mg/kg IV OD
 - **Pneumonia:** Amoxicillin 40mg PO BD
- Paracetamol if Temp higher than 38.5
- Oxygen if SpO2 <90% on air
- CPAP if SpO2 <90% on oxygen
- Supportive care, help with feeding (NGT), i.v. Fluids
- NBM if the child is too breathless to feed

When there is no response:

- Consider antibiotic change after 48 hours if no better, particularly if persistent fever.
- Macrolides a good choice if child can take PO.
- If not consider ceftriaxone.
- If any suspicion of aspiration use metronidazole IV.

- Remember maintenance fluids – calculations coming later!

Wheezy conditions:

- A range of possible diagnoses:
- Under 1s – this would most likely be bronchiolitis:
- Due to Respiratory syncytial virus.
- Usually self-limiting.
- In approx. 10% of children leads to more severe illness with respiratory signs.
- Classic history is of a recent URTI symptoms followed by respiratory distress.

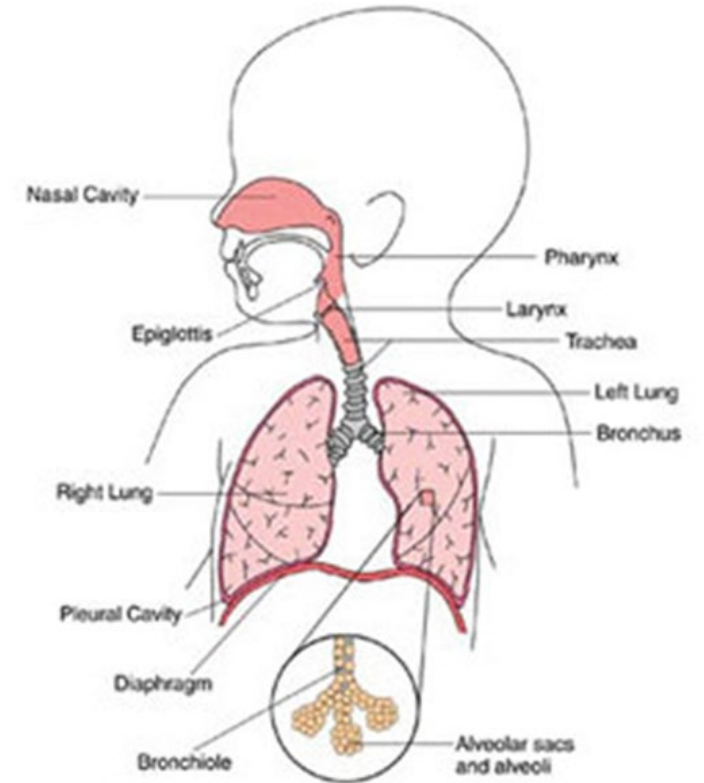
Treatment

- Nurse at 45 degrees/ upright
- Oxygen if SpO₂ <90% on air
- CPAP if SpO₂ <90% on oxygen
- Supportive care, help with feeding (NGT), IV fluids
- NBM if the child is too breathless to feed
- Gentle nasal suction
- Antibiotics if severely unwell (to cover superadded pneumonia)

Wheeze

associated with cough or cold

- **Age:** 1 to 2 years
- **Cause:** Viral infection of the airways
- **Background:** respiratory distress, cough and cold
- **Look, listen, feel**
 - Auscultation: wheeze, usually both lungs
 - Hyperinflation of the chest
 - Takes longer to breathe out
 - Respiratory distress less severe than in asthma



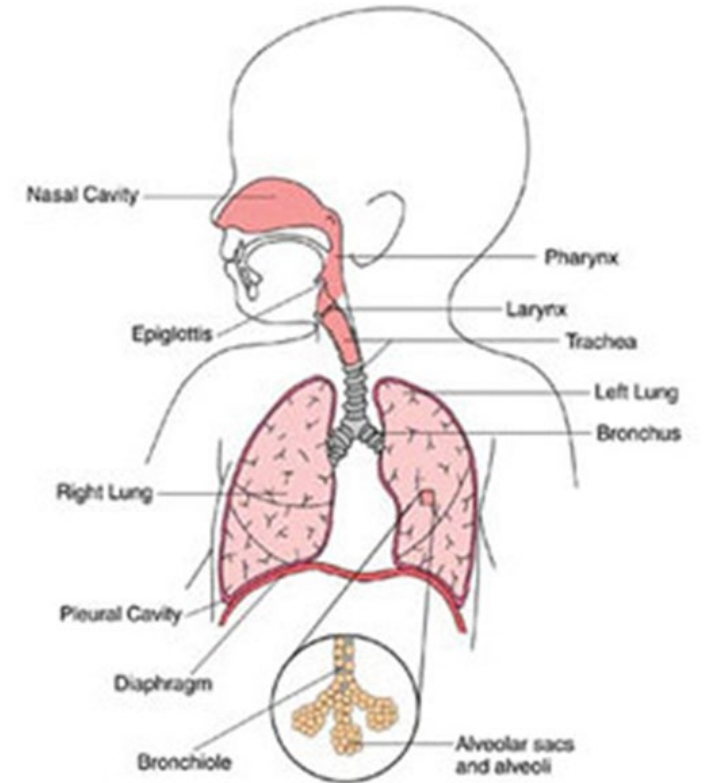
Viral induced wheeze: Treatment

- Nurse at 45 degrees/ upright
 - Hypoxia: give oxygen if SpO₂<90%
 - Bronchodilator: salbutamol 10 puffs with spacer, repeat as often as necessary
 - Inflammation: steroids
 - Oral: prednisolone 2mg/kg (max 40mg) OD
 - IV: hydrocortisone 4mg/kg (max 100mg) QID
-
- Most cases can be managed with inhaler puffs
 - A spacer makes the puffs work better

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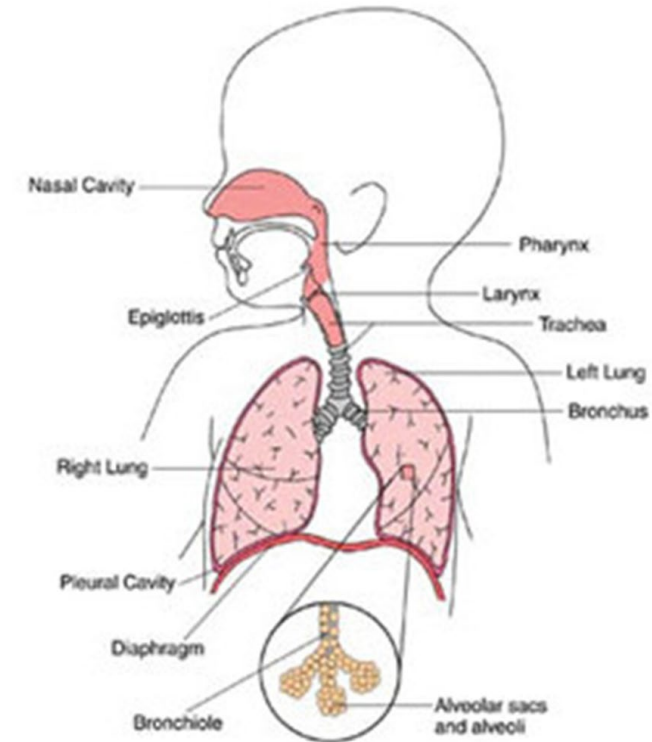
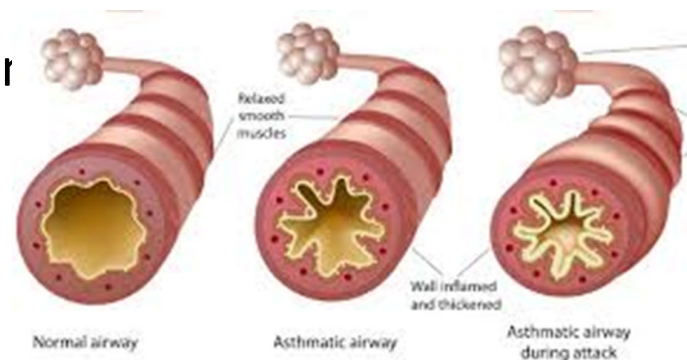
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Treat: Spacer



Asthma

- **Age:** older than 2 years
- **Cause:** sensitive lower airways (bronchi). The bronchi get tight in the presence of a trigger.
- **History:** Night-time cough; recurrent attacks of shortness of breath or wheeze, history of asthma, allergy, use of inhaler (puff), triggers (exercise, infection, dust, allergies)
- **Look, listen, feel:**
 - Auscultation: wheeze, usually both lungs
 - Hyperinflation of the chest
 - Takes longer to breathe out
 - Low grade or no fever



Asthma: Questions to ask?

- Family history.
- Triggers
- Other areas of atopy e.g. rashes, hay fever.
- Diurnal rhythm.
- Frequent attacks or admissions to hospital.

Asthma in the OPD:

- Ideally diagnosed with spirometry.
- However: Perfectly OK to use a trial of salbutamol and review.
- 1st line is salbutamol prn.
- If child has frequent attacks – use a low dose steroid BID. Most helpful is beclometasone 50 mcg BID, increasing to 100 mcg (2 puffs). Child must take regularly.
- If still ongoing attacks and in monteleukast PO.

Questions?

Summary

- Respiratory distress is a common sign
- The cause will often be a lung problem, although not always
- If you notice respiratory distress, it is important to assess carefully, looking at all the related signs and symptoms
- Making a provisional diagnosis will help you to structure your treatment
- Bronchiolitis, pneumonia, and asthma are common; you may not be able to know which problem is present at your initial assessment: make sure you have considered all the possibilities!