

ThinkAskLearn
Health Professional Education

"I really cant breathe"
Pearls of Paediatric Breathing Assessment

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How do we get to a diagnosis?


- History
- Examination
 - Initial Observations
 - Observations over time
 - Clinical Assessment Skills
- Tests
 - Pathological
 - Radiological



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Respiratory Assessment


- Inspection
- Palpation
- Percussion
- Auscultation



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History in Respiratory Distress


- Trauma
- Change in voice
- Onset and duration of symptoms
- Associated symptoms
 - Fever suggests an infectious etiology
 - Tachypnea without fever maybe metabolic acidosis
- Exposures Toxins,
- Previous episode of respiratory distress
- Underlying medical
- Family history



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Is a blood gas useful?


- Yes and No
- Often offers little in diagnostic decision making
- Clinical picture more helpful to determine ventilatory support
- Helpful in the longitudinal care of patient



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What is going on here?

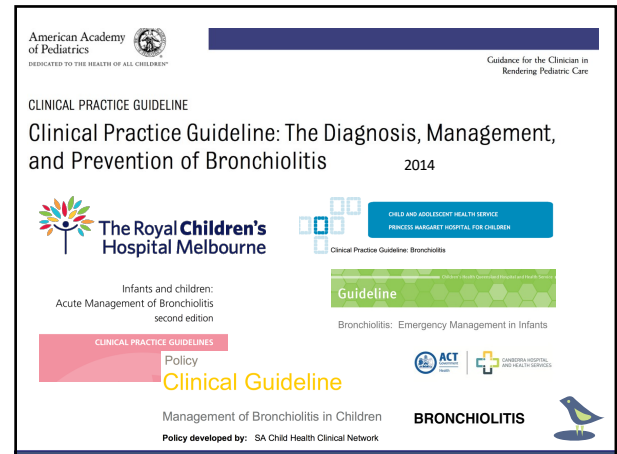
- Henry is 2mo boy
- Presents with nasal congestion and poor feeding for 2 days.
- No wet nappies >8hrs
- SVD @38/40, otherwise well
- His older brother has had a cold over the last week.
- RR 68, HR 152, T 38.6
- WOB increased, subcostal, bilateral crackles



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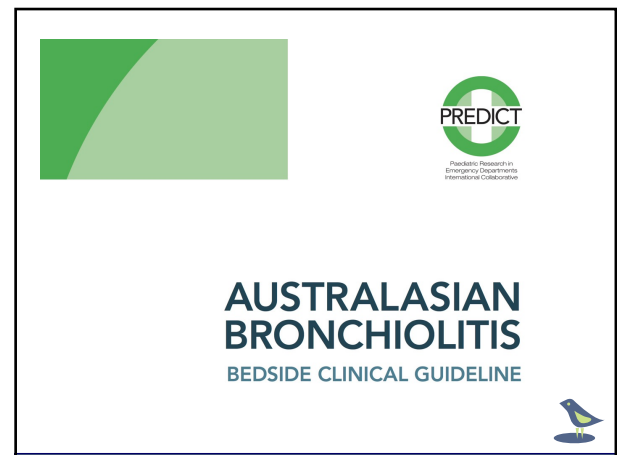
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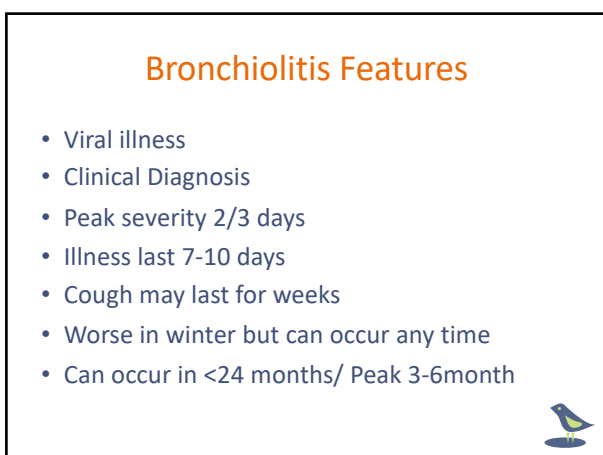
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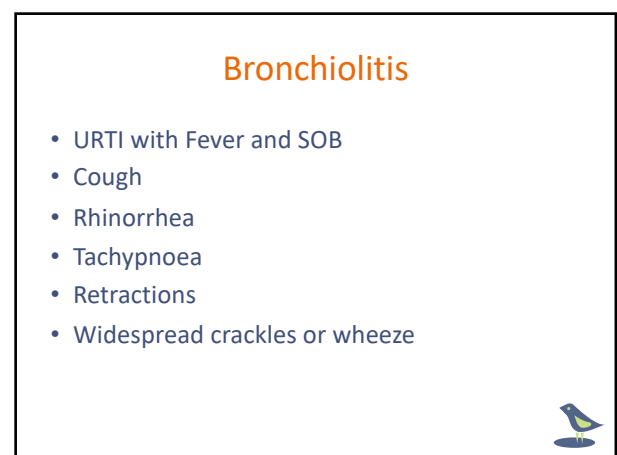
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Risky Patients - Admit

- Gestational age less than 37 weeks
- Chronological age at presentation less than 10 weeks
- Post-natal exposure to cigarette smoke
- Breast fed for less than two months
- Failure to thrive
- Chronic lung disease
- Congenital heart disease
- Chronic neurological conditions
- Indigenous ethnicity



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INITIAL ASSESSMENT			
This table is meant to provide guidance in order to stratify severity. The more symptoms the infant has in the mod-severe categories, the more likely they are to develop severe disease.			
	MILD	MODERATE	SEVERE
Behaviour	Normal	Some/intermittent irritability	Increasing irritability and/or lethargy Fatigue
Respiratory rate	Normal – mild tachypnoea	Increased respiratory rate	Marked increase or decrease in respiratory rate
Use of accessory muscles	Nil to mild chest wall retraction	Moderate chest wall retractions Tracheal tug Nasal flaring	Marked chest wall retractions Marked tracheal tug Marked nasal flaring
Oxygen saturation/oxygen requirement	O ₂ saturations greater than 92% (in room air)	O ₂ saturations 90–92% (in room air)	O ₂ saturations less than 90% (in room air) Hypoxemia, may not be corrected by O ₂
Apnoeic episodes	None	May have brief apnoea	May have increasingly frequent or prolonged apnoea
Feeding	Normal	May have difficulty with feeding or reduced feeding	Reluctant or unable to feed



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Do not test the child!

- Chest X-ray (CXR)
- Blood tests (including full blood count (FBC), blood cultures)
- Virological testing (nasopharyngeal swab or aspirate)
- Urine microscopy and culture



Predict 2016/26



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Do not treat patient

- No medication including:
 - Salbutamol – even in wheezing family
 - No longer trial of ventolin
- Steroids
- Adrenaline – except in Peri-Arrest
- Hypertonic Saline Nebbs
- Antibiotics
- Antivirals
- No Chest Physio
- No nasal suctioning



Predict 2016/26



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Supportive Treatment

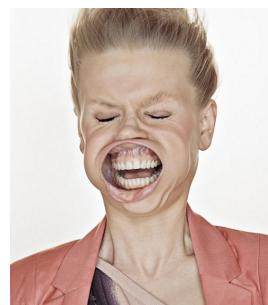
- Oxygen
 - Only if they need it
 - **Persistently** less than 92% room air
 - ‘brief desaturations are not a reason to commence oxygen therapy’
 - Try normal NP first

Predict 2016/26



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High Flow Nasal Cannula



- “HFNC can be considered in the presence of hypoxia (oxygen saturation less than 92%) **and** moderate to severe recessions
- Its use in infants without hypoxia should be limited to the randomised controlled trial (RCT) setting only “

Predict 2016/26



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Supportive Treatment

- Monitoring
 - Use CEWT tools
- “Continuous oximetry should not be routinely used to dictate medical management unless disease is severe”

Predict 2016



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Supportive Hydration

Unknown volume- 60 -100% maintenance volume, watch for overload



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Scenario

- 0200
- 18 month old
- Difficulty breathing tonight and a barking cough
- Audible stridor. Moderate accessory muscle use. Happy active child



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Let's talk about croup



Croup is a viral infection in babies and young children, that causes a harsh 'barking' cough.



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Croup

- Acute Respiratory Syndrome
 - Barking Cough
 - Hoarseness
 - Stridor
- Described as not painful ???
- Is distressing, potentially fatal
- Involving Larynx, Trachea, Bronchi
- laryngotracheobronchitis



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Croup - The numbers

- Common under the age of six,
 - peak incidence in children aged seven to 36 months
 - Rare over 6 years of age
- 5% of 2 year olds suffer croup
- Male:Female ratio of about 1.4:1
- Parental history - 3.2 times more likely
- Smoking has no impact on croup
- Winter slightly worse season



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Assessment of Severity

	MILD	MODERATE	SEVERE
Behaviour	Normal	Some/intermittent irritability	Increasing irritability and/or lethargy
Stridor*	Barking cough Stridor only when active or upset	Some stridor at rest	Stridor present at rest
Respiratory Rate	Normal	Increased Resp rate Tracheal Tug Nasal Flaring	Marked increase or decrease Tracheal Tug Nasal Flaring
Accessory Muscle Use	None or minimal	Moderate chest wall retraction	Marked chest wall retraction
Oxygen	No oxygen requirement	No oxygen requirement	Hypoxemia is a late sign of significant upper airways obstruction

RCH Guideline 2011(2018)



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Management of Croup

- Cough alone may not require treatment
- Mild or Moderate
 - Prednisolone or Oral dexamethasone
 - Observe for 30 min post steroid administration
 - Discharge once stridor-free at rest
- Severe
 - Nebulised adrenaline (5ml of adrenaline 1:1000)
 - IV/IM Dexamethasone
 - Observe for 4 hours post adrenaline. Consider discharge once stridor free at rest



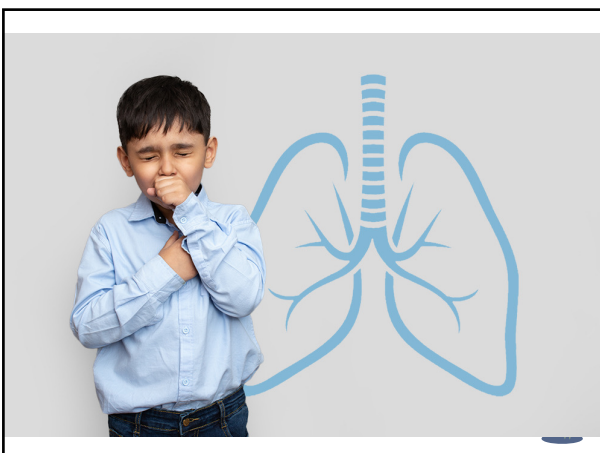
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Role of Steam Therapy

- Steam inhalation and mist therapy
- Been described since 19th Century
- Parents often describe benefit from getting in the shower, change in air temperature, humidified air
- No evidence but studies severely limited,
 - Compared humid air with steroid use in mod/severe
 - Small numbers in studies
- Some sites recommend humidification for mild (stay at home) croup



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Types of Asthma

- Infrequent Intermittent 75%
- Frequent Intermittent 20%
- Persistent 5%



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Asthma Definition

- In young children, the diagnosis of asthma can be confirmed by a clinical response to an inhaled bronchodilator
- In children aged 7 years and over, use spirometry to confirm the diagnosis of asthma
- Wheeze suggests asthma but is not always so
- In young child need to exclude non asthma causes of wheeze



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Symptoms	Mild	Moderate	Severe and life-threatening*
Altered consciousness	No	No	Agitated Confused/drowsy
Oximetry on presentation (SaO ₂)	94%	94–90%	Less than 90%
Talks in	Sentences	Phrases	Words Unable to speak
Pulse rate	Less than 100 beats/min	100–200 beats/min	More than 200 beats/min
Central cyanosis	Absent	Absent	Likely to be present
Wheeze intensity	Variable	Moderate to loud	Often quiet
PEF**	More than 60% predicted or personal best	40–60% predicted or personal best	Less than 40% predicted or personal best Unable to perform
FEV ₁	More than 60% predicted	40–60% predicted	Less than 40% predicted Unable to perform

Asthma assessment



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Evidence

Holding Chambers v's Nebulisers

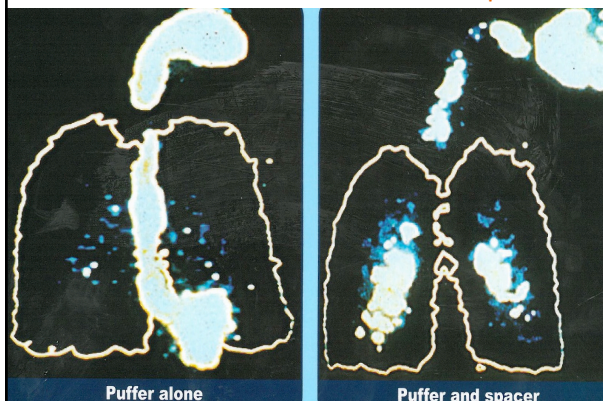
Cochrane Review 2013

- 1897 children and 729 adults in 39 trials
- LOS in ED – 33 mins vs 103 mins
- Pulse Rate – 6.3% lower
- No outcome difference



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Medication – With and Without a Spacer



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Asthma Management

- Mild Asthma
 - Give Salbutamol via MDI with Spacer as follows:
 - <6 yrs- 6 puffs via MDI with spacer
 - >6 yrs- 12 puffs via MDI with spacer

if child is < 4 yrs use a face mask and small volume spacer

If > 4 yrs use a mouthpiece and large volume spacer

May have burst therapy 20min then repeat by 3

Review for discharge criteria with asthma plan



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Asthma Management

- Moderate Asthma
 - Give oxygen if sat <94%
 - Within the first hour give 3 consecutive bursts of Salbutamol via spacer
 - Ipratropium bromide may be used in addition
 - Start oral Prednisolone 1mg/kg daily for 3-5 days
 - Review in 2 hours for discharge criteria



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Asthma Management

- Severe asthma
 - Contact senior help early
 - Give High flow oxygen



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Asthma Management

- Severe asthma
 - Contact senior help early
 - Give High flow oxygen
 - Give 3 consecutive bursts of Salbutamol and Ipratropium nebuliser
 - IV hydrocortisone
 - Resassess frequently



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Life Threatening Asthma

- Oxygen high flow
- IV salbutamol
- IV hydrocortisone
- Second line therapies Aminophylline
- Consider BiPAP
- Intubation and ventilation
- Permissive hypercapnia



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LITTLE MISS WHOOPS

Roger Hargreaves



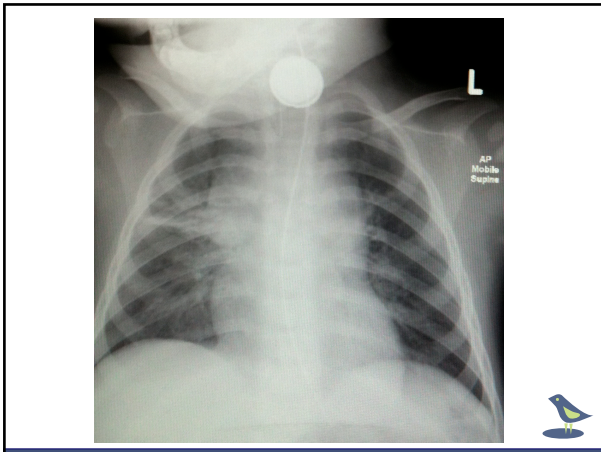
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2 yr old presents to ED

- Severe respiratory distress
- Stridor, Tired,
- ED in extremis
- To OT for RSI
- Post intubation xray reviewed by Cons Anaes, Cons Paed, Cons Intensivist, Paeds Retrieval team and many more
- ET & NGT Tube well placed
- Consolidation noted to Rt middle lobe
- Transferred to Paed tertiary facility



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Conclusion

- Discussed a structured approach to respiratory assessment
- Explored common presenting complaints and their management
 - Bronchiolitis
 - Croup
 - Asthma
 - Foreign Body

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