

# MMed and DCH Lectures

## Common paediatric problems (but some uncommon causes)

June 21<sup>st</sup>, 2021

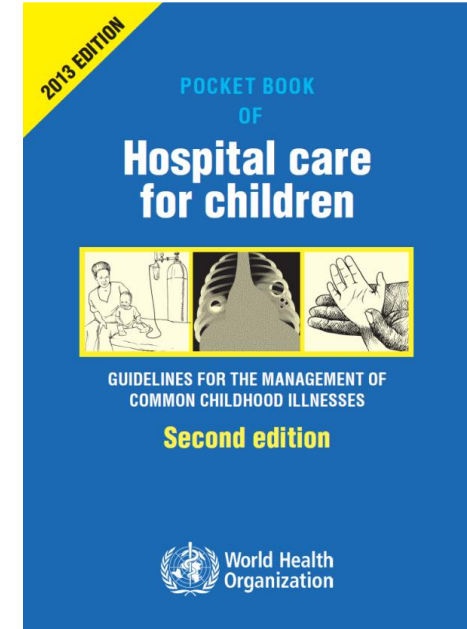
Prof Trevor Duke

# Charlie: 5-year-old boy, 3 weeks of wheeze and cough

- Previously well, 3 weeks of cough, wheeze, not eating much, fevers in the first week, cannot lie down without coughing and becoming distressed

# Stages of Management of every Sick Child

- Triage
- Emergency treatment
- History and examination
- Laboratory investigations, if required
- Main diagnosis and other diagnoses
- Treatment
- Supportive care
- Monitoring
- Discharge planning
- Follow-up



# Triage

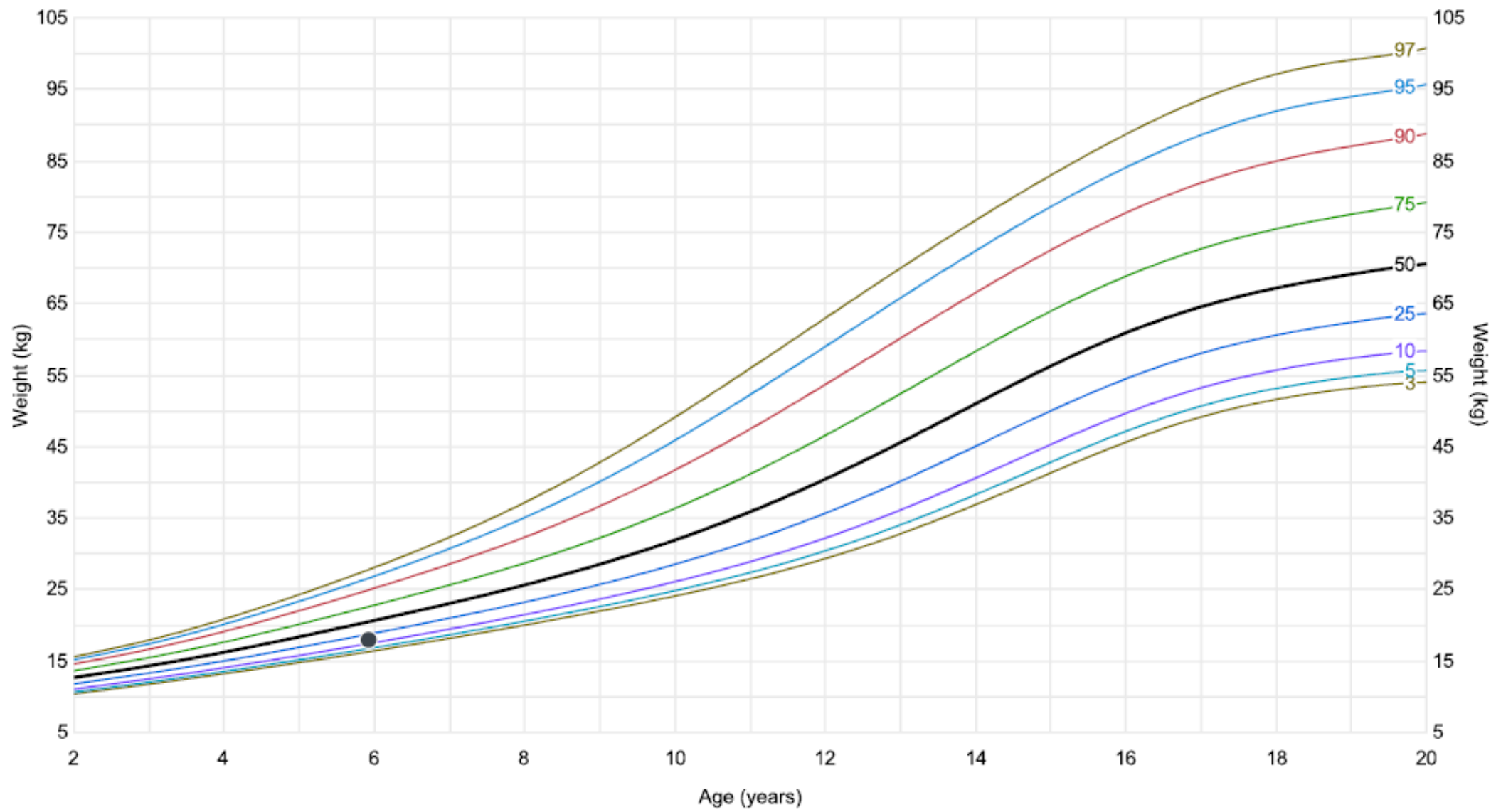
Take a brief history of the presenting problem

Take temperature and weigh the child

- A. Listen for stridor or obstructed breathing
- B. Look for cyanosis and for signs of respiratory distress (chest indrawing, tracheal tug), check SpO<sub>2</sub>
- C. Feel the skin temperature of the hands and feet, feel the pulse for volume, check capillary refill time
- D. Assess for lethargy and level of interaction.

# Examination

- Pale, moderate intercostal recession, mild stridor, soft wheeze
- Comfortable sitting up
- Distressed and coughing when lays flay
- No lymphadenopathy, spleen 2 cm below left costal margin, liver not enlarged



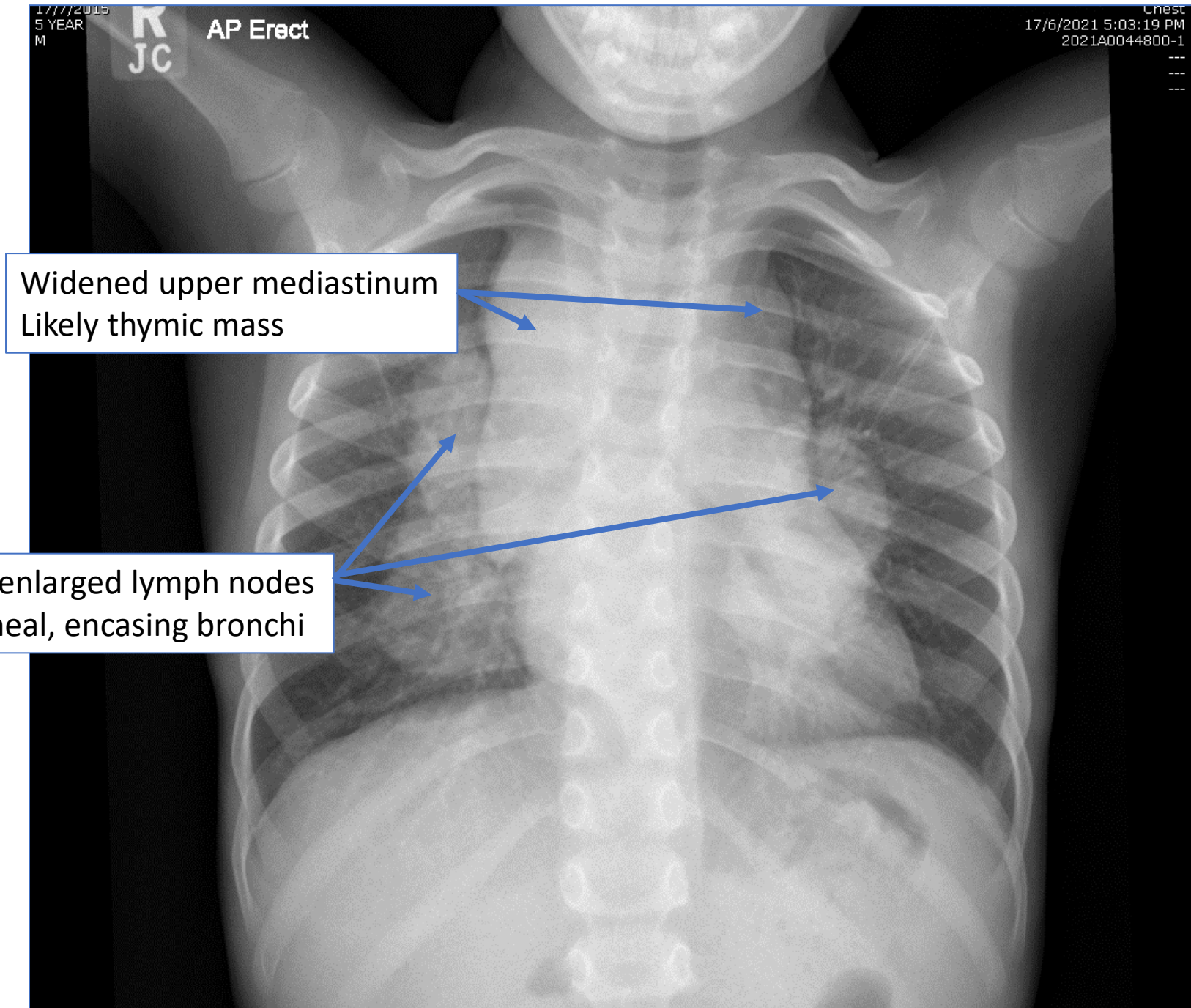
- Haemoglobin: 96
- Hct: 0.30
- RCC: 4.33
- **MCV: 69**
- **MCH: 22.2**
- RDW: 24.2
- Platelets: 490
- White Cell Count: 6.3
- Neutrophils: 5.24
- **Lymphocytes: 0.78**
- Monocytes: 0.27
- Eos: 0.04
- Basophils: 0.01

# Differential diagnosis: the child with 3 weeks of wheeze and cough

- Asthma
- Pneumonia – atypical such as mycoplasma?
- Cardiac? (cannot lie down)
- Tuberculosis – lymph node obstruction of airways?
- Inhaled foreign body?
- What else??
  - Iron deficiency anaemia?



What do you see?

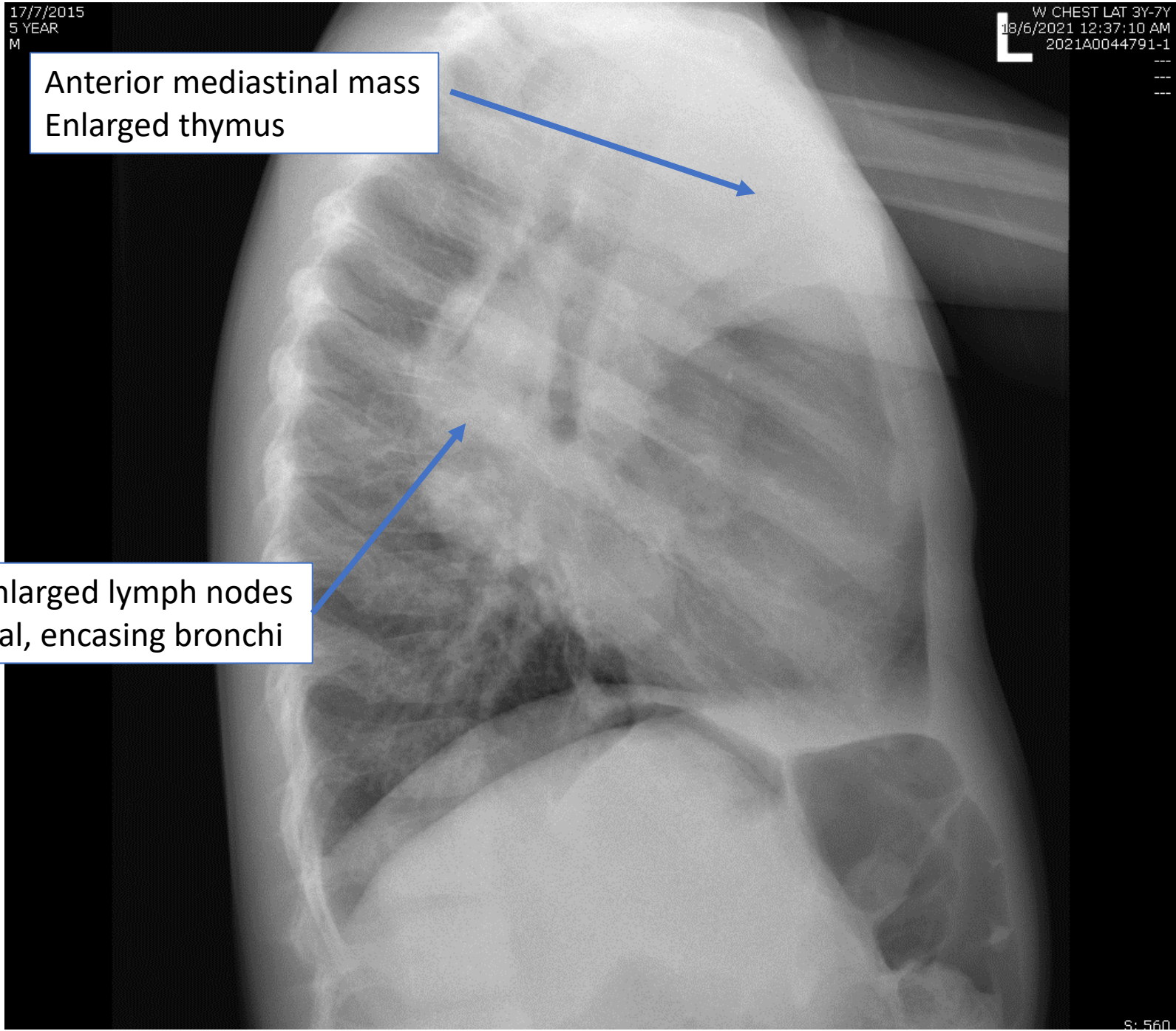


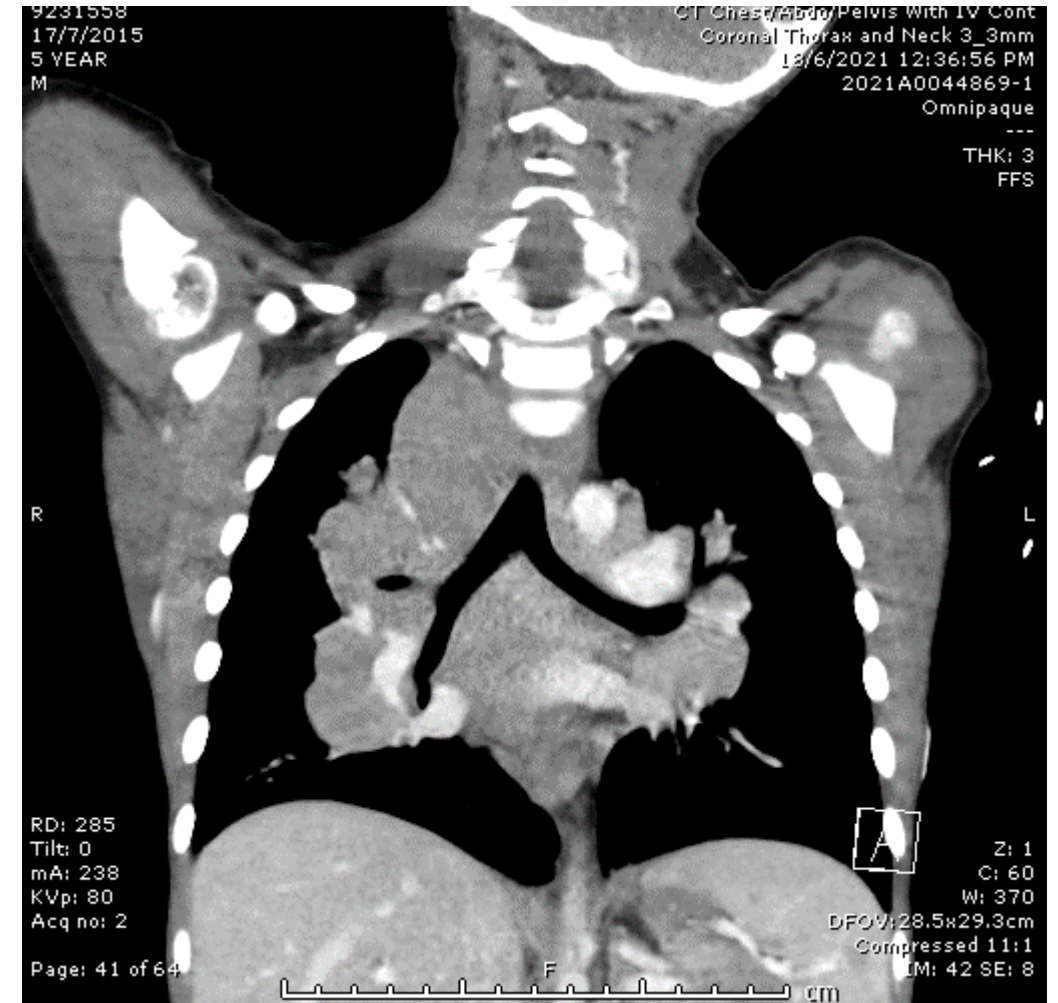
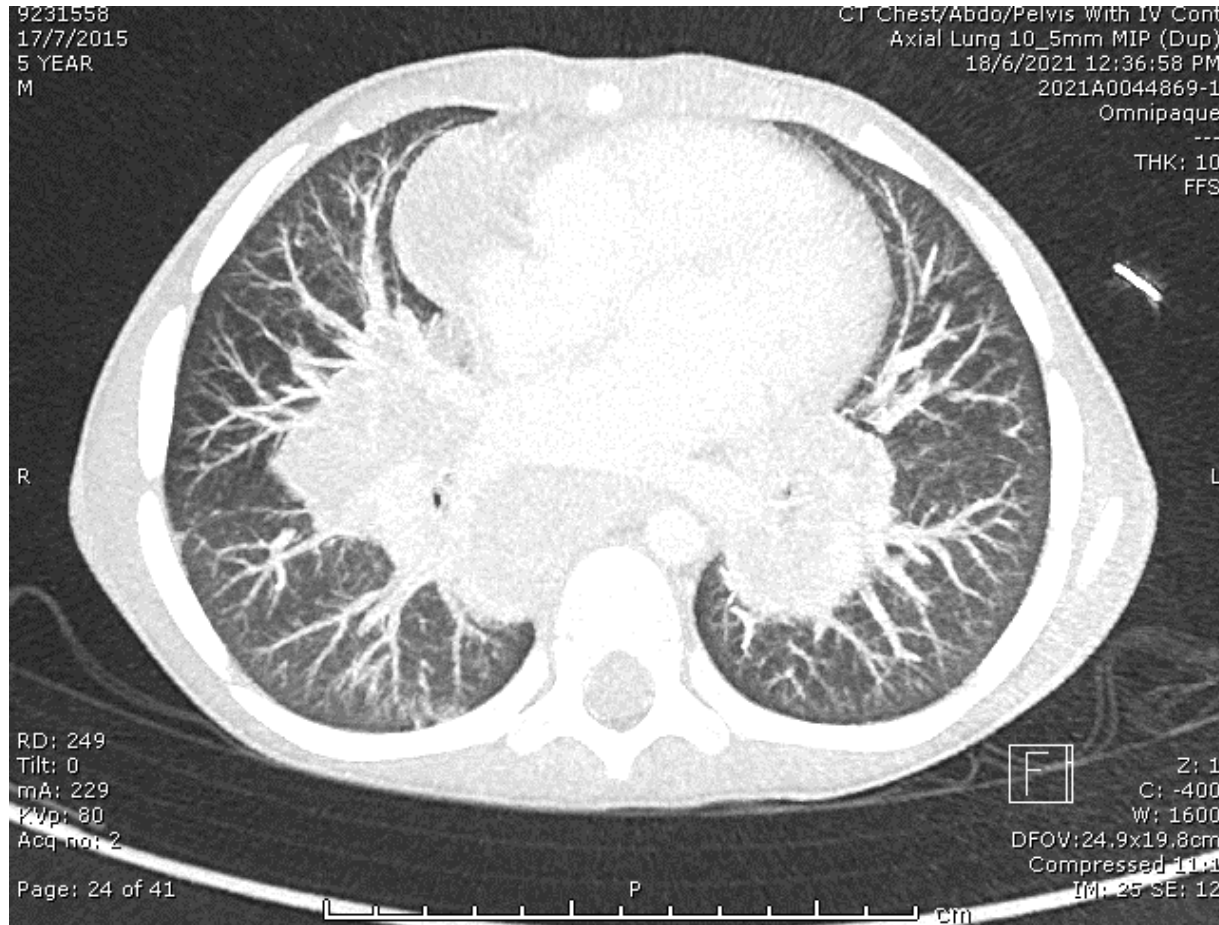
Widened upper mediastinum  
Likely thymic mass

Multiple enlarged lymph nodes  
Paratracheal, encasing bronchi

Anterior mediastinal mass  
Enlarged thymus

Multiple enlarged lymph nodes  
Paratracheal, encasing bronchi

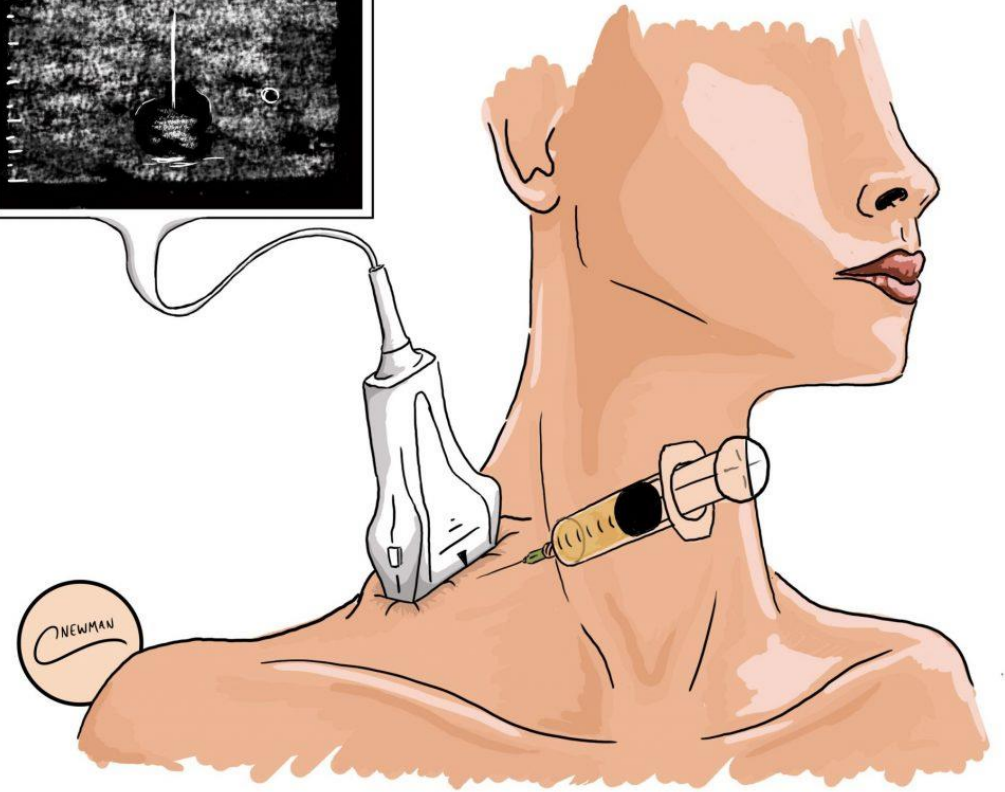
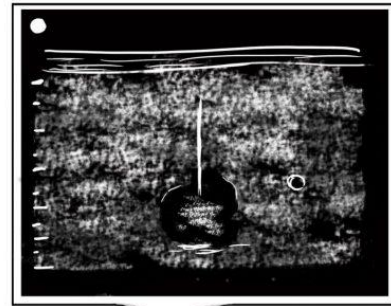
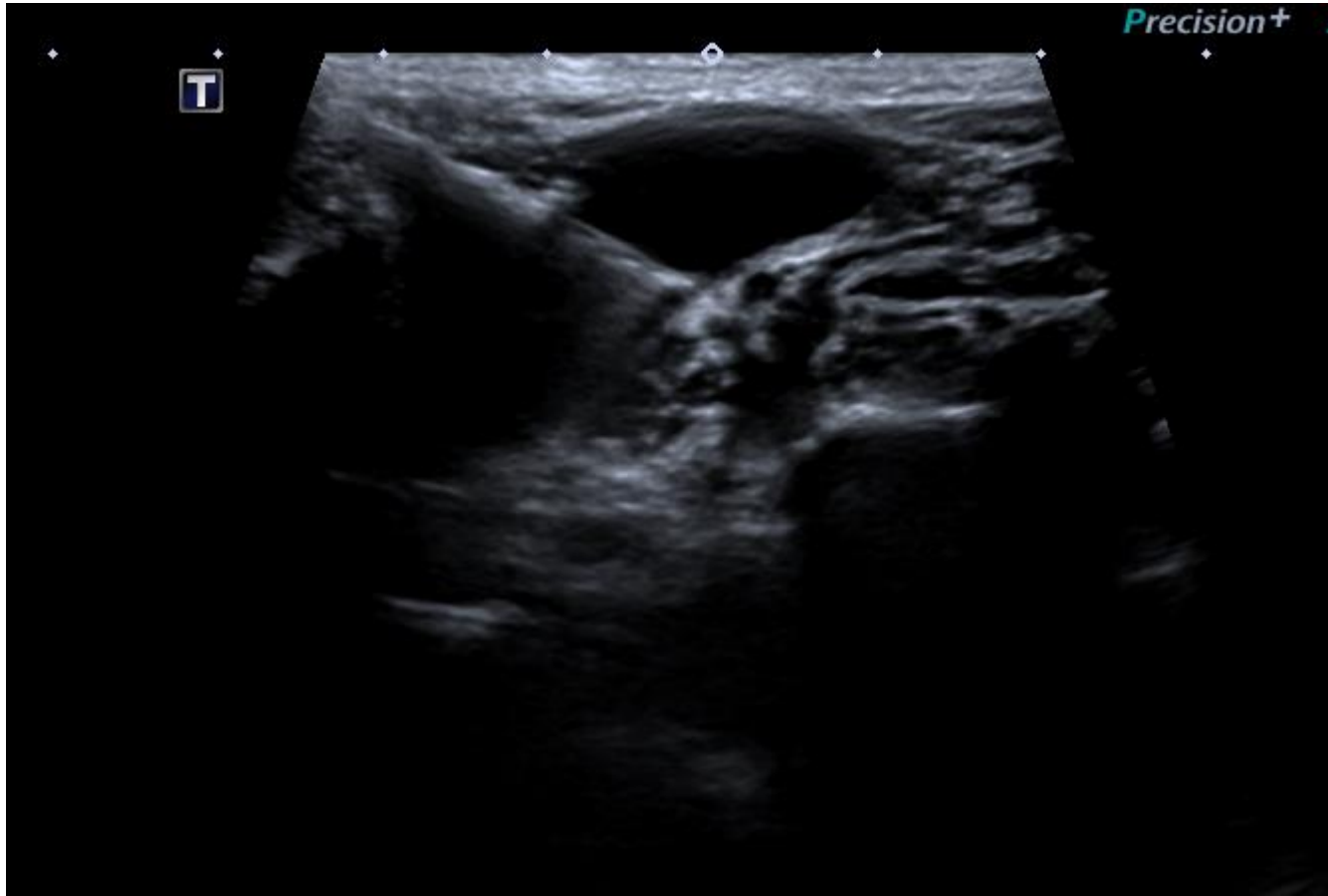




CT scan only demonstrates what was seen on the chest x-rays  
Differential diagnosis: TB lymphadenopathy (but no cavity or consolidation)  
Lymphoma (T-cell – thymic; B-cell – Burkitt; but most likely Hodgkin's disease)

# How to do a procedure (lymph node biopsy) in a child with a mediastinal mass

- Lymph node aspirate
  - Ketamine + morphine, small aliquots titrated
  - Local anaesthetic
  - Semi-awake, sitting up
  - Do not lie the child flat when sedated, they will obstruct



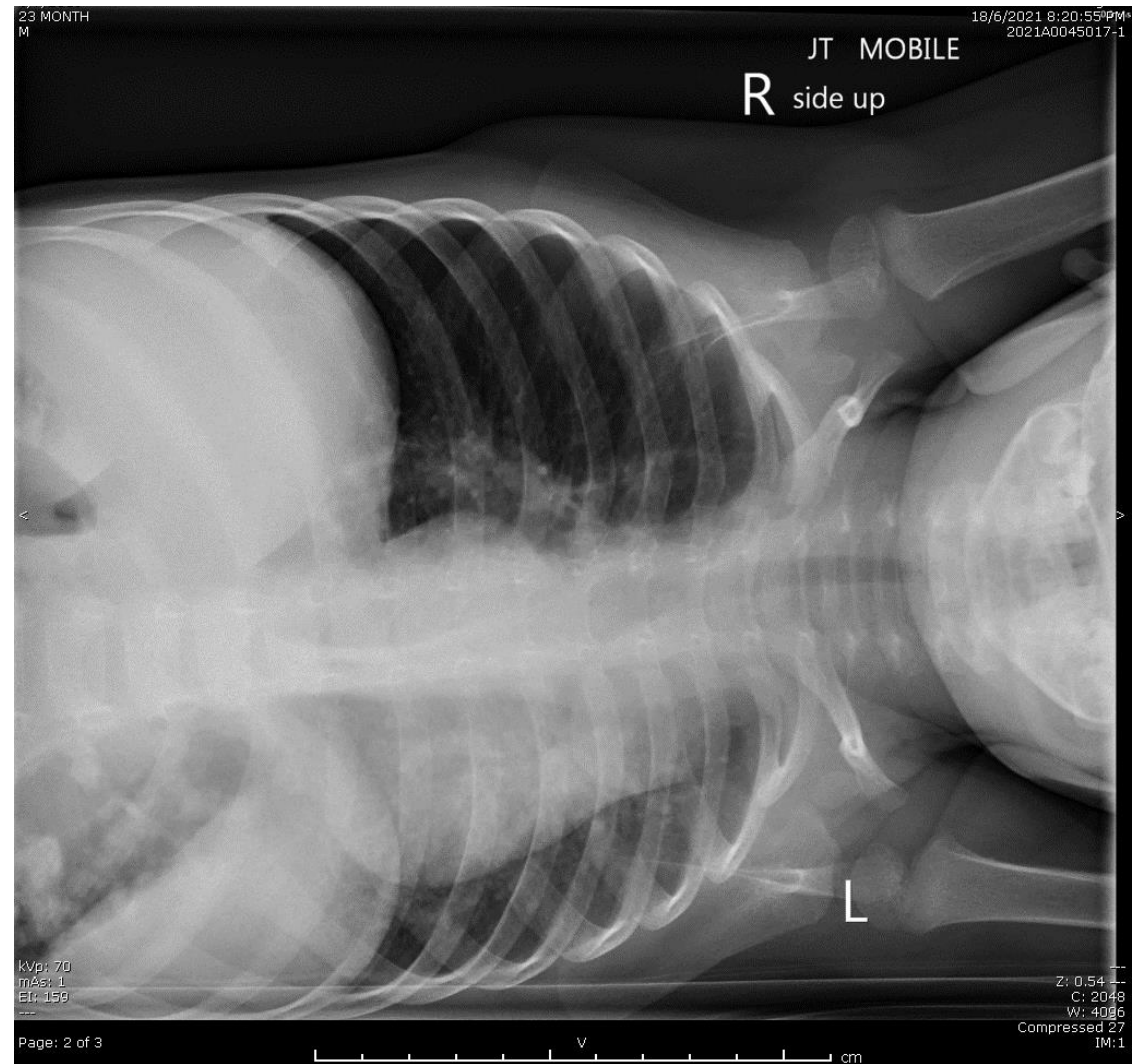
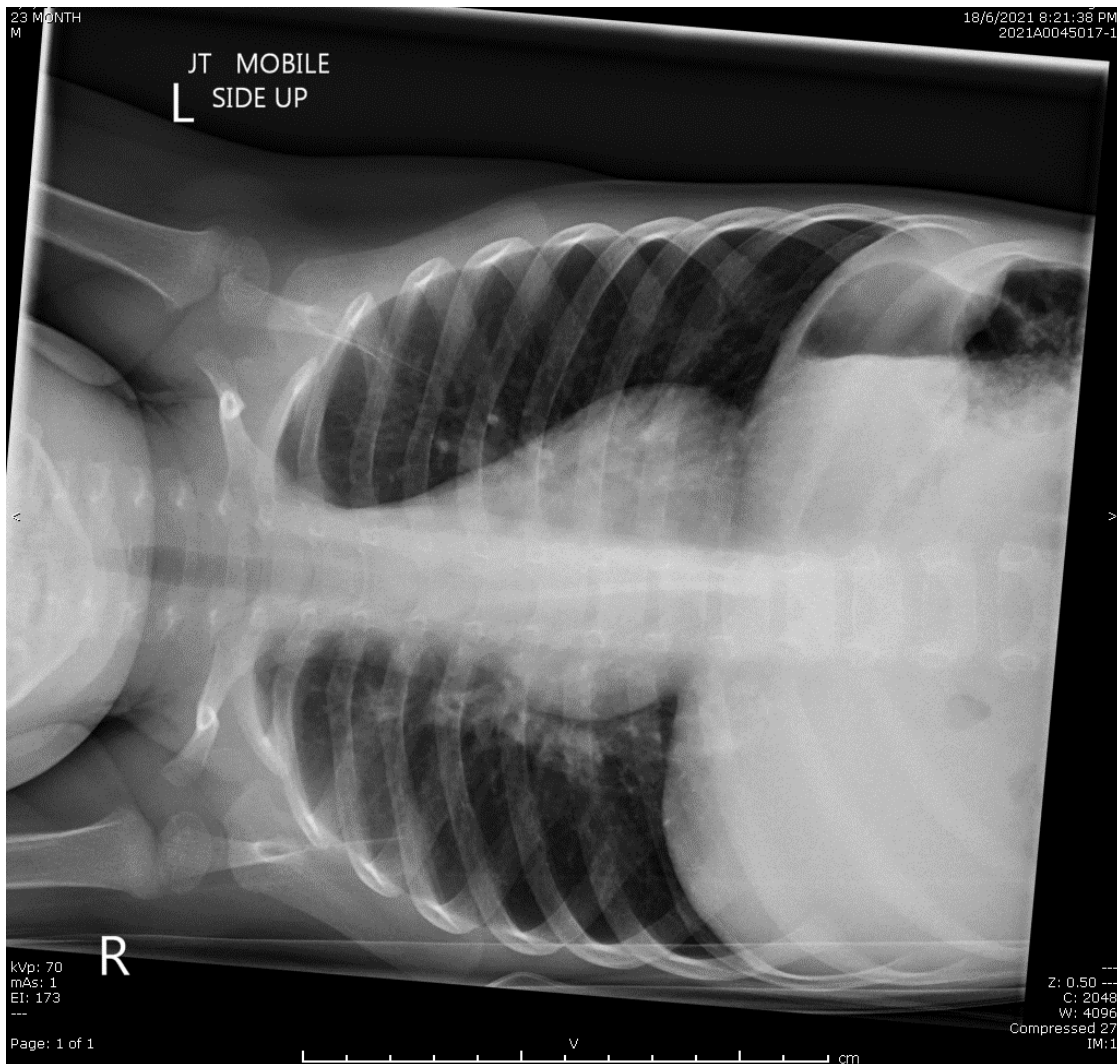
# Chemotherapy for Hodgkin's disease

- **Start with prednisolone, which will shrink the tumour and make the airway safe** (regardless of what sort of lymphoma it is)
- D1 Vincristine 1.5 mg/m<sup>2</sup> IV
- D2 Cyclophosphamide 650 mg/m<sup>2</sup> IV
- D1-8 Procarbazine 100 mg/m<sup>2</sup> orally on days 1-8
- D8 Adriamycin 35 mg/m<sup>2</sup>
- D8 Vinblastine 6 mg/m<sup>2</sup> and bleomycin 10 mg/m<sup>2</sup> all intravenously on day 8
- D1-14 Prednisone 40 mg/m<sup>2</sup> orally
- 6 cycles, each 3 weeks, 90% cure

# Sanjay: 23-month-old boy coughing fit after eating raw oats

- Runny nose and low-grade fever 3 days
- Coughing fit while eating breakfast
- Mother slapped him on the back
- Respiratory distress increased throughout the day
- RR 66/min, chest indrawing, crepitations ++ on right side, HR 168 / min, SpO<sub>2</sub> 88% in air, expiratory wheezes over right lung
- Emergency treatment – oxygen
- Differential diagnosis
  - Pneumonia
  - Asthma
  - Foreign body aspiration?

Ideally take an inspiratory and expiratory film, but if not possible, take a chest x-ray on left side and on right side



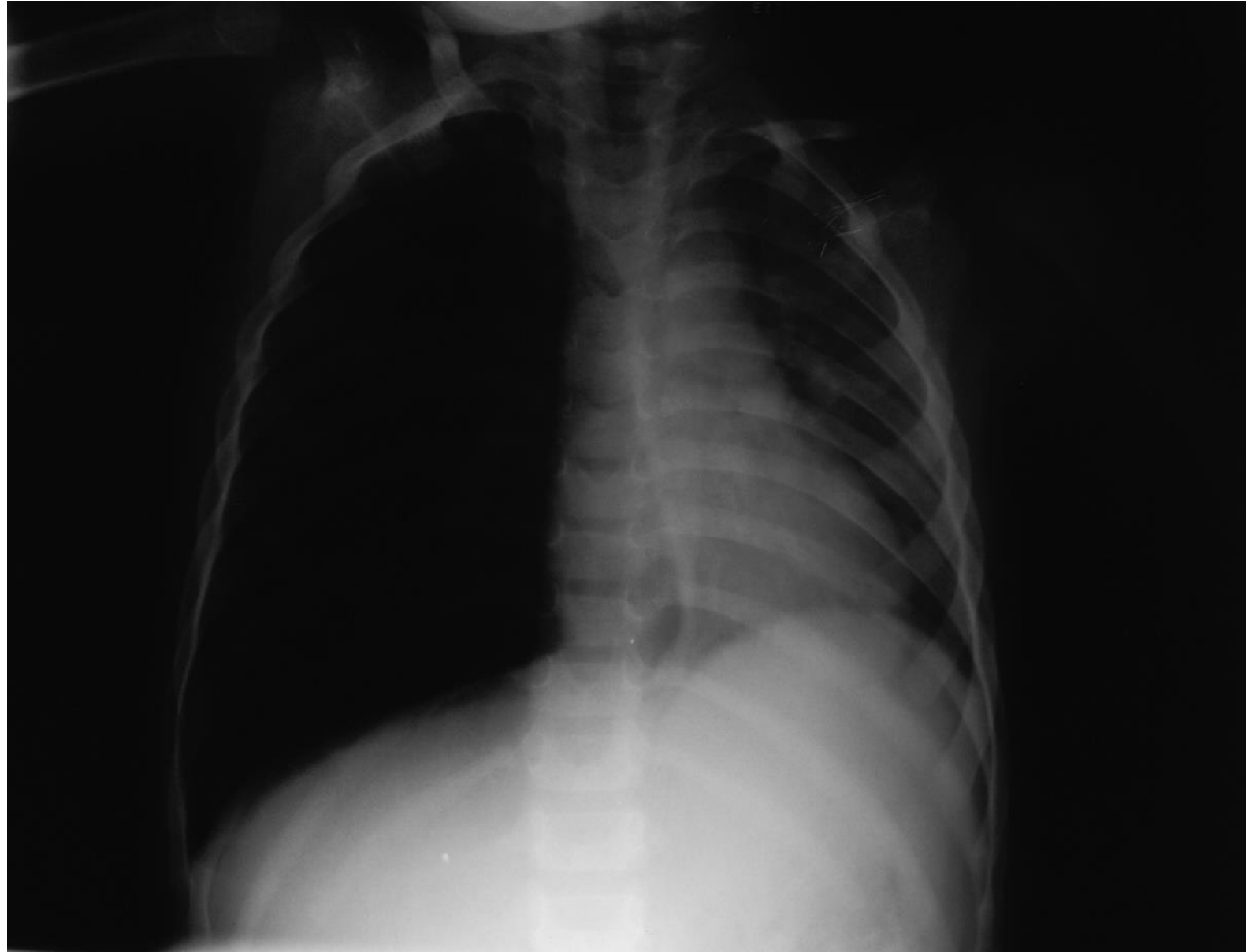
Look for asymmetry, relative hyperinflation of right lung = right sided foreign body or obstruction



# Management

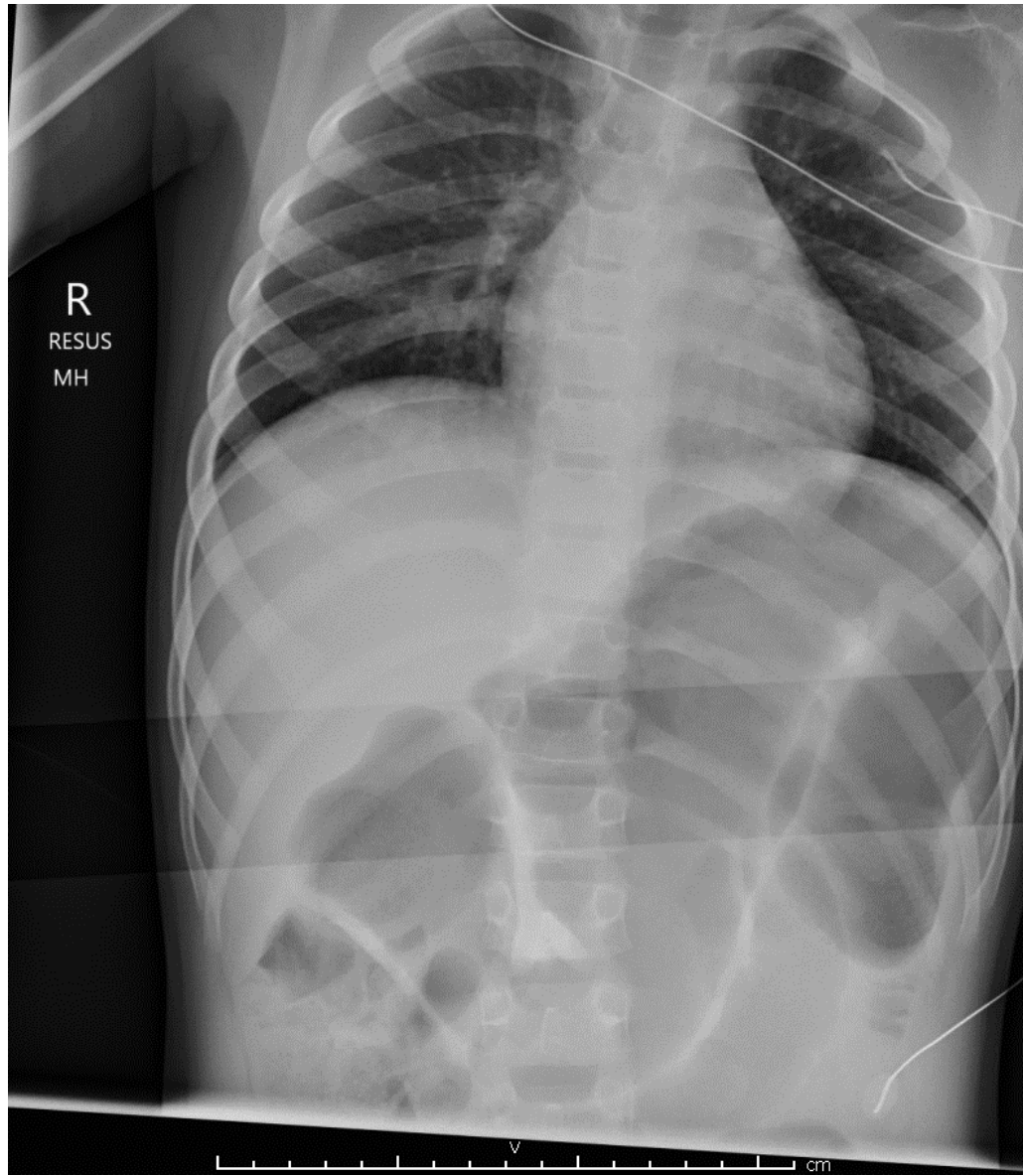
- Foreign body removed at bronchoscopy – multiple food particles
- Oxygen until stable
- Benzylpenicillin for 5 days
- Recovered fine

Foreign body  
in right main  
bronchus –  
coffee bean



# Emanuel: 7-year-old boy with shock

- 2 days of diarrhoea and vomiting, then large bout of diarrhoea and collapse
- BP 52/18, mean 40
- Pulses weak, HR 170
- Pale, mottled



# 7-year-old boy with shock

- History of Hirschsprung's disease –
  - Aganglionosis of colonic mucosa
- Resection of large bowel (descending colon), re-anastomosis as an infant
- Had been growing well
  - weight 1 month ago 25kg
  - now 21 kg (suggesting severe dehydration)

pH: 6.77

pCO<sub>2</sub>: 53 mmHg

pO<sub>2</sub>: 38 mmHg

Bicarbonate: 8

Base Excess: -29

Hb: 17.9 g/dL

Sodium: 131 mmol/L

Potassium: 6.6mmol/L

Chloride: 100 mmol/L

Glucose: 14.8 mmol/L

Lactate: 14.4 mmol/L

# 7-year-old boy with shock

Severe metabolic (lactic) acidosis – low pH and low bicarbonate, large base deficit  
Hypercarbia (shock and unconsciousness)  
High Hb – suggests severe dehydration from hemoconcentration  
High glucose = stress response

pH: 6.77

pCO<sub>2</sub>: 53 mmHg

pO<sub>2</sub>: 38 mmHg

Bicarbonate: 8

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# Differential diagnosis

Severe dehydration and shock from:

- Virus diarrhoea – rotavirus, norovirus, adenovirus
- Dysentery – E. coli, Shigella flexneri
- Cholera
- Antibiotic associated diarrhoea – Clostridium difficile
- Hirschsprung's enterocolitis / toxic megacolon

# Hirschsprung's enterocolitis

- Inflammatory colitis, like necrotizing enterocolitis or pigbel
- Sometimes due to *Clostridium difficile*
- Lethargy, fever, diarrhoea, bloody stools
- Severe shock – dehydration, toxic shock, bacteraemia



# Rehydration – for any cause of such severe dehydration

- 20ml/kg x 2
- Severe dehydration
- Weight 25kg – 10+ dehydrated
- Fluid replacement
- Maintenance:
  - 100ml per kg for first 10kg = 1000
  - 50ml per kg for next 10 kg = 500
  - 20ml/kg thereafter = 100
  - Total 1600ml / 24 hours = 67ml per hour
- + Deficit 2.5L = 208 ml/hour
- + 100ml for every diarrhoeal stool
- Therefore – 275ml per hour for first 12 hours

# Treatment of Hirschsprung's enterocolitis

- Antibiotics: amoxicillin, gentamicin, metronidazole
- Bowel washouts BD – saline irrigation through rectal tube, with ketamine sedation (0.5mg/kg IV)
- Recovered well in 5 days

# What we've learnt

- Causes of wheeze and respiratory distress
- A procedure in a child with a mediastinal mass
- Radiographic signs of an airway foreign body
- Hirschsprung's enterocolitis / Toxic megacolon
- Assessment and management of dehydration