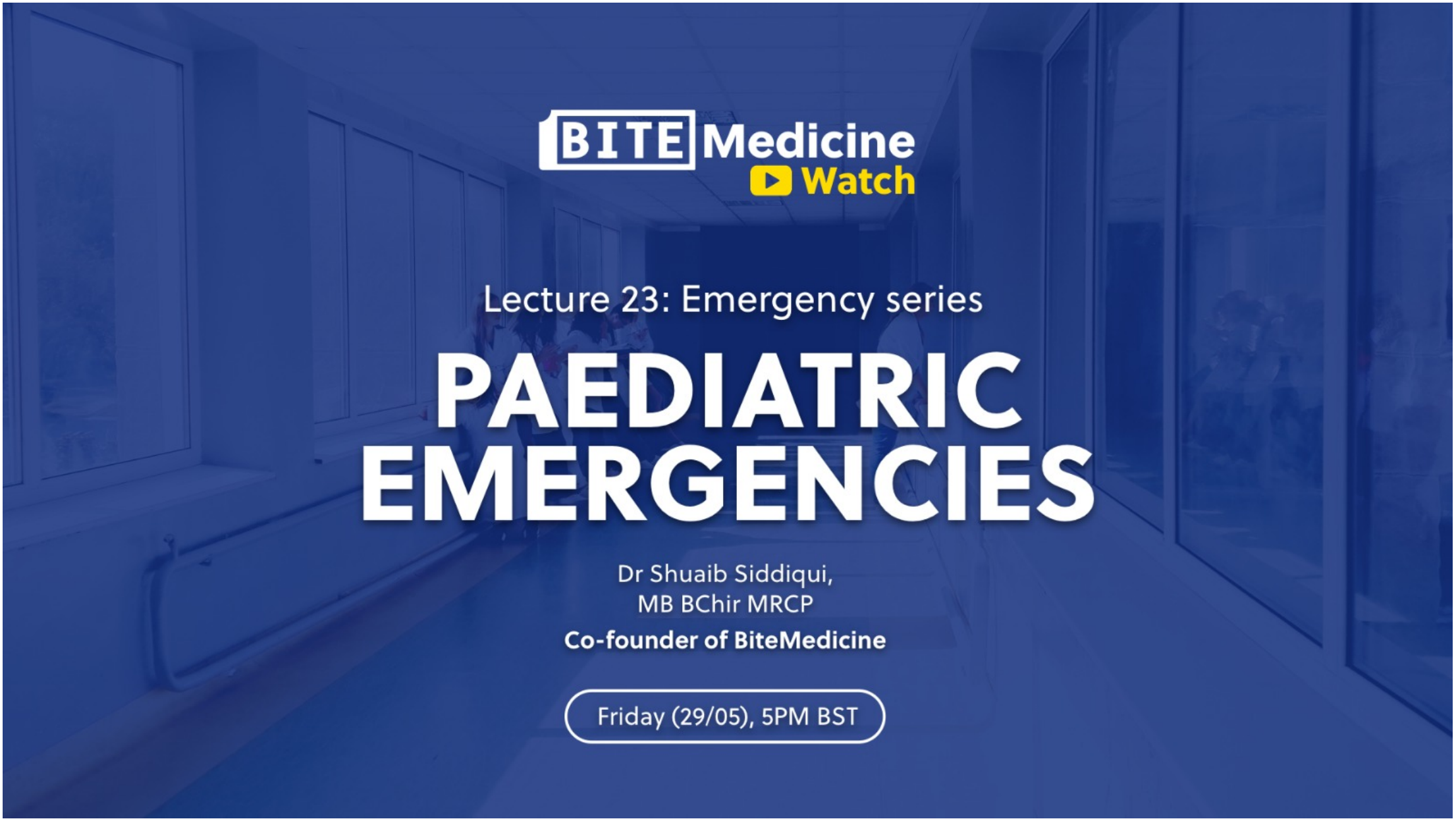

BITE Medicine
Watch
Lecture 23: Emergency series
PAEDIATRIC EMERGENCIES
Dr Shuaib Siddiqui,
MB BChir MRCP
Co-founder of BiteMedicine
Friday (29/05), 5PM BST

Aims & objectives

Organ	Emergency
Respiratory	**Croup** **Bronchiolitis** **Asthma** **Viral induced wheeze** Epiglottitis
Neurology	**Seizures**
Gastroenterology and surgery	**Pyloric stenosis** **Intussusception**
Haematology	**ALL** **Sickle cell crisis**
Infection	**Meningitis** **Sepsis**
Other	**Anaphylaxis** Kawasaki disease

Case-based discussion: 1

History

A 7-month-old child presents to the emergency department with his father. He has had a runny nose and cough for the last few days, and today his father noted he has been sucking in his ribs whilst breathing.

He is refusing his bottle and has only had about a third of his normal fluid intake.

Observations

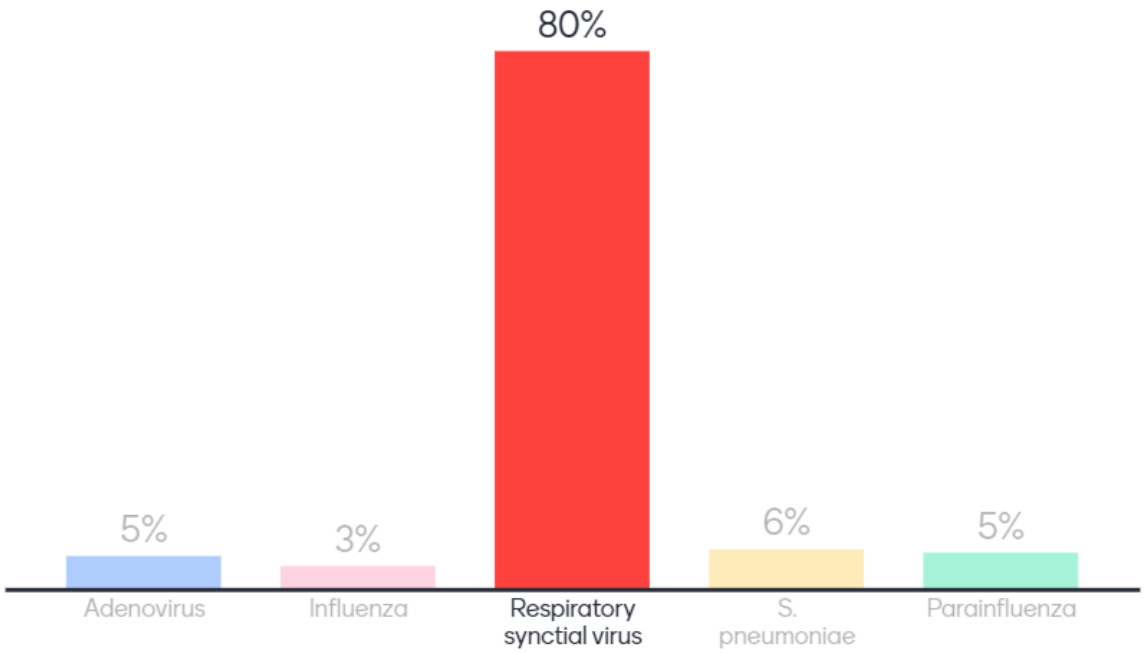
HR 180, RR 60, SpO2 90%, Temp 38.3

(HR 80-160)
(RR 30-60)

(1)

What is the likely causative organism?

Mentimeter



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Observations

HR 180, RR 60, SpO2 90%, Temp 38.3

(HR 80-160)
(RR 30-60)

(1)

Introduction: Bronchiolitis

Definition: acute **infection of the lower respiratory tract** that results in inflammation of the small airways (bronchioles)

Epidemiology

- Affects 1 in 3 infants in the first year of life (NICE)
- 2% of infants require hospitalisation
- Very good prognosis

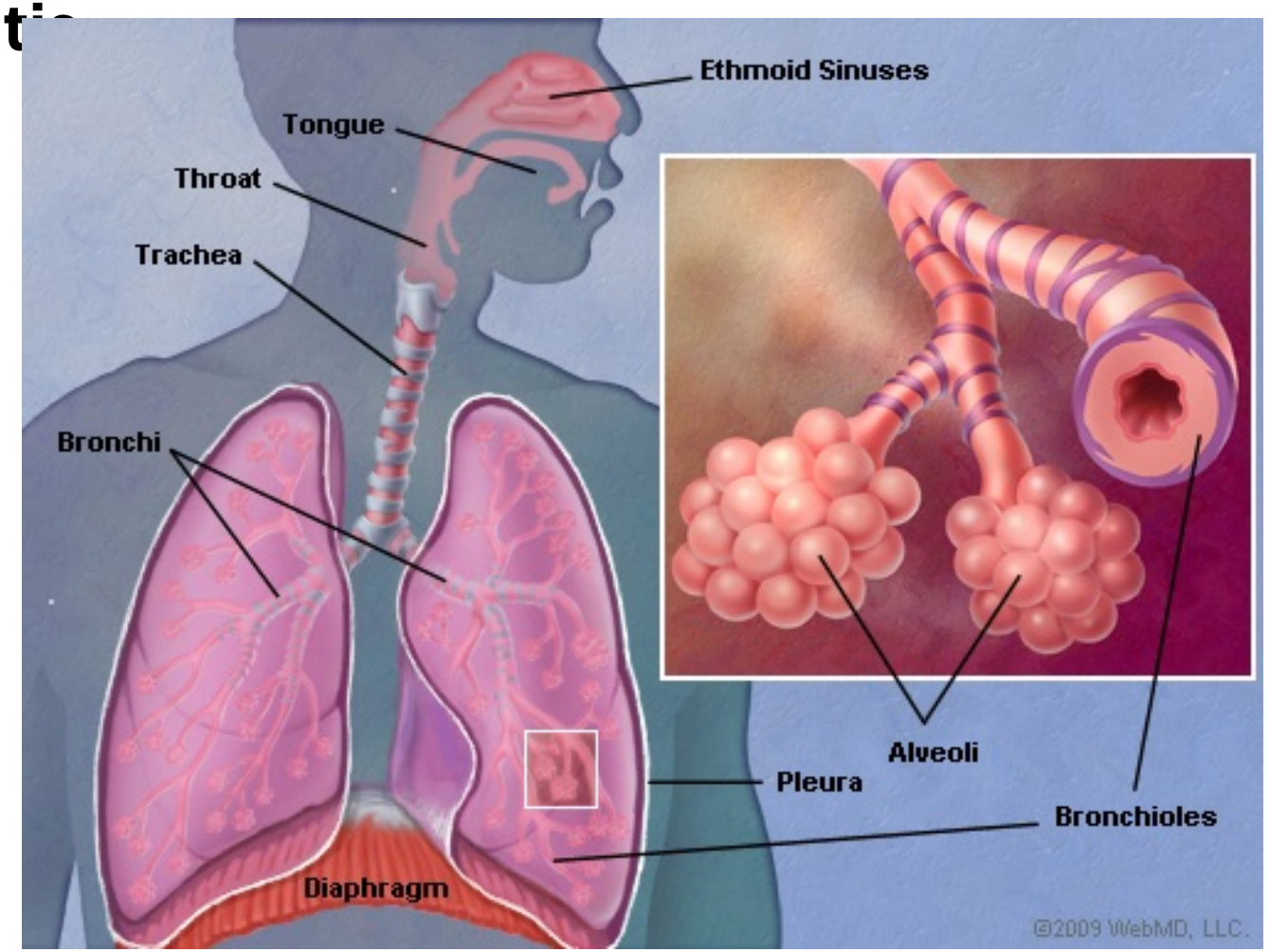
Aetiology

- RSV
- Mycoplasma, adenovirus

Risk factors

- **Age:** peak incidence 3-6 months
- **Comorbidity:** congenital heart disease, cystic fibrosis, prematurity
- **Winter**

Pathophysiology: Bronchiolitis



(2)

Clinical features

Timeline	Clinical features
Day 1-3: • Infection of upper respiratory tract	Coryza and cough
Day 4-6 • Infection of bronchioles	**Respiratory distress**: • Intercostal and subcostal recession • Tracheal tug • Nasal flaring • Accessory muscle use **Wheeze and crackles** **Poor feeding**
Day 6-9 • Recovery	Resolution of symptoms

Which of the following would be a cause for admission?

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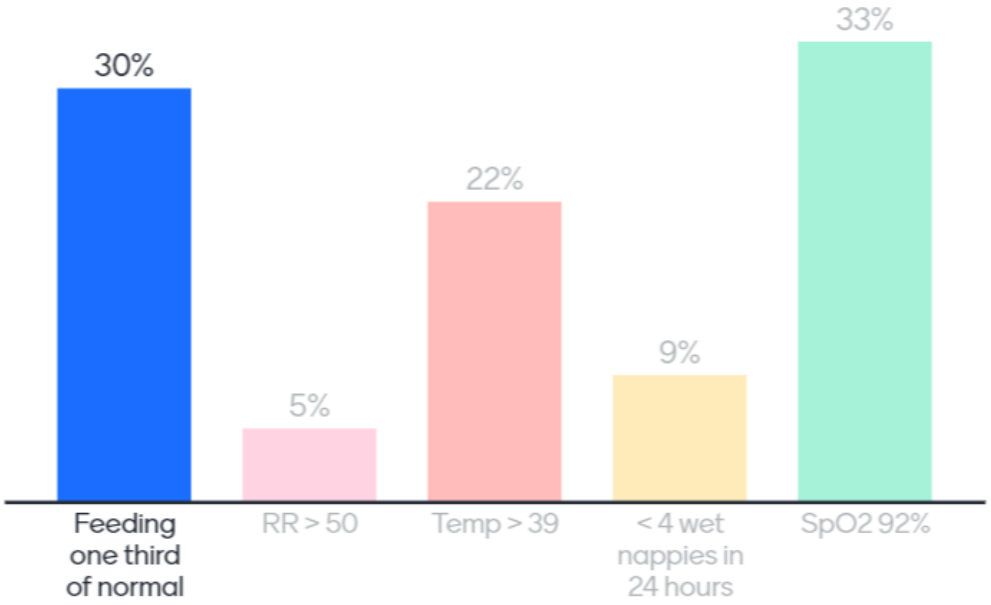


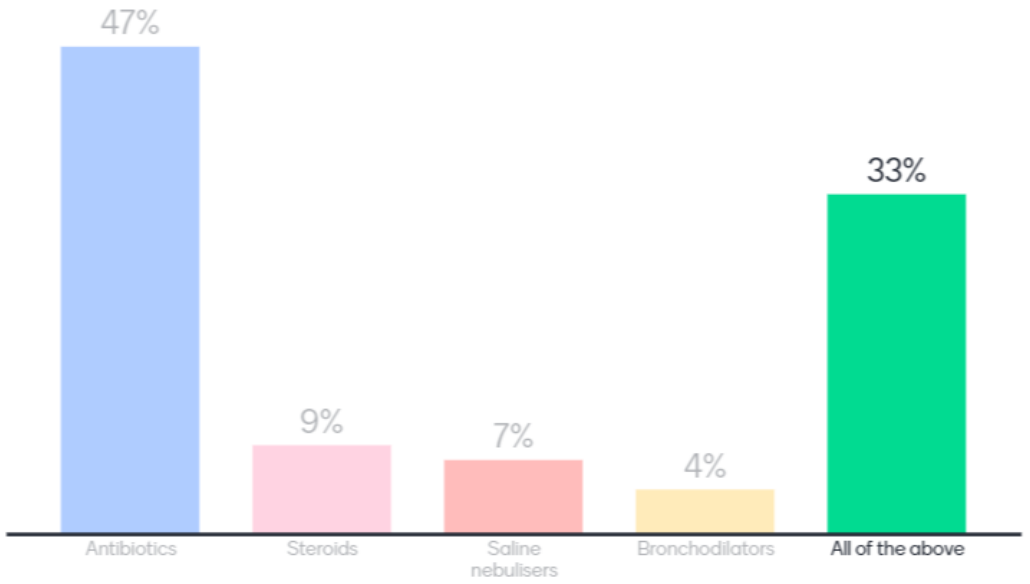
Clinical features

Red flag features suggesting admission is required

- RR > 60 - 70
- Respiratory distress
- SpO2 < 92%
- Feeding < 50% or evidence of dehydration

Which of the following is NOT used in the management of bronchiolitis?

Mentimeter



Investigations & Management: Bronchiolitis

Investigations

- **Clinical diagnosis**
- **Capillary blood gas** if necessary
- **CXR** if suspecting secondary pneumonia

(3)

Management

- **Nasal suction**
- **Oxygen:** maintain saturations >92%
  - Headbox
  - Nasal cannula
  - CPAP
  - Intubation and ventilation
- **Fluids:** NG or IV
- **Antibiotics, bronchodilators and saline nebulisers are not used**

Case-based discussion: 2

History

A father brings his 2-year-old son, Zac, to A&E. Zac has an audible barking cough. The father mentions he has had difficulty breathing overnight and noted he was sucking his ribs in and out.

On examination, you note the child has stridor when he is running around. There are no visible intercostal or subcostal recessions.

Observations

HR 140, RR 45, SpO2 96%, Temp 38.3

(HR 80-130)
(RR 24-40)

(4)

Case-based discussion: 2

History

A father brings his 2-year-old son, Zac, to A&E. Zac has an audible barking cough. The father mentions he has had difficulty breathing overnight and noted he was sucking his ribs in and out.

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Observations

HR 140, RR 45, SpO2 96%, Temp 38.3

(HR 80-130)
(RR 24-40)

(4)

Introduction: Croup

Definition: laryngotracheobronchitis

Epidemiology

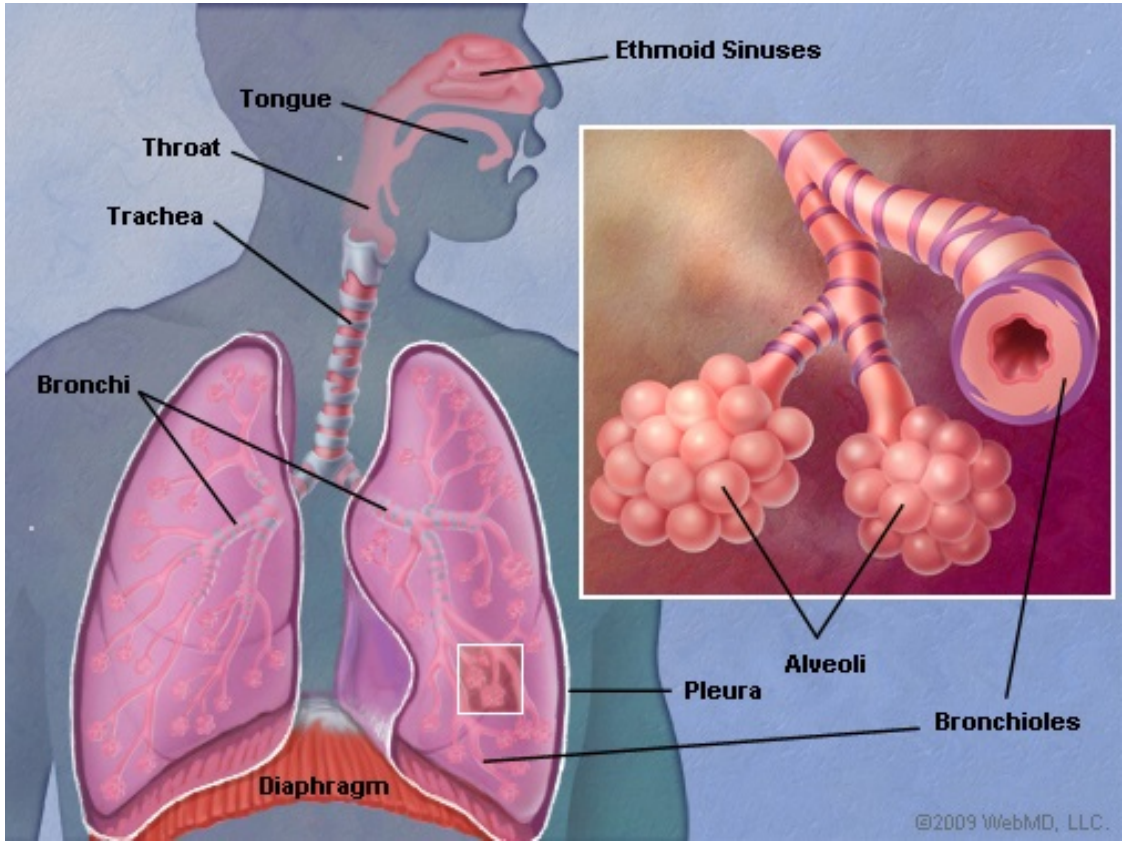
- Affects 3% of children per year
- Typically < 3 years of age
- Males > females

Aetiology

- Parainfluenza virus
- RSV, adenovirus

Risk factors

- Age
- Gender
- Presentation in late autumn/winter
- Previous intubation



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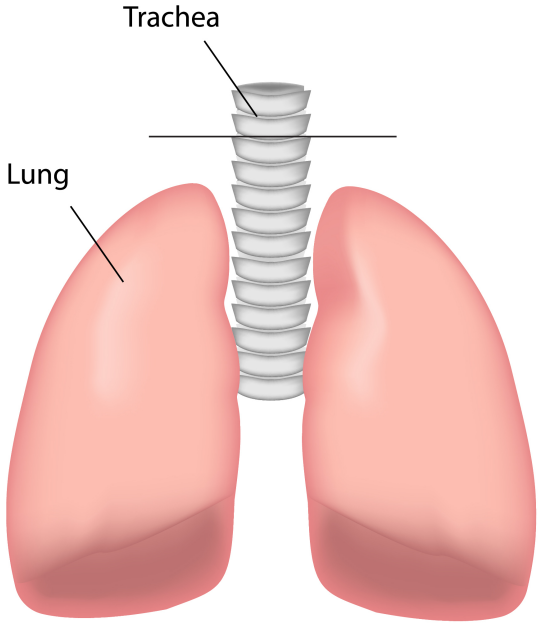
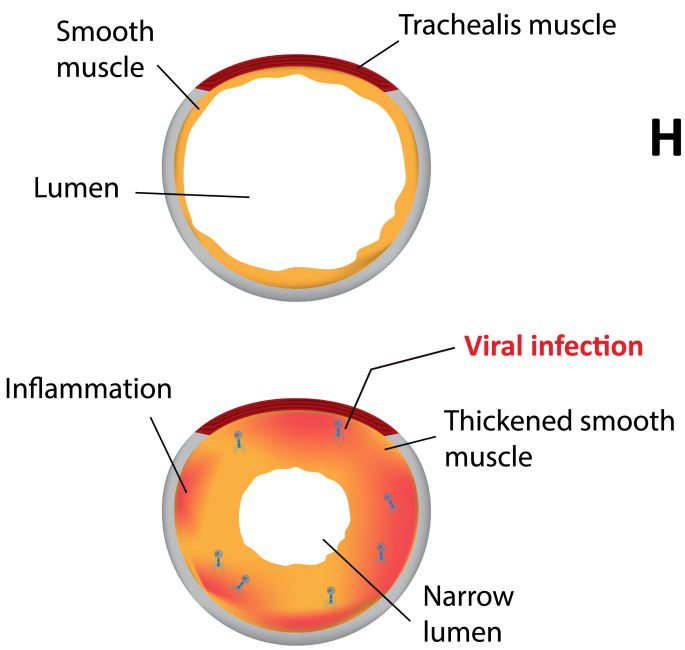
Pathophysiology: Croup





Healthy Airway

Croup

Clinical features

Symptoms	Signs
Barking cough worse at night	Stridor
Difficulty in breathing	**Respiratory distress**: • Intercostal and subcostal recession • Tracheal tug • Nasal flaring • Accessory muscle use
Coryza	
Fever	

Question: 4

History

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(HR 80-130)
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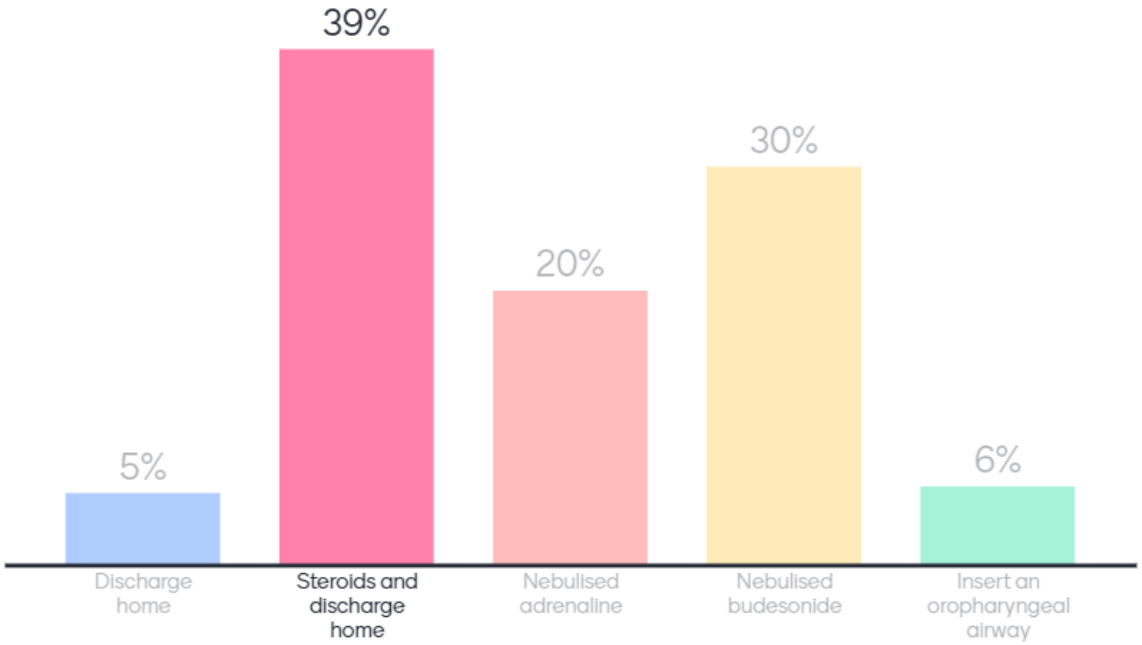
(4)

What is your next step?

Mentimeter



Clinical features

	Mild	Moderate	Severe
Barking cough	Occasional	Frequent	Frequent
Stridor	None at rest	At rest	At rest
Respiratory distress	None	Present	Present
Alert	Happy child	Alert and can be settled	Agitation or lethargy

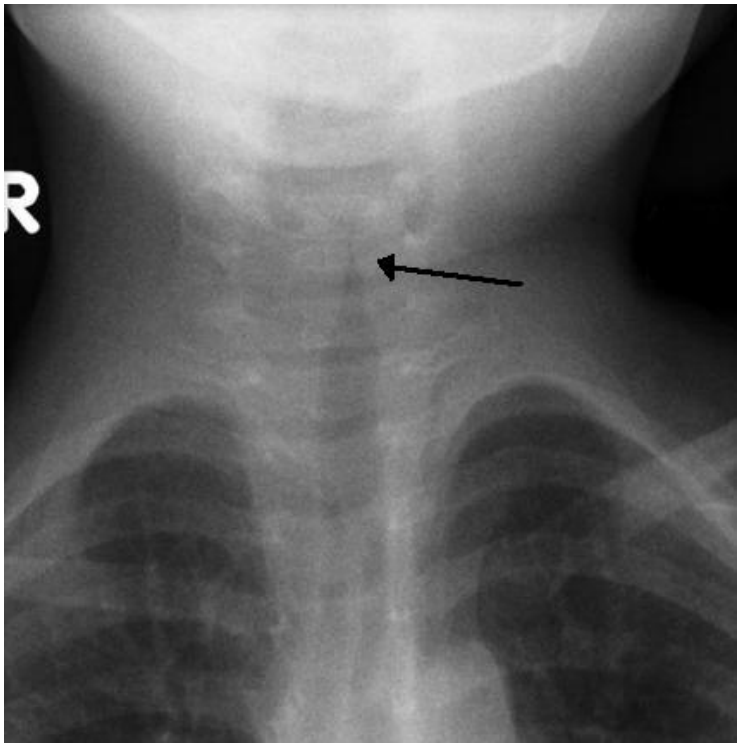
Investigations & Management: Croup

Investigations

- **Clinical diagnosis**
- **Do not annoy the child!**
  - Avoid throat examinations and venepuncture/cannulation if possible
- **Capillary blood gas** if necessary

Management

- **Steroids:** all patients should be given oral dexamethasone
- **Admission:** if moderate or severe
  - **Oxygen**
  - **Nebulised steroids:** if unable to tolerate oral
  - **Nebulised adrenaline:** used in an emergency
  - **Intubation:** deteriorating child



(5)

Case-based discussion: 3

History

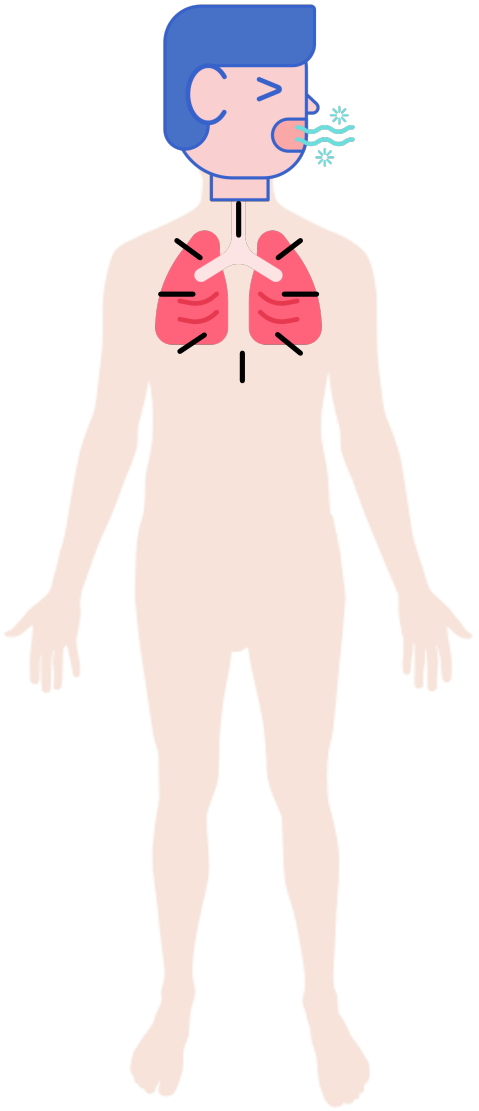
An anxious mother bursts through the A&E doors carrying her 4-year-old son in her arms. He has been wheezy for the last few days and has been using a salbutamol inhaler hourly. The mother was reluctant to bring the child to hospital due to COVID-19.

The mum reports no prior history of asthma. He is normally a well child.

Observations

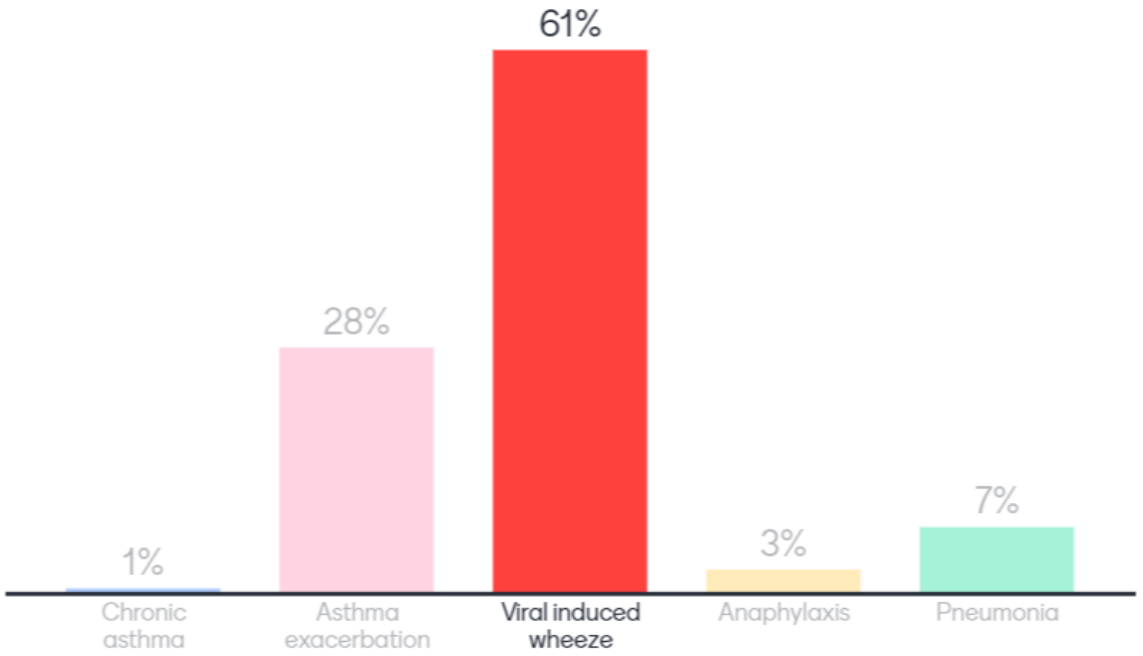
HR 139, RR 55, SpO2 88%, Temp 38.3

(HR 80-120)
(RR 24-34)



What is the likely diagnosis?

Mentimeter



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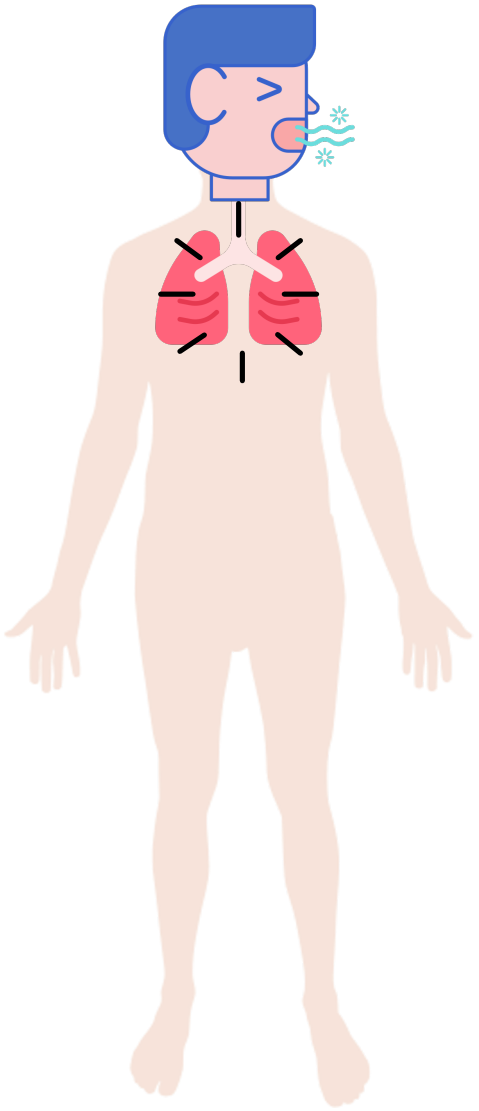


Introduction: Viral induced wheeze (VIW)

Definition: episodes of wheezing induced by an **upper respiratory tract viral infection**

Epidemiology

- 50% of children will have an episode before the age of 6
- Most patients will 'grow out' of the condition

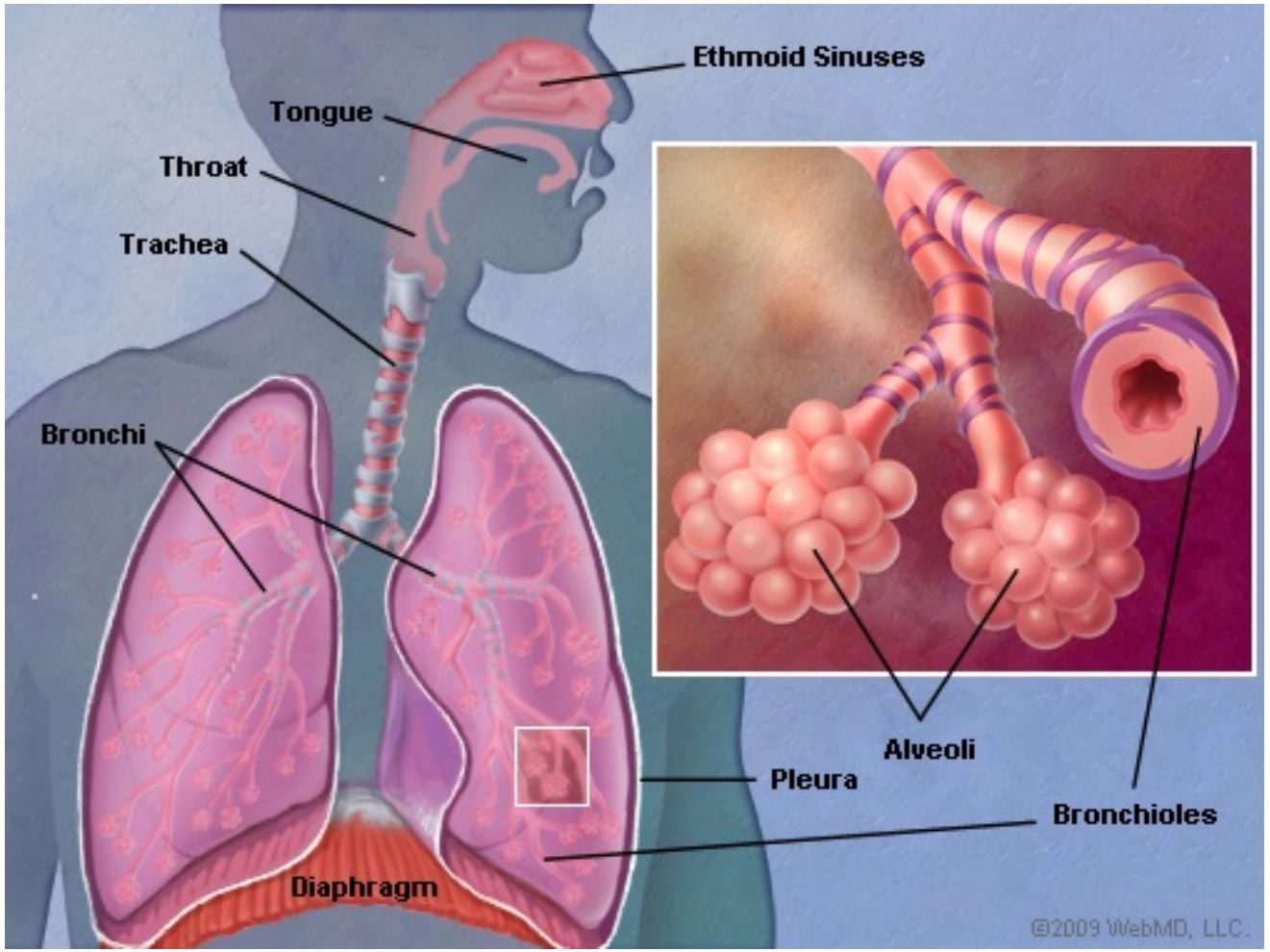
Aetiology

- RSV
- Rhinovirus
- Influenza

Risk factors

- **Age:** usually less than 5 years old
- **Viral infection**

Pathophysiology: VIW



(2)

Clinical features

Symptoms	Signs
Coryza: usually precedes wheezing	**Evidence of URTI**: e.g. erythematous tonsils
Cough and **wheeze**	Widespread wheeze on auscultation
Poor feeding	**Respiratory distress**: • Intercostal and subcostal recession • Tracheal tug • Nasal flaring • Accessory muscle use
Fever	

Asthma or VIW?

VIW	Multiple trigger wheeze	Asthma
• Episodes of wheeze but well in between	• Episodes of wheeze but well in between • Wheeze may be triggered by viral infection as well as other factors	• Episodes of wheeze with respiratory symptoms in between • Family history of asthma • History of atopy
• Resolves after 6 years of age	• Increased risk of developing asthma	• Persists

Question: 6

History

An anxious mother bursts through the A&E doors carrying her 4-year-old son in her arms. He has been wheezy for the last few days and has been using a salbutamol inhaler hourly. The mother was reluctant to bring the child to hospital due to COVID-19.

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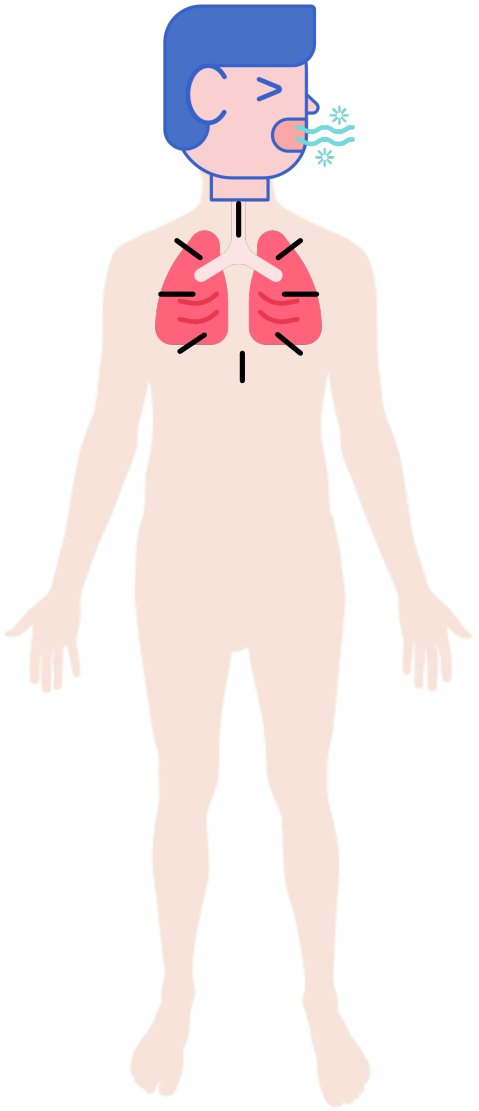
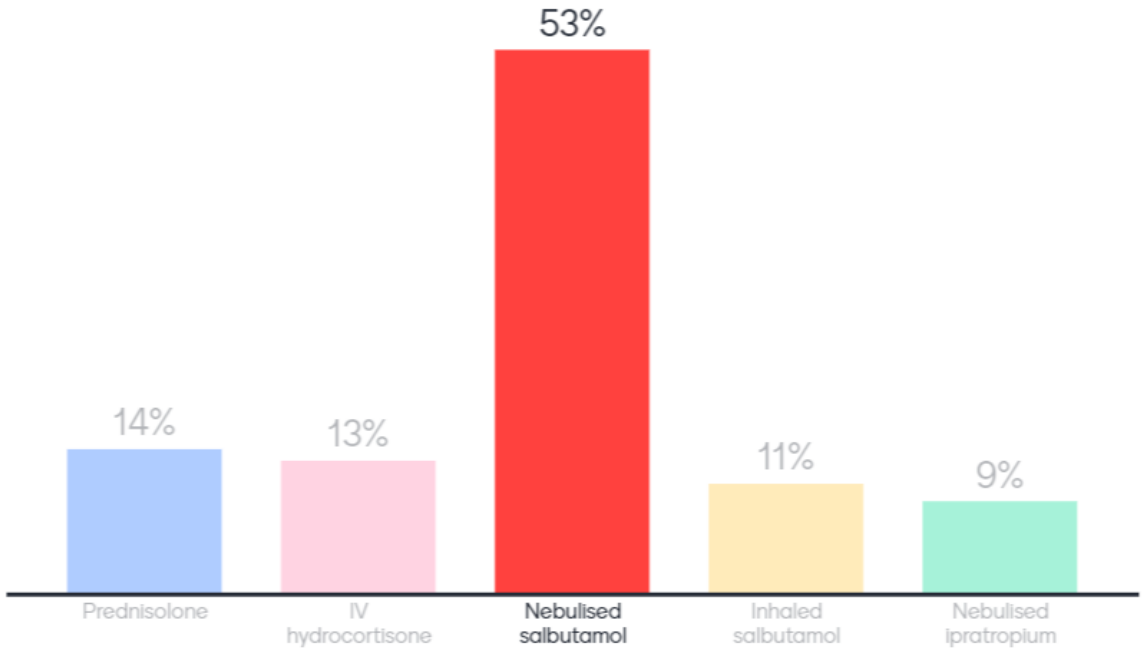


What is your first line management?

Mentimeter



Investigations & Management: VIW

Investigations

- **Clinical diagnosis**
- **Capillary blood gas** if necessary
- **CXR** if necessary

Management

- **Oxygen:** aim SpO2 > 92%
- **Bronchodilators:**
  - Salbutamol
  - Ipratropium
- Ventilation
- **Steroids not routinely used**

Case-based discussion: 3

History

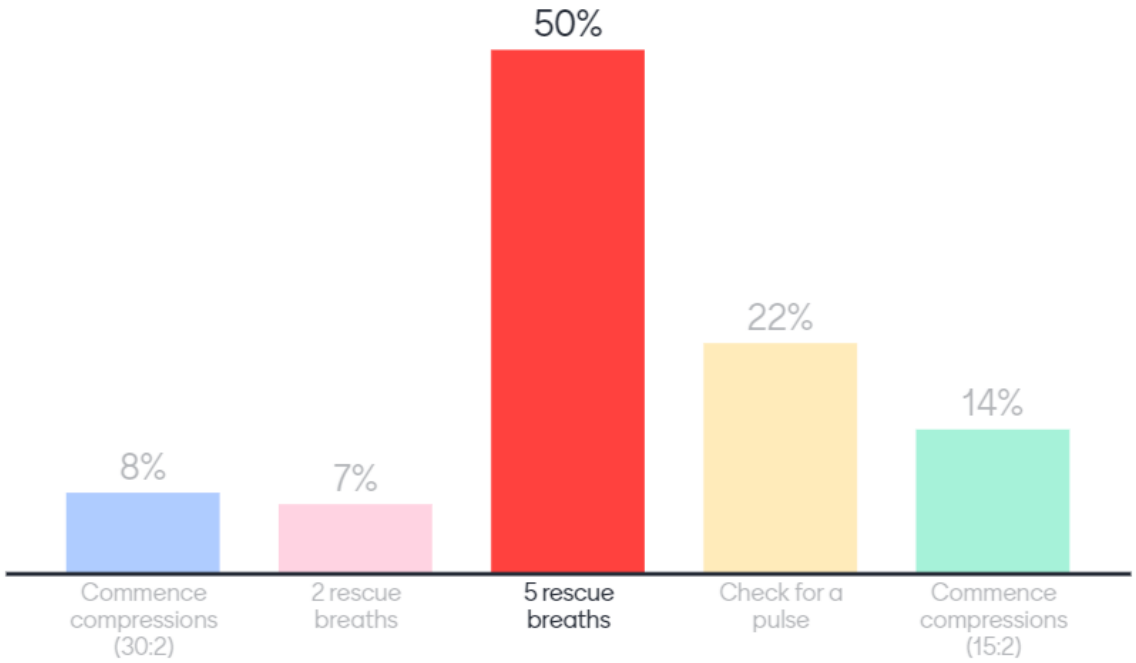
You start nebulised salbutamol and ipratropium. Two minutes later you hear the mother crying for help. The child is floppy. The nurse inserts an oropharyngeal airway.

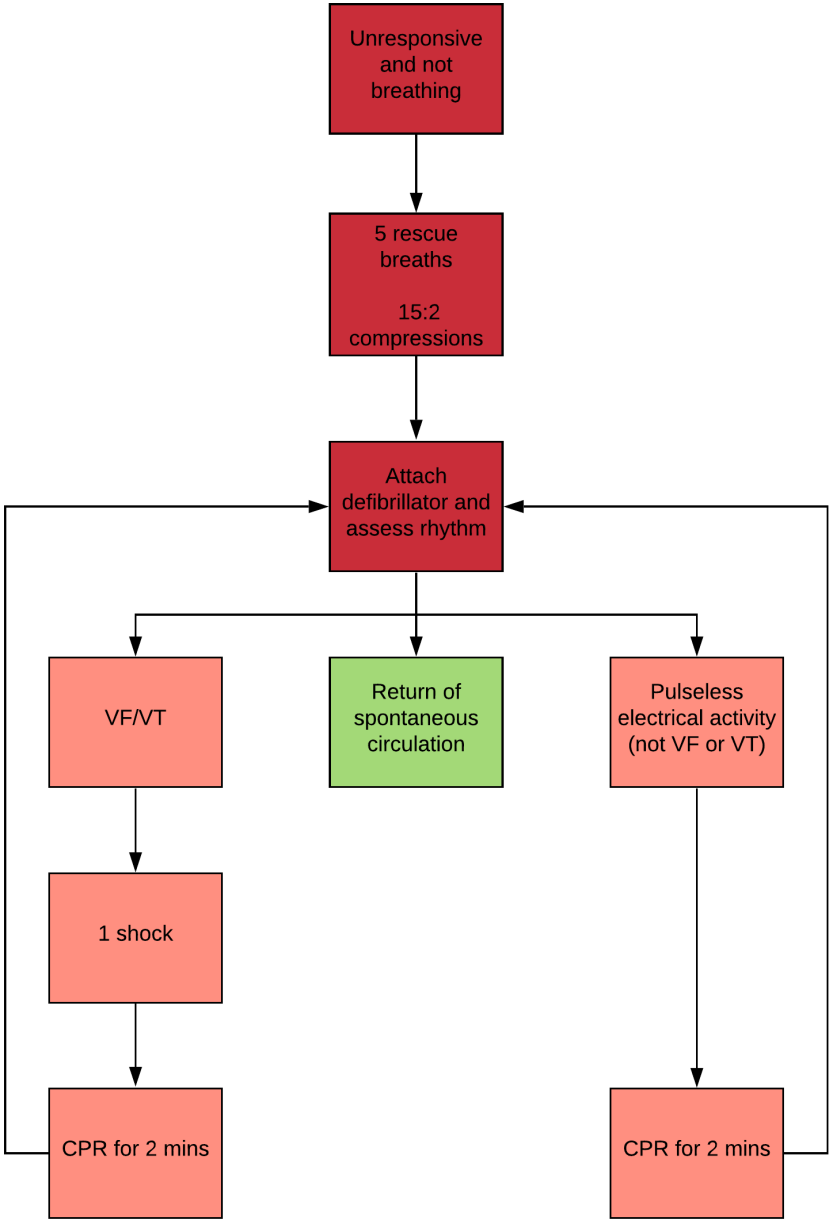
You observe the patient from the end of the bed and note he is not breathing. A 2222 call has been put out and help is on the way.

Respiratory rate 0

What is your next step?

Mentimeter




Unresponsive and not breathing
5 rescue breaths
15:2 compressions
Attach defibrillator and assess rhythm
VF/VT
Return of spontaneous circulation
Pulseless electrical activity (not VF or VT)
1 shock
CPR for 2 mins
CPR for 2 mins

Differential diagnoses: respiratory distress

Bronchiolitis	Croup	Viral induced wheeze	Asthma exacerbation	Pneumonia
< 1 year	< 3 years	< 5 years	> 5 years	Any age
• 9 day illness • RSV	• Barking cough • Parainfluenza virus	• Wheeze • Generally well in between episodes	• Wheeze • Symptomatic between episodes	• Productive cough • High fever • Crepitations
If the child requires admission: • Bloods including capillary blood gas • CXR				

Recap

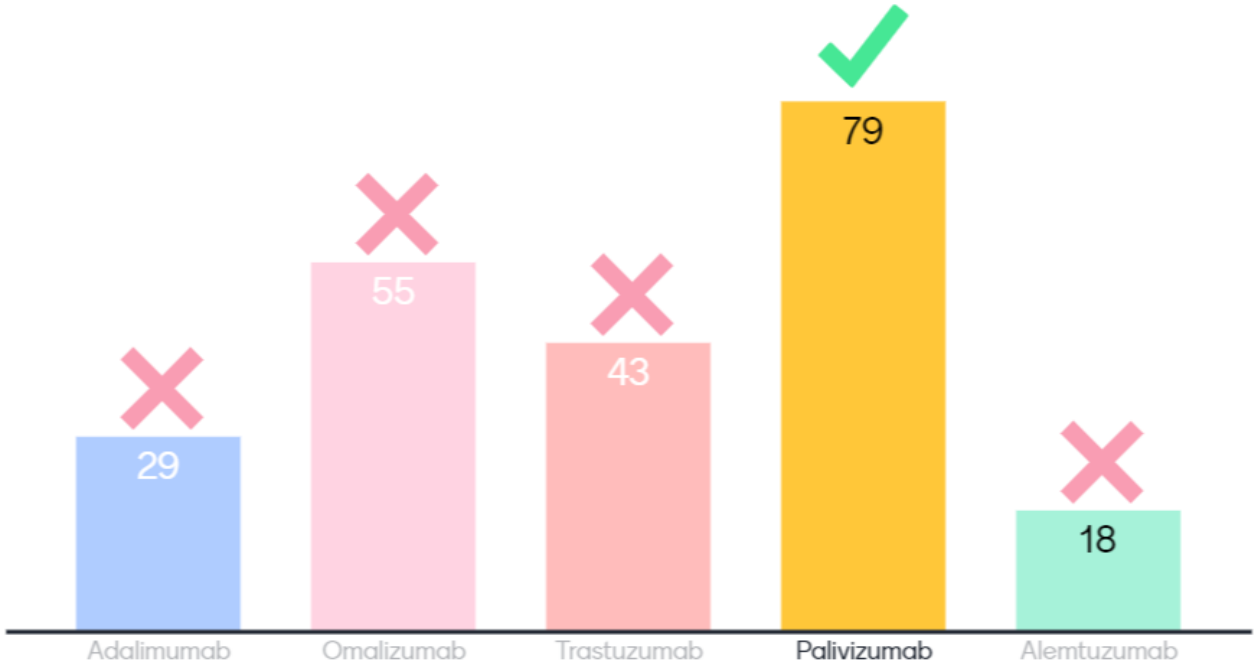
- Respiratory distress is a very common presenting complaint to the emergency department
- Bronchiolitis is treated with **supportive** measures
- Patients with croup should be given **dexamethasone**
- Viral induced wheeze is treated with **bronchodilators**
- Hypoxia is the most common cause of paediatric cardiac arrest
- **Rescue breaths** are the priority in an arrest

- **Next session:**
  - **Asthma**
  - **Pyloric stenosis**
  - **Intussusception**
  - **ALL**

Top-decile question

Which of the following would you recommend in a patient with cystic fibrosis?

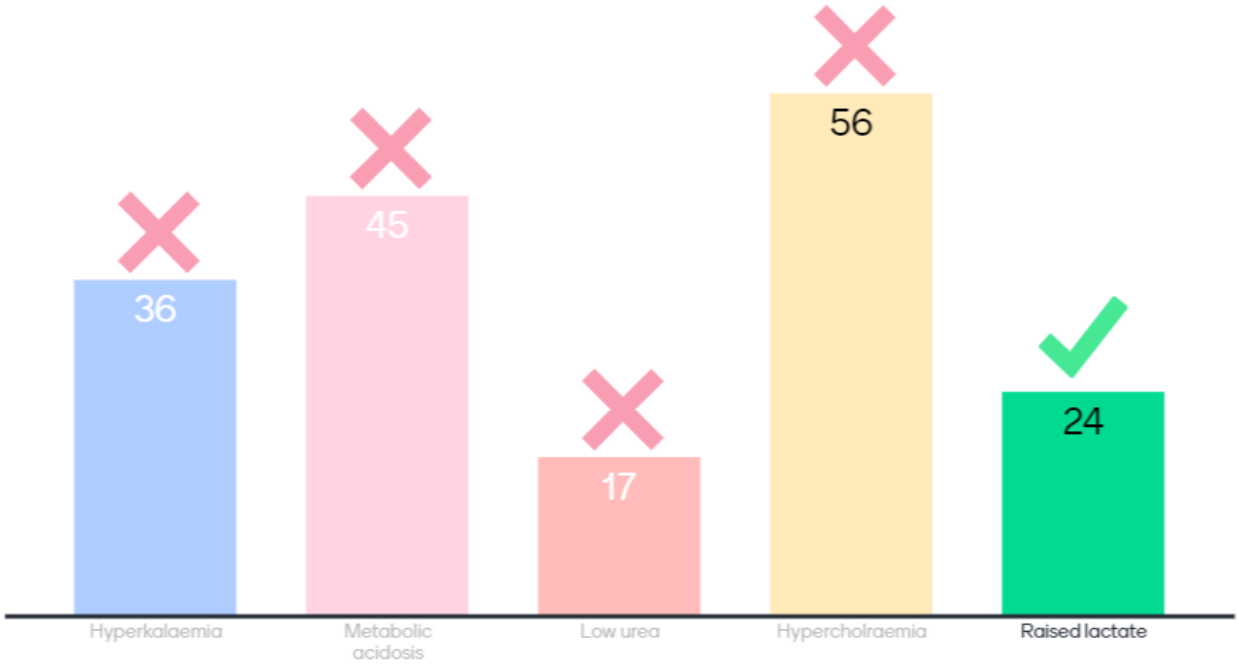
Mentimeter



Top-decile question

Which of the following is most suggestive of pyloric stenosis?

Mentimeter



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