Management of Acute Exacerbation of Asthma / Wheeze

Secondary Care Clinical Assessment Tool for Children Over 2 Years

NHS England

Assessment

History
- Breathless/wheeze/cough/chest tightness
- Viral or allergic trigger
- Previous episodes or interval symptoms
- Family or personal history asthma, eczema or atopy
- Current/Previous treatment and responses

Examination
- Able to speak in sentences
- Respiratory rate
- Chest wall expansion and movement
- Use of accessory muscles
- Auscultation of chest – reduced air entry, wheeze, prolonged expiration
- Oxygen Saturation
- Peak flow measurement (>5yrs but often unreliable in younger age)

Consider other diagnosis
- Pneumonia
- Croup
- Foreign body
- Hyperventilation/panic attack

→ No – treat as below

→ Yes → **It may not be asthma. Seek expert help**

Treat according to most severe feature

Moderate Exacerbation
- Able to talk
- Moderate respiratory distress/wheeze
- Oxygen Sats ≥92%
- PEF >50% predicted or best (>5yrs)

2-5 yrs:
- RR ≤40/min HR ≤ 140/min

5-12yrs:
- RR ≤30/min HR ≤ 125/min

12-18yrs:
- RR <25/min HR ≤ 110/mn

Severe
- Previous attack within last 2 weeks
- Too breathless to talk or complete sentence
- Marked respiratory distress/wheeze
- Sats <92%
- PEF 33- 50% predicted or best

2-5yrs
- RR>40/min HR > 140/min

5-12yrs
- RR>30/min HR > 125/min

12-18yrs
- RR≥25/min HR >110/min

Life Threatening
- Oxygen sats <92% plus any of the following:
- Silent chest
- Poor respiratory effort
- Exhausted and unresponsive
- Confusion/coma/agitation
- Cyanosis
- Bradycardia
- Respiratory arrest
- PEF not recordable or <33% predicted or best

- Give Salbutamol 2-10 puffs via spacer+facemask (given one at a time)
- Increase by 2 puffs every 2 minutes up to 10 puffs according to response
- Assess response and repeat if necessary
- Give stat dose soluble Prednisolone 20mg
- **2-5yrs** and 30-40 mg **> 5yrs** or 2mg/Kg dose (maximum 40mg)

- Give high flow oxygen via fitted face mask aim for Sats 94-98%
- Give nebulised Salbutamol (using 6L oxygen). **<5yrs** 2.5mg and **> 5yrs** 5mg
- Reassess and Repeat at 20-30min intervals or as necessary
- Give stat dose soluble Prednisolone 20mg **2-5yrs** and 30-40 mg **> 5yrs** or 2mg/Kg **dose** (maximum 40mg)
- Or IV Hydrocortisone 4mg/Kg
- If poor response nebulised Ipratropium Bromide (using 6L oxygen): **<12yrs** 250mcg;**12-18yrs** 500mcg repeated every 20-30 minutes
- Poor response see life-threatening

Discuss with senior clinician or Paediatrician or PICU team

- Commence resuscitation - ABC
- Give high flow oxygen via a facemask to achieve $Sp0_2$ 94-98%

PAEDIATRIC CARDIAC ARREST CALL

Give **back to back** nebulised Salbutamol (using 6L-8L oxygen). **<5yrs** 2.5mg, **>5yrs** 5mg
- Give oral prednisolone 20mg **2-5yrs** and 30-40 mg **> 5yrs** or 2mg/Kg dose (maximum 40mg)
- **Or Hydrocortisone** 4mg/Kg
- Give nebulised Ipratropium Bromide (using 6L-8L oxygen). **<12yrs** 250mcg **12-18yrs** 500mcg repeated every 20-30 minutes

POOR RESPONSE

Ensure consultant paediatrician present

IV Salbutamol 15mcg/Kg bolus over 10 minutes followed by continuous infusion 1-5mcg/Kg/min (dilute to 200mcg/ml)

IV Aminophylline 5mg/Kg loading dose over 20 minutes followed by continuous infusion 1 mg/Kg/hour

Bolus IV infusion of Magnesium Sulphate 40mg/Kg (max 2g) over 20 mins

Consider CXR and blood gases

Arrange PICU/HDU admission

Good response
Reassess within 1 hour
- Subtle or no use of accessory muscles
- Minimum wheeze
- Sats >92% in air
- Rising PEF in **>5 yrs**

Poor Response
Reconsider diagnosis: Severe or Life Threatening episode

Good response
Continue salbutamol 1-4 hourly
Re-Assess regularly

Admit/further observation on Children's Assessment unit for all cases if severe symptoms after initial treatment

Discharge from hospital and GP

Patient must be stable have minimal recession with Sats >92% and manage 3-4 hourly between doses of inhaler

- Discharge on salbutamol 2-10 puffs up to 4 hourly via spacer + facemask
- Complete a 3 day course of Prednisolone; child < **5 yrs** 20mg; **5-12 yrs** 30-40mg for 3 days; **12-18 yrs** 40mg for 3- 5 days(or 2mg/kg dose up to 40mg)
- Give acute asthma management plan
- Check inhaler technique and regular medication
- Review overall asthma control and consider need to step up medication
- Arrange a review at GP practice within 48 hrs
- Open access to Children's Assessment Unit for 48hours
- Full respiratory review at GP practise in 7-14 days
- Arrange FU in clinic with Asthma Consultant/nurse

THINK TTT –
consider compliance with existing **Therapy**, Inhaler **Technique** and **Triggers** before stepping up treatment

Table 1: Normal Paediatric Values metres only

Respiratory Rate at Rest:
<2-5yrs 25-30 breaths/min
5-12yrs 20-25 breaths/min
>12yrs 15-20 breaths/min

Heart Rate
<2-5yrs 95-140 bpm
5-12yrs 80-120 bpm
>12yrs 60-100 bpm

Systolic Blood Pressure
<2-5yrs 80-100 mmhg
5-12yrs 90-110 mmhg
>12yrs 100-120 mmhg

Table 2: Predicted Peak flow: for use with EU/EN13826 scale PEF

Height (m)	Height (ft)	Predicted EU PEFR (L/min)
0.85	2'9"	87
0.90	2'11"	95
0.95	3'1"	104
1.00	3'3"	115
1.05	3'5"	127
1.10	3'7"	141
1.15	3'9"	157
1.20	3'11"	174
1.25	4'1"	192
1.30	4'3"	212
1.35	4'5"	233
1.40	4'7"	254
1.45	4'9"	276
1.50	4'11"	299
1.55	5'1"	323
1.60	5'3"	346
1.65	5'5"	370
1.70	5'7"	393

Ref: The British Thoracic Society (BTS) and SIGN Guideline on the Management of Asthma (Revised Jan 2012) and thanks to The Suffolk Respiratory Pathway Group
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