CUH ED Asthma/ Preschool Wheeze Algorithm

For children aged 2-16 years with wheeze and shortness of breath AND asthma / preschool wheeze diagnosis and/or past history of wheeze. If no prior history consider foreign body or anaphylaxis.

Mild
PRAM 0-3

- Clinician to assess within 60 min
- Salbutamol MDI/Spacers one dose, can repeat every 20mins if necessary for up to 1 hour.
- Ensure device/technique appropriate
- Consider oral steroids only if asthma and >6 years

Alternative for > 12 years on SMART regime use anti-inflammatory reliever:

- Budesonide /Formoterol 100/6 or 200/6 , 1-2 puffs 4 hourly (Maximum 12 puffs / 24 hours)

Moderate
PRAM 4-7

- Clinician to assess within 30 min
- Oxygen via non rebreather mask (e.g. 15L/min) to maintain SpO2 >92%
- Salbutamol MDI/Spacer every 20 mins x 3 doses & review 20 mins after 3rd dose given
- Consider Ipratropium MDI & Spacer every 20 mins x 3 doses
- Ensure Device/technique appropriate
- **If > 6 years oral steroids within first hour**
- **If <6 oral steroids only if admitted and positive Asthma Predictive Index**

Severe
PRAM 8-12

- Clinician to assess within 15 min
- Oxygen via non rebreather mask (e.g. 15L/min) to maintain SpO2 >92%
- Salbutamol Nebulised, (every 20-30 mins for 1-3 hours) and review 20 mins after 3rd dose.
- Ipratropium nebulised every 20 mins x 3 doses

If no rapid improvement

- IV Hydrocortisone 6hrly initially
- IV Magnesium Sulphate (1st line)
- Consider High flow nasal cannula oxygen
- Involve EM/Paeds Consultant
- +/- Senior Reg Anaesthesia 67638

COMPLETE ALL OF THE ABOVE WITHIN 60 MINUTES OF TRIAGE

Mild – Reassess Vital Signs + PRAM

If PRAM ≥ 4

- Reassess and move to top of 'Moderate' pathway

If PRAM ≤3 consider discharge if:

- >1 hour after their last MDI via spacer
- No significant intercostal and/or suprasternal in drawing at least 1 to 2 hours after the last bronchodilator treatment
- Good air movement on auscultation with at most mild expiratory wheeze
- Oxygen saturations on room air ≥92 %
- Acceptable oral intake
- Complete asthma/preschool wheeze checklist

Moderate – Reassess Vital Signs +PRAM

If PRAM ≥ 8

- Reassess and move to top of 'Severe' pathway

Following first hour of treatment if PRAM is ≥4 or has not improved by 3 points

- Salbutamol MDI every 30-60 mins
- Consider IV Magnesium Sulphate if poorly responsive to Salbutamol;
- If Magnesium Sulphate given monitor BP closely and admit

In preschool wheeze: oral steroids only if admitted and features suggestive of asthma (parental asthma, concurrent food allergy or eczema, positive skin prick test or high eosinophil count)

Severe – Reassess Vital Signs + PRAM

If poor response (PRAM unchanged or less than 3 point improvement)
ADD

- IV Magnesium Sulphate, salbutamol or Aminophylline are given through separate lines
- Can repeat dose of magnesium sulphate if Mg levels not > 2.5mmol/L post initial dose or if more than 6 hours since last dose
- IV Aminophylline (2nd line). Loading dose followed by continuous infusion. Monitor serum levels if duration of treatment prolonged
- IV Salbutamol (3rd line),
- Monitor BP

If PRAM is improving,
Wean Salbutamol to 1-2hrly and Ipratropium to 4-6 hrly and move to 'Moderate' pathway

Critical/Life Threatening

Silent chest, exhaustion, cyanosis, increasing hypoxia agitation, confusion, drowsiness, marked tachycardia, bradycardia

- **Assess immediately** and manage in Resus until stabilised
- **Involve Senior EM/Paeds Consultant + Senior Reg Anaesthesia 67638**
- Oxygen 15L via non rebreather mask
- Salbutamol Nebulised: At least three doses given continuously every 20-30mins, without interruption between doses.
- Ipratropium Nebulised every 20 minutes X 3 doses.
- IV Hydrocortisone
- IV Magnesium Sulphate (1st line)
- Consider IM Adrenaline into lateral thigh which should be repeated after 5 minutes if not improving.
- Venous Gas + Portable Chest X-Ray
- Balanced crystalloid fluid bolus 10mL/kg to achieve euvolaemia or if dehydrated.
- **IV Magnesium Sulphate, salbutamol or Aminophylline are given through separate lines**
- IV Aminophylline (2nd line). Loading dose followed by continuous infusion. Monitor serum levels if duration of treatment prolonged
- IV Salbutamol (3rd line),
- Consider HFNC / Non-invasive Positive Pressure **with IPATS support** (CPAP, BIPAP)

Call IPATS for advice
Consider transfer to CHI, Dublin

Medication	<6 years	>6 years
One dose Salbutamol MDI	6 puffs	10 puffs
One dose Ipratropium Bromide MDI	4 puffs	8 puffs
Salbutamol Neb	2.5 mg	5 mg
Ipratropium Neb	125 micrograms	250 micrograms
Prednisolone	1-2 mg/kg OD, 2-5 days Round to the nearest 5mg (max 60mg)	
Dexamethasone (if vomiting prednisolone)	0.3mg/kg PO (max 12mg) as a single dose	
Hydrocortisone	4mg/kg IV 6 hourly (max 100mg)	
If BMI >25 use ideal body weigh for all infusions; ECG monitoring, Monitor BP and Electrolytes		
Magnesium Sulphate	50mg/kg IV over 30 mins (max 2g)	
Aminophylline loading dose	5mg/kg IV (max 500mg) over 30 mins. No loading dose given if on oral theophylline. Then infusion 0.7-1mg/kg/hour. Level 6 hours after infusion commences if treatment to continue. Pause infusion for 20mins before level taken. Target 10-20mg/L	
Salbutamol infusion (IV preparation different from nebulised preparation)	Starting dose 1-2 microgram/kg/min; Caution max dose 20 micrograms/min can easily be exceeding by weight dosing	

Criterions	Descriptions	Score
O_2 Saturation In room air	≥ 95%	0
	92-94%	1
	< 92%	2
Suprasternal retraction Visible	Absent	0
	Present	2
Scalene muscle contraction Palpable	Absent	0
	Present	2
Air Entry If asymmetric: rating determined by most severely affected lung field	Normal	0
	↓ at the base	1
	↓ at the apex and the base	2
	Minimal or absent	3
Wheezing If asymmetric: rating determined by two most severely affected zones	Absent	0
	Expiratory only	1
	Inspiratory (± expiratory)	2
	Audible without stethoscope or silent chest (minimal or no air entry	3
	PRAM SCORE: (max 12)	

Score	0-3	4-7	8-12
Severity	Mild	Moderate	Severe