Name: D.O.B: Unit No: NHS: No:

St Helens and Knowsley Teaching Hospitals NHS Trust

Paediatric Multidisciplinary Integrated Care Pathway & Management of Severe Life-threatening Asthma

For children > 2 years with Cough/Wheeze/Difficulty in breathing (Asthma)

Patient Sticker

Instructions for use:

This document is a total record of a 'patient care episode' and is to be completed by all members of the multidisciplinary team. The pathway's aim is to guide care provision to ensure optimum care together with continuity of management. Clinical judgement is to be exercised at all times.

On patient discharge the pathway document is to be filed in the appropriate section of the medical notes.

Sepsis Screening

PAEDIATRIC SEPSIS SCREENING TOOL (Circle)	
Current or history of temperature (within 24 hours) <36 or >38.5 (>38 if less than 3 months of age) Plus suspected infection	YES / NO
Altered conscious level?	YES / NO
Observations abnormal for age range?	YES / NO
Not passed urine or had wet nappy for >18 hours?	YES / NO
Non-blanching rash or mottled or cyanotic or pale?	YES / NO
Are you or parents/ carers concerned that this child looks unwell?	YES / NO
If POSITIVE for ANY 2 of the above IMMEDIATELY:	
1. Escalate to a doctor for review using the NICE Sepsis Pathway **2. Obtain Capillary Lactate and Blood Glucose NOW**	

Name: D.O.B: Unit No: NHS: No:

A&E Triage / CHOBS Assessment Sheet

Name Address	Date Time	Referral source
Male	Female	Age
DOB	Height	Weight(kg)
Next of kin	Contact number	

Reason for attendance:

Nursing Assessment *If any highlighted symptoms apparent - treat as life threatening!*

Colour Pink Pale **Cyanosed**
Physical state **Breathless at rest** **Fatigued** **Exhausted**
Ability to speak Normal **With difficulty** **Unable to speak**
Respiratory state Normal Mild/**Moderate/Severe recession**
Oxygen saturation in air:…… is it <94% **Y**/N if yes give O_2 via face mask
Respiratory rate……..(<5 yrs >50) (>5 yrs > 40) **Y**/N
Heart rate…… (<5 yrs >140) (>5 yrs > 120) **Y**/N
Peak Flow if > 5 yrs…….. Best/Predicted……Below 50% (P) Y/N

Mild	Moderate/Severe	Life Threatening
Alert	Alert/lethargic	Exhausted
Able to speak in sentences	Able to speak in phrases/odd words	Unable to speak/babble
No use of accessory muscles	Moderate use of accessory muscles	Use of accessory muscles
Mild wheeze	Moderate/marked wheeze	Wheeze absent / silent chest
(p) PEF > 80%	(P) PEF 50-70%	(P) PEF < 50% SaO2 < 92%
SaO2 > 94% in air	SaO2 < 92%	Cyanosed & Requiring oxygen

Classification of severity:	**Mild**	**Moderate/Severe**	**Life Threatening**
Patient to be reviewed	**(within one hour)**	**(Within 10 min)**	**(Immediately)**

Comments:

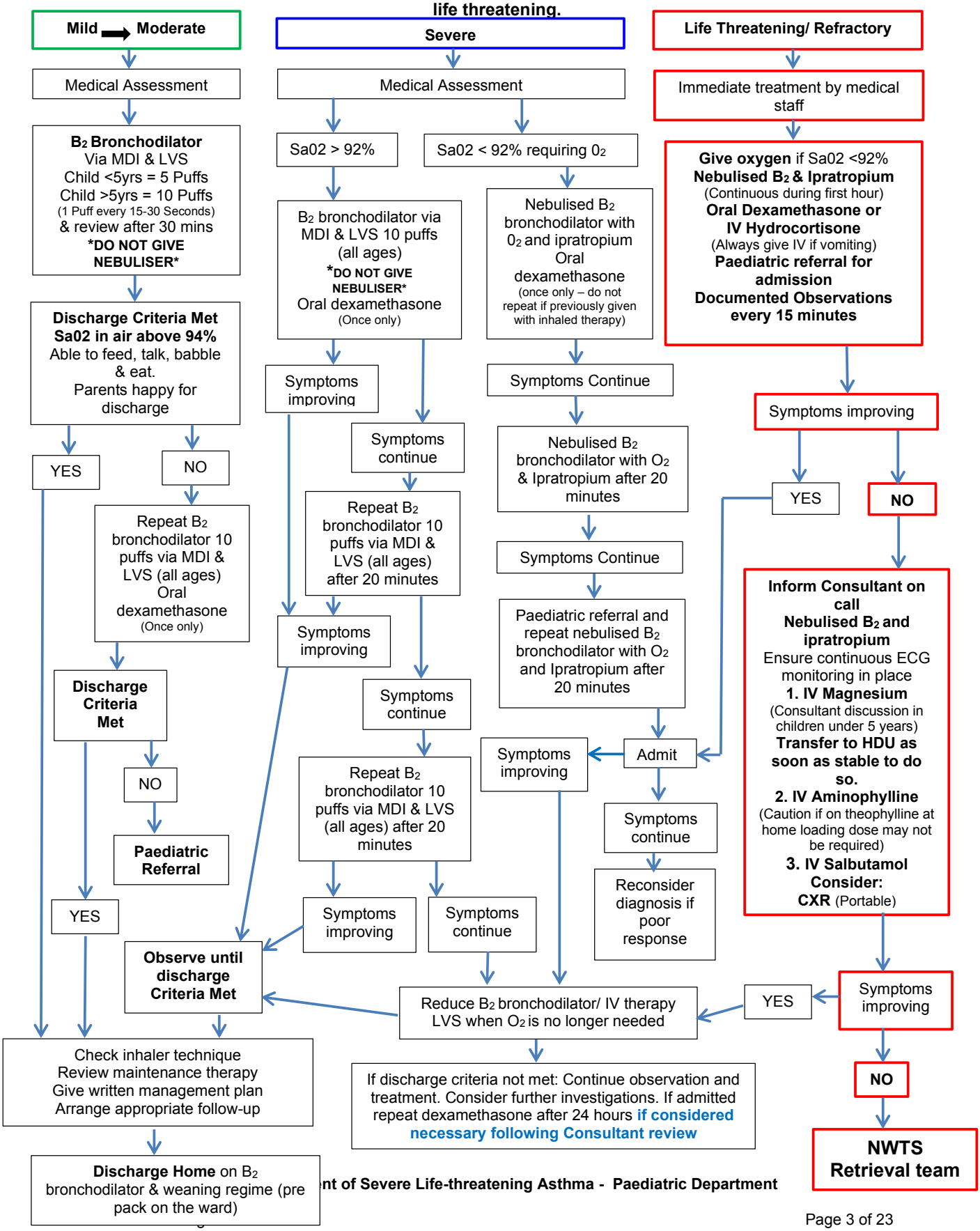
Date …… Time ……. **Signature ……**

Name (PRINT) …… **Designation ……**

Acute Paediatric Asthma – Care Pathway Flow Chart

Bronchodilator therapy should be given via pMDI and Large Volume Spacer (LVS) if Sa02 >92%

Do Not give nebulised therapy unless Sa02 <92%, child cannot speak in sentences or symptoms are life threatening.



Children and Young Persons Admission Proforma

Guidance for completion of documentation:

Section A: Nursing Staff complete for all hospital attendances
Section B: Medical staff complete for all hospital attendances
Section C: Nursing Assessment complete for all hospital admissions

NAME: **DATE OF BIRTH**:

ADDRESS & POSTCODE:

Case Sheet No **CONSULTANT:**

NHS NO:

Adults accompanying the child:
Name & Relationship:

Two Emergency contact Numbers:
(Include names, telephone numbers, and relationship to child)

1.

2.

GENERAL PRACTITIONER (Name and Address)

DATE & TIME OF ADMISSION

REFERRAL ROUTE:

SECTION A
Demographics

ETHNICITY: (please circle)

WHITE	White British	White Irish	Traveller of Irish Heritage	Gypsy / roma	Any other white background
Black or black British	Caribbean	African	Any other black background		
Asian or Asian British	Indian	Pakistani	Bangledeshi	Any other Asian background	
Mixed / dual Background	White & Black Carribean	White & Black African	White & Asian	Any other ethnic group	
Chinese and other	Chinese	Any other ethnic group			

Is English the childs first lanuguage: YES ☐ NO ☐ (please document language spoken)

Is an interpreter/signer required YES ☐ NO ☐

Does the child / young person have a disability NO ☐ YES ☐

RELIGION (please circle) Roman catholic C of E Muslim Hindu Sikh Buddist Other…….

Do you wish to see a religious leader YES ☐ NO ☐

FAMILY / SOCIAL HISTORY

Who does the child live with? Birth Parent/s ☐ Other (please state)

Details of parents / 2 main carers living with the child

1. **Mother / Main Carer:**
   (Name, DOB, relationship, address, contact numbers)

2. **Father / Partner / Main Carer**:
   (Name, DOB, relationship, address, contact numbers)

Who has Parental responsibility?
(Name, Age, Address, Contact Numbers if different from above)

Document Siblings details: (Include names, DOBs, address of all siblings; half / step siblings)
1. 3.

2. 4.

Details of birth mother / father if not resident with child (Name, DOB, address, contact number)

Details of Residential Home Manager (Name, Address, contact numbers)

Date …… Time ……. Signature …….

Name (PRINT) ……. Designation ……

With whom does the child live 7 days a week if a joint custody arrangement?
(Document details of all household members, i.e. name, DOB, relationship and addresses if child lives at different addresses)

SUPPORT SERVICES WORKING WITH THE CHILD / YOUNG PERSON (Name, Address, Contact Number)

Other Doctors / Specialists

Health Visitor / School Nurse (Clinic Base)

School / College / Nursery

Midwife (if under 28 days)

Other (document)

SOCIAL CARE INVOLVEMENT: Ask the child or parent(s)

Do you presently have a social worker? YES / NO
If YES, record name, base, contact number and details

Have you previously had a social worker? YES / NO
If YES, record name, base, contact number and details

Is your child subject to, or has been subject to, a child protection plan? YES / NO

Is your child subject to, or has been subject to, a CAF? YES / NO

If **YES** is answered to the above please document more details

ADDITIONAL INFORMATION: Consider -Family functioning & wellbeing, bereavement, violence, criminality, antisocial /abusive behaviour. Culture / Race / Language issues. Size and composition of household. Formal / informal support networks from extended family / others.

Date …… Time ……. Signature …….

Name: D.O.B: Unit No: NHS: No:

Name (PRINT) …… Designation ……

OBSERVATIONS / ASSESMENT

Name Band :- Ensure the child has a NAME BAND INSITU **YES** ☐

AVPU (circle):- **A**lert Reponds to **V**oice Responds to **P**ain **U**nresponsive

WEIGHT:

Observations

Time	Temp	Pulse	Resps	Sats	PEF	CRT	Blood sugar	Pain score	PEWS	Signature

Document - Intake / Output:

Time	Oral fluids / diet	Volume	Vomits	Urine	Bowels	Signature

Is topical anaesthetic cream required YES / NO If Yes prescriber should circle type required a

Ametop	**Denela**	**Prescribers Signature**
Time Applied:	**1st check signature**	**2nd check signature**
Time Removed:		

Date …… Time …… Signature ……

Name (PRINT) …… Designation ……

Name: D.O.B: Unit No: NHS: No:

SECTION B - MEDICAL ASSESSMENT

Date & Time of medical assessment

PC: Presenting complaint and duration

HPC: History of presenting complaint

Asthma prompts:

- Previous admissions WARD/HDU/ITU (Atopic ? Eczema / * Allergic Rhinitis /* Food allergy
- Nocturnal cough
- Day time cough
- Exercise symptoms
- School absence
- Are asthma symptoms regular or intermittent

PMH: Past Medical History

Date …… Time …….. Signature ……

Name (PRINT) …… Designation ……

Name: D.O.B: Unit No: NHS: No:

CHILDHOOD IMMUNISATION SCHEDULE		
AGE	**IMMUNISATION**	**Circle if immunised**
2 Months (8 weeks)	Diphtheria, tetanus, pertussis, poliomyelitis and *Haemophilus Influenzae* type b PVC pneumococcal conjugate (prevenar 13) Rotavirus vaccine (rotarix) 1st dose Meningococcal group B vaccine (1st dose)	**YES / NO**
3 Months (12weeks)	Diphtheria, tetanus, pertussis, poliomyelitis , Hepatitis and *Haemophilus influenzae* type b (infanrix hexa) 2nd dose Rotavirus vaccine (Rotarix) 2nd dose	**YES / NO**
4 Months (16weeks)	Diphtheria, tetanus, pertussis, poliomyelitis , Hepatitis B and *Haemophilus influenza* type b (infanrix hexa) 3rd dose Pneumococcal conjugate vaccine 1st dose (prevenar 13) Meningococcal group B vaccine (rDNA component) 2nd dose	**YES / NO**
12-13 months	Haemophilus influenza B and meningococcal group C conjugate vaccine (menitorix) Booster meningococcal group B vaccine (rDNA component absorbed) Booster pneumococcal conjugate vaccine (prevenar 13) Booster measles mumps and rubella, MMR 1st dose	**YES / NO**
3 Years and 4 months old	Pre-school booster Diphtheria, tetanus, pertussis and poliomyelitis (Infanrix IPV or Repevax) MMR 2nd dose (MMR, VaxPro or Priorix)	**YES / NO**
Girls 12 -13	Human papillomavirus types 16 and 18 (HPV) Vaccine 2 doses 6-24 months apart (Gardasil)	**YES / NO**
14 – 18 years	Diphtheria, tetanus and poliomyelitis booster (Revasix) MenACWY vaccine (nimenrix or Menveo)	**YES / NO**
6 upwards	Flu Vaccination for children with chronic disease	**YES / NO**

Refer to the Green Book – Chapter 11 Childhood immunisation for current schedule

If 'NO', document advice given and inform Paediatric Liaison

Allergy Status:

Drug History:
(Include: over the counter, herbal / recreational)
asthma promps: preventer therapy?, spacer?

Birth History

Birth Weight: Gestation:

Mode of delivery:

Ante/Neonatal Problems / SCBU

Drugs prescribed / taken in pregnancy:

Development :

FAMILY / SOCIAL HISTORY - GENOGRAM:
Consider : Parents age / occupation, marital status / relationship breakdown / absent parents / family medical history including illness, mental health, parental substance misuse, physical disability

Asthma prompts:
✳Atopy ✳Pets ✳Smokers ✳Known triggers.

Date …… Time ……. Signature …….

Name (PRINT) …… Designation ……

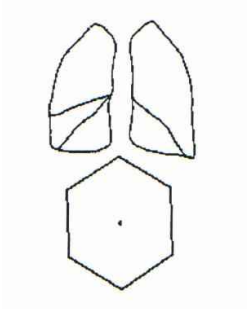
Name: D.O.B: Unit No: NHS: No:

CLINICAL EXAMINATION

General Condition / Visual Signs

Respiratory

Resp rate…….. SaO2……..…… PEF……..……..
Effort…….



CVS

Abdomen / genitalia

ENT

CNS / Neurological: Is a cranial nerve examination required **YES / NO**
If **NO** document that the child is moving all limbs and has no injuries

LEGS	Left	Right	**ARMS**	Left	Right
Tone			Tone		
Power			Power		
Reflexes			Reflexes		
Plantars					

PAEDIATRIC COMA SCALE		
EYES OPEN		
Spontaneously		4
To Speech		3
To Pain		2
NONE		1
BEST VERBAL / NONE VERBAL RESPONSE		
Orientated	Alert	5
Confused	Cries	4
Monosyllabic	Innapropriate cry	3
Incomprehensible sounds	Moaning	2
NONE	NONE	1
BEST MOTOR RESPONSE		
Spontaneous Movement		6
Localises to pain		5
Withdraws to pain		4
Flexion to pain		3
Extension to pain		2
NONE		1
Total GCS Score		**=**

Date …… Time …….. **Signature ……**
Name (PRINT) …… **Designation ……**

Name: D.O.B: Unit No: NHS: No:

Injuries / Skin: (Document- rashes, discolouration, bruising, lacerations etc - Use a body map if required)

Growth Parameters:
(Plot growth parameters including OFC if < 1 year)

Provisional Diagnosis:

Differential Diagnosis /Impression:

Plan:

Date …… Time ……. **Signature …….**

Name (PRINT) …… **Designation ……**

Name: D.O.B: Unit No: NHS: No:

Multidisciplinary Asthma Review

RR:…..……. **HR:**……. **SaO2:**……..…. % **Air:** Y/ N **Fio2:**.....%
Humidified O_2: Y / N **Recession:** None / Mild / Moderate / Severe
Time of last Bronchodilator: ..……hrs ago **Inhaled via:** Spacer / Nebulised
Frequency of therapy 1 / 2 / 3 / 4 / 5 / 6 hourly
PEF if > 5 years Actual PEF …….. (P) PEF ……> 50 % (P) Y/N
Minimum fluid requirements ……..**ml/24 hours.** **Minimum Fluids requirements achieved Y/N Fluid Balance**……**+/-**
Condition: Static Improving Deteriorating Examination/Progress: Management Plan:

Pathway continuum: **Mild Moderate Severe / Life Threatening**	**PEWS SCORE ……..** Next review due in 1 / 2 / 3 / 4 hours' time

Date …… Time ……. **Signature ……**
Name (PRINT) …… **Designation ……**

Name: D.O.B: Unit No: NHS: No:

Multidisciplinary Asthma Review

RR:…..……. **HR:**…….…… **SaO2:**……..…. % **Air:** Y/ N **Fio2:**.....%
Humidified $O^{2:}$ Y / N **Recession:** None / Mild / Moderate / Severe
Time of last Bronchodilator:……hrs ago **Inhaled via:** Spacer / Nebulised
Frequency of therapy 1 / 2 / 3 / 4 / 5 / 6 hourly
PEF if > 5 years Actual PEF …….. (P) PEF ……> 50 % (P) Y/N
Minimum fluid requirements ……..**ml/24 hours.** **Minimum Fluids requirements achieved Y/N Fluid Balance**……**+/-**
Condition: Static Improving Deteriorating Examination/Progress: Management Plan:

Pathway continuum: **Mild Moderate Severe / Life Threatening**	**PEWS SCORE ……..** Next review due in 1 / 2 / 3 / 4 hours time

Date …… Time …….. **Signature ……**
Name (PRINT) …… **Designation ……**

Name: D.O.B: Unit No: NHS: No:

Multidisciplinary Asthma Review

RR:……. **HR:**……. **SaO2:**……..…. % **Air:** Y/ N **Fio2:**.....%
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Time of last Bronchodilator:..……hrs ago **Inhaled via:** Spacer / Nebulised
Frequency of therapy 1 / 2 / 3 / 4 / 5 / 6 hourly
PEF if > 5 years Actual PEF …….. (P) PEF ……> 50 % (P) Y/N
Minimum fluid requirements ……..**ml/24 hours.** **Minimum Fluids requirements achieved Y/N Fluid Balance**……**+/-**
Condition: Static Improving Deteriorating Examination/Progress: Management Plan:

Pathway continuum: **Mild** **Moderate** **Severe / Life Threatening**	**PEWS SCORE ……..** Next review due in 1 / 2 / 3 / 4 hours time

Date …… Time ……. **Signature ……**

Name (PRINT) …… **Designation ……**

Non-pharmacological interventions in acute severe asthma

CXR should be considered in the following situations:

- Persistent unilateral signs suggesting pneumothorax, lobar collapse or consolidation
- Life – threatening asthma not responding to treatment
- Surgical emphysema
- Mechanically ventilated patient

Blood Gas measurements

- In moderate to severe asthma pH is normal and pCO_2 is low
- Normal or increased pCO_2 indicates worsening asthma & imminent respiratory failure
- Capillary blood gases can be of use in severe asthma in children
- A child receiving large doses of B_2 agonists may develop lactic acidosis which will resolve as the dose of B_2 agonist is reduced.

Antibiotics

- The majority of acute asthma attacks are triggered by viral infections
- Decision for antibiotics should be made on clinical grounds

Physiotherapy

- No role for physiotherapy in the unventilated asthmatic patient

Alternative diagnoses to consider in the child that is not improving

- Anaphylaxis / Allergic Reaction
- Hyperventilation
- Pulmonary oedema
- Severe Pneumonia
- Inhalation injury
- Atypical infection
- Foreign body

Name: D.O.B: Unit No: NHS: No:

Guideline on Drugs used for Acute Asthma in Children

ALWAYS CONSULT MEDUSA/BNFC FOR FURTHER GUIDANCE

- All inhaled medications to be given using the appropriate spacer +/- mask depending on age and capabilities.
- All nebulised medications to be given via close fitting face mask driven by 8 (litres per minute) of prescribed Oxygen to maintain SaO2 greater than 94%.
- Children <2 years with clinical picture consistent with asthma/severe bronchospasm may respond better to magnesium sulphate and aminophylline rather than salbutamol.

DRUG	DOSAGE	ADMINISTRATION AND GUIDANCE
Inhaled salbutamol	< 5 years: 5 puffs (1to 4 hourly > 5 years: 10 puffs (1to 4 hourly) 100 micrograms/puff	Via volumatic spacer/aerochamber (optimum action 15 minutes post-treatment)
Nebulised salbutamol	< 5 years: 2.5mg (1-4 hourly > 5 years: 5mg (1-4 hourly)	Every 20 minutes if severe
Nebulised ipratropium (Atrovent)	< 12 years: 250 micrograms (4-6 hourly) > 12 years: 500 micrograms (4-6 hourly)	Every 20 minutes if severe
Oral dexamethasone	0.6mg/kg (1 month-18 years) Maximum 16mg dose	**Single dose in A&E /ChObs** (Give 2nd dose after 24 hours if admitted **if considered necessary following Consultant review**)
IV hydrocortisone (as sodium phosphate) Ready Made Vial	4mg/kg (100mg per ml ampoule) (Maximum 100mg per dose)	6 hourly given over 20-30 minutes Mix in 10 to 20 ml of 0.9% sodium chloride/glucose 5%.
IV hydrocortisone (as sodium succinate) Powder for Reconstitution	4mg/kg (100mg powder ampoule) (Maximum 100mg per dose)	6 hourly given over 20-30 minutes Dilute 100mg powder with1.9mls of water for injection (50mg/1ml) Then further dilute to a concentration of 1mg in 1ml with 0.9% sodium chloride/ 5% glucose
Aminophylline	**Loading Dose** 5mg /kg (once only) (maximum 500mg dose) ✳Do not give if the child has had oral theophylline in previous 24 hours. **Caution if the child is on concurrent erythromycin/ clarithromycin**	Dilute in 10 to 20 ml of 0.9% sodium chloride Administer over 20 –30 minutes **✳Cardiac monitoring required and an HDU bed.** ***Give with caution in children with chronic underlying conditions eg liver disease** Check Aminophylline level 4-6 hours after dose

DRUG	DOSAGE	ADMINISTRATION AND GUIDANCE
Aminophylline	**Continuous/maintenance infusion** (1 month -11 years) 1mg/kg/hour Adjust dose according to theophylline plasma levels (12-17 years) 500-700 micrograms/kg/hour Adjust according to theophylline plasma levels In an obese patient the dose should be calculated on ideal body weight, taking height into account. Infuse as per calculation to body weight i.e. 1 ml per kg. As the patients clinical condition improves the infusion can be halved and halved again at a later date. Eventually discontinue when the child is stable) *Give with Caution in children with chronic underlying conditions such as liver disease. Refer to BNF	**Mix 500mg of Aminophylline (250mg/10ml ampoule)** **To 500ml bag 0.9% sodium chloride** **(Please remove 20mls of sodium chloride first before adding the drug)** **To give a concentration of 1mg/ml** Patient should have continuous cardiac monitoring & have minimum of 12 hourly U&E's Check levels 4-6 hourly until stable then every 24 hours Therapeutic range is 10 to 20mg/L (plasma levels correlate well with clinical effect but not with toxicity) Response to monitoring <5mg/L increase dose by 50% and check levels in 6 hours 5-15mg/L continue 15-20mg/L half infusion rate >20mg/L STOP infusion and recheck levels in 6 hours
IV salbutamol (> 2 years old) (If required under 2 years old, discuss with NWTS before commencement)	**Loading Dose given as Bolus** 15 micrograms/kg over 5 minutes (maximum 250 micrograms) **Infusion** 1 to 5micrograms/kg/minute Start at 1to 2 microgram/kg/hour **(More than 2 micrograms to be given in ICU)** **Maximum dose 20micrograms/min**	See Pages 19-20 for full administration details **Continue cardiac monitoring and minimum of 12 hourly U&E** **NB: Incompatible with Aminophylline at site of infusion. Salbutamol and Aminophylline MUST be administered through two different lines** **Cautions:** **Can cause Hypokalaemia and Lactic acidosis**

Name: D.O.B: Unit No: NHS: No:

IV MAGNESIUM SULPHATE

Use in children of 5 years and over who have been assessed by the pathway as having severe/life-threatening asthma and who do not improve after 3 nebulised treatments.
All children who receive intravenous magnesium sulphate must be admitted.

Use in children under 5 years of age is CONSULTANT DECISION ONLY

Prescribing

Intravenous magnesium sulphate **must** be prescribed by, or under the supervision of, appropriately experienced Paediatric, A&E or PICU staff**. Middle grade staff should always be involved with these children.**

Form
Magnesium sulphate 50% injection, containing 500 mg/ml of magnesium sulphate: (equivalent to 2 mmol/ml of magnesium). This is available in 2ml/10 ml ampoules.

Dose
Infuse 40 mg/kg over 20 minutes. The maximum dose is 2g. Use the appropriate volume of magnesium sulphate 500 mg/ml from the table below and **make up to 20ml with sodium chloride 0.9%.** Prepare and use immediately. Administer via an infusion pump

Weight (kg)	Dose of magnesium sulphate (mg)	Dose volume of 50% magnesium sulphate (ml)
15-16	600	1.2
17-18	700	1.4
19-23	800	1.6
24-28	1000	2.0
29-33	1200	2.4
34-38	1400	2.8
39-43	1600	3.2
44-48	1800	3.6
≥49	2000	4.0

Contraindications

i. Children less than 5 years of age
ii. Children with severe renal impairment
iii. Children with myasthenia gravis

Side Effects
Mild discomfort has been reported at the infusion site during the infusion in approximately half of patients. This is not usually an indication to stop the infusion.

A clinically non-significant fall in blood pressure (~5mmHg) may occur. This is not usually an indication to stop infusion.

Overdose – hypermagnesaemia. Dependent on the size of the overdose, progressive muscle weakness, significant hypotension and ultimately respiratory failure have been reported.

Repeat doses

- The clinical state of the patient should be reviewed 20 minutes after the magnesium sulphate infusion is completed.
- If the patient fails to improve, further intravenous therapy with aminophylline/ salbutamol should be considered.
- IV magnesium sulphate can be repeated if still not responding 1-2 hours after initial dose. (**ONLY on the advice of a Consultant Paediatrician or a member of the NWTS Team)**

IV SALBUTAMOL (LOADING DOSE AS BOLUS)

NB: IV Salbutamol and Aminophylline are incompatible at the site of infusion and MUST be administered through two different lines

Single intravenous injection over 10 minutes

- Child <2 years: 5 micrograms/kg
- Child 2 years and over: 15 micrograms/kg (maximum of 250 micrograms)

Preparation: Dilute 1mg (1ml) of Salbutamol injection 5mg/5ml with 19 ml of Sodium Chloride 0.9% injection to give a concentration of 50 micorgrams/ml

For child UNDER 2 years: 5 micrograms/kg

Weight in kilograms	Dose to be given in micrograms	Volume of diluted injection (50 micrograms in 1ml) to be given in ml
5	25	0.5
6	30	0.6
7	35	0.7
8	40	0.8
9	45	0.9
10	50	1.0
11	55	1.1
12	60	1.2
13	65	1.3
14	70	1.4
15	75	1.5

For child OVER 2 years: 15 micrograms/kg (maximum of 250 micrograms per dose)

Weight in kilograms	Dose to be given in micrograms	Volume of diluted injection (50 micrograms in 1ml) to be given in ml
10	150	3.0
11	165	3.3
12	180	3.6
13	195	3.9
14	210	4.2
15	225	4.5
16	240	4.8
17 and over	250	5.0

SALBUTAMOL INFUSION

- Prepare an infusion of concentration of 200 micrograms in 1 ml.
- Dilute 10 mg (10 ml) of salbutamol injection (5mg/5ml) with 40 ml of sodium chloride 0.9% to give 10 mg in 50 ml i.e. 200 micrograms in 1 ml
- Infuse at 1 to 5 micrograms/kg/min which are equivalent to 60 to 300 micrograms/kg/hour. Nursing staff programme infusion pumps ml per hour. Start at the lower dose and adjust according to response. (Given in HDU setting)

Example

For a child of 15 kg who needs 60 micrograms/kg/hour = 900 micrograms/hour
The reconstituted infusion has a concentration of 200 micrograms/ml
Therefore the rate = 900 micrograms/hour = 4.5 ml/hr (see table below)
200

Weight in kg	Starting Dose* (micrograms per hour)	Rate of Infusion+ ml/hour	Weight in kg	Starting Dose* (micrograms per hour)	Rate of Infusion+ ml/hour
5	300	1.5	29	1740	8.7
6	360	1.8	30	1800	9.0
7	420	2.1	31	1860	9.3
8	480	2.4	32	1920	9.6
9	540	2.7	33	1980	9.9
10	600	3.0	34	2040	10.2
11	660	3.3	35	2100	10.5
12	720	3.6	36	2160	10.8
13	780	3.9	37	2220	11.1
14	840	4.2	38	2280	11.4
15	900	4.5	39	2340	11.7
16	960	4.8	40	2400	12.0
17	1020	5.1	41	2460	12.3
18	1080	5.4	42	2520	12.6
19	1140	5.7	43	2580	12.9
20	1200	6.0	44	2640	13.2
21	1260	6.3	45	2700	13.5
22	1320	6.6	46	2760	13.8
23	1380	6.9	47	2820	14.1
24	1440	7.2	48	2880	14.4
25	1500	7.5	49	2940	14.7
26	1560	7.8	50	3000	15.0
27	1620	8.1	51	3060	15.3
28	1680	8.4	52	3120	15.6

*Starting dose is 1 microgram/kg/minute
+The reconstituted infusion has a concentration of 200 micrograms/ml

MONITORING

- Continuous cardiac monitoring is required
- U&E must be carried out every 12 hours as a minimum
- Blood gases checked every 4 hours
- **Look out for signs of acidosis**

Name: D.O.B: Unit No: NHS: No:

WEANING OFF INTRAVENOUS INFUSIONS FOR ASTHMA

As the child improves (clinically) aim to wean down infusions as follows:

Child must be stable for 6 hours before starting to wean down infusions

1. Reduce aminophylline to half the rate of current infusion and continue with intravenous salbutamol infusion.

2. After a further 6 hours stop aminophylline infusion but continue with IV salbutamol for another 4 hours

3. Stop IV salbutamol if child is stable for 4 hours

4. Continue to give nebulised salbutamol and ipratropium during initial stages of IV infusion but change to high dose via MDI and spacer as child improves and oxygen requirements come down

5. Ensure IV canula is left in situ in case of further need.

Referral Criteria	
1	Frequent attendance > 3 in 6 months
2	> 3 courses of oral steroids in 12 months
3	Previous treatment with Aminophylline
4	Previous admissions to HDU/PICU
5	Known children with 'Brittle asthma'
6	Children on high dose inhaled steroids i.e.

For < 5 years

>400micrograms/daily of beclometasone or budesonide
>200micrograms/daily of fluticasone

For > 5 years

6 to 800 micrograms daily of beclometasone or budesonide
2 to 400 micrograms daily of fluticasone
250 to 500 micrograms daily of fluticasone and salmeterol (e.g. Seretide, Sirdupla)
200 to 400 micrograms daily of budesonide and formoterol (Symbicort)

Reference List

NWTS Guidelines for Management of acute severe asthma in children over 2 years
https://www.nwts.nhs.uk/_file/ja4btiZPDv_309676.pdf

BNFc 2023

https://www.nice.org.uk/guidance/ng80/chapter/Recommendations#pharmacological-treatment-pathway-for-children-and-young-people-aged-5-to-16 Updated March 2021

Name: D.O.B: Unit No: NHS: No:

DISCHARGE PLANNING - FROM A&E / CHOBS

ADMISSION REQUIRED	**YES / NO** **Ward**:
If admission is requried Complete Section C – NURSING ASSESSMENT	

DISCHARGE from A&E / CHOBS YES / NO

Does the child require a discharge planning meeting? YES / NO

Parents / carers agree to discharge YES / NO

Discharged to: (document discharge address and contact telephone upon discharge)

Discharged to Hospital at Home YES / NO (If yes complete HAH referral form)

Discharged with contact advice: 24 hour contact ☐ 48 hour contact ☐

Date and Time contact expires (state)

Agencies notified of discharge (document date and details of person informed)

Paediatric Liaison ☐ Health Visitor ☐ Social Services ☐ School ☐

Other (state)

Follow up plans required: -

OPD APPOINTMENT REQUIRED YES / NO	**INHALER TECHNIQUE WITNESSED** ☐
RESPIRATORY NURSE REVIEW YES / NO	**WHEEZY INFANT MANAGEMNT PLAN** ☐
GP REVIEW ADVISED YES / NO	**ASTHMA MANAGEMENT PLAN** ☐
	WEANING REGIME ☐

Date and Time of Discharge

Name of nurse discharging the child ……

Signature ……

Name: D.O.B: Unit No: NHS: No:

Discharge Reliever Therapy
(For children admitted with a wheezy episode or asthma)

Children must **NOT** go home on 10 puffs of their reliever therapy this is for emergency management only or for use when the child is an in-patient.

Your child has been having regular **Reliever** inhalers whilst in hospital; this could have been either salbutamol (Ventolin), or ipratropium (Atrovent). These inhalers help your child to breathe, therefore, we need to reduce them slowly to prevent recurrence of the breathing difficulties. Now your child is well enough to be discharged home, the reducing dose of **reliever** medication for your child is as follows:

5 puffs of salbutamol every 4 hours for 2 days

4 puffs of salbutamol every 6 hours for 2 days

2 puffs of salbutamol every 12 hours for 2 days

Always encourage your child to take the reliever via the spacer device when unwell e.g. Volumatic or Aerochamber. Encourage the child to use slow deep breaths at least 6 breaths for each puff of medication put into the spacer. Always shake the inhaler after each dose.

After you have completed this regime please give the Reliever inhaler only when needed e.g. when coughing, wheezing or having difficulty in breathing as per your child's individual Self-Management Plan.

- If your child is still having symptoms at the end of this regime e.g. cough wheeze or continued difficulty in breathing you may continue the reducing dose of inhalers for a few extra days. However if you are worried that your child does not seem to be improving; please contact the ward from where you were discharged or the Respiratory Nurse Specialist who will be able to provide extra advice.

- You may use this reliever regime anytime when your child has a cold (upper respiratory tract infection) in the future. However if your child continues to have symptoms despite regular reliever inhaler every 4 hours please take your child to be reviewed either by your G.P, Walk in Centre or Accident and Emergency department.

Please give to child's parents/ guardian on discharge

Ward 3F 0151 430 1616
Ward 4F/ CHOBS 0151 430 1627