1 CPD CREDIT

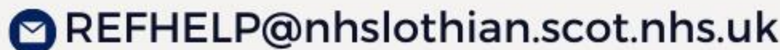
Ref Talks

Autumn Series 2023

ACUTE PAEDIATRICS

A rapid-fire refresher on acute medical paediatric cases. Updates and latest guidance changes. Topics to include acute wheeze, allergy, HUS, stroke, eating disorders, fever and more. Who to send in and where.

WELCOME



REFHELP@nhslothian.scot.nhs.uk

Philippa Wood
Consultant Paediatrician
NHSL

Jennifer S Horne
Consultant Paediatrician
NHSL

Acute paediatrics: Updates and tips

Dr Philippa Wood, Consultant Paediatrician

Dr Jennifer Horne, Consultant Paediatrician

NHS Lothian

Outline

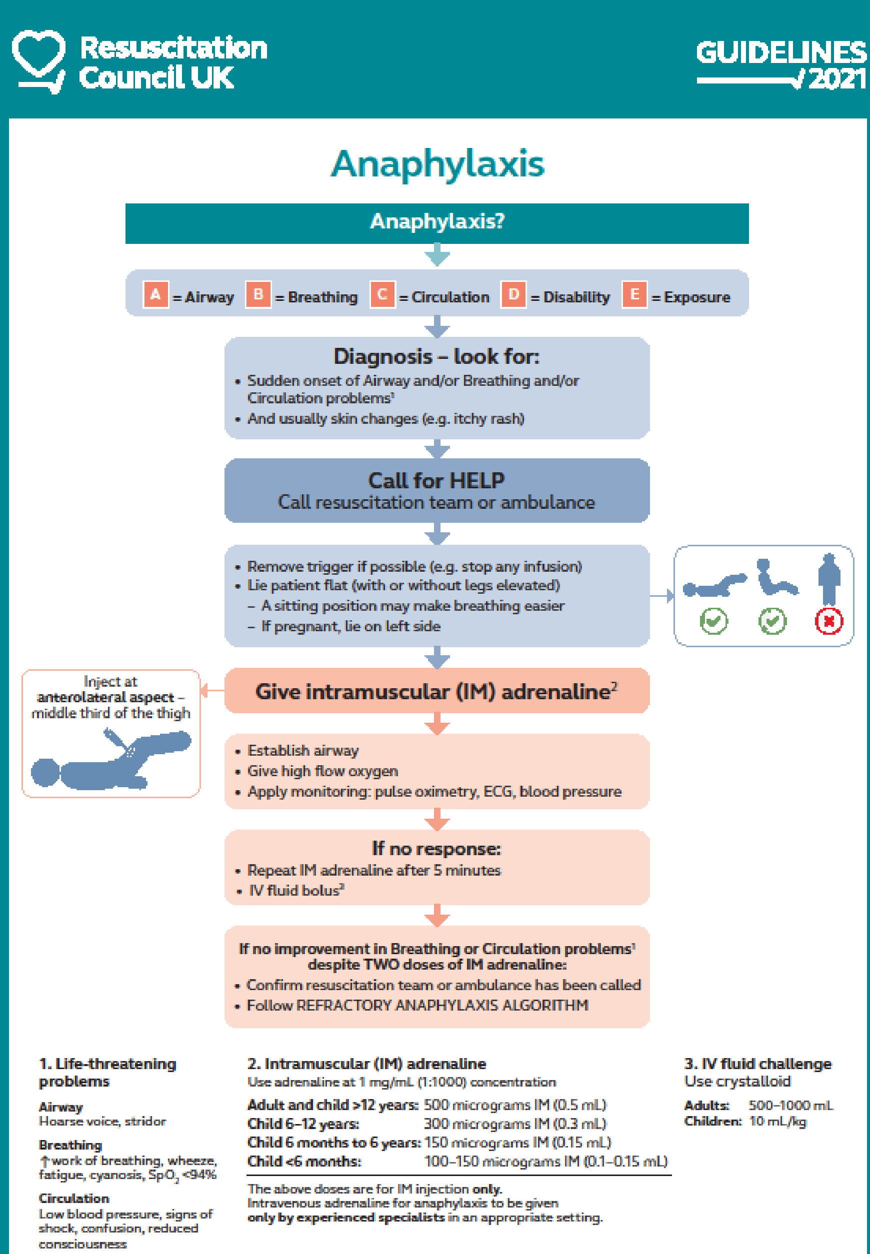
- Acute referral pathway
- Allergy
- Asthma/wheeze guidance update
- Fever/infection – Kawasaki, UTI, pneumonia
- GI/renal
  - Bloody diarrhoea/HUS
  - HSP
- Stroke
- New T1 diabetes
- Medical emergencies in eating disorders
- BRUE
- Cancer referrals

Medical Paeds Acute referrals

- Royal Hospital for Children and Young People
  - Edinburgh, East and Midlothian, up to 16 years
  - Open-door policy, no need to call unless specific information
  - Send all referrals to emergency department
  - Consultant discussion available 0900-1700 via #9250 (may be quicker to send advice request via SCI gateway)
  - Specialties – please call
  - Note no "rapid access" outpatient service (Urgent OPA can be up to 8 weeks) – if requires review <48 hours, send to ED +/- phone call

- St John's Hospital
  - West Lothian, up to 16 years
  - Call paediatric middle grade
  - If very unwell, send to emergency department for assessment
  - T1 diabetes (known or suspected) not accepted → RHCYP

Allergy: Anaphylaxis



[Resuscitation Council UK](#)

Allergy

BSACI ALLERGY ACTION PLAN

RCPCH · anaphylaxis UK · AllergyUK

This child has the following allergies:

Name:

DOB:

Photo

Mild/moderate reaction:

- Swollen lips, face or eyes
- Itchy/tingling mouth
- Hives or itchy skin rash
- Abdominal pain or vomiting
- Sudden change in behaviour

Action to take:

- Stay with the child, call for help if necessary
- Locate adrenaline autoinjector(s)
- **Give antihistamine:** ……………… **(If vomited, can repeat dose)**
- Phone parent/emergency contact

Watch for signs of ANAPHYLAXIS

(life-threatening allergic reaction)

Anaphylaxis may occur without skin symptoms: ALWAYS consider anaphylaxis in someone with known food allergy who has SUDDEN BREATHING DIFFICULTY

A AIRWAY
- Persistent cough
- Hoarse voice
- Difficulty swallowing
- Swollen tongue

B BREATHING
- Difficult or noisy breathing
- Wheeze or persistent cough

C CONSCIOUSNESS
- Persistent dizziness
- Pale or floppy
- Suddenly sleepy
- Collapse/unconscious

IF ANY ONE (OR MORE) OF THESE SIGNS ABOVE ARE PRESENT:

1. **Lie child flat with legs raised** (if breathing is difficult, allow child to sit)
2. **Immediately dial 999** for ambulance and say ANAPHYLAXIS ("ANA-FIL-AX-IS")
3. In a school with "spare" back-up adrenaline autoinjectors, **ADMINISTER the SPARE AUTOINJECTOR** if available
4. Commence CPR if there are no signs of life
5. **Stay with child** until ambulance arrives, **do NOT stand child up**
6. Phone parent/emergency contact

*** IF IN DOUBT, GIVE ADRENALINE ***

You can dial 999 from any phone, even if there is no credit left on a mobile. Medical observation in hospital is recommended after anaphylaxis. For more information about managing anaphylaxis in schools and "spare" back-up adrenaline autoinjectors, visit: **sparepensinschools.uk**

Emergency contact details:

1) Name: ……………………

☎ ……………………

2) Name: ……………………

☎ ……………………

Additional instructions:

If wheezy: DIAL 999 and GIVE ADRENALINE using a "back-up" adrenaline autoinjector if available, then use asthma reliever (blue puffer) via spacer

Parental consent: I hereby authorise school staff to administer the medicines listed on this plan, including a 'spare' back-up adrenaline autoinjector (AAI) if available, in accordance with Department of Health Guidance on the use of AAIs in schools.

Signed: ……………………

Print name: ……………………

Date: ……………………

This BSACI Action Plan for Allergic Reactions is for children and young people with mild food allergies, who need to avoid certain allergens. For children at risk of anaphylaxis and who have been prescribed an adrenaline autoinjector device, there are BSACI Action Plans which include instructions for adrenaline autoinjectors. These can be downloaded at **bsaci.org**

For further information, consult NICE Clinical Guidance CG116 Food allergy in children and young people at **guidance.nice.org.uk/CG116**

This is a medical document that can only be completed by the child's healthcare professional. It must not be altered without their permission. This document provides medical authorisation for schools to administer a 'spare' adrenaline autoinjector in the event of the above-named child having anaphylaxis (as permitted by the Human Medicines (Amendment) Regulations 2017). The healthcare professional named below confirms that there are no medical contra-indications to the above-named child being administered an adrenaline autoinjector by school staff in an emergency. **This plan has been prepared by:**

Sign & print name: ……………………

Hospital/Clinic: ……………………

☎ …………………… **Date:** ……………………

For more information about managing anaphylaxis in schools and "spare" back-up adrenaline autoinjectors, visit: sparepensinschools.uk

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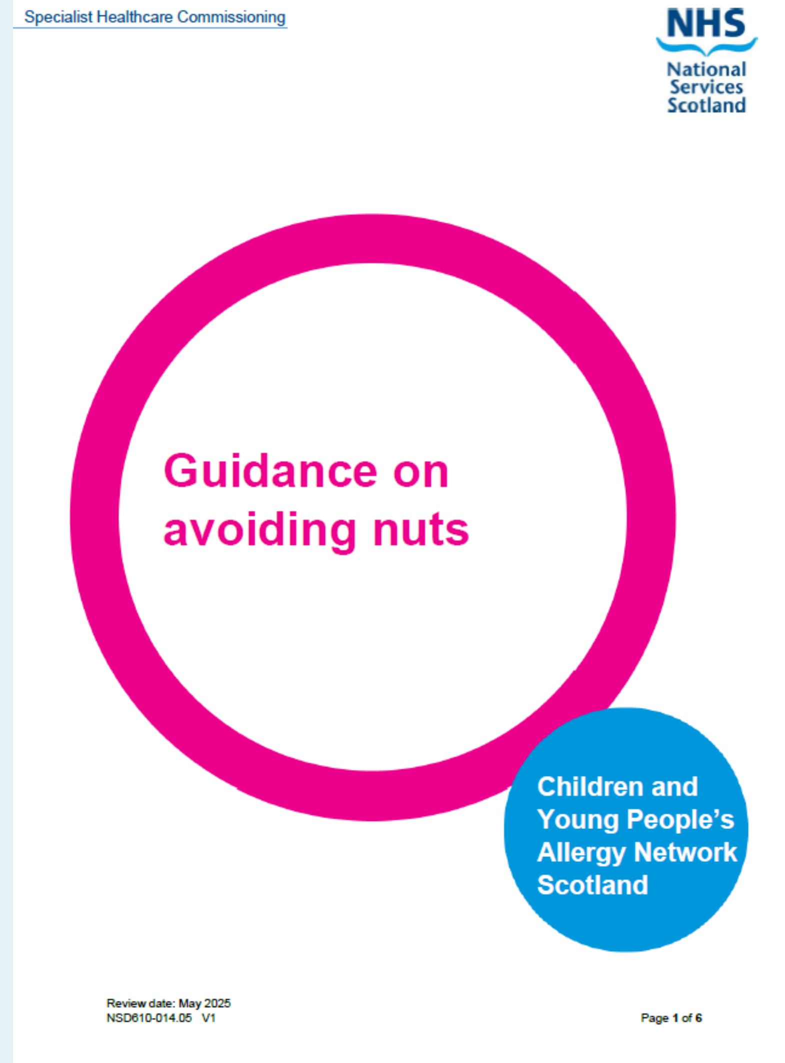
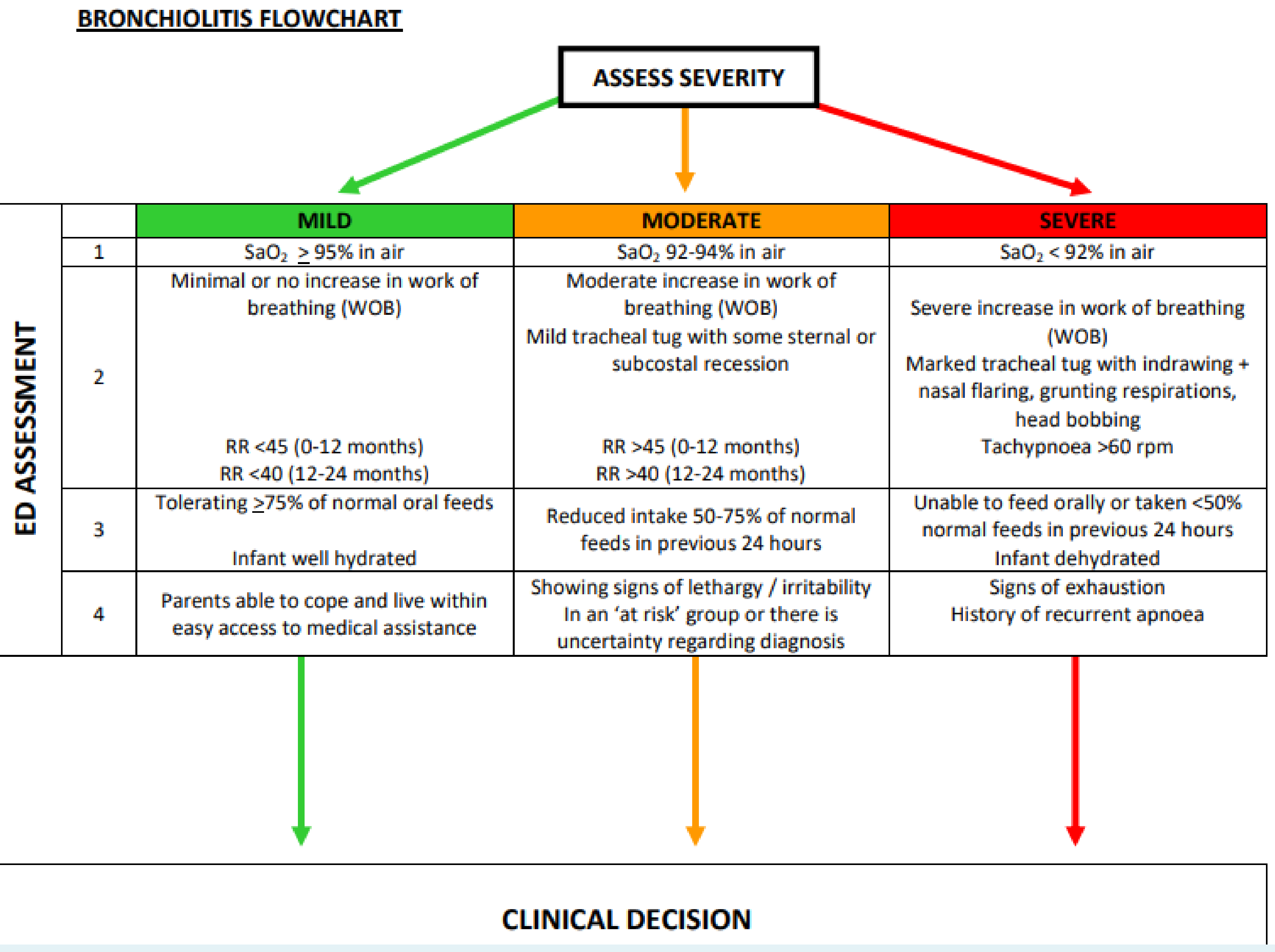


BSACI

CYANS

Bronchiolitis



BRONCHIOLITIS FLOWCHART

ASSESS SEVERITY

ED ASSESSMENT		MILD	MODERATE	SEVERE
	1	$SaO_2 \geq 95\%$ in air	SaO_2 92-94% in air	$SaO_2 < 92\%$ in air
	2	Minimal or no increase in work of breathing (WOB) RR <45 (0-12 months) RR <40 (12-24 months)	Moderate increase in work of breathing (WOB) Mild tracheal tug with some sternal or subcostal recession RR >45 (0-12 months) RR >40 (12-24 months)	Severe increase in work of breathing (WOB) Marked tracheal tug with indrawing + nasal flaring, grunting respirations, head bobbing Tachypnoea >60 rpm
	3	Tolerating ≥75% of normal oral feeds Infant well hydrated	Reduced intake 50-75% of normal feeds in previous 24 hours	Unable to feed orally or taken <50% normal feeds in previous 24 hours Infant dehydrated
	4	Parents able to cope and live within easy access to medical assistance	Showing signs of lethargy / irritability In an 'at risk' group or there is uncertainty regarding diagnosis	Signs of exhaustion History of recurrent apnoea

CLINICAL DECISION

Asthma/ wheeze

Future action plan if your child gets breathless and/or wheezy

Symptoms		Action
No symptoms	→	No blue inhaler required
Getting a cold/contact with a trigger	→	Take up to 4 puffs of the blue inhaler, 4 times a day, for 4 days. This is not a course and can be used less frequently or stopped depending on symptoms.
Your child is coughing and wheezing. They are breathing faster and making more effort with their breathing. They are finding it difficult to talk, eat and drink or lie down to sleep. You are worried about their breathing.	→	Take 10 puffs of the blue inhaler over 10 minutes. This is called an **emergency dose**. This should last for 4 hours.
All inhalers should be given through the spacer		

If you need to repeat the emergency dose within 24 hours at home you need to get urgent medical advice, day or night. **If your child does not get better after the emergency dose, can only speak single words or cannot talk, is gasping for breath or has colour change they need urgent help - you must phone 999 for an ambulance.**

While you are waiting for help to arrive, continue to give 1 puff of their blue inhaler each minute.

Remember: if you are worried about your child, get medical advice straight away

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Initial wheeze management in ED

Consensus document for use in the **Emergency Department** reflecting interpretation of national guidance. **Discuss any clinical concerns or queries with a senior staff member**

Age < 1y

Salbutamol unlikely to help

Manage as **Bronchiolitis**

Admit:
- SpO2 <90% if > 6 weeks
- SpO2 <92% if < 6 weeks
- Regular suction
- Significantly increased WOB
- < 50-75% oral feeds

Caution: preterm, cardiac, CLD, T21, immunodeficiency, neurological
Consider: social setting and distance from home

Do not prescribe steroids

A small number of infants aged 10-12m who are predominantly severely wheezy particularly if atopic (eczema, food allergies) may respond to salbutamol.
Trial 10 puffs if SpO2 allow or 1 x 2.5mg salbutamol /ipratropium nebuliser then **REASSESS** to determine need for further Rx.

Salbutamol toxicity occurs more easily in infants – **do not continue unless defined benefit** in SpO2 or clinical status

DOCUMENT EFFECT on TRAK

Age 1 - 2y

Consider trial of 10 puffs salbutamol if SpO2 >/=92% and mild-mod WOB

Salbutamol / ipratropium nebuliser if SpO2 <92% or severe WOB

A lot of children this age have bronchiolitis and their **wheeze is not drug responsive**. It is reasonable to try 10 puffs or 1 combineb then REASSESS and DOCUMENT on TRAK if it makes little difference

Do not prescribe steroids in ED
Admitting teams may prescribe later

Age 2 - 3y

10 puffs salbutamol if SpO2 >/=92% and mild-mod severity

Salbutamol / ipratropium / magnesium nebulisers if SpO2 <92% or severe WOB

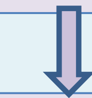
Prescribe steroids in ED **only** if being admitted

20mg Prednisolone

Age 3 - 5y

10 puffs salbutamol if SpO2 >/=92% and mild-mod severity

Salbutamol / ipratropium / magnesium nebulisers if SpO2 <92% or severe WOB



Prescribe steroids in ED only if being admitted

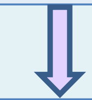
Consider discharging patients **known to have asthma or previous severe wheeze** with 3d course steroids

20mg Prednisolone

Age 5y +

10 puffs salbutamol if SpO2 >/=92% and mild-mod severity

Salbutamol / ipratropium / magnesium nebulisers if SpO2 <92% or severe WOB



Prescribe steroids if discharged **or** admitted

40mg prednisolone for 3 days

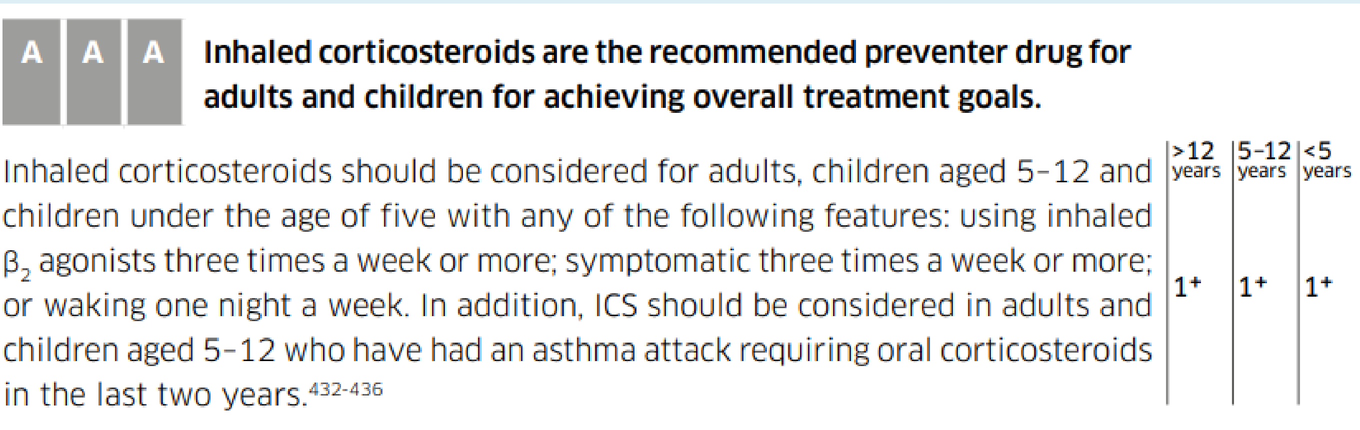
References: BTS_SIGN Guideline for Management of Asthma 2019, NICE Guideline NG9 Bronchiolitis in Children, updated 2021

Asthma/ wheeze

- Improving acute wheeze/asthma:
  - 4 puffs 4 times a day on day of presentation/discharge
  - Then UP TO 4 puffs 4 times a day for 4 days

When to start an inhaled steroid

- Experiencing symptoms more than 3 times per week on a regular basis
- Admission with an attack



A	A	A	**Inhaled corticosteroids are the recommended preventer drug for adults and children for achieving overall treatment goals.**

	>12 years	5–12 years	<5 years
Inhaled corticosteroids should be considered for adults, children aged 5–12 and children under the age of five with any of the following features: using inhaled β_2 agonists three times a week or more; symptomatic three times a week or more; or waking one night a week. In addition, ICS should be considered in adults and children aged 5–12 who have had an asthma attack requiring oral corticosteroids in the last two years.[432-436]	1^+	1^+	1^+

BTS-SIGN asthma guidance

Asthma/ wheeze

Referral to NHS Lothian asthma nurse-led clinic (RefHelp)

- >2 years of age
- Diagnosis unclear or in doubt (after a trial of treatment – email for advice)
- Rapid escalation in treatment with poor response to treatment
- Excess use of bronchodilator therapy (despite adequate treatment and good adherence)
- Multiple courses of oral steroids (more than 2) in a year
- Regular requirement for inhaled corticosteroids above licensed doses
- High dependency/ Intensive care admission (if not already followed up by secondary care)
- Recurrent viral induced wheeze which requires oral steroids
- Significant Parental anxiety or need for reassurance
- Children with asthma and co-existing nut allergy/ previous anaphylaxis

Asthma/ wheeze

Selecting the correct *AeroChamber Plus** *Flow-Vu** Anti-Static Valved Holding Chamber (VHC) for children & adults

AeroChamber Plus VHC* is being replaced with *AeroChamber Plus* Flow-Vu** Anti-Static VHC from August 2020. Technique should always be taught and assessed when prescribing a new VHC.

AeroChamber Plus Flow-Vu** Anti-Static VHC with Medium Mask for Children 1-5 years

AeroChamber Plus Flow-Vu** Anti-Static VHC with Youth Mouthpiece 5 years +

AeroChamber Plus Flow-Vu** Anti-Static VHC with Small Adult Mask

AeroChamber Plus Flow-Vu** Anti-Static VHC with Large Adult Mask

AeroChamber Plus Flow-Vu** Anti-Static VHC with Mouthpiece

AeroChamber Plus Flow-Vu** Anti-Static VHC should be washed weekly. Please refer to manufacturer's patient information leaflet for washing instructions. The *AeroChamber Plus* Flow-Vu** Anti-Static VHC should also be replaced annually.

Further advice on spacers is available from www.ljf.scot.nhs.uk

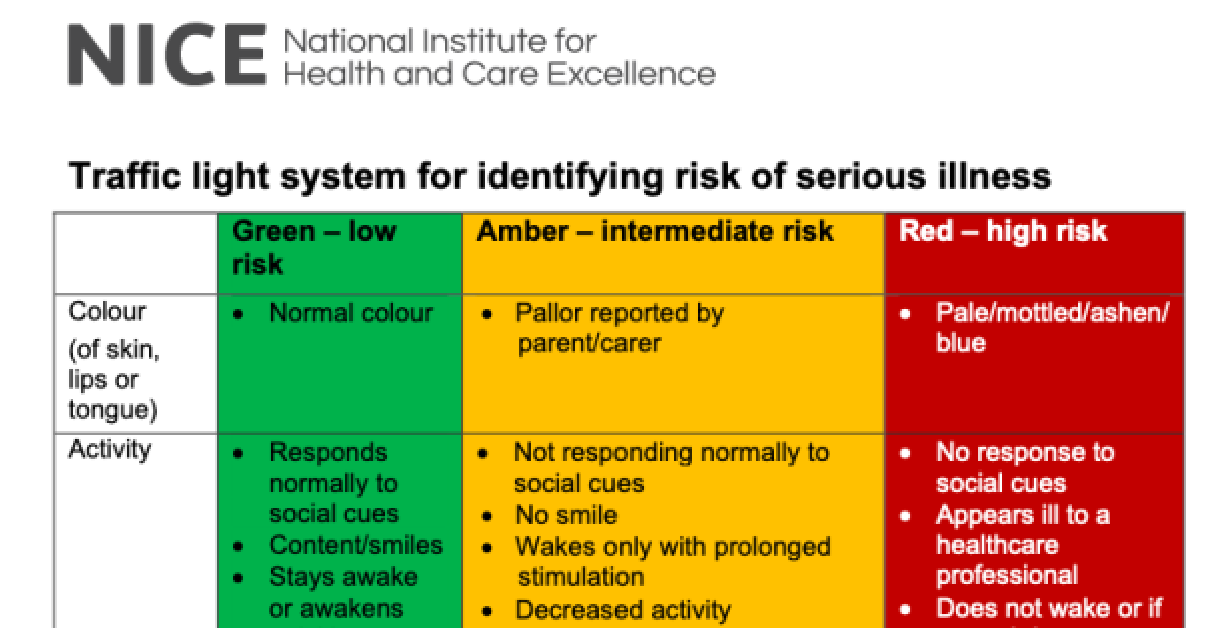
Asthma UK https://www.asthma.org.uk/advice/inhaler-videos

Produced by NHS Lothian Paediatric Asthma Nurse Specialists and NHS Lothian Respiratory Managed Clinical Network July 2020

*Trademarks and registered trademarks of Trudell Medical International

Fever

[NICE traffic lights]– shared decision making



NICE National Institute for Health and Care Excellence

Traffic light system for identifying risk of serious illness

	Green – low risk	Amber – intermediate risk	Red – high risk
Colour (of skin, lips or tongue)	• Normal colour	• Pallor reported by parent/carer	• Pale/mottled/ashen/ blue
Activity	• Responds normally to social cues • Content/smiles • Stays awake or awakens	• Not responding normally to social cues • No smile • Wakes only with prolonged stimulation • Decreased activity	• No response to social cues • Appears ill to a healthcare professional • Does not wake or if

Fever

NICE traffic lights – avoid fever phobia

Healthier Together advice sheets

What should you do?

- Keep monitoring your child for red and amber features (see above). Seek help if they develop, as this may suggest a more severe illness requiring specific investigations and treatment.
- To make your child more comfortable, you may want to lower their temperature using paracetamol (calpol) and/or ibuprofen. Use one and if your child has not improved 2-3 hours later you may want to try giving the other medicine. However, remember that fever is a normal response that may help the body to fight infection and paracetamol/ibuprofen will not get rid of it entirely.
- Avoid tepid sponging your child – it doesn't actually reduce your child's temperature and may cause your child to shiver.
- Encourage them to drink plenty of fluids.
- If a rash appears, do the **glass test**.

DOWNLOAD 'FEVER' ADVICE SHEET FOR CHILDREN UNDER 5 YEARS OF AGE

DOWNLOAD 'FEVER' ADVICE SHEET FOR CHILDREN OVER 5 YEARS OF AGE

Fever

Antimicrobial stewardship

BSAC pathways – for children presenting to hospital

Fever

Specific scenarios:

Send all infants <3 months for assessment – watch this space

Malaria >= 1 year after return from malarial area

Petechial rashes – if well appearing, only 1.5% have SBI. May not get Ix or Rx but send for assessment or discuss

Sore throats – can use FeverPAIN in children as per NICE (GAS outbreak guidance now withdrawn)

Urinary tract infection - diagnosis

- NB other causes of dysuria – threadworms, balanitis, vulvovaginitis – and pyuria – viral infection, appendicitis
- Urine sample is the ONLY investigation recommended for “Green” febrile patients WITHOUT a focus
- Urine collection: “clean catch” (wash perineum first)
  - 26% of these can be contaminated
- Please don’t treat without sending a sample first!

Leukocyte esterase and nitrite are both positive	Assume the child has a urinary tract infection (UTI) and give them antibiotics. If the child has a high or intermediate risk of serious illness or a history of previous UTI, send a urine sample for culture.
Leukocyte esterase is negative and nitrite is positive	Give the child antibiotics if the urine test was carried out on a fresh urine sample. Send a urine sample for culture. Subsequent management will depend on the result of urine culture.
Leukocyte esterase is positive and nitrite is negative	Send a urine sample for microscopy and culture. Do not give the child antibiotics unless there is good clinical evidence of a UTI (for example, obvious urinary symptoms). A positive leukocyte esterase result may indicate an infection outside the urinary tract that may need to be managed differently.
Leukocyte esterase and nitrite are both negative	Assume the child does not have a UTI. Do not give the child antibiotics for a UTI or send a urine sample for culture. Explore other possible causes of the child's illness.

Urinary tract infection - management

- Send in all <3 month infants for emergency assessment if suspected
- **Upper** UTI: if either temp >38 OR has loin pain/tenderness
  - Oral antibiotics for 7-10 days (cefalexin or co-amoxiclav)
- **Lower** UTI: 3 days trimethoprim
- STOP antibiotics if culture negative

Urinary tract infection - imaging

- See NICE guidelines
- Bottom line – send referral to Medical Paeds (we will send on to UTI Nurse-led clinic) if
  - Recurrent UTI
  - Atypical UTI
  - UTI under 6 months old

Urinary tract infection in under 16s: diagnosis and management

Lower respiratory tract infection

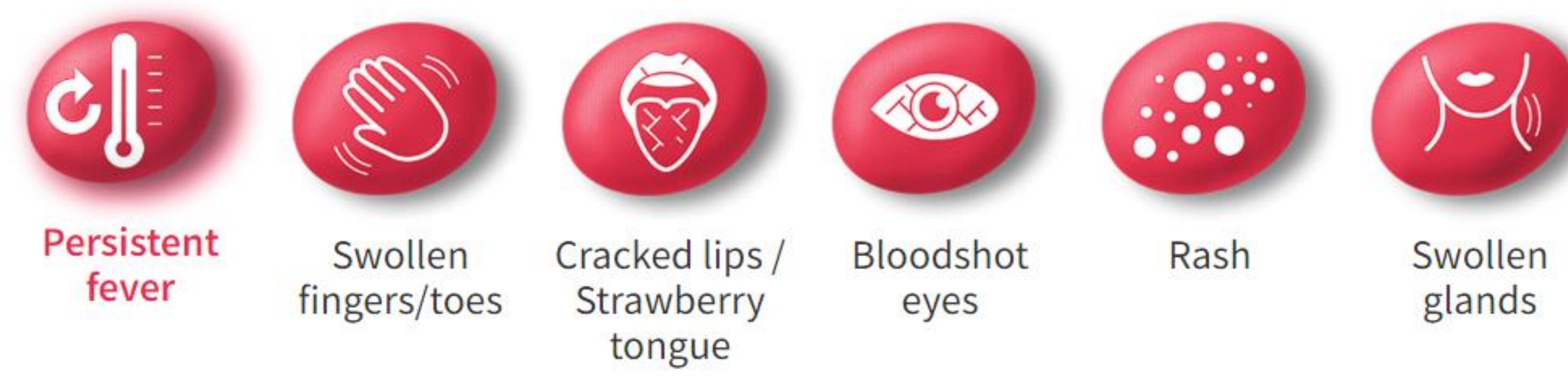
Viral vs bacterial less important

Degree of severity determines need for admission, particularly oxygen requirement

If persistent fever (24-48hrs) + respiratory distress/tachypnoea WITHOUT wheeze or bronchiolitis > give antibiotics
Presence of crackles less relevant

5 days Amoxicillin

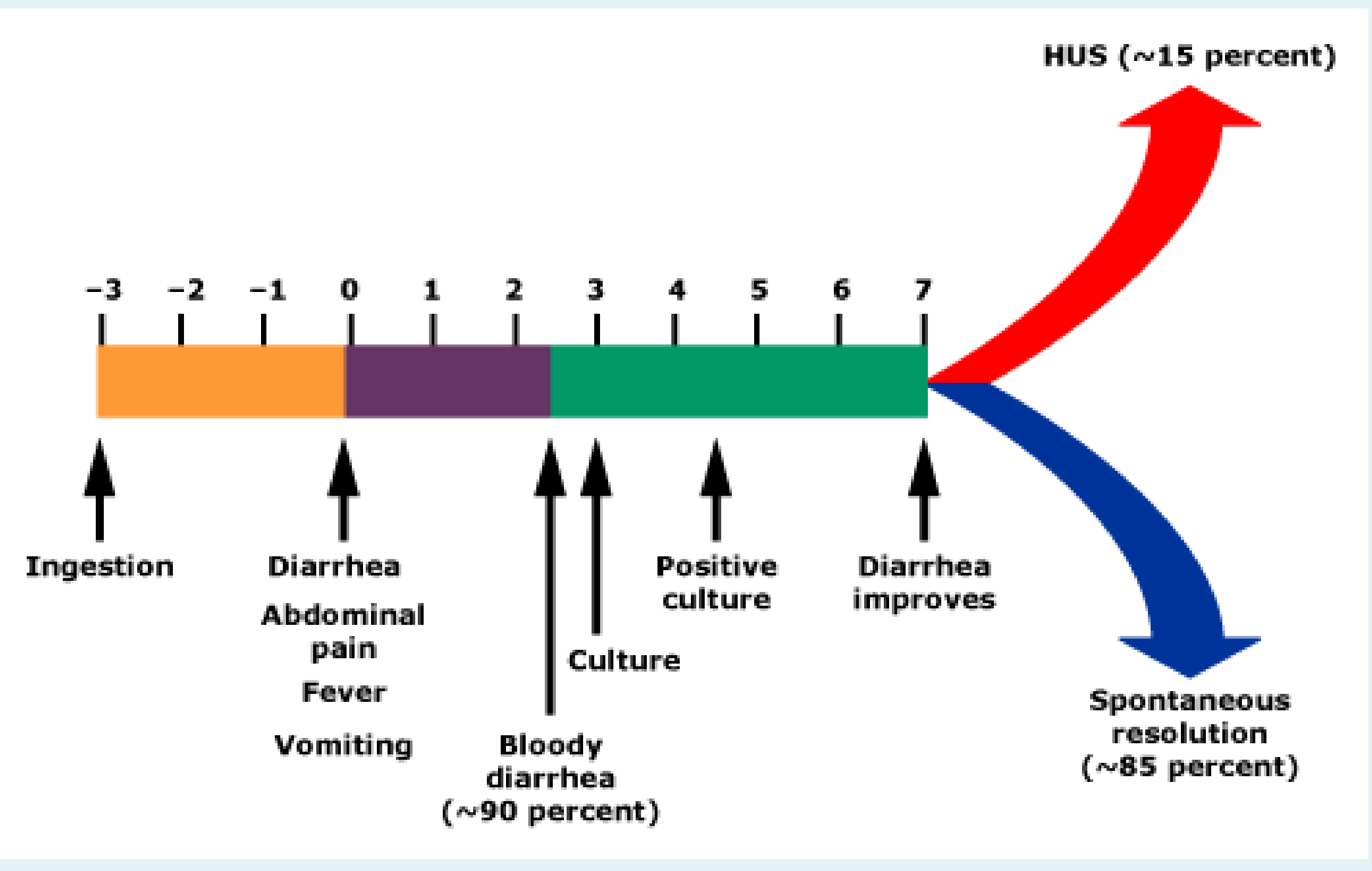
Persistent fever
5 DAYS+



[Societi - UK KD Foundation]

Also – think serious bacterial infection

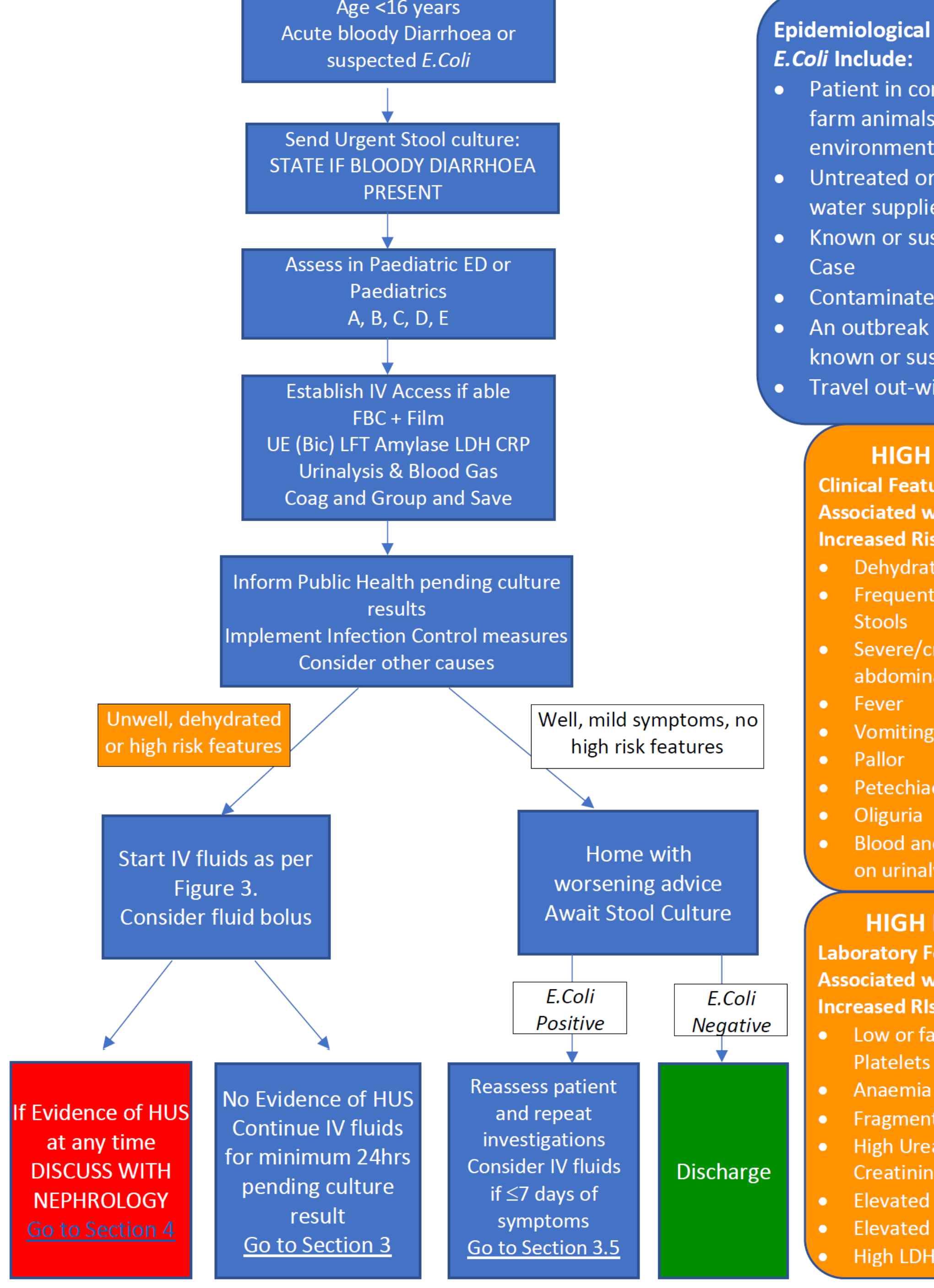
Acute bloody diarrhoea



[GGC Acute bloody diarrhoea and HUS]

Criteria for entry into the pathway for Bloody Diarrhoea or suspected *E.Coli* are:

1. Acute bloody diarrhoea
   1. Minimum of one episode of blood in stool AND
   2. Diarrhoea defined as acute onset loose stool
2. Non bloody acute diarrhoea **AND suspicion of *E. Coli***
   2. Contact with
      2. farm animals
      3. contaminated environments (fields, farms, rural areas)
      4. Untreated water from rivers or private supplies
      5. A known or suspected case of E.Coli
      6. Contaminated food (undercooked meat, unpasteurised milk, raw vegetables)
   3. Travel outwith the UK
   4. An outbreak of *E. Coli* is known to be present locally or nationally



Gastroenteritis

Dehydration

- Clinical assessment of hydration
- Expect urine output to be less than normal if intake is reduced – refer if *significantly* low

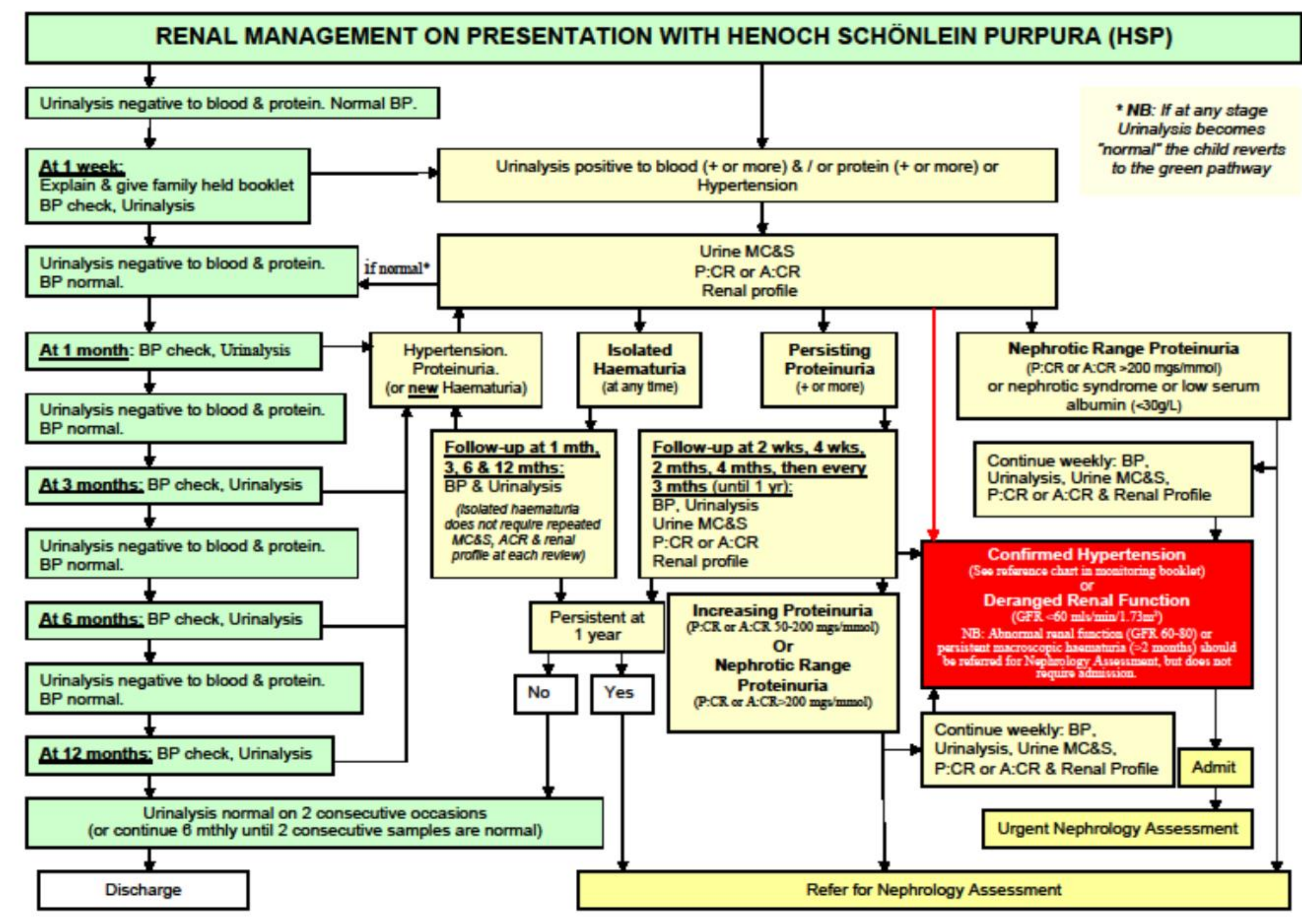
Hypoglycaemia

- Encourage sugar-containing fluids for an oral fluid challenge (risk of ketotic hypoglycaemia or accelerated starvation)

Consider wide differential diagnosis of vomiting

	Neonate	Infant	Child	Adolescent
Vascular	Stroke		Migraine	
Infection	Any infection esp gastroenteritis, meningitis, pneumonia, UTI, appendicitis, tonsillitis, Helicobacter, labyrinthitis			
Trauma	NAI		Head injury	
Autoimmune/ allergy		CMPA, FPIES Intussusception	Coeliac, anaphylaxis, food allergy	
Metabolic	IEM	Ketosis, IEM		
Iatrogenic/ induced	Overfeeding, accidental poisoning		Medications: salbutamol, prednisolone, morphine, NSAIDs. Deliberate overdose/poisoning	
Neoplastic		Brain tumour		
Congenital	Malrotation, atresia, pyloric stenosis	GORD, hydrocephalus Obstructed hernia	Vascular rings, malrotation	
Degenerative				Pregnancy
Endocrine	Hyperthyroidism		DKA	
Functional		Constipation	Functional vomiting, dyspepsia, cyclical vomiting syndrome, motion sickness	Eating disorder, rumination syndrome

HSP



GGC HSP guideline

Stroke in Childhood

Clinical guideline for diagnosis, management and rehabilitation

Stroke association

RCPCH Royal College of Paediatrics and Child Health
Leading the way in Children's Health

Identify children with suspected stroke

1 Identify potential stroke

- Acute focal neurological deficit
- Speech disturbance
- Unexplained, persistent change in conscious level (GCS ≤ 12 **OR** AVPU < V)

Also consider stroke in children with:

- New onset focal seizures
- New onset severe headache
- Ataxia
- Dizziness
- Resolved acute focal neurological deficit
- Sickle Cell Disease

Neurological assessment

PedNIHSS definitions	Scale definition

2 Pre-hospital care: Ring 999 / 111

- Manage Airway
- Administer high flow O_2 if clinically indicated
- Perform a capillary glucose test within 15 minutes of presentation
- Treat HYPOGLYCAEMIA (If capillary blood glucose 3 mmol/L give 2 ml/kg of 10% dextrose)
- Assess using **FAST**
- Transport to nearest ED with acute paediatric services
- Priority call / pre-alert ED of impending arrival of child with suspected stroke
- Activate (locally defined) acute paediatric stroke pathway
- If Sickle Cell Disease is suspected, discuss with paediatric haematologist who should be present in pre-hospital care / ED

3 ED: Activate acute stroke pathway

This algorithm is not wholly applicable to children with Sickle Cell Disease. If Sickle Cell Disease is suspected:

- Discuss with paediatric haematologist
- Exchange transfusion even if initial imaging is normal

- Intubate if GCS < 8, AVPU = U, if there is a loss of airway reflexes or there is suspected / proven raised intracranial pressure
- Administer high flow O_2 and target SpO_2 ≥ 92%
- If the circulation is compromised give a 10 ml/kg isotonic fluid bolus
- Perform a capillary glucose test within 15 minutes of presentation. If capillary blood glucose 3 mmol/L give 2 ml/kg of 10% dextrose and consider a hypoglycaemia screen

Polyuria/ polydipsia

DO YOU KNOW THE SIGNS OF TYPE 1 DIABETES?

We call them the **4Ts.** If you or your child are weeing more often, constantly thirsty, more tired than usual, or losing weight for no reason, it could be a symptom of type 1 diabetes. If left undiagnosed, type 1 diabetes can be fatal. **If you're experiencing any of the 4Ts, ask your doctor for a test immediately.**

Scan the QR code or visit diabetes.org.uk/the4Ts

DIABETES UK

KNOW DIABETES. FIGHT DIABETES.

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Medical emergencies in eating disorders

MEED Guidance

BEAT

Assessing

Does the patient have an eating disorder?

Yes: Anorexia nervosa- Bulimia nervosa- Other

Not sure: Request psychiatric review

Is the patient medically compromised?

- ☐ BMI <13 (adults); m%MBI <70% (under 18)?
- ☐ Recent loss of >1kg for 2 consecutive weeks?
- ☐ Acute food or fluid refusal/intake <400kcal per day?
- ☐ Pulse <40?
- ☐ BP low, BP postural drop >20mm, dizziness?
- ☐ Core temperature <35.5°C?
- ☐ Na <130mmol/L?
- ☐ K <3.0mmol/L?
- ☐ Raised transaminase?
- ☐ Glucose <3mmol/L?
- ☐ Raised urea or creatinine?
- ☐ Abnormal ECG?
- ☐ Suicidal thoughts, behaviours?

Is the patient consenting to treatment?

Yes:

No: Mental health assessment requested

BRUE

- Brief, resolved, **unexplained** event (phrase replaces ALTE)

Age < 1 year

AND

Brief (usually <1 minute) duration with full recovery by time of presentation

AND

No explanation of event evident from history and examination.

AND AT LEAST ONE OF

Cyanosis or pallor

Absent, reduced or irregular breathing

Marked change in tone (increased or decreased)

Altered consciousness

Suspected cancer

Headsmart

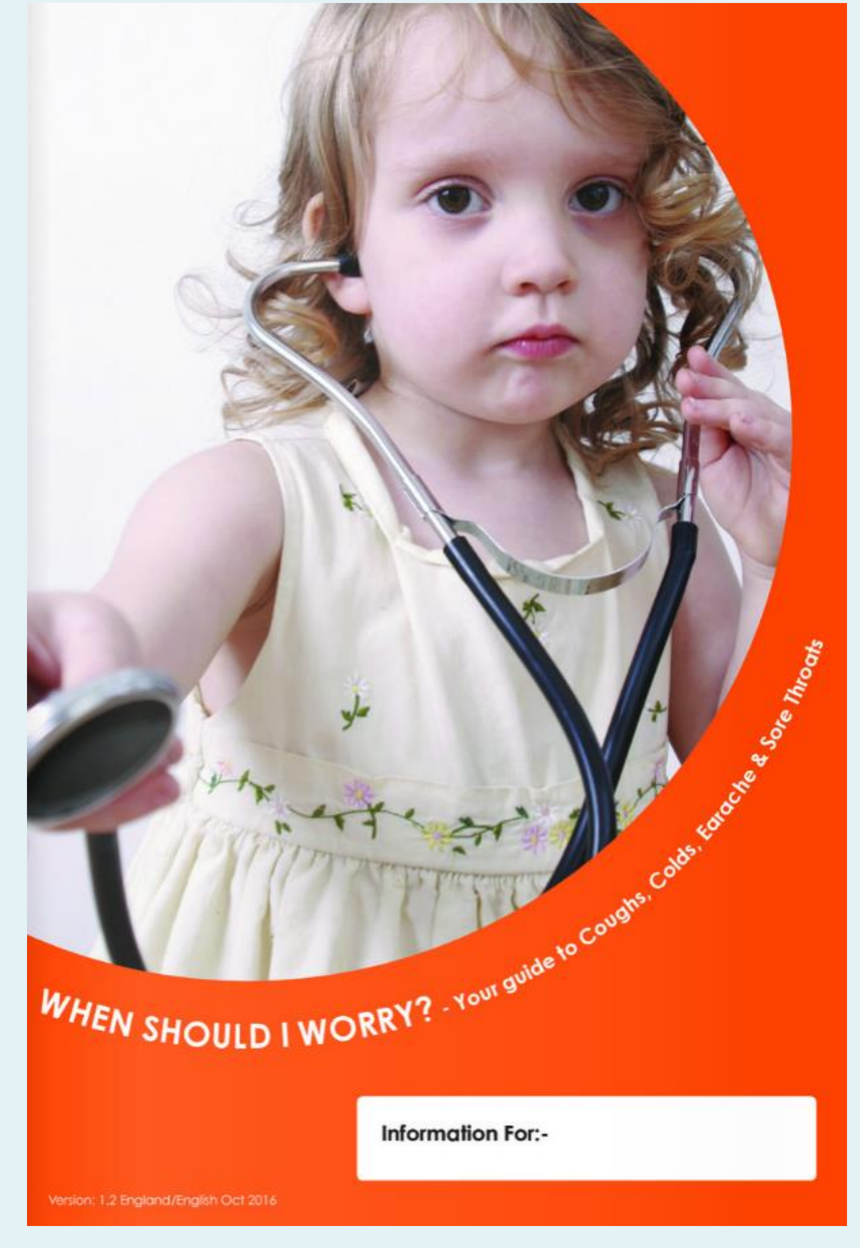
- Send to ED at appropriate time
- *Unexplained* petechiae/bleeding/bruising
- *Unexplained* hepatosplenomegaly, abdominal mass,
- *Unexplained* lumps, bone pain/swelling
- Focal neurology or cerebellar symptoms

- Separate RefHelp page for lymphadenopathy

Safety netting

[whenshouldIworry.com]

[Healthier Together]



Paediatric advice and assessment is available 24/7

Q+A