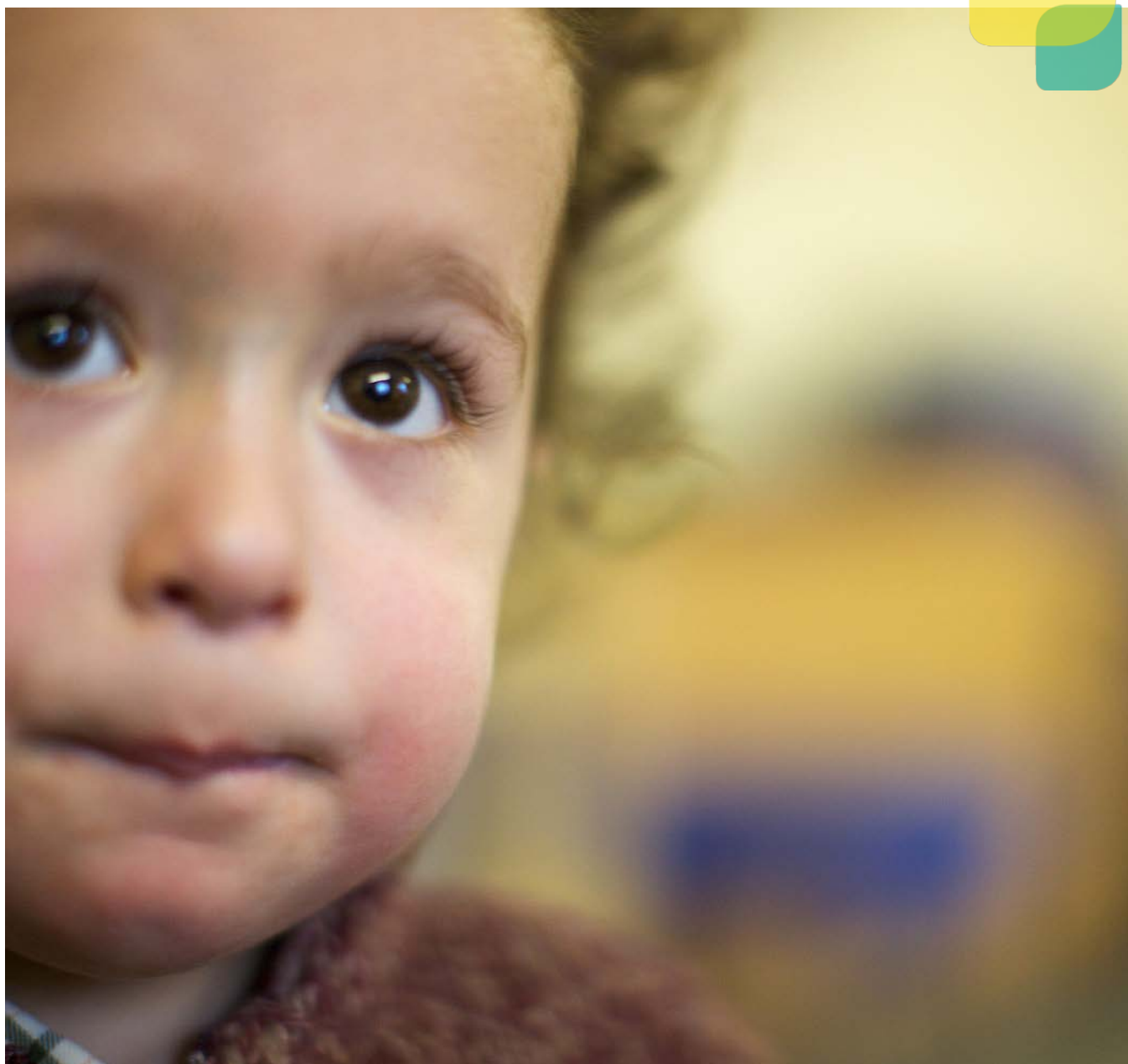


An Introduction to paediatrics in the Emergency Department





Paediatrics in the RUH Emergency Department

We have a dedicated paediatric area within our Emergency Department at the RUH. Alongside this we have a dedicated paediatric resuscitation area including a neonatal resuscitaire. We see approximately 20,000 children per year and cover Bath and surrounding areas of Wiltshire and the outskirts of Bristol.

Within our paediatric area we have 2 seated examination cubicles and 4 trolley cubicles for those patients requiring them. Additionally, there is a dedicated paediatric waiting room and triage/nurse base (all currently under development).

Future plans include having the paediatric area staffed 24/7 with clinicians allocated to this area to enhance flow and patient journey through the hospital and department.

The Paediatric Team

We have a small but dedicated paediatric team made up of:

- Paediatric Lead Consultant Liz Gilby,
- Consultant Jess Spedding,

We currently have 5 registered paediatric nurses working within the department.

- Paediatric Nurse Lead, SCN Neil Macaulay-Brooks
- SR Sarah Potter
- SR Emma Langhorn
- SN Emily Hancock
- SN Emma Santer

We also have 2 paediatric safeguarding nurses working in conjunction with our safeguarding team to ensure that all paediatric attendances are monitored and followed up as needed.

- Sam Coolbear
- Ruby Nicholson-Pallet

Mike Menzies is our paediatric safeguarding lead nurse for the Trust and provides regular support and safeguarding supervision sessions in the department.

The hospital CAMHS service runs from 9-5 Monday to Friday and operate and on-call service out of hours, contactable via switchboard.



Paediatric Teaching

SR Penny Rutter is our Clinical Practice Facilitator and runs regular study days which always include a paediatric session.

SR Sarah Potter is our main paediatric teaching lead and regularly adds current topics and 'One Minute Wonder' teaching to the [ED website](#).

The paediatric topics covered within the teaching sessions will have competencies attached and can be signed off against the paediatric competency booklet. We request that these competencies are signed off by a paediatric nurse.

Topics include observations (including PEWS), IV drugs/fluids respiratory illnesses, rashes, abdominal presentations and minor injury presentations.

This document briefly outlines the differences between paediatric and adult triage, medicines and fluids and common paediatric presentations to the emergency department.

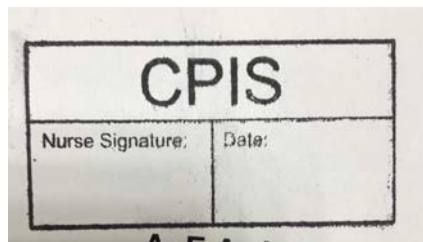
Holding Children

It is often necessary to hold children for procedures to ensure these happen safely. Please familiarise yourself with the [Safe holding policy](#)

Paediatric Triage vs Adult Triage

In addition to the basic triage, it is important that the following are completed:

- Check whether childhood vaccinations are up to date.
- Ideally all children should be weighed. This is used as part of the assessment of the child and for calculating medication doses.
 - All children under the age of 2 should be undressed fully and nappy removed.
 - [Paediatric Weights One Minute Wonder](#)
- Ask the names of all accompanying adults and their relationship to the child, this will sometimes include asking parental responsibility.
- All families should be asked whether they have a Social Worker, and if so, their name and where they are based.
 - This should then be documented on the paediatric safeguarding tool on FirstNet (The red triangle next to their name) and a social care notification form completed (See 'Safeguarding' section)
 - Anyone can complete this but we must ensure that this is completed before the child is discharged home.
 - Reception staff will stamp the front of the cas card with CPIS for children who are on a child protection plan – this should be acknowledged with a signature



- Blood sugars (BM) must be recorded in all children who present with signs of possible dehydration, fitting, collapse or generally unwell.
 - If a blood BM of 2.6 or less is recorded the patient must be moved to resus 4 and a hypoglycaemic screen completed by the medical team. This is to test for any underlying, undiagnosed metabolic conditions.
- Urine samples should be collected on all patients who present with abdominal pain, vomiting, fever or generally unwell.
 - A BHCG (Pregnancy test) should be recorded on all female patients over the age of twelve who require a urinalysis with their consent.
 - Babies and young children who require a urine sample need a clean catch specimen.

ANALGESIA

Within the RUH paracetamol and ibuprofen doses are dependent on age, as per BNF guidance.

There are quick reference charts for paracetamol and ibuprofen doses and these can be found in the drug room in minors, the triage rooms and on the drug cupboard in resus.

All nurses are able to PGD simple analgesia providing they have been qualified 12 months and have completed the relevant PGD competencies.

Occasionally analgesia doses are calculated as follows:

- Paracetamol (Calpol): 15mg/kg = dose in mg, 4-6 hourly
- Ibuprofen (Nurofen/Calprofen): 5mg/kg = dose in mg, 6-8 hourly

We refer to the WHO analgesia ladder and have other analgesia available to use e.g. Entonox, IN diamorphine or fentanyl for severe pain caused by acute injuries, as well as oramorph and IV morphine.

Children requiring enhanced analgesia will require extra monitoring and the application of Ametop. Please refer to local guidelines for further information.

Support with paediatric medicines

- Drug doses may be checked in the BNFC or on Trust guidelines.
- Medusa has a 'Paediatric Intravenous Drugs' section with guidance on preparation and administration for all IV medications, and there is a selection of the most commonly given drug pages available in a folder in R4.
- Also in R4 is a folder of 'PICU/WATCH Drug Sheets' which have drug doses and administration guidance for emergency drugs by weight.
- eResus also has guidance on doses of drugs by condition, including a 'recipe' for some drugs such as phenytoin and salbutamol.

All medications (including IV fluids) being administered to children need to be checked by two nurses - this is a NMC requirement.

[Paediatric IV drugs teaching](#)

[IN fentanyl teaching](#)

[Pain assessment and control teaching](#)



DISTRACTION AND THE IMPORTANCE OF PLAY

Distraction and play is a vital part of caring for a child in the emergency department. Children in our care are injured or unwell, in a new environment, surrounded by unfamiliar people and equipment. Often they are in pain and this is extremely frightening for a child. We aim to make the child's experience in our department a positive one and try to make it a less frightening time. Additionally, a frightened child is an uncooperative child, so putting them at ease will make our job of assessing and treating them much easier.

Play

Where possible, children in the department should be allowed to remain in the children's waiting room where there are a variety of toys and activities available to them. Children should only be in a bed space when their clinical condition requires them to be in bed, monitored or having treatment, or when being assessed. Play is a large part of the recovery process and so allowing the child to remain in the waiting room for as much of their ED stay as possible will have a positive effect on them.

Where it is necessary for a child to be nursed in a bed space, they should have access to toys at the bedside, and we encourage children to continue playing throughout their treatment.

Distraction

We have a selection of distraction equipment (noisy/shiny/light up toys) available in the department which can be used to distract the child, making it easier for us to obtain observations/carry out procedures. Distraction can also drastically reduce pain, and so can be utilised alongside analgesia and to reduce the impact of painful procedures, such as cannulation.

Reward

Children will remember the last thing that happened to them in our department. If their visit to the ED ends with them getting a reward, then this is what they will remember, making it a positive experience for them. We have stickers, certificates and balloons available to reward children.

VITAL SIGNS

The recording of vital signs is extremely valuable in recognising the deteriorating child. Baseline observations should include temperature, pulse, blood pressure, oxygen saturations and respiratory rate. The frequency of observations is dictated by their clinical condition.

Below is a table of normal parameters for neonates/children:

Age	Respiratory rate	Heart rate	Systolic BP
0-3 months	30-60	120-150	60-80
4-11 months	30-50	110-150	70-90
1-4 years	20-40	90-130	80-100
5-11 years	20-30	80-120	90-110
12 + years	15-25	70-100	100-130

Children will have PEWS (Paediatric Early Warning Score) calculated in much the same way as adults have NEWS calculated. There are 5 PEWS charts, divided into age ranges (as in the table above). It is vital that the correct chart is used in order to accurately calculate the PEWS. In addition to HR, RR, SpO₂, Oxygen delivery, Systolic BP and conscious level, PEWS charts also allocate a score to capillary refill time and level of respiratory distress.

Capillary refill time should be measured centrally, by pressing a finger on the sternum for 5 seconds and then releasing and counting the number of seconds the blanched skin takes to return to normal colour. Anything over 2 seconds will score.

In order to assess respiratory distress, you will need to be able to see the child's face and chest. This is easiest to do with the child's clothing removed, if age appropriate to do so. There is a key on the PEWS chart which describes what constitutes mild, moderate and severe respiratory distress. [This video](#) demonstrates wheeze and subcostal recession, [this video](#) demonstrates grunting, [this video](#) demonstrates head bobbing and [this video](#) demonstrates stridor.

There is an age appropriate neuro observation chart on the reverse side of the PEWS chart.

In ED, a child with PEWS of 3 or more, or who looks unwell, will be managed in Resus 4.

[Paediatric Temperatures One Minute Wonder](#)

[Baby ECG leads One Minute Wonder](#)

NHS
Hospitals Bath
Foundation Trust

Royal United Hospitals Bath
NHS Foundation Trust

[illegible]

No response									
Denise Greeman, Version 6, 01/01/20, Review 01/01/22									
Approved by the Document Review Group DRG67									

SEPSIS

Sepsis is the number one cause of preventable death in the world. In the UK alone, it's estimated that 52,000 people die per year from sepsis. Babies and children are high risk for developing sepsis.

During triage we perform a basic sepsis screening for all children. Those children who are presenting with a possible infection and have one or more of the following should be flagged to a clinician

- PEWS or 2 or more, or have an increase in their PEWS of 2 or more
- Looks sick
- Is under 3 months old.

The doctor will then complete a more detailed sepsis assessment within the paediatric clerking document.

Babies under 3 months old are particularly at risk as they have not completed their primary immunisation course, and have been exposed to potential triggers during birth (e.g. Enterovirus, Group B Strep). All babies under 3 months with ANY fever (>37.5) should be moved to R4 and a senior ED doctor informed.

Babies and children over 3 months with signs of sepsis should be cared for in R4.

Category	All ages		Age <5		Age 5-11		Age 12+	
	High	Mod	High	Mod	High	Mod	High	Mod
Respiratory	Sats<90%	Sats<91% Nasal flare	↑RR <1yr >60 1-2yrs >50 3-4yrs >40 Grunting Apnoea	↑RR <1yr 50-59 1-2yrs 40-49 3-4yrs 35-39	Sats<90% ↑RR 5yrs >29 6-7yrs >27 8-11yrs >25	Sats <92% ↑RR 5yrs 24-28 6-7yr 24-26 8-11yr 22-24	↑RR >25 Sats <92% in <40%O2	↑RR 21-24
Circulation and hydration	↓ HR <60	CRT >2 ↓ urine output (<1ml/kg/hr)	↑HR <1yr >160 1-2yrs >150 3-4yrs >140	↑HR <1yr 150-159 1-2yrs 140-149 3-4yrs 130-139	↑HR 5yr >130 6-7yr >120 8-11yrs >115	↑HR 5yr 120-129 6-7yr 110-119 8-11yrs 105-114	↑HR >130 SBP <90 or drop of 40 No urine >18hrs	↑HR 91-130 SBP 91-100 No urine 12-18hrs
Temp.	<36°C		<3/12 >38°C	3-6/12 39°C+				
Skin	Mottled Ashen Cyanosis Non-blanching rash							Signs of potential infection eg at wound site
History/behaviour		Cold hands and feet Leg pain	No response to social cues Appears ill to HCP Drowsy Weak/high pitch cry	Abnormal response to social cues No smile Reduced activity Parental concern Hard to wake	Altered behaviour/mental state Appears ill to HCP Drowsy	Abnormal behaviour Reduced activity Parental concern	Objectively new altered mental state	History of altered mental state Impaired immunity Surgery, trauma within weeks

NICE criteria for moderate and high risk of sepsis.

RESUS

Children requiring more input will be put into R4. This can be unnerving if you are not used to looking after sick children. Hopefully you will have attended either PILS or APLS at some point during your ED journey.

A simple way of remembering resuscitation formula is: **WETFLAG**

W eight	0 – 1 (0.5 X age in months) +4 1 – 5 (2 x age) +8 6 – 12 (3 x age) +7
E nergy	4 joules per Kg
T ube	Internal diameter mm = (age/4) +4 Length cm = (age/2) +12
F luid	20mls per kg 0.9% Normal Saline
L orazepam	0.1mg/kg
A drenaline	0.1 mls/kg 1:10,000
G lucose	2mls/kg 10% Dextrose (2.5ml/kg for neonates)

We have access to EResus which you will find on the touchscreens in Resus. This has all the current guidelines/algorithms and antibiotic guidelines.

We are supported closely by the Children's Ward and utilise WATCH services for our critically unwell children. These guidelines can also be found on the intranet and also a quick go to file in R4.

All of these guidelines are supported by APLS guidelines. You will not be left alone in R4, you can always ask for help



SAFEGUARDING

All children who present to ED must have a safeguarding screening tool completed. This is a prompt to ensure that any child known to social care has a notification form completed, and that any safeguarding concerns are raised and referrals made appropriately.

Child safeguarding referrals are covered in your Level 3 Safeguarding Children and Young People training and the online forms will be shown to you during your department induction period.

Most children who attend emergency departments raise no safeguarding concerns whatsoever. There are a number of children, however who we have a duty to safeguard.

Referrals

Referrals should be made for all young people who present with deliberate self harm or suicide attempts, intoxication (drugs or alcohol), non-accidental injuries and dog bites in children under 5 (or if the situation meets criteria laid out in the dog bite guidelines. All dog bites to under 18s must be reported to the police).

Injuries

When assessing an injury in a child – think does the injury fit the history described, and is the story appropriate for the child's developmental stage? There is a guide to child development on the ED website.

This is particularly relevant for non-mobile babies, that is children who are not bottom shuffling, rolling, pulling to stand, cruising, crawling or walking independently. It is essential to follow the Management of Bruising and Injuries in Non-Mobile Babies and Children Policy. This also includes children with disabilities.

Ensure that you undress the child fully, looking for other injuries/bruising, and document what you find, including if you find no further injuries.

The voice of the Child

Young children can sometimes be unreliable historians when retelling the accounts of an accident, and we rely heavily on the parent or guardian's account. Wherever possible, please try to obtain an account from the child.

If you have any doubt, or any concerns you must flag this with a senior nurse or doctor and document your concerns. The safeguarding team are also available to support you.

IV FLUIDS

IV fluids vary in children and are calculated differently than in adults. The formula is given below.

Fluids can be administered via slow IV bolus in an emergency situation, however, the majority of maintenance fluids will be administered via a paediatric pump.

Training will be provided for use of the pumps.

Routine maintenance IV fluid rates are calculated on the child's weight using the Holliday-Segar formula:

100ml/kg/day for the first 10kg of weight

50ml/kg/day for the next 10kg of weight

20ml/kg/day for the weight over 20kg.

Over a 24 hour period, males rarely need more than 2500ml and females rarely needs more than 2000ml of fluid.

Examples

7kg baby

$100\text{ml} \times 7\text{kg} = 700\text{ml}$

$700\text{ml/day} = 29\text{ml/hr}$

15kg child

$100\text{ml} \times 10\text{kg} = 1000\text{ml}$

$50\text{ml} \times 5\text{kg} = 250\text{ml}$

$1000 + 250 = 1250\text{ml/day} = 52\text{ml/hr}$

32kg child

$100\text{ml} \times 10\text{kg} = 1000\text{ml}$

$50\text{ml} \times 10\text{kg} = 500\text{ml}$

$20\text{ml} \times 12\text{kg} = 240\text{ml}$

$1000 + 500 + 240 = 1740\text{ml/day} = 72.5\text{ml/hr}$

Routine maintenance fluids for paediatric patients is 0.9% Sodium Chloride + 5% Dextrose. Alternative fluids are prescribed for specific conditions e.g. Asthma, DKA, surgical conditions. See Trust Guidelines.

Neonates (Babies under 28 days of age) are prescribed fluids differently depending on day of life and specific conditions.



MILK FEEDS

Infants are exclusively fed milk until around 6 months of age, when food and small amounts of water are introduced. Until 12 months milk is the main source of nutrition/calories/fluids for babies.

Infants should ideally be fed 'responsively'. That is – as often and as much as they want. Parents and carers should look for feeding cues and respond by offering a feed – whether this is via breast or bottle. This applies to most 'well' babies. Once babies begin to eat solid food (around 6 months) milk feeds usually become part of the eating routine, rather than responsive. Daytime feeds also tend to change once babies begin sleeping for longer periods at night.

It is useful to know a baby's ideal feed volume to get an indication of how well they are feeding.

It may also be necessary to know daily feed volumes if the baby is unwell and needs to feed specific volumes or is to be fed via nasogastric tube.

From around 7 days of life, babies should feed 150ml/kg/day and this is divided into feeds.

Infants typically will feed 3-4 hourly (8/6 times per day), however in some scenarios e.g. bronchiolitis the baby may be fed 2 hourly (12 times a day).

Breast Fed Babies

Breast fed babies will feed on demand, and parents will often refer to the length of time they fed for (in minutes). This is only a good indicator of how well they are feeding when compared to their norm. Volume of milk taken per minute varies from baby to baby and mother to mother.

Breast fed babies will also go to the breast for comfort and not feed, so it is important to ask the mother how well she feels baby is feeding.

Special Feeds

Some babies, will have a specific feed plan from their medical team or dietician and it is important that this is followed, rather than feeding responsively or 'on demand'

1 ounce (oz.) is equivalent to 30ml



COMMON CHILDHOOD PRESENTATIONS TO ED

Listed below are some common paediatric presentations to the Emergency Department. These can also be accessed on our ED website, by accessing the following link:

MEDICAL

BRONCHIOLITIS

Bronchiolitis is a viral infection of the small airways (bronchioles) resulting in inflammation, oedema and excessive secretions. It affects babies under 1 year of age. The acute illness lasts 7-10 days. Patients tend to get worse before they get better with day 3 or 4 being the worst. Patients are often left with a residual cough for several weeks.

Presentation: cough, 'snuffly' sounding breathing, and increased shortness of breath. This can be associated with recession, nasal flaring, grunting and wheeze. Most patients experience feeding difficulties and/or vomiting and some will have episodes of apnoea (breath holding/stopping breathing).

Observations: Respiratory rate, oxygen saturations, work of breathing, heart rate, temperature and capillary refill time. It is also imperative to ask about history of feeding, vomiting and amount of wet nappies.

Treatment: Mainly supportive. Intervention is only needed when:

- Saturations drop below 92%.
 - o This can be in the form of wafting O2 or head box humidified oxygen.
- Inadequate breathing or becoming tired
 - o Respiratory support can be given via Optiflow (High flow humidified nasal cannula oxygen), CPAP or intubation and ventilation.
- Feeding is inadequate or vomiting is excessive.
 - o A Fluid Trial of dioralyte should be given if vomiting and the child's usual milk if not (breastmilk, formula or cow's milk). A couple of drops of saline in each nostril prior to feeding may help to clear secretions from the nose.
 - o If clinically dehydrated and/or the patient is unable to tolerate oral feeds then a NG tube or cannula for intra-venous fluid would need to be considered.

[Bronchiolitis One Minute Wonder](#)

[RUH Bronchiolitis Management Guideline](#)

[RUH High Flow Oxygen – AIRVO Optiflow Guideline](#)



CROUP

Croup (laryngotracheobronchitis) is a viral infection affecting the throat. It is most common between the ages 6 months and five years and can vary in severity from mild to life-threatening.

Presentation: History of cough/cold symptoms, fever and a 'Barking Cough' (similar sound to a seal or a little dog). They may have recession, commonly an audible inspiratory stridor which in most cases intensifies when distressed.

Observations: Respiratory rate, oxygen saturations, work of breathing, heart rate, temperature and capillary refill time.

Treatment:

- An oral steroid called Dexamethasone needs to be given as soon as possible. The dose is 0.15 mg/kg.
- In moderate cases a Budesonide nebuliser can be given. The dose is commonly 2mg.
- In severe cases an Adrenaline nebuliser can be given. The dose is 5mls of 1:1000.

The main priority is to keep the child as calm as possible. This means watching the child from a distance, keeping the child with their parent/carer (on their lap/in their arms) and trying to use distraction techniques. It may be appropriate to remove monitoring if it is causing distress.

The child's respiratory distress can rapidly deteriorate if the child becomes too upset.

[RUH Croup Guideline](#)



ASTHMA / VIRAL INDUCED WHEEZE

The diagnosis of asthma is a clinical one. Acute exacerbations of asthma are the most common reason for a child to be admitted to hospital in the UK and represent 10-20% of all acute medical admissions in children.

Wheezing episodes in very young children (e.g. under the age of 5 years) are usually due to viral infections, but are treated the same as asthma.

Presentation: Cough, shortness of breath, wheezing, chest 'tightness'

Observations: Respiratory rate, oxygen saturations, work of breathing, heart rate, temperature and capillary refill time.

Treatment:

- Oxygen therapy to maintain saturations above 92%.
- Salbutamol 'Burst therapy' – 3 doses of salbutamol given within an hour
- Inhalers are used if saturations are 92% or above. A burst of inhalers is prescribed as 10 puffs of Salbutamol via a Volumatic spacer device every 20 mins.
- Nebulisers are used if saturations are below 92%. 2.5mg is prescribed under the age of 5 years and 5mg over the age of 5. Make up to 5mls of liquid using saline. Driven by 8 litres of oxygen and running for 10 mins.
- Dexamethasone 0.3mg/kg (max 10mg) one-off dose.

The time between the salbutamol is then lengthened as tolerated until the child can go 3-4 hours without treatment and are suitable for discharge. Children requiring this level of observation may have to be referred to PAU for ongoing care.

In more severe – life-threatening cases the child will require IV steroids and bronchodilators and IV fluids (80% maintenance with 20mmols KCl in 500ml). The Child may require respiratory support in the form of Optiflow.

[Paediatric Inhaler Technique One Minute Wonder](#)

[RUH Acute Asthma Management in Children Guideline](#)

Gastroenteritis is extremely common in children and is usually caused by a viral infection. The most important feature is the prevention or reversal of fluid and electrolyte depletion. This is particularly important in children.

Observations: Respiratory rate, oxygen saturations, work of breathing, heart rate, temperature, capillary refill time and blood pressure.

It is important to find out if the amount of wet nappies has decreased and whether they are tolerating any fluid at all.

- An oral fluid trial with Dioralyte oral powder needs to be given. Mix the sachet with 200mls of water and commence on a fluid trial. The amount to give depends on the weight of the child (see department guidelines on back of fluid trial chart). This should be given from triage.
- If the Oral Fluid Trail fails then an NG tube or Intra-venous fluids will need to be considered.
- Children who are drowsy, floppy or have a low blood glucose should be moved to resus 4 and IV fluid resuscitation commenced. If the glucose is below 2.6mmol/L a hypoglycaemia screen should be taken.

RUH Diarrhoea and Vomiting in Children Guideline



HENOCH-SCHONLEIN PURPURA (HSP)

A form of vasculitis relatively common in children between the ages of 4-11. It affects the small arteries in the skin, joints, GI tract and kidneys and tends to develop following a viral or bacterial infection.

Presentation: A purpuric rash (non-blanching) that usually occurs over the buttocks and lower limbs. It commonly is associated with abdominal pain and joint swelling/pain. Occasionally there may be dark urine indicating haematuria.

Observations: Respiratory rate, oxygen saturations, heart rate, temperature, capillary refill time and blood pressure.

A urine sample should be obtained to look for blood and protein. This could indicate nephritis.

Ametop should be applied in triage as bloods are sometimes required.

Treatment: No specific treatment is required.

- NSAIDs (Ibuprofen) may be given for joint pain provided there is no renal involvement.
- Steroids may be given if there is kidney inflammation.

RUH Henoch Schonlein Purpura Guideline

MESENTERIC ADENITIS

A fairly common cause of temporary abdominal pain in children under the age of sixteen and is a result of inflamed lymph glands in the abdomen. It usually follows a recent viral or bacterial infection. It is not usually serious and gets better without treatment.

Presentation: Colicky, cramping abdominal pain.

Observations: Respiratory rate, oxygen saturations, heart rate, temperature, capillary refill time and blood pressure.

A urine sample should be obtained to rule out UTI

Treatment: Regular analgesia



FOREIGN BODY

Ear: The foreign body may be removed in ED by an ENP/ED doctor or may require ENT input. Some children may need to have the object removed in theatre under general anaesthetic.

Nose: A simple technique that could be adopted for removal of foreign body from the nose is the mother's kiss, this is a simple procedure performed by the parent and if successful, the child may not have to see a clinician.

Mother's kiss for nasal foreign bodies

Ingestion/inhalation: The course of action is dependent on the object ingested.

- **Airway obstruction** - Signs of airway obstruction are stridor, drooling, difficulty breathing, choking. It is important to keep the child as calm as possible, wherever they are comfortable and keeping the child with their parent/carer (on their lap/in their arms). It may be appropriate to remove monitoring if it is causing distress and to avoid doing blood pressures.
If the child is choking then the BLS choking algorithm should be followed.
- **Coins** - Coins come in varying sizes and so will have varying levels of impact on the child. Large coins may become lodged in the oesophagus or trachea. Observe for signs of airway obstruction as above. The child will require removal of the coin in theatre under GA. Smaller coins may be swallowed relatively easily. As long as the coin has passed the diaphragm, the child will be discharged home with no intervention. This can be assessed by using the metal detector (kept in the minors drug room) or xray.
- **Button battery** - Button batteries (especially large lithium button batteries), can cause harm or kill a child if they are swallowed and get lodged in the oesophagus or stomach. The energy from the battery reacts with saliva to create caustic soda. This can burn through the oesophagus and surrounding blood vessels and lead to catastrophic internal bleeding and death. The size of the battery and of the child is important – children under 5 are most at risk. A child who has swallowed a button battery should be triaged as a P2 and there should be no delay in obtaining a chest xray. If xray shows a button battery lodged in the oesophagus then they should be given honey (stored in minors drug cupboard, over 1 year old only) and referred to ENT immediately.

If a lithium coin cell battery gets stuck in a child's oesophagus, it can cause catastrophic bleeding and death within 4 hours of ingestion.



OVERDOSE/POISONING

Overdose and poisoning are common presentations to the Emergency Department. This may be deliberate or accidental. This includes medicines, chemicals and plants/berries.

In triage it is vital to obtain details of:

- What has been ingested
- Quantities and dosages
- What time the ingestion occurred (if less than 1 hour since ingestion, activated charcoal may be appropriate)
- Any treatment given
- Any symptoms
- Was this intentional or accidental
- How the child obtained it

Observations: Respiratory rate, oxygen saturations, heart rate, temperature, capillary refill time and blood pressure. Blood glucose and 12 lead ECG should also be obtained.

Treatment: Is dependent on what has been ingested and [Toxbase](#) should be consulted for specific management plans. Often the only treatment required for asymptomatic patients is observation.



TRAUMA / ORTHOPAEDIC

HEAD INJURY

Head injuries are a common presentation for children in the emergency department and most are innocent accidents during play and recreational sports. However as with all presentations, we should be aware of potential non-accidental injuries, especially in the non-mobile baby.

History

- Mechanism – what happened and how?
- When did it happen?
- Was it witnessed?
- Was there a loss of consciousness? Did they cry straight away?
- Has the child vomited since, and if so, how many times?
- What has the child's behaviour been like since?
- Were they wearing a helmet (if appropriate)? This is an opportunity for some health promotion/safety advice.

Observations

- Respiratory rate, oxygen saturations, heart rate, blood pressure, temperature, GCS, pupillary response,
- In children with any concerning signs (below) neuro obs should be done as per NICE guidelines (15 minutes for 1 hour, 30 minutes for 2 hours, hourly thereafter unless concerns).

Concerning signs of a head injury

- History of unconsciousness
- Ongoing drowsiness or difficulty waking from sleep
- Confusion or repetition of words
- Unable to recollect events leading up to head injury
- Vomiting more than twice
- Significant bruising to the face/head
- Boggly haematomas to the head

If concerned about a child with a head injury

- Highlight to a senior nurse/doctor
- Move to an appropriate area in the department, this could be R4
- Record observations every 15 minutes until reviewed by a clinician and then monitor as per head injury guideline
- Offer analgesia if it has not already been administered, if the child is vomiting, consider PR analgesia.

Not all children presenting with head injuries need admission; the vast majority go home. Ensure that any wounds are cleaned and closed as needed. Ensure they are given a head injury advice leaflet and understand red flag signs to return.

[RUH Head Injury in Children Guideline](#)



PULLED ELBOW

Pulled elbow is a common minor injury suffered by children aged between 1 and 5 years. It is usually a result of a sharp jerking or pulling action on the arm. Because the child's elbow is not fully mature it is possible for the radius to slip out of a ring-shaped ligament, partially or completely, at the elbow. This makes it difficult or painful for the child to move their arm.

Presentation: Minimal swelling, no bony tenderness and the arm held at their side and a history of not using their arm. Occasionally the child will hold the wrist of the injured arm with their other hand in an attempt to immobilise the arm.

Treatment: The treatment of a pulled elbow is to release the trapped ligament and return the bone to its normal position. The Triage nurse may be able to do this simple manoeuvre, so the patient does not necessarily need to see the doctor. This should only be performed if the person has received training and there is a clear history for a pulled elbow.

BUCKLE FRACTURE

Buckle fractures are extremely common in children as their bones are immature and softer. They occur when one side of the bone bends or is compressed but does not suffer a break. The other side of the bone remains intact. They generally affect the long bones in the body, particularly the radius, ulna, humerus or femur.

Presentation: History of trauma, with bony tenderness and reluctance to use the affected limb.

Treatment: The patient is usually put into a futura splint or plaster of Paris for up to 3 weeks. Patients that are put into a futura splint do not require further follow up from the orthopaedic team at the RUH.

SUPRACONDYLAR FRACTURE

This is one of the most common fractures in children. They are usually seen at the distal humerus just above the epicondyles.

Presentation: A history of a fall onto an out-stretched hand. Patients will commonly have significant pain, gross swelling at the fracture site and are unable to move the affected elbow.

Treatment: Analgesia (often intranasal opiates), above elbow back-slab and in a lot of cases, surgery.



TODDLERS FRACTURE

A toddler's fracture is a fracture of the distal tibia in toddlers 9 months - 3 years. The fracture is un-displaced and has a spiral pattern. They occur after low-energy traumas, sometimes with a rotational component.

Presentation: Pain, particularly on dorsi-flexion, limping and swelling. Younger children may refuse to weight bear or crawl on the affected leg.

Treatment: The patient will require a plaster of Paris and will be reviewed by the orthopaedic team for follow up. It is important to remain alert for any safeguarding concerns, particularly in a non-mobile baby.

PERTHES' DISEASE

Perthes' disease is a childhood disorder which affects the head of the femur. The blood supply to the growth plate of the femur (epiphysis) becomes inadequate, resulting in necrosis.

It is not clear why this happens; it is not due to injury or to a general blood vessel problem. Over several months the blood vessels regrow and the blood supply returns to the 'dead bone' tissue. New bone tissue is then laid down and the femoral head regrows and remodels over several years.

Presentation: Hip or groin pain or a limp. The pain is persistent and there may be wasting of the muscles in the upper thigh, shortening of the leg and stiffness of the hip, making walking a problem.

Treatment: Depends on the severity of the disease and may include physiotherapy, crutches, plasters or, sometimes, an operation to re-shape the bone around the hip joint. Most children, however, recover with no treatment. Parents may be asked to try to limit their child's physical activities and particularly contact sports when the disease is active.



SUFE (Slipped Upper Femoral Epiphysis)

SUFE is a condition of the hip in which the growth plate of the femur is weak and the epiphysis (head of the femur) becomes separated from the rest of the bone. SUFE is most likely caused by multiple factors including local trauma, obesity and inflammatory factors. It occurs in adolescence and more commonly affects boys than girls.

Presentation: Intermittent limp and pain of several weeks in their thigh, groin and knee with a decreased range of movement.

Treatment: Surgery is required to stabilise the growth plate and prevent it slipping further.

IRRITABLE HIP

Irritable hip is a condition that can affect boys and girls of any age, however it affects twice as many boys than girls. It occurs when the lining that covers the hip joint becomes inflamed. The cause of this inflammation is unclear.

Presentation: Reluctance to weight bear, pain in the hip and difficulty walking.

Treatment: Analgesia and rest, most patients can be treated at home. Xrays and bloods are often done to rule out other causes of hip pain.

[RUH The Limping Child Guideline](#)



SURGICAL

PYLORIC STENOSIS

This is a common condition which typically presents at 6-10 weeks old. It is more common in boys and first-born children. The pylorus is a muscular area at the exit of the stomach. It normally acts as a valve, opening to allow the stomach to empty. In pyloric stenosis the muscle becomes very thick and this stops the valve from opening and the stomach from emptying.

Presentation: Babies will have progressive non-bilious vomiting, which may become projectile or blood tinged. After vomiting they appear hungry and keen to feed again. Affected children are at risk of dehydration and constipation.

Observations: Respiratory rate, oxygen saturations, heart rate, temperature, capillary refill time and blood pressure.

Treatment: Blood gas, USS, keep nil by mouth with nasogastric tube on free drainage. They will require surgical repair.

[RUH Pyloric Stenosis Guideline](#)

INTUSSUSCEPTION

An intussusception is a condition where part of the intestine prolapses into another section of intestine, similar to the way in which the parts of a collapsible telescope slide into one another. This can often result in an obstruction. It typically affects children from the ages of 6 months to 3 years.

Presentation: The child may suddenly become distressed, curl up in a ball and appear unwell. Vomiting may develop and the child may pass a “redcurrent jelly” stool (this is a very late sign). Intussusception often occurs following a viral infection.

Observations: Blood pressure, Respiratory rate, Saturations, Heart rate, Temperature, Capillary refill, Blood pressure, Urine sample, stool sample.

Treatment: Diagnosis is confirmed by USS. The child will need fluid resuscitation, IV antibiotics, IV analgesia, and urgent transfer to Bristol Children's Hospital for surgical review as it is a surgical emergency. They will have an air enema which reduced the intussusception in most cases and surgical reduction is air enema is not successful.



MALROTATION AND VOLVULUS

Malrotation is an abnormality of the bowel, which happens while the baby is developing in the womb. This leads to the bowel being susceptible to twisting on itself – a volvulus. This often happens at birth but can occur at any point. Not all children with a malrotation will develop a volvulus.

Presentation: Bilious vomiting (dark green), crampy abdominal pain, abdominal distention, and the passage of blood and mucus in their stool. As little/no food or liquid can pass the twisted portion, the patient may also pass little or no faeces.

Observations: Respiratory rate, oxygen saturations, heart rate, temperature, capillary refill time and blood pressure.

Treatment: The baby should be nil by mouth with a nasogastric tube on free drainage. IV fluids, IV antibiotics are required. Volvulus is diagnosed with a contrast study and requires surgical repair. This is a surgical emergency and requires a time critical transfer to Bristol Children's Hospital.

Very young babies should have a septic screen to rule out neonatal sepsis with a septic ileus as the cause of the bilious vomiting.

[RUH Bilious Vomiting Guideline](#)



BEREAVEMENT

From time to time, we will have to deal with the death of a neonate or child in the department. This is a challenging time for all involved and there is always help via TrIM or EAP following events such as these. However, as with adult deaths, there is guidance that we are required to follow. There is information on the intranet regarding which processes to follow, some of which are highlighted below.

Deaths will be categorized into expected and unexpected, each with separate guidance. In ED we are more likely to see the unexpected death.

All deaths up to the age of 18 years must be notified to Child Death Enquiry Office.

All unexpected deaths up to the age of 18 years must be referred to the Coroner's Officer.

Use the [RUH Child Death Notification Checklist](#) to help ensure all necessary steps are undertaken, this can be found on the intranet.

Options for families for spending time after the death of their child

- Following the death the family may want to stay with the child for a period of time prior to the body being moved to the main mortuary.
- Normally refrigeration will be required after 2-3 hours following death, especially in cases where a Coroner's post mortem is required.
- In exceptional circumstances, options for spending time after death include:
 - For babies: Forget Me Not room on CDS, NICU parents flat/cubicle, whichever parents prefer.
 - For all children: family room/cubicle on paediatric ward or the Chapel of Rest (adjacent to the mortuary).
- In an unexpected death, it is a requirement that the patient and family are not left alone at any time. A nurse should remain with them at all times, both for comfort and for safeguarding reasons due to the unexpected nature of the death.
- Sometimes the police and community paediatrician will be present in ED and you may be required to assist them.
- Often the paediatric consultant is present in ED and will have been called to inform them that a child death has occurred, sometimes a paediatric nurse from the ward may also come to assist with obtaining necessary samples. During this time, we must ensure that the parents are supported and informed of all proceedings.



Making Memories

Within in ED we also have some memory/keepsake boxes donated from the charity 4Louis. They can be found in **x** and are available in pink, blue or yellow. Where appropriate, these can be offered to the family, and hand/foot print and a lock of hair taken with parental consent. These are also available on NICU and the paediatric ward.

Transporting children

Infants will be transported in a Moses basket. These are available either in ED, paediatric seminar room or the mortuary.

Older children's bodies will be transported in the mortuary trolley.

The portering staff will transfer bodies to the mortuary. Nursing staff (ED or ward staff) will usually accompany body to the mortuary.

A copy of the health records and medical investigation 'sample taken form' needs to accompany the bodies of children who have died unexpectedly to the mortuary.

Families may wish to take the body home or away from the hospital following an expected death. This can only occur if a death certificate has been issued but there is no legal reason then why they cannot do this. Staff should advise and support parents/carers in doing so. They may take the body in their own car if they wish but many will prefer a funeral director to do this for them. Funeral directors can also advise in complex situations such as families wanting to take a child out of the country.