SOUTH TEES CHILDREN & YOUNG PEOPLE'S UNIT

NHS
South Tees Hospitals
NHS Foundation Trust

Paediatric Pre assessment **Guidelines**

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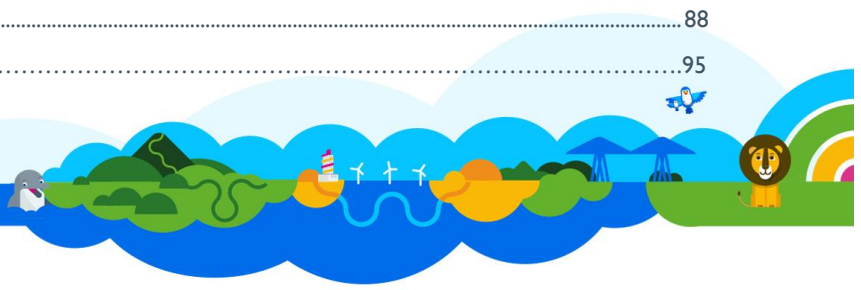

Paediatric Pre assessment Service

The South Tees paediatric pre assessment service aims to offer a multidisciplinary, high quality, family and child centred pre operative assessment to children and young people requiring surgery. The service is open to all children and young people attending The James Cook University Hospital, Middlesbrough, and Friarage Hospital in Northallerton. We also offer on request, a local pre assessment service for children due for surgery at other centres nationwide if and when this is appropriate.

The aims of the service are:

- To medically assess the fitness of the child for the proposed procedures and suggest or organise appropriate optimisation as needed.
- To work within the multidisciplinary team to make decisions regarding the safest place and time frame for a child or young person to have surgery.
- To work with families, children, and young people to prepare them for their theatre journey.
- To exploit "teachable moments" within the context of medical and emotional preparation to improve the health opportunities of the child, young person, or wider family.
- To work with other Trusts, organisations and wider paediatric anaesthetic and surgical operational delivery networks to help assess and prepare children and young people and their families for theatre as close to home as possible and in timeframes that work for families.

Who can be seen by the service?

- Any child or young person 0-18 years old requiring elective or emergency surgery.
- Young people who are 18-19 years old but have not yet transitioned to adult services and require elective or emergency surgery.
- Children and young people who have not yet been booked for surgery but require assessment of their suitability for surgery or plans for surgical optimisation.
- Children and young people, 0-19 years, requiring anxiety interventions prior to a planned surgical procedure.

Timing of pre assessment and surgery.

- Pre assessments should be booked by surgical teams **six weeks** prior to the date of elective surgery.
- For urgent elective surgery (within **two weeks** of a surgical date) a rapid pre assessment can be accommodated. The paediatric pre assessment service has urgent appointment slots each day set aside for cases that have to be seen at short notice. The use of these slots is monitored. These urgent slots are booked in the usual way and once filled may mean other children cannot be accommodated.
- If a child has not had their procedure within 3 months of their pre assessment a further assessment is required and should be requested by the referring team (usually a shorter telephone assessment).
- Once the pre assessment has been booked the patient notes should be sent to the pre assessment clinic. If the notes are not available in time for the pre assessment appointment then it will be cancelled and the referring team will be informed. It will be up to the referring team to re book pre assessment. No new appointment will be automatically booked by the pre assessment team.

What happens when a referral is made to the service?

Once a decision has been made that surgery is required a referral should be made to the paediatric pre assessment service by following the flowchart on page 5. There are currently three types of pre assessment offered:

Nursing **telephone only** pre assessment	Suitable for children who are medically fit, having surgery in the next three months and meet the "Telephone only" criteria. Suitable for children who have already had a standard or telephone pre assessment within the last 3 months and are now attending for a further procedure or have had their procedure delayed so it is more than 3 months since their last pre assessment.
Face to face nursing pre assessment	This is suitable for all children. It is a face to face or telephone pre assessment conducted within 3 months of the operative date by a member of the pre assessment nursing team.
Consultant Anaesthetist pre assessment	**This is an additional appointment.** All children must also be seen in nursing pre assessment. This is for children with complex medical needs, significant anxiety or who require further planning around anaesthesia and surgery. It may be a face to face or telephone appointment. Time should be allowed for this to be completed prior to any surgical date being given.

Once referral is made to the service, children and young people will be seen or telephoned by one of the pre assessment nurses. The nurses will perform a medical and social assessment to determine whether the child is fit for surgery. They will advise or organise specific investigations and refer on to Consultant anaesthetist pre assessment if this is required and has not already been done. Any issues, suggestions for list ordering, or if the child requires further investigation or is not fit for surgery, will be notified to the referring Consultant and/or secretary as soon as possible after the pre assessment.

All children and young people attending for elective surgery at South Tees NHS Trust must have a paediatric pre assessment prior to their admission. If this is not in place then the child cannot be admitted for elective surgery.

Pre assessment of emergency list cases?

The pre assessment service is happy to pre assess urgent/emergency cases if there is time to do this and capacity in clinic prior to a surgical date. This will not always be possible. Children who cannot be seen will still be pre assessed by the anaesthetist on the morning of surgery.

Missed pre assessment appointments

- If the patient is having a nursing telephone pre assessment, two attempts will be made to contact the patient by phone at the booked time. If they are uncontactable after these two attempts then the referring team will be informed and the patient will need re referral for pre assessment. No new appointment will automatically be booked by the pre assessment team.
- For nurse face to face appointments, if the child or young person is not brought and no contact is made by the family at the arranged time then the referring team will be informed and the Trust "Patient not brought" policy will be followed. No second appointment will automatically be issued by the pre assessment team.
- For **Consultant Anaesthetist** pre assessment appointments, one new appointment time will be issued in the event of the patient not being brought or being uncontactable by telephone. However, if this appointment is also missed then the referring team will be informed and no further appointment will be automatically issued by the pre assessment team. The referring team will be informed of all missed appointments.
- If the patient or carer telephones to cancel an appointment, a new appointment will be given. However, if this occurs more than twice the "patient not brought policy" will be followed ad the referring team informed.

Referral Pathways

Please follow the flow chart below to book a child or young person into the pre assessment service. **If you are unsure at any stage, please contact the pre assessment clinic for further advice.**

CHILD REQUIRES SURGERY

Has the child been pre assessed in the last 3 months?

YES

Nurse telephone assessment

- Email patient details and key information to pre assessment.
- Please send notes to pre assessment clinic.

NO

Does the child meet the criteria for "telephone only" pre assessment?

YES

Nurse telephone assessment

- Email patient details and key information to pre assessment.
- Please send notes to pre assessment clinic.

NO

Does the child have complex medical needs?

Does the child have significant anxiety?

Does the child require additional anaesthetic or surgical planning?

YES

Consultant Anaesthetist assessment

- Please email a copy of clinic letter with reason for referral marking it for **Consultant assessment.**
- Please book nurse assessment as well.
- Please send notes to paediatric pre assessment service.

NO

Nurse face to face pre-operative assessment

- Please email details to:
- Please book standard pre assessment appointment
- Please send notes to pre assessment clinic

If concerns found at nursing assessment refer to **Consultant Anaesthetist clinic**

The details required to make a pre assessment referral can be found on the referral template.

Allergy and Anaphylaxis

Allergy: An inappropriate immune response to a normally harmless substance.
Symptoms include: sneezing, wheezing, coughing, shortness of breath, runny nose, rashes, swelling of face, itching, sickness, vomiting and diarrhoea.

Anaphylaxis: A severe life threatening form of allergy which requires immediate treatment.
Symptoms include: Facial or throat swelling, difficulty swallowing or speaking, wheeze, cough, severe asthma, difficult or noisy breathing, stomach cramps, vomiting, dizziness or collapse.

Side Effect: A secondary effect of a drug or treatment.
Examples include: antibiotics causing stomach upset. Symptoms are variable and dependent upon the drug.

Intolerance: Where a substance (usually food) causes unpleasant symptoms.
Symptoms include tummy ache, diarrhoea or constipation.

History

- Any history of allergy?
- A family history of anaphylaxis? (This may increase risk; however specific allergies are not inherited).
- If parent's state, there was a "reaction to anaesthetic" - refer to Anaesthetic Reactions guideline.
- What is the allergy to?
- Who diagnosed the allergy and where?
- What happens when the child has a reaction?
- What treatments have been used previously for the allergy? Does the family/patient carry an EpiPen?
- Any hospital admission or clinic appointment for allergy? PICU? Immunotherapy?
- Any other allergy related conditions - asthma/eczema? (Please refer to atopy guideline if yes)
- Do they have a written allergy management plan?

Examination

- Check any allergy cards/allergy alert bracelets and make a note of what is written on them.
- Check folds of elbows/knees and hands and ankles for signs of eczema.
- If asthma co-exists, please examine as per asthma guidelines

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Investigations

- Allergy clinic letter or results (if attended).
- Copy of latest paediatrician letter (if attended).
- Allergy management plan copy
- Please record type of EpiPen used and check expiry date. Who prescribes EpiPen? Last review?

Plan

If a child has an EpiPen ask the parents to bring this to the hospital on the day of surgery.

- For a **straightforward allergy** there is no need to refer the patient on. Please make sure the allergy is well documented in the notes and on the drug Kardex and allergy bands are applied on admission.
- **Latex allergy** patients should be identified on the operating list and placed first on the list. Please email the anaesthetist covering the list so that they are aware there is a latex allergy patient on their list.

Refer to Consultant pre assessment clinic:

- Children with anaphylaxis/angioedema (severe facial/mouth swelling) of unknown cause.
- Children awaiting investigations for severe allergy.
- Children with unusual or multiple allergies e.g. Corn.
- Children with recent hospital or PICU admissions with severe allergy.
- Children who have had reactions to anaesthetic drugs such as Atracurium.

References

- https://www.rcpch.ac.uk/sites/default/files/RCPCH_Care_Pathway_for_Children_with_Anaphylaxis.pdf
- https://www.allergyuk.org/information-and-advice/conditions-and-symptoms
- https://www.nhs.uk/conditions/allergies/
- Chapter 15, Allergy and Immunity, T. LISSAUER, G. CLAYDEN, Illustrated Textbook of Paediatrics, Third Edition, Mosby Elsevier 2007, Pages 253-260.

Anaemia

Detection of anaemia is very important as it reduces the need for perioperative transfusions.

Anaemia: haemoglobin below the established laboratory levels or a red cell count below normal. Most common cause is iron deficiency.

Inherited anaemias: Anaemia with an underlying genetic cause. These are rare and have specific management required beyond supplements. Examples include Thalassemia or G6PD deficiency.

Normal ranges for haemoglobin are shown below:

Age	Haemoglobin (Hb) g/L
Birth	140-240
2 weeks	134-198
4 weeks	134-198
2-6 months	94-130
6 months – 1 year	111-141
1-6 years	115-140
6-12 years	115-155
12-18 years **GIRL**	120-160
12-18 years **BOY**	130-170

Adapted from https://www.nbt.nhs.uk/sites/default/files/Childrens%20FBC%20Reference%20Ranges.pdf (accessed 26/2/2021)

History

- Any diagnosis of anaemia? A specific type?
- Has the anaemia been investigated? Who by? Test results?
- Has the anaemia been treated? What medications is the child on?
- If female patient aged 10 or above, could this be related to periods?
- Any chance of pregnancy? *See Pregnancy/Periods guideline.*
- Any history of easy bruising or unexplained bleeding?
- Any anaemias that run in the family? Sickle cell/thalassemia? *See Sickle Cell Guideline*
- Any history of infections at birth? If yes, ask about TORCH infections.
- Any foreign travel recently? Where?
- Any family history of autoimmune disease? (Rheumatoid arthritis, type I diabetes, hypothyroidism, coeliac disease).
- Any history of longstanding diarrhea?
- Any previous transfusions? Where? Why?
- Any recent new medications? Which?
- Any dietary restrictions? Vegetarian? Vegan? If baby/toddler, ask about weaning and cow's milk intake.

Examination

- Look at eyes/gums. May be pale if very anaemic or jaundiced in certain types of anaemia.
- Full set of observations – heart rate and respiratory rate may be elevated if significantly anaemic.
- Check for any bruising/bleeding/petechiae.
- Height and Weight +/- head circumference - children with chronic anaemia are often growth restricted but with normal head circumference.

Investigations

- Check any blood results on Web ICE - Hb, red cell count, Ferritin, B12, Folate, Blood film. If noted to have anaemia but no further results please order haematinics as above.
- Any haematology/paediatrician clinic letters.
- Any blood/test results if investigated elsewhere.
- Any management plans from specialist services (usually specific to patients with Sickle Cell Anaemia).

Plan

Children with mild anaemia (see chart for normal range) with otherwise normal blood tests do not need referral unless surgery has significant risk of blood loss (e.g. major orthopaedic surgery). Please give dietary advice and notify GP that the patient has a mild anaemia so that they may monitor this and give iron as appropriate.

Non urgent surgery
Please warn parents that surgery may be delayed if the child or young person is anaemic. Girls who are menstruating and who have iron deficiency anaemia do not usually need investigation but should be referred back to GP if it is causing symptoms or haemaglobin below normal range for age for review and iron. Please discuss with Consultant anaesthetists before referral to GP or surgical cancellation.

Surgery which cannot be postponed
If surgery is urgent then please request haematinics, blood film, U &E and coagulation screen. Once results are available discuss the patient with the Consultant anaesthetist and Consultant Haematologist for further advice. In some cases, an iron infusion may be appropriate in these patients, but this will be organised by the haematology team. Please inform the GP of blood findings.

Refer to Consultant pre assessment clinic:

- Children with anaemia that has not yet been investigated or treated.
- Children with haemoglobin more than 10% below normal range or needing urgent surgery.
- Children with rare inherited anaemias, including (but not limited to):
- Fanconi Anaemia
- Sickle Cell Anaemia
- Thalassemia Trait
- Diamond-Blackfan Anaemia
- Aplastic Anaemia
- Autoimmune or haemolytic anaemias
- Sideroblastic Anaemia
- G6PD Deficiency
- Children with anaemia of Chronic Disease - anaemia related to cardiac issues/renal problems/metallic heart valves/osteomyelitis/endocarditis.

References

- https://www.gosh.nhs.uk/conditions-and-treatments/general-medical-conditions/anaemia
- https://patient.info/doctor/childhood-anaemia

Anaesthetic Reactions

Malignant Hyperthermia/Malignant Hyperpyrexia (MH): An inherited disorder of skeletal muscle that causes patients to have a potentially fatal reaction to some commonly used anaesthetic agents.

Suxamethonium apnoea / Mivacurium apnoea / Succinylcholine apnoea: An inherited disorder leading to a deficiency in plasma cholinesterase's or reduced plasma cholinesterase activity that means Suxamethonium/Mivacurium (muscle relaxant drug used for some anaesthetics) take much longer to wear off compared to usual. Suxamethonium usually lasts 4-10 minutes, in those with suxamethonium apnoea it can last hours or even days, leading to ITU admission.

History

- Any family history of reactions to anaesthetic? What reaction?
- If "slow to wake" did they go to ITU/return to theatre or get admitted to intensive care? (If "drowsy/sleepy" in recovery/ward post op, unlikely to be significant).
- Any "high temperature" related to anaesthetic +/- an intensive care admission?
- Have family/patient been to the MH unit at Leeds for testing? If so, document the results and request copies of any clinic letters and test results.
- Have they ever needed muscle biopsies related to an anaesthetic problem?
- Ask if the family have ever seen a geneticist/been seen in genetic clinics related to an anaesthetic problem - if so, who and where, and what was the outcome?
- Has the GP ever done bloods for suxamethonium apnoea? When/where? Are results on web ice?
- Any recent blood transfusions or FFP transfusions?

Examination

- Examination not usually necessary.

Investigations

- If confirmed MH or Suxamethonium apnoea please obtain copies of relevant test results. Clinic letters and results from testing at Leeds should be requested and placed in the notes. Ask the patient/family to bring copies of correspondence to clinic or on the day of surgery.
- Photocopy any alert cards that the patient may have and advise them to bring on the day of surgery.
- If the family are waiting testing for MH, please document this and document if there is an MH or genetic clinic date for them in the notes.
- If there is question over a history of suxamethonium apnoea or the patient has not yet been tested, blood tests for plasma cholinesterase levels can be taken. It is important the result is available before the date for surgery. It may take longer to come back than normal blood tests. Please ring the labs to ensure the test can be done that day (may need to be sent elsewhere). The test cannot be done if the patient has had FFP (fresh frozen plasma) within the last 6 weeks as the result will not be accurate.

Plan

All patients with confirmed or suspected MH should be referred to the Consultant Anaesthetic pre assessment team and highlighted to the anaesthetist covering the list.

- Please make sure that it is written on the front of the drug chart and on allergy bands.
- Please make sure that MH or Suxamethonium apnoea is recorded on the theatre list.
- **Malignant Hyperpyrexia (MH)** - Any patients with MH susceptibility must be **the first patient** on the list. This should also be communicated to the surgeon and highlighted on the theatre list. This is to allow the theatre to have the appropriate planning and "clean" anaesthetic machine to reduce the risk to the patient.
- If they do not already have a suxamethonium apnoea alert card, please consider downloading one for the patient from the RCoA website and asking the patient/family to carry it and bring a copy to every hospital appointment/surgery date.
- **Contact Numbers for Leeds MH unit**
  Direct Line: 0113 20 65270
  Fax Number: 0113 20 64140

  Emergency 24 hour Hot-Line: 07947 609601 (For new MH cases seen in theatre)

References

- https://www.rcoa.ac.uk/sites/default/files/documents/2019-09/SuxamethoniumAlertCard.pdf
- https://www.rcoa.ac.uk/sites/default/files/documents/2019-11/Factsheet-Suxapnoeaweb.pdf
- https://www.leedsth.nhs.uk/a-z-of-services/malignant-hyperthermia/

Anxiety

Anxiety is a state of cognitive and behavioural preparedness that a child mounts in response to an actual or perceived threat. It can present in a variety of ways:

- Agitation
- Restlessness
- Inattention, poor focus
- Somatic symptoms like headaches or stomach aches
- Avoidance
- Tantrums
- Crying
- Refusing to go to school / come to hospital appointments
- Meltdowns before school about clothing, hair, shoes, socks
- Meltdowns after school about homework
- Difficulties with transitions within school, and between school and an activity/sport
- Difficulty settling down for bed or sleeping. Waking up early.
- Having high expectations for school work, homework and sports performance.

Children may also have physiological symptoms such as sweaty hands, high heart rates, respiratory rates and blood pressure which can be picked up when observations are done.

Anxiety is often under reported by children and their families or rapidly noticed by staff. Factors predicting anxiety include:

- **Age** – children aged 1-3 are more likely to have separation anxiety.
- **Temperament** - shy, inhibited, dependent, and/or withdrawn children have higher levels of anxiety.
- **Parental anxiety** - Children of anxious parents have higher levels of anxiety.
- **Previous hospital/theatre experiences** - Negative experiences increase anxiety.
- **Negative reaction to vaccination** predicts non-compliance during anaesthesia.

History

- All children should be asked how they feel about coming to the hospital for their operation. Some may respond verbally; others may show non-verbal signs and these should be documented. All children should be asked to indicate their anxiety on the South Tees Anxiety scale (found on page 14).
- It is also important to establish:
    - Is there anything specific that the child is anxious about?
    - What is the child or young person's understanding about what is going to happen?
    - Has the child had previous bad experiences with anaesthetics, hospital visits, blood tests or vaccinations? What happened?
    - Is the child always anxious about things? Have they missed school due to anxiety?
    - Does the child wet the bed?
    - How does the child cope when separated from parents?
    - Has the child ever had any anxiety treatment or referral to CAMHS?
    - Does the child have another diagnosis that may make them anxious? E.g. Autism.
- How anxious are the parents and what are they anxious about?

Examination

- Look for signs of heightened anxiety such as tearfulness, hiding behind parents, very chatty, not talking.
- Observe and record child and parents reactions
- Full set of standard observations (if possible) – please document why if observations not possible.

Investigations

- If the child has previously been treated for anxiety, please request details of this from the treating team and record contact details.
- If the child has been seen by a paediatrician, please request last clinic letter.
- If all previous GA's have occurred in another Trust, please request copy of last anaesthetic chart.

Plan

- Provide the child and carers with information for the Little Journey app.
- Provide the child and carers with leaflets in appropriate languages.
- For specific conditions refer to the specific guidance for these (e.g. Autism).
- Consider whether child would benefit from copy of sequencing cards or a mask to take home.

- Check whether the child has previously been seen in consultant pre assessment and if there is an anxiety plan in place.

YES AND IT WORKED

Print out the plan/letter and put into the patients notes.
Email the anaesthetist covering the list with a copy of the plan and make them aware that the child is coming in.
Consider whether child is on correct place on list or correct list (check letter).

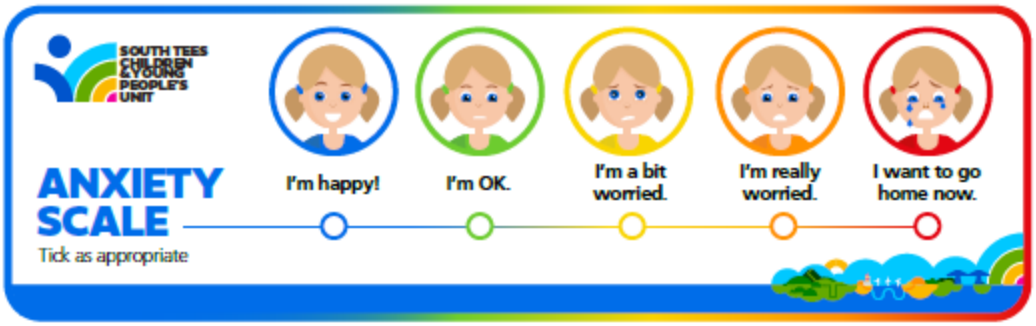
YES, BUT IT DID NOT WORK

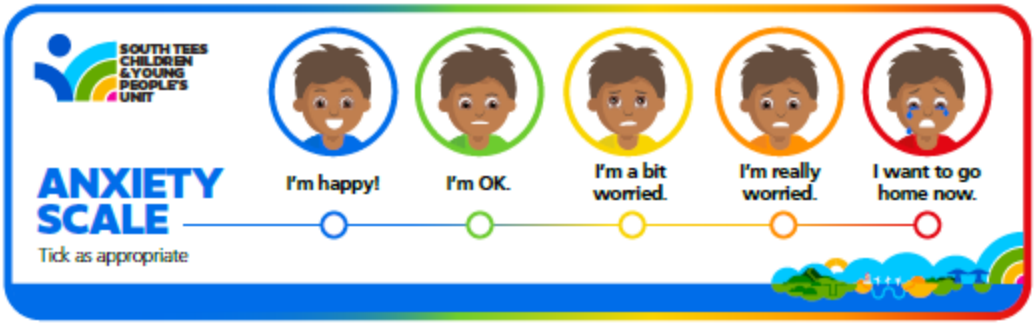
Print out the plan and place in the notes.
Find out from parents what did not work previously and why.
Refer child for notes review/telephone review with Consultant anaesthetist and make parents aware of this.

NO

Check anxiety score and follow chart overleaf

FIT AND WELL			ADDITIONAL NEEDS *
MINOR ANXIETY Face pictures 2-3	**MODERATE ANXIETY** Face picture 4	**SEVERE ANXIETY** Face picture 5	**ANY ANXIETY**
Identified to anaesthetist by nursing staff on day of surgery	Notes review by senior pre-assessment nurse/Consultant.	Referral by surgical team or pre assessment nursing staff to Consultant Anaesthesia pre-assessment clinic – notes review by Consultant.	
Assessment by anaesthetist on day of surgery	Identified to anaesthetist by email / phone in advance of day of surgery.	Clinic appointment or telephone consultation with individualised anaesthetic contract or plan with copy to anaesthetist covering list and surgical team.	
Consider sedative pre medications / distraction plan on day of surgery.	Consider sedative pre medications / management plan in advance if needed.	*This may include Autism, Asperger's, ADHD, Learning disabilities, Trisomy 21, frequent panic attacks or anxiety under the care of CAMHS or similar.	





Asthma

Asthma: A lung disease that affects the airways. Airways have hyper-responsiveness and inflammation. Symptoms include wheeze, cough, and breathlessness in response to certain asthma triggers.

"Brittle asthma"/Severe asthma: A serious and life-threatening form of asthma. Difficult to manage symptoms even with very high doses of the usual medications.

History

- Any history of asthma or atopy? Is the asthma diagnosed as "brittle" or severe?
- What medications are used?
- Inhalers with/without spacer & oral medicines.
- Any home nebulizers? Home oxygen?
- How frequently is the reliever (blue) inhaler needed usually? Increased recently?
- Any recent (within the last 12 weeks) steroids? How many oral steroid doses in last 6 months?
- Any hospital admissions for asthma? When? Where? PICU?
- Who manages asthma? GP/hospital?
- What is their normal peak flow?
- Any asthma management plan?
- Last asthma review – when and who by?
- Any recent change to medications?
- Any asthma attacks within last 12 weeks?
- Any smoking or vaping in the household?

Examination

- Check mouth - oral thrush may mean poor inhaler technique.
- Auscultate chest for wheeze if not audibly wheezy.
- Look for accessory muscle use or increased respiratory rate, shortness of breath and cough if child has been running round department. If noted at rest, please document this.
- Check for other signs of atopy - eczema, etc.
- Measure height to calculate predicted peak flow

Investigations

- Peak flow and copy of peak flow diary if patient has one.
- Complete Asthma control test on ALL asthmatic children and document on pathway. Please refer scores of less than 19 to Consultant anaesthetist for notes review/Consultant clinic review. **https://www.asthmacontroltest.com/en-gb/welcome/**
- Copy of latest respiratory/paediatric clinic letters
- Asthma management plan copy

Plan

- For mild asthma (symptoms well controlled, minimal reliever inhaler use, only symptomatic when unwell with cough/cold) there is no need to refer the patient on.
- If there are smokers in the household, give smoking cessation advice if appropriate. Refer to Trust Smoking guideline. Advise parents to smoke/vape outside and change clothes & wash hands prior to contact with the child at a minimum.

Refer to Consultant pre assessment clinic:

- Children with severe or brittle asthma.
- Children currently on oral steroids or recent steroids.
- Children with recent exacerbation/admission.
- Children who have ever needed ITU treatment for asthma.
- Children with associated complex atopy - multiple allergies and asthma, complex treatment e.g. immunotherapy.
- Any child with a peak flow 60% or less of predicted or usual (predicted if usual not known)
- Asthma control test <19.

PEAK EXPIRATORY FLOW RATE

For use with EU / EN13826 scale PEF meters only

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

Example PEFR values for height

BTS SIGN Asthma quick reference guideline (QRG 153 • British guideline on the management of asthma) Sept 2016

References

- https://www.asthma.org.uk/advice/severe-asthma/what-is-severe-asthma/
- https://www.asthma.org.uk/advice/understanding-asthma/types/#brittleasthma
- https://www.asthma.org.uk/advice/understanding-asthma/what-is-asthma/
- http://www.peakflow.com/paediatric_normal_values.pdf

Atopy

Atopy is a predisposition for various allergic disorders. This can run in families but the exact mechanism behind it is unclear. Common manifestations of atopy include:

- Gastro-intestinal complaints
- Eczema
- Asthma
- Rhinitis.

Food allergy – incidence of 3-5% and increasing. Common triggers are milk and egg.

- There is some concern that individuals with an allergy to **soy or egg** could suffer from a cross reaction with propofol. Fortunately, publications have found no correlation between a soy allergy and propofol in children. The narrative regarding eggs is different, an Australian paper has advised the avoidance of propofol in patients who develop an anaphylactic reaction to eggs though propofol seems to be safe in patients who have either a mild or moderate reaction to eggs (5, 6).
- **Banana, Pear, Chestnut and Avocado** allergies can be linked with latex allergy. (2,3)

Allergic rhinitis/hay fever – involves the nasal mucosal region, can co-exist in patients with asthma.

Eczema – incidence of 15-30% and increasing in developed nations. Food triggers such as milk, peanuts and eggs are common and there is a strong association with food allergies. In later life, sensitisation to dust mites and pollen can happen. The itching can have a detrimental impact on the quality of sleep and this has knock on effects on the family's life. Emollients, topical steroids and antihistamines are common medications, some patients may be on topical tacrolimus or herbal remedies.

History

- What triggers the atopic reaction?
- How severe is the reaction?
- Does the reaction impact on the patient's life?
- What medications/creams are they using?
- The patient may have attended an allergy clinic, ask to see letters if available.
- **Food allergy** –Does the patient carry an EpiPen? Have they used it and when? Ask about egg anaphylaxis and allergic reactions to avocados, kiwi fruit, banana, celery, chestnuts and pears (3). Any hospital admissions with allergy? Take details of these.
- **Allergic asthma** – what their normal peak expiratory flow rate is. Also see asthma guideline.
- **Eczema** – ask about herbal remedies, Chinese herbal remedies have been known to cause liver toxicity. (4) Ask about sites? How bad is it? Reactions to plasters?

Examination

- **Eczema** – infants: cheeks and scalp, children: dorsal and flexure aspects of limbs, teenagers and adults: flexure surfaces, head and neck.
- **Asthma** – see Asthma guideline, but wheeze, chest infection and peak expiratory flow rate are important

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Investigations

- In atopy related conditions, there are no directly related investigations that are routinely requested.
- If patient or carer reports severe atopic reaction please request last anaesthetic charts or clinic letters so that this can be investigated further.
- Please record when hay fever is worst and any known precipitants

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Plan

- Please document allergies clearly. Most allergies do not need referring on.

Refer to Consultant pre-operative clinic:

- Unusual allergies e.g. Corn
- Severe atopic reactions
- Mastocytosis
- Significant atopic reaction with last GA or Morphine.
- Chlorhexidine allergy

- **Latex allergy patients** must be first on the list and this must be documented on the operating list. If you have concerns about latex allergy please refer patient to pre assessment Consultant.
- **Chlorhexidine allergy patients** need highlighting on the theatre list and should be first on the list.

References

- Strobel S, Spitz L, Marks S D. 2016. GOSH handbook. Great Ormond Street Handbook of Paediatrics, second edition. CRC Press
- Ahmed S, Savic L. 2020. Latex: a rare but important cause of perioperative allergic reactions. BJA education. Elsevier. https://bjaed.org/article/S2058-5349(20)30115-3/fulltext
- Bernardini R, Catania P, Caffarelli C, Cardinale F, Franceschini F, Pelosi U, Peroni D. G. 2011. Perioperative latex allergy. International Journal of immunopathology and pharmacology. https://journals.sagepub.com/doi/10.1177/039463201102405308
- NICE. 2020. Treating atopic eczema in children aged 12 and under. http://pathways.nice.org.uk/pathways/eczema
- Harper N.J.N. 2015. Propofol and food allergy. British Journal of Anaesthesia. https://academic.oup.com/bja/article/116/1/11/2566111
- Murphy A, Campbell D.E., Baines D, Mehr S. 2011. Allergic Reactions to Propofol in Egg-Allergic Children. Anaesthesia and Analgesia. https://journals.lww.com/anesthesia-analgesia/Fulltext/2011/07000/Allergic_Reactions_to_Propofol_in_Egg_Allergic.24.aspx

Autism and ADHD

Autism is a different perspective of the world. Autistic children may find the world overwhelming and react very differently when exposed to the stressful and "fixed" world of the NHS. Medically they are often completely fit but without attention to their specific needs the anaesthetic journey can be very challenging.

ADHD is a condition that affects behaviour. Those with the condition can be restless, may have trouble concentrating and may act on impulse. Most children are diagnosed 6-12 years old. Often symptoms improve with age. There is an association with sleep and anxiety problems.

History

Please record full medical and medications history including birth history. Please ask the parents about their views regarding the proposed theatre journey and how we can make it easier.

Autism

- When was autism diagnosed (may not be the case) and by who?
- Any particular likes or dislikes?
- What are the best coping mechanisms that they use? Stimming? Proprioception?
- Do they find mindfulness helpful?
- How do they feel about:
  - Touch
  - Noises
  - Smells
  - Textures
  - Foods
- Do they find sequencing or structure reassuring?
- What happens when they feel overwhelmed? Any violence?
- Have they had a previous anaesthetic and how did it go?
- Pre medications – did they help?
- How do they sleep at night? Do they take Melatonin? Does it work?
- Where do they go to school? How do they cope in school?

ADHD

- Have they had a previous anaesthetic? How did it go?
- Pre medications – did they help?
- How does their ADHD manifest?
- Medications and doses?
- Any particular likes or dislikes? Any triggers??

Examination

Examination is not generally required or appropriate as it will increase anxiety for the child or young person.

Investigations

- Please request copies of most recent letters from Community Paediatricians or CAMHS.
- Please record details of any medications and doses.
- If the child or young person has had an anaesthetic elsewhere, please request copy of last anaesthetic chart/details of premedication given.
- Please score anxiety (chart in *Anxiety Guideline*) and record this.
- Please print a copy of last individualised anaesthetic plan if one in place.

Plan

- Please refer all children with Autism the ward or theatre **Autism Champion nurse/play specialist** by email so that they can organise completion of South Tees Paediatric Surgical Autism Passport and link up with the patient and carers.

> Please refer all children with severe Autism/ADHD to Consultant pre assessment clinic for notes review. They may also need a clinic review but this can be decided after notes review.

- Please make sure child or young person and their family has details of the following:
    - "Little Journey" app to help them prepare for the surgical journey.
    - Print out of sequencing cards (if likely to be useful). These can be emailed.
    - Details of Autism Champion to contact in case advice needed.
- Consider whether a side room on the ward would be appropriate.
- Consider list position and admission time – please inform surgeon and secretary if changes needed.

References

- The Secret Life of Rose: Inside an Autistic Head, Rose Smitten, Amazon Publications.
- http://www.nhs.uk/conditions/attentiondeficithyperactivitydisorder

Blood Tests

MINOR SURGERY

E.g. Drainage of abscess, grommets, removal of skin lesions, bleomycin therapy, nasal cautery etc.

Test	ASA1	ASA2	ASA3 -5
Full blood count	Not routinely	Not routinely	Not routinely
Coagulation screen	Not routinely	Not routinely	Not routinely
Renal function	Not routinely	Not routinely	If at risk of AKI
ECG	Not routinely	Not routinely	If no recent ECG

INTERMEDIATE SURGERY

E.g. hernia repairs, adenotonsillectomy, arthroscopy.

Test	ASA1	ASA2	ASA3 -5
Full blood count	Not routinely	Not routinely	Discuss with pre assessment consultant
Coagulation screen	Not routinely	Not routinely	
Renal function	Not routinely	Not routinely	
ECG	Not routinely	Not routinely	

MAJOR OR COMPLEX SURGERY

E.g. Scoliosis surgery, full house hip surgery.

Test	ASA1	ASA2	ASA3 -5
Full blood count	Yes	Yes	Yes
Coagulation screen	Not routinely	Not routinely	Consider – discuss with Consultant
Renal function	Yes	Yes	Yes
ECG	Not routinely	Not routinely	Consider – discuss with Consultant

- **Sickle cell testing** – please refer to Sickle cell guideline.
- **Diabetes** – please refer to diabetes guideline. We do not routinely check HbA1C pre operatively.

If you are unsure whether a test is required please speak to the Paediatric pre assessment consultant before organising for it to be carried out.

Refusal of Blood Products

There are approximately 8.5 million Jehovah's Witnesses around the world, with 150,000 living in the UK. A policy refusing the transfusion of blood products was first introduced by the church in 1945, with those who ignored this policy forced to leave. In June 2000, a change in this policy was announced which made it the responsibility of the individual to revoke his or her membership through self-disclosure that they had received blood, rather than the congregation initiating dis-fellowshipping through a judicial committee. This subtle change has created an important difference as it means it is possible for an individual Jehovah's Witness to accept a blood transfusion and choose to remain silent thereby avoiding exclusion from the congregation. **It is, therefore, essential that medical confidentiality be maintained should a Jehovah's Witness choose to receive a blood transfusion for themselves or their child.** Others may also refuse blood products and this sheet should be applied to all who express this wish on behalf of their child. This is their right and they should be reassured that we will work with them to adhere to their wishes, within the law of United Kingdom.

The power to give or withhold consent to medical treatment on children's behalf lies with those with **parental responsibility.** The surgical team have a legal and ethical responsibility to ensure the well-being of the child under their care, however every effort must be made to respect the beliefs of the family and avoid the use of blood products wherever possible.

Despite this statement it has become accepted within the legal framework in the United Kingdom that transfusion is justified without consent in circumstances in which a child's life is acutely threatened, whether this is in the context of acute illness or trauma, or in the setting of an elective treatment or procedure in which serious complications arise. Under such circumstances the law permits doctors to administer blood transfusion without consent from the child or those with parental responsibility, unless other directives have been given by the courts.

Children under the age of 16 years can give consent for blood if they are believed to have sufficient competence to understand the issues concerned. This ruling enables a child of suitable age and maturity to give consent for elective treatment in the absence of parental consent, or even if parents object. However, the ruling does not empower a child to withhold consent for necessary or lifesaving treatment. In these cases early advice from the legal team is helpful as an application to the court may be needed.

Consider Legal advice in the following situations:

- The views of those with parental responsibility differ.
- Children of 16-17 years having elective surgery, with capacity and refusing blood products or with differing views to their parents.
- Under 16's refusing consent for blood products.
- The patient has no capacity under the mental health act.

Ideally all decisions should be made in advance and should be clearly documented. In some cases it may be helpful to involve the local Hospital Liaison committee for Jehovah Witnesses.

History

- Any issues with bleeding previously – ask about nosebleeds/cuts and grazes?
- Any problems with bleeding during previous operations?
- Any family history of bleeding problems?
- Any problems with anaemia/previous courses of iron?
- Any episodes of arrhythmia, fainting, dizzy spells, 'funny turns'.
- Any blue episodes?
- Current medications – particularly ask about those which increase bleeding such as ibuprofen and other NSAIDs, anticoagulants.
- Any drug allergies?
- Diet – good diet containing iron rich foods? Formula or cow's milk including quantity consumed?
- Any recent infections? Children who have had recent tonsillitis are more prone to bleeding.
- Does the patient or carer wish a member of the liaison committee to be present when they come to Consultant pre assessment? This is always an option and just requires organising in advance.

Examination

- Full set of observations including saturations in air.
- Cardiovascular examination – murmurs, conjunctival pallor, prolonged CRT, general pallor.

Investigations

Blood tests - Full blood count, Haematinics, coagulation, Urea and electrolytes.

These should be requested as early as possible to allow for treatment if needed prior to surgery, even if bleeding risk is considered low. Please check web ice to make sure that these have not already been done by the GP recently. Ideally these results would be available at Consultant pre assessment clinic.

Other actions

Please refer child and family to consult Paediatric anaesthetic pre assessment clinic (face to face) using referral form (copy can be found in forms section of the Guidelines booklet). Please advise them that surgery will not proceed without this appointment and that they should bring copies of any advance directives with them to this appointment.

The Consultant clinic appointment will discuss:

- A clear assessment of the likely need for blood product support during or after surgery and of the urgency and importance of the surgical procedure itself.
- The law surrounding blood products in emergency situations in children and what would happen in this scenario (joint decision by Consultant anaesthetist and surgeon).
- Investigate current haematological status and put in place any measures that may be needed to reduce likelihood of transfusion.
- The use of any blood products would always be disclosed.
- The specific wishes of the child or person with parental responsibility.

Specific Directives

The decision of individual Jehovah's Witnesses to refuse blood and blood components is a matter of personal choice. Products which they may decide not to accept are as follows:

Auto transfusion	Immediate intra-operative auto transfusion is permitted by many Witnesses provided the circuit is linked to the patients' circulatory system and there is no storage. However, pre operative collection and subsequent reinfusion is not permitted.
Blood tests	Generally no objections
Whole blood or product transfusions	Transfusions of whole blood, packed red cells, plasma, white cell and platelets are usually rejected.
Blood fractions: • Albumin • Immunoglobulins • Anti D • Fractions prepared to treat individual factor deficiencies	Individual decision by each Witness
Haemodialysis	Permitted by many Witnesses provided non-blood prime is used.
Haemodilution	Intraoperative haemodilution is permitted by many Witnesses when the equipment is arranged so as to keep the blood in a constant link to the patients' circulatory system.
Cardiac Bypass	Permitted by many Witnesses provided non-blood prime is used (non blood prime may not be possible in small children)
Serums	Not forbidden, although some Witnesses conscientiously refuse them.
Erythropoietin	Erythropoietin treatment is usually acceptable.
Expanders (Saline / Dextran/ Gelatin / Haemacel / Hetastarch)	Non-blood volume expanders are usually acceptable.

Specific Issue Order

A specific issue order is made by the courts under Section 8 of the Children's Act 1989 when a child is under 18.The court takes into account he best interests of the child and makes an order regarding blood transfusions which supersedes parental responsibility in this area. It does not take away a parent's rights in other areas or the right to be kept informed of ongoing management of their child.

References

- https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/full/10.1111/anae.14441#:~:text=The%20children%20of%20Jehovah's%20Witnesses,for%20elective%20or%20emergency%20surgery.

Bleeding,clotting & blood thinners

Haemophilia: Tendency towards abnormally severe or prolonged bleeding or inability of blood to clot.

Thrombophilia: An increased tendency to form blood clots, can be genetic/inherited or acquired.

Anticoagulation: A medication given to prevent blood from clotting or reduce the risk of blood clots.

Platelet disorders: Platelets are the first stage in the healing process. They form a plug which then allows the blood to clot. There are three main disorders affecting platelets. These are **thrombocythemia** (too many platelets), **Thrombocytopenia** (not enough platelets) and platelet **dysfunction disorders** (there are enough platelets, but they do not work).

History

Haemophilia/Bleeding disorders

- Any diagnosis of haemophilia or a bleeding disorder? A specific type? Any bleeding disorders that run in the family?
- Any history of low platelets or any form of thrombocytopaenia?
- Do they bleed/bruise significantly? Did they bleed from umbilical cord a lot after birth? Vaccinations?
- Any history of unexplained bleeding/bruising? (Nosebleeds requiring hospital treatment, bleeding into joints, blood in urine/vomit/stools, black stools, sudden change to periods, bruising after injections)
- Who manages the bleeding disorder? Where? Name of specialist nurse/consultant? Test results?
- What medications is the child on? Dose/frequency?
- Do they require regular IV medications/infusions/admissions? When was the last one? Where?
- Any problems with getting cannulas in previously? Do they have long term IV access?
- Have they had a blood transfusion for serious bleeding before? Where/when?
- Have they ever been given a platelet transfusion before? Where/when/why?
- Do they have an emergency management plan for bleeding? **(Photocopy for notes)**
- Any history of anaemia related to their haemophilia? (See anaemia guidelines if yes)
- Any previous surgery? What for? Was there a plan from haematology for the surgery? (Get copy)
- Any history of unexplained bleeding/bruising should be a trigger to consider Non-Accidental Injury. If there is concern about this, contact a consultant anaesthetist before the patient leaves the department.

Thrombophilia/Blood clotting disorders

- Any diagnosis of thrombophilia, or previous PE or DVT? A specific type? Any blood clotting disorders that run in the family? Any history of blood clots in the family?
- Any history of blood clots following surgery? If yes, where was the clot? How was it treated?
- Any history of blood clots at other times? (E.g. chemotherapy, intensive care admission), how long ago?
- Any history of blood clots during pregnancy (if child is female and has any history of pregnancy)?
- Who manages the blood clotting disorder? Where? Name of specialist nurse/consultant? Test results?
- Any problems with cannulation previously? Do they have long term IV access (port/PICC/Hickman)?
- What medications is the child on? Dose/frequency? (see anticoagulation questions below)

Anticoagulation

- Which anticoagulant is the child on? What dose/frequency? **Anticoagulant drugs include:**
  - Heparin (including clexane, fragmin, innohep, enoxaparin, tinzaparin, dalteparin)
  - Warfarin/Coumadin
  - Direct Oral Anticoagulants (DOAC/NOAC) (including apixaban, edoxaban, rivaroxaban, dabigatran)
- Are they on any aspirin/clopidogrel/ticagrelor?
- Why are they anticoagulated? (Inherited blood clotting disorder, DVT/PE, stroke, blood clot somewhere in the body, metallic heart valve, cardiomyopathy, Kawasaki disease, renal failure?)
- Who do they see related to their blood thinners? Where? Name of specialist nurse/consultant?
- If on warfarin, what is their target INR? Do they have a yellow book/anticoagulation record? (Photocopy for notes)
- How frequently do they have blood tests? Where? Do they check INR with a fingerpick test at home?
- Who doses the warfarin/anticoagulation? Any recent dose change?
- Any problems with bleeding whilst on their blood thinners?
- Have they ever needed the anticoagulation reversed? When? Why?

Platelet disorders

- Examples of platelet disorders may include: Bernard Soulier disease, Glanzmann's thrombasthenia, Hermansky Pudlak syndrome, Jacobsen syndrome, Lowe syndrome, Thrombocytopenia with absent radius (TAR) syndrome, Thrombotic thrombocytopenic purpura (TTP).
- Any bruising or petechiae (small pinprick bleeds)
- Any problem with bleeding after previous operations? Referrals? Tests?
- If female, ask about heavy periods – how often, how many pads?
- Does the child suffer with nosebleeds? How often? Do they come to hospital?
- Any bleeding when brushing teeth?
- Any blood in poo? Urine?
- Any iron deficiency anaemia? Iron tablets?

Henoch-Shonlein Purpura

- When was diagnosis made? Where? (obtain discharge summary)
- Any renal problems at present?
- Last check up? With whom?

All patients and parents should be asked about any **objection to blood products/transfusion** regardless of type of procedure (refer to *blood refusal guideline* if appropriate).

Examination

- Look at eyes/gums. May be pale if very anaemic related to bleeding
- HR/RR - may be elevated if significantly anaemic
- Check for any bruising/bleeding/petechiae
- If there is bruising/bleeding in unusual areas (e.g. calves, buttocks, soles of feet, abdomen) or bruising has usual patterns (e.g. lines, fingerprints, clear imprints), consider Non-Accidental Injury**. If there is concern contact a consultant anaesthetist before the patient leaves the department.**
- Height and Weight
- Check any current long term IV access and ensure they are clean, working and free from infection

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Investigations

- **Check blood results** - Haemoglobin, platelet count, coagulation screen (PT/APTT/INR), Factor VIII/IX levels if Haemophilia patient, G&S (higher risk for antibodies) bleeding time. Blood group (vWF).
- Please request copies of any investigations done in other Trusts.
- Any haematology/paediatrician/cardiology/genetics **clinic letters and management plans.**
- Any management plans from specialist services – including names /contact details for specialist team.
- Photocopy of Yellow Book/anticoagulation record book if applicable.

Plan

- Children who are anticoagulated or have a bleeding disorder should be referred to consultant pre-assessment clinic and highlighted to the surgeons.
- Children with simple thrombocytopaenia (low platelets) do not need referral if platelets >100 and stable and no significant bleeding/bruising but require discussion with a consultant.
- Children on aspirin alone may not need referral to clinic but may require discussion with a consultant
- Children with blood clotting disorders/bleeding disorders/thrombophilia/anticoagulation should be highlighted as needing a VTE risk assessment.

Refer to Consultant pre assessment clinic:

- Children with unexplained bleeding/bruising that has not been investigated
- Children with Haemoglobin levels <80g/L.
- Children with platelets <100 or any confirmed platelet disorder.
- Children with bleeding disorders, including (but not limited to):
  - Haemophilia A or Haemophilia B/Christmas Disease
  - Von Willebrand Disease
  - Alpha Granule Deficiency (Gray Platelet syndrome)
  - Delta Storage Pool Deficiency
  - Scott Syndrome
  - May-Hegglin Anomaly
  - Alport Syndrome
  - Wiskott-Aldrich Syndrome
- Children with known or suspected HSP or vasculitis.
- Children with antibodies following previous transfusion if blood likely to be required.
- Children with a tendency to develop blood clots including but not limited to:
  - Previous DVT/PE
  - Factor V Leiden
  - Protein C Deficiency
  - Protein S Deficiency
  - Antiphospholipid Syndrome
  - Antithrombin Deficiency.
- Children on anticoagulation - Heparins, Warfarin/Coumadin, Direct Oral Anticoagulants (DOAC/NOAC) including apixaban, edoxaban, rivaroxaban, dabigatran.

References

- https://www.gosh.nhs.uk/conditions-and-treatments/conditions-we-treat/haemophilia-0
- https://www.gosh.nhs.uk/medical-information/medicines-information/warfarin
- https://haemophilia.org.uk/bleeding-disorders/inherited-platelet-disorders/

Consent & Parental Responsibility

Before an operation consent must be obtained in writing on one of the Trust approved Consent forms. Sometimes this is done in clinic and sometimes on the day of surgery. Without consent surgery cannot proceed and therefore it is vital to establish who will be giving consent at pre assessment so that right person is present at the right time.

If unsure please seek advice from Senior Matron or Consultant.

Who can consent?

- **The child or young person** can consent for themselves if 16-18 years old with no impairment to understanding and reasoning. If children and young people are under 16 years old they may still be able to consent if they can understand why the procedure is required and the potential risks and benefits to having or not having the treatment.

- **Someone with parental responsibility for that child**. Those who have this may include:

    - **Mothers** automatically have parental responsibility for their child.
    - **Fathers** also have parental responsibility if they were married to the mother when the child was conceived or born, or if they got married to her later.
    - **Unmarried fathers** whose children were born after January 2004 and are named on the birth certificate have parental responsibility.
    - **Unmarried fathers** whose children were born before January 2004 do not automatically have parental responsibility, but they can get it by a parental responsibility agreement, a court order or by marriage to the mother.
    - **Same sex partnerships** – both have responsibility if they were married or civil partners at the time of birth or fertility treatment jointly register birth or have parental responsibility order.
    - **People looking after the child** like grandparents, step parents, older siblings or childminders **do not** have parental responsibility.
    - **Looked after children** in the care of the local authority need to obtain consent via the designated team manager who holds parental responsibility, if parents no longer have it. Some foster carers may be authorised for routine health reviews but not surgical consent.

Legal orders

In some cases, children may attend hospital for surgery with a legal order in place. These are outlined in the table overleaf. It is important to get a copy of these orders and make sure that the surgeon and anaesthetist is aware they are in place.

It can take significant time to organize for a Senior Social Services Manager to sign a consent form and so this must be organised in advance of the day of surgery to avoid delays.

Type of order	Description	Parental responsibility?
Special Guardianship order (SGO)	This is an order made by the family court (The Adoption and Children Act 2002) that places a child or young person to live with someone other than their parents on a long term basis. The person who the child is placed with is the special guardian. Adults with Special Guardianship order have parental responsibility along with birth parents but can override birth parents.	**Birth Parents** **Special Guardian** (can overrule parents)
Section 20 order (voluntary placement)	Section 20 orders are made under the Children's Act 1989. The Local authority must provide a child or young person with somewhere to live if they do not have a home or have an unsafe home. Parents may be asked to sign this to agree children can live away from them for a period of time. This order allows the local authority to investigate and care for the child but does not change who has parental responsibility. It remains with the birth parents.	**Birth Parents**
Interim care order (ICO)	Interim care orders (ICO) can be put in place by the local authority under the Children's Act 1989, if they believe a child is at risk of harm. It allows the local authority to make decisions about the child or young person whilst investigations are ongoing. It lasts 8 weeks and can be renewed by the Courts for periods up to 28 days at a time. The child may be in foster care or live with a relative or parents. Parental responsibility is SHARED between birth parents and social services. Birth parents who retain parental responsibility or Social Care Manager nominated Senior manager (not foster carer or care worker) can sign consent.	**Birth Parents** **Social Services Senior Manager**
Full care order **(FCO)**	A full care order can be put in place by the courts under Children's Act 1989. It allows local authorities to assume care for the child. Parental responsibility is shared between birth parents and social services but unlike with an ICO Social services can override birth parents wishes or limit their parental rights and responsibilities. Parents who retain parental responsibility can sign consent but often it must be signed by Senior nominated manager form social care (not foster carer or care worker).	**Social Services Senior Manager** **Birth Parents** (must be clarified)
Placement order	Placement orders allow children to be placed with a suitable family following care proceedings. It is made under Section 21 of the Adoption and Children's Act 2002. They last until revoked or until the child is 18 years old. These orders often although not always proceed adoption/post adoptive orders. Birth parents, Social Services Senior Manager and Adoptive Parents all have parental responsibility. However, social care can limit or override others with parental responsibility. Consent can be signed by any of these but if any dispute Social Care nominated Senior Manager has overall responsibility.	**Social Services Senior Manager** Adoptive Parents **Birth parents** (need to clarify)

Post adoptive order	An adoption order is an order transferring care of the child to the adoptive parents. The child is no longer the legal child of the birth parents. This order permanently severs the tie between child and birth parents from a legal perspective. Adoptive parents have full parental responsibility and sign consent. Birth parents and social services have no parental responsibility.	**Adoptive parents**
Police Protection Order (PPO)	Under Section 46 of the Children's Act 1989 a Police officer can remove a child to a place of safety if they feel they are at risk of harm. The child can be kept for up to 72 hours in a police station or other suitable accommodation foster care/hospital/with a relative). This is not granted by the Courts. It can be used to prevent a child being removed from a hospital in an urgent situation. It lasts 72 hours. The parents retain parental responsibility for consent and must be kept aware of what is happening with the child. Social services must be informed when a PPO is put in place.	**Birth Parents**
Emergency Protection Order (EPO)	This is a short term order to remove a child from immediate risk of harm and to allow social services to investigate further. It lasts 8 days and can be extended a further 7 days if needed. The holder of the order (social services) takes on temporary parental responsibility for the child shared with the birth parents, although social services can overrule birth parents in the best interest so of the child	**Social Services Senior Manager** (can overrule birth parents) **Birth Parents**

* Further advice should be sought in cases of Private Fostering arrangements.

Cardiac Conditions

Murmur: An extra noise in addition to the usual heart sounds. This can be related to a heart problem, but can be innocent (only appears when the child has a fever or viral illness). Often found just after birth and resolve spontaneously.

Congenital Heart Disease: An abnormal heart structure that the child is born with. Can be cyanotic - child will have low saturations normally and often a blue tinge to lips or fingers. Acyanotic congenital heart disease does not have low oxygen saturations.

Arrhythmia: A change in the electrical rhythm of the heart from normal sinus rhythm. Many and varied, can be fast or slow and intermittent or permanent. Diagnosed on ECG. Some conditions run in families and may not be fully investigated until the child reaches a certain age.

History

- When was the heart disease diagnosed? How old?
- Has the child been diagnosed with a murmur? Has it been investigated? Any follow up needed?
- If diagnosed at a later date was it following another illness? Kawasaki syndrome or viral infection?
- If diagnosed at ultrasound before birth, where was the child born? Any surgery in the first few days? Did they go to neonatal intensive care? Were they intubated? How long for?
- Any surgery in the past? Where? When? Any surgery planned for the future? Where? When?
- How long were they in critical care after surgery? How long were they intubated for? Tracheostomy?
- What medications does the child take? Any blood thinners/anticoagulation? Which? Target INR?
- Do they have a pacemaker or ICD?
- What are the child's normal oxygen saturations in air? Any home oxygen? How much and when?
- Any episodes of the child going blue? Collapse? Breathlessness? Squatting after running around?
- Any unexplained collapse/blackout episodes?
- Who does the child usually see in clinic for their heart? How often? Where?
- Do they have a specialist nurse to contact? Who? Where? Contact details?
- Any episodes of heart racing or funny heart rhythms? Do they need treatment?
- What treatment has been needed for the heart rhythms in the past?
- Any family history of heart problems? Any family history of sudden death in children or young adults?
- Has the child had any complications from their heart disease? Stroke? Blood clots? Cardiac arrest? etc.

Examination

- Full set of observations including blood pressure and oxygen saturations.
- Document if cyanosed/blue and if any wheeze.
- Cardiac examination – heart sounds/murmurs.
- Look for signs of breathlessness, oedema.
- Surgical scars.
- Assess veins – is vascular access likely to be difficult?

Investigations

- ECG needs to be done with a copy available in the notes.
- Please obtain most recent echocardiogram report (even if very old).
- Please obtain copies of most recent cardiac clinic letter and paediatrican letter.
- Copy of any results of cardiac investigations (angiograms, cardiac catheterisations, cardiac MRI etc.).
- Copy of yellow book and recent blood results if anticoagulated

Plan

- Children who have **"innocent" murmurs** - a heart murmur unrelated to heart disease, who are well, fully discharged from follow up and have been investigated in the past do not need consultant review.

Refer to Consultant pre assessment clinic:
Children with heart problems or who have had any heart surgery including:

- ASD/VSD
- Aortic stenosis
- Pulmonary stenosis
- Coarctation of the aorta
- Tetralogy of Fallot
- Transposition of the Great Arteries
- Any valve replacements
- Pacemaker or ICD
- Heart transplant
- Hypoplastic left heart
- Blalock-Taussig Shunt
- Arrhythmia syndromes including: Wolf-Parkinson-White Syndrome, Brugada Syndrome, Long QT Syndrome, Short QT Syndrome, complete heart block.
- Any other arrhythmia including SVT
- Pulmonary hypertension
- Heart failure or cardiomyopathy.
- Previous Kawasaki Syndrome
- Children with unexplained collapse/blackout episodes
- Children awaiting investigations under cardiology
- Children with complex heart disease may need surgery delayed or to take place elsewhere if significantly unwell or requiring a centre with paediatric cardiac surgeons
- Any child with a potential cardiac issue or if there is any doubt over the diagnosis.

References

- Chapter 17, Cardiac Disorders, T. LISSAUER, G. CLAYDEN, Illustrated Textbook of Paediatrics, Third Edition, Mosby Elsevier 2007, Pages 285-306.
- https://www.bhf.org.uk/informationsupport/conditions/brugada-syndrome
- https://www.bhf.org.uk/informationsupport/conditions/arrhythmias

Cerebral Palsy

Cerebral Palsy is a term referring to a non-progressive injury to the developing brain which occurs antenatally or in the neonatal period (roughly 80% of cases are antenatal) leading to impaired motor function. It presents as a spectrum of symptoms, ranging in severity, but often involving issues with muscle tone, movement, joint contractures and scoliosis. It may be associated with learning difficulties, epilepsy, visual problems, hearing problems, communication challenges, behavioural disorders and feeding problems. **As presentations can be very variable it is vital not to make assumptions and to assess all children and young people on an individual basis.**

History

- How many weeks were they born at? Any NICU/special care? Intubated? How long for?
- What age was the cerebral palsy diagnosed? Infancy or later?
- Which specialties are involved in the child's care?
  Please record names of consultants/specialist nurses and contact details.
- What other agencies are involved? Physiotherapists, carers, home nursing, OT, SALT etc.?
- Are they in main stream or special schooling? Which school are they at? Do they have 1 to 1 support? Do they have physiotherapy or occupational therapy at school? Record names of providers.
- Does it affect specific limbs or whole body? Is one side worse than the other?
- What is the child physically able to do? Hold up head, sit up unaided, write, draw, and grasp objects, crawl, stand, and walk, with/without aids? Does the child need any specific aids when admitted to hospital?
- How does the child communicate? Makaton? Speech? Technology assisted? Do parents/carers interpret noises/sounds/words? It is important to explore what children understand. Many will have a body that does not do everything they would like but full comprehension (remember to talk to the child not just the parent).
- Any learning disability? (A high percentage of children with cerebral palsy have age appropriate understanding and cognition, assume this as default).
- Does the child need glasses/hearing aids? Any visual impairment not corrected by glasses?
- Can the child eat and drink? Any thickened fluids needed? Any NG/PEG/gastrostomy feeding now or previously? Any reflux?
- Any problems with clicking jaw or jaw popping out or teeth?
- Any behavioral disorders or anxiety?
- Any epilepsy associated? *(See epilepsy guideline)*
- Any hip problems or scoliosis? Any previous surgery for these? Where? When?
- Any chest infections or aspiration? Do they need airway suctioning at home? Any recent or frequent hospital admissions? Ever been in ITU? Chronic Lung disease?
- What medications is the child on? Any infusion pumps or baclofen pumps?

Examination

- Oxygen saturations in air if on home O2/frequent chest infections?
- Any issues with aspiration?
- Document any mobility aids used or splints needed. Any joint contractures?
- Any issues with PEG/gastrostomy site if has one.
- Look at sites for IV access – are there likely to be difficulties?

Investigations

- Please obtain clinic letter from last paediatrician appointment and letters relating to any significant medical issues the child has (e.g. letters from home ventilation service if this is in place).
- If recently admitted please print out latest discharge summary.
- Please check for any recent investigations (including but not limited to):
    - Respiratory function test results if any done - particularly if notable scoliosis.
    - Any motility studies/gastric emptying/barium swallow if done.
    - Any CAMHs/psychology letters if input for anxiety or learning disabilities.
    - PEG/Gastrostomy/NG feeding regime.
    - Any SALT or OT assessments?
    - Any X-rays of jaw/OPG or procedures for problematic mouth opening.
    - Any EEG reports if has history of epilepsy or seizures.
    - Group and save required for major surgery (higher risk of bleeding)
- Any emergency healthcare plan if family has one.
- Contact details for any other agencies or specialist nurses involved in care with clinic letters.
- Communication passports should be requested and copied for the medical notes.

Plan

- Children with mild cerebral palsy (i.e. single limb issues, needing minimal support at school, and minor issues with mobility) and/or single system issues do not usually need referral to consultant pre-assessment clinic but should be highlighted to the anaesthetist for the list by email.
- If the child has epilepsy that is well controlled (as per *epilepsy guideline*) and cerebral palsy without significant multi-system impact, they may only need notes review.
- Children with epilepsy or significant respiratory problems may need HDU bed.
- Please remember to advise parents about infections and anaesthesia and give self-cancellation advice.

Refer to Consultant pre assessment clinic:
Children with cerebral palsy with multiple issues including (but not limited to):

- Behavioural issues or anxiety
- Uncontrolled or complex epilepsy (as per epilepsy guideline)
- Any jaw/mouth issues
- GI issues, especially severe reflux or aspiration
- Frequent admissions with chest infection
- Severe or notable scoliosis
- Home oxygen or ventilation
- Children with significant physiotherapy input
- Children with additional communication needs, e.g. BSL/Makaton or visual needs.

References

- Chapter 4, Developmental problems and the child with special needs, T. LISSAUER, G. CLAYDEN, Illustrated Textbook of Paediatrics, Third Edition, Mosby Elsevier 2007, Pages 39-54.

Coronavirus

Please see latest copy of Covid Elective Surgery in Children PATHWAY DOCUMENT which can be found on the intranet under Paediatric Anaesthesia Guidelines.

This document is regularly updated and the most up to date version will be there.

Cystic Fibrosis

Cystic Fibrosis is an inherited condition affecting multiple organ systems. It is characterised by abnormal function of mucous producing cells and sweat glands. Thick, sticky mucus causes problems with lungs, the digestive tract, liver, pancreas and sinuses, amongst other organ systems.

History

- At what age was the cystic fibrosis diagnosed? Antenatal? Newborn heel prick test? Later?
- Who do they see in clinic? Where? How often?
- How frequently are they in hospital?
- Do they have problems with IV access? Any portacath, PICC or Hickman line now or in the past?
- What medications do they take?
- Any nebulisers? Home oxygen?
- Any long term antibiotics?
- Do they have diabetes? (See diabetes guideline)
- Any chronic lung infections? Pseudomonas or Burkholderia cepacia? Any multidrug resistant infections?
- Ever needed NG/PEG/gastrostomy feeding?
- What are their normal saturations? Any need for oxygen at home?
- When were they last in hospital? Ever needed intensive care? When? How long for?
- Any overnight ventilation? Home ventilation team details?
- What is their usual physiotherapy regime?
- Any other agencies involved? Psychology? Social worker? Specialist nurse? Names & contact details.

Examination

- Height, weight, BMI
- Blood sugar reading – it is acceptable to ask the child or young person for a reading they had done that day if this has been done.
- Heart rate, respiratory rate , oxygen saturations (document usual saturations if known, and if saturations in air/oxygen and how much oxygen)

Investigations

- Copy of most recent clinic letters from paediatrician and respiratory specialist.
- Copy of most recent pulmonary function/spirometry
- Copy of a recent chest X-ray/CT if none available on local radiology system (requested through PACS).
- Results of any recent blood tests and any sputum cultures (with antibiotic sensitivities)
- If child has not had an anaesthetic at JCUH please obtain last anaesthetic chart.

Plan

- Children with cystic fibrosis are not generally suitable for day case procedures and may need an HDU bed depending on severity of illness.
- Children with cystic fibrosis related diabetes need a consultant paediatric diabetologist perioperative plan as per the *diabetes guidelines*.
- Children with cystic fibrosis will need pre-operative admission to a side room to protect them from potential infection and for pre-op physiotherapy.
- Children with Cystic Fibrosis should have a plan from the local Cystic Fibrosis team. Some may require antibiotics prior to admission. In some cases the cystic fibrosis team also request test of investigations to be done whilst the child or young person is under anaesthesia. Please clarify this with them an obtain forms if they are needed.

ALL CHILDREN WITH CYSTIC FIBROSIS SHOULD BE REFERRED TO CONSULTANT PAEDIATRIC ANAESTHESIA PRE ASSESSMENT CLINIC FOR PLANNING/REVIEW.

References

- Chapter 16, Respiratory Disorders, T. LISSAUER, G. CLAYDEN, Illustrated Textbook of Paediatrics, Third Edition, Mosby Elsevier 2007, Pages 261-283.

Diabetes

Type I Diabetes: An autoimmune condition which causes the pancreas to stop producing insulin. This is the type of diabetes most commonly seen in children.

Type II Diabetes: Less common in children. A condition where the pancreas produces insulin that does not work properly, or produces less insulin than the body requires. It is often (but not always) linked to obesity, genetics (family history) and ethnicity (more common in those of South East Asian origin).

Diabetic Ketoacidosis (DKA): A complication of diabetes (usually type 1 but can be related to any type) where a severe lack of insulin leads very high blood glucose and high blood/urine ketones. **It is life threatening and requires immediate treatment – please contact anaesthetic registrar on call immediately if you suspect this.**

History

- What type of diabetes is it?
- Is it "brittle" or difficult to manage diabetes?
- Insulin injections or pump? Which types of insulin? (Be aware, lots of them sound very similar but aren't! Need to document insulin name AND device, e.g. Humulin M3 Kwikpen)
- Any other medications?
- Do they have a CGM (continuous glucose monitor)? Which one?
- How often do they check blood glucose? How do they check/sites?
- What do their blood sugar levels usually run at?
- Who manages blood sugars? (Child or parents or both?)
- Who do they see in clinic? (Paediatric diabetes vs Young Adult Diabetes service)
- How often do they "hypo"? What symptoms do they get?
- Have they been admitted to hospital within the last 12 months for their diabetes?
- Any critical care/ICU admissions with diabetes/DKA? Where? When?
- Any related conditions? (Coeliac, hypothyroid? Rare syndromes?)
- Any complications from diabetes? (Eyesight, kidney function, numb feet?)
- Ever had an Islet Cell Transplant? (Rare treatment for those with Type 1 diabetes who are prone to severe hypoglycaemic episodes)

Examination

- Height, Weight, BMI
- Capillary Blood Glucose (BM) if not done one recently (that day).
- Blood Pressure
- Please check results on any continuous monitors and pumps and document type/functions etc.

Investigations

- Blood sugar diary if one is kept and copy of most recent clinic letter.
- HbA1c result (should be within last 12 weeks) **Consider postponing surgery if >53mmol/mol.**
- Copy of diabetes plan - *should have a preoperative diabetes plan from their consultant in notes.*
- Contact details for diabetes specialist nurse.

Plan

CHILDREN WITH DIABETES MUST HAVE A DIABETES PLAN FROM PAEDIATRICIANS FILED IN NOTES. IF THIS PLAN IS NOT AVAILABLE, PLEASE CONTACT THE DIABETES TEAM. ELECTIVE SURGERY CANNOT GO AHEAD WITHOUT THIS PLAN.

- Please book ward bed (check plan as some children need to come in night before surgery).

Refer to Consultant pre assessment clinic:

- Children with rare diabetes and diabetes syndromes including, but not limited to:
- Neonatal Diabetes (diabetes diagnosed under age 9 months - can disappear but recur in teenage years)
- Wolfram Syndrome (DIDMOAD)
- Alström Syndrome (Includes Type 2 Diabetes)
- Type 2 Diabetes
- Type 3c Diabetes
- MODY (Maturity Onset Diabetes of the Young)
- Diabetes caused by hemochromatosis, cystic fibrosis or pancreatitis
- Diabetes related to mitochondrial disease
- Diabetes related to steroids, cancer treatment or cancer
- Children with no hypo awareness
- Children with brittle diabetes or who have had Islet Cell Transplant
- Children with recent (within 6 months) or frequent admissions with DKA
- Children who are on tablet/oral medication as treatment for diabetes (+/-insulin)
- Children with anxiety or needle phobia.

References

- https://www.diabetes.org.uk/guide-to-diabetes/complications/diabetic_ketoacidosis
- https://www.diabetes.org.uk/Diabetes-the-basics/Other-types-of-diabetes/Alstrom-Syndrome
- https://www.diabetes.org.uk/diabetes-the-basics/related-conditions
- https://www.diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/treating-your-diabetes/islet-cell-transplants

Trisomy 21 (Down's syndrome)

Down's Syndrome/Trisomy 21 is a genetic condition caused by an extra copy of chromosome 21. It is the most common chromosomal condition in children and can affect multiple systems. There is an association with a higher risk of certain medical conditions which include:

- Cardiac abnormalities – ASD/VSD/AVSD.
- Learning disabilities.
- Atlanto-axial subluxation.
- Thyroid disease.
- Sleep apnoea.
- ENT/Airway concerns.

History

- Diagnosed antenatally, at birth or later? How many weeks of pregnancy when they were born?
- Any neonatal intensive care/special care? Were they intubated? How long were they in NICU/SCBU/hospital for after birth?
- Who does the child see for conditions related to Trisomy 21? Which consultants? Where? How often?
- Any cardiac conditions? Previous surgery? Where/when?
- Any recent echo? Where/when?
- Any thyroid issues? Treated?
- Any sleep apnoea or snoring or history of disordered breathing during sleep? Sleep study?
- Any breathing issues? Chest infections? Any hospital admissions with chest?
- Any teeth issues? Large tongue/drooling?
- Any unexplained bruising/bleeding? Any history of leukaemia and chemotherapy - if yes, when? Any issues with IV access?
- Any stomach/bowel issues? Constipation? Reflux? Vomiting? NG/PEG? Any previous abdominal surgery?
- Any neck issues? (Instability) Has the child complained of pins and needles in limbs? Has the child recently become clumsier? This would raise concerns regarding atlanto axial subluxation.
- Any weakness to arms? Any arm tingling when moving neck? Does the child complain of funny sensations to arms/hands?
- Any anxiety around hospitals? Bloods/cannulas? Anaesthetics?
- Mainstream school? Special Educational Needs? Special school? Name of school.
- Do they have a social worker? Name and contact details.
- Other agencies involved in their care? (e.g. physio, CAMHS, SALT, psychology) Names/contact details.

Examination

- Height/weight and BMI plotted – this must be on **SPECIFIC Trisomy 21 GROWTH CHART.**
- Check for power/paresthesia in arms when moved- any weakness? Document.
- Neck movement. Able to look up? Any tingling in arms when moving their head?
- Large tongue? Able to see tonsils? Airway assessment - may be at risk of difficult airway.

Investigations

Please obtain:

- Latest clinic letter from cardiology and copy of most recent echocardiogram/ECG.
- Any letters from specialty Consultants – respiratory/endocrine/ENT.
- If history of sleep apnoea, copy of sleep study report
- Latest clinic letter from paediatrician.
- Any motility studies/gastric emptying/barium swallow if done
- Any CAMHs/psychology letters if input for anxiety or learning disabilities
- Any emergency healthcare plan if family have one
- Copy of any recent blood results – TFT's/FBC/U+E etc.
- Any physio letters if has input, particularly important if neck issues
- If any arm weakness or history of neck issues may need flexion/extension neck x-rays.
- If the child has not had any anaesthetics here at JCUH before, please obtain copy of last anaesthetic chart from wherever they were treated.

Plan

- Children who are well, with no cardiac disease, no regular hospital follow up do not need referral.
- Children with recurrent chest infections or sleep apnoea may not be suitable for day case and may need discussion.
- Consider if HDU bed is required.

Please refer to other pathways for specific conditions and actions required.

Refer to Consultant pre assessment clinic:

- Children with any congenital heart disease
- Children with significant respiratory disease
- Children with anxiety
- Children with neck issues or potential difficult airway
- Children with significant acid reflux or gastrointestinal problems
- Children with previous chemotherapy/leukaemia
- Children with unexplained bleeding/bruising that has not been investigated

References

- https://www.stanfordchildrens.org/en/topic/default?id=down-syndrome-trisomy-21-90-P02356
- Chapter 8, Genetics, T. LISSAUER, G. CLAYDEN, Illustrated Textbook of Paediatrics, Third Edition, Mosby Elsevier 2007, Pages 105-122.

Epilepsy and Fits

Seizure: Abnormal movements/behaviour caused by abnormal brain activity. Could be whole body shaking, drop attacks, single limb twitching, blank episodes, eye rolling, a combination of these or other unusual behaviours.

Febrile convulsion/seizure: A seizure associated with a fever in the absence of another cause, and not related to a neurological infection.

Epilepsy: Recurrent seizures that are not febrile convulsions, in the absence of an acute brain injury or neurological insult. Children may have seizures but not have a diagnosis of epilepsy.'

History

- Any history of epilepsy, fits, faints, funny turns or seizures?
- Does the child have a syndrome associated with their fits?
- Who does the child see for their epilepsy/fits? Consultant/hospital/specialist nurse?
- What age were epilepsy/fits diagnosed?
- Have the seizures been investigated? Where? By who?
- What type of seizures (whole body shaking, one limb shaking/twitching, eye rolling, blank episodes, drop attacks, floppy episodes, chewing/abnormal mouth movements, does the child have? How often?
- What medications are they on? Any recent changes? Levels checked in last 12 weeks?
- Any recent (in the last 12 weeks) changes to seizure frequency? More/less?
- Any triggers for seizure? Sleep deprivation? Illness? Vomiting? Inability to eat? Menstruation? etc.
- Any hospital admissions for seizures within the last 6 months?
- Have they even been in intensive care for seizures?
- Ever had status epilepticus?
- Do they have an epilepsy management plan?
- In teenagers and older children, any history of drug use or drug related seizures?
- If awaiting investigations, any appointments? Who with? Where? Any results so far?

Examination

- Height, weight.
- Any neurological deficit? (Weakness down one side, wobbly walking etc.)

Investigations

- If children have had recent (12 weeks) bloods for anti-epileptic medication levels, and they are within range with no change in medication, these do not need repeating. Date/results should be documented.
- Most recent clinic letters – paediatrician and paediatric neurologist (if available).
- Copy of EEG report
- Copy of epilepsy management plan
- Discharge letter if recent hospital/ICU admission
- Name & contact details of epilepsy specialist nurse

Plan

- Children who have uncomplicated febrile seizures only do not need referral to consultant pre-assessment clinic.
- Children with epilepsy with a predictable seizure pattern, infrequent seizures and stable medical management (see recent clinic letters) do not need referral to consultant pre-assessment clinic but discuss if you are concerned regarding whether they require a ward bed.

Refer to Consultant pre assessment clinic:
Children with epilepsy syndromes including, but not limited to:

- Agenesis of corpus callosum (Aicardi Syndrome)
- Angelman Syndrome
- Dravet Syndrome
- Lennox Gastaut Syndrome
- Rett Syndrome
- Ring Chromosome 20 Syndrome
- Sturge Weber Syndrome
- West Syndrome (Infantile spasms)
- Significant structural abnormality of the brain, previous brain surgery for epilepsy, VP/LP shunts related to epilepsy
- Children with difficult to manage epilepsy - multiple drugs and frequent seizures
- Children who have had a recent increase (within the last 12 weeks) in seizure frequency
- Children who have been admitted to hospital with seizures within the last 6 months
- Children who have required intensive care admission for seizures
- Children with unexplained seizures/fits/faints/funny turns or those awaiting investigation

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References

- https://www.epilepsy.com/learn/professionals/refractory-seizures/epidemiology-and-difficult-treat-epilepsies/difficult-treat
- Chapter 27, Neurological Disorders, T. LISSAUER, G. CLAYDEN, Illustrated Textbook of Paediatrics, Third Edition, Mosby Elsevier 2007, Pages 449-472.
- https://www.epilepsysociety.org.uk/childhood-epilepsy-syndromes#.XsZ0OS-ZNdg

Facial Conditions/Difficult Airway

There are a range of conditions, circumstances and genetic syndromes which put children at greater risk of a difficult airway. This is rare in the paediatric population. It is the situation in which an anaesthetist struggles to mask ventilate, visualise the vocal cords with direct or indirect laryngoscopy, intubate the patient, ventilate via a supraglottic device or a combination of these factors.

History

- Ever been told they have a difficult airway in the past? Under what circumstances?
- Any previous or current tracheostomy?
- Any history of sleep apnoea or snoring? Have they had a sleep study?
- Any neck injuries/factures to c-spine or surgery in the past?
- Any facial injuries, jaw fractures or surgery in the past?
- Any mouth or dental surgery in the past?
- Any surgery to airway in the past? (Trachea, vocal cords, nasopharynx, tonsils, bronchoscopy, panendoscopy?) What for?
- Any lymphangioma/haemangioma to face/neck?
- Any history of being in neonatal or paediatric intensive care? How long for? Intubated? Tracheostomy?
- Any history of syndromes/conditions? (see list below)
- Do they have a letter from an anaesthetic team/hospital regarding their airway?

List of Genetic Syndromes that increase risk

- Trisomy 21 (Down's Syndrome)
- Apert Syndrome
- Beckwith-Wiedemann Syndrome
- Pierre-Robin Sequence
- Klippel-Feil Syndrome
- Treacher-Collins Syndrome
- Mucopolysaccharidoses (Hunter's Syndrome, Hurler's Syndrome)
- Crouzon Syndrome
- Goldenhar Syndrome
- VACTERL/VATER Association
- Pfeiffer Syndrome
- Cleft lip and palate or vocal cord abnormalities (including papilloma)
- Tracheoesophageal fistula (repaired or not)

Examination

- Height, weight, BMI (Obesity alone is a risk for difficult airway)
- Examine mouth - document if very large tongue, very prominent and/or large front teeth, any wobbly teeth and where, if very small lower jaw, any facial asymmetry
- What is the mouth opening like? How many cm? Is it obviously reduced?
- Neck movement - can they look up without leaning backwards? Can they move head forwards?

Investigations

- Copies of previous anaesthetic charts, especially important if last anaesthetic in a different trust.
- Copy of any difficult airway paperwork if known to have difficult airway
- Copies of PICU/NICU discharge letters
- Any radiology if had imaging of neck/jaw related to surgery or injury
- Any clinic letters if seen by craniofacial consultants
- Copy of sleep study results if history of obstructive sleep apnoea

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Plan

- Children with difficult airways but a longstanding tracheostomy do not need consultant pre-assessment if surgery is not related to the airway, but would still need highlighting to the consultant for the list ahead of time.
- Children with risk factors for difficult airway but have had an anaesthetic in the last 12 months that is documented as no airway complications and no difficulty ventilating do not need consultant pre-assessment, but would still need highlighting to the consultant for the list ahead of time.

Refer to Consultant pre assessment clinic:

- Children who have risk factors for difficult airway and any of the above genetic conditions
- Children with obesity (BMI > 98th centile, equivalent to BMI >28 if over 15 years old)
- Children with associated cardiac/respiratory/GI complications and any risk factors for difficult airway
- Children having any airway, maxillofacial or ENT surgery with above risk factors
- Any child who is known to have a difficult airway and NO tracheostomy or permanent airway device.
- Any child with a question as to whether their airway has been difficult in the past.

References

- https://bjaed.org/article/S2058-5349(17)30135-X/pdf
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6573050/
- http://ether.stanford.edu/library/pediatric_anesthesia/airway%20management/PediatricUpperAirway.pdf
- https://academic.oup.com/bjaed/article/15/1/7/257339
- https://www.rcpch.ac.uk/sites/default/files/2018-03/boys_and_girls_bmi_chart.pdf

Infection Control

Please refer to trust infection control policy on the intranet as this is regularly updated. If you are unsure, please contact infection control team for advice.

MRSA

Methicillin Resistant *Staphylococcus Aureus* (MRSA) Colonisation is managed with eradication therapy.

- **Patients previously positive for MRSA (emergency admissions):** If the previous positive isolations of MRSA all precede the current admission, then the patient requires one negative MRSA screen during the current admission to be classified as low infection control risk.
- **Patients previously positive for MRSA (elective admissions):** For elective admissions of previously MRSA-positive patients, if the patient had a negative MRSA screen as part of pre-admission screening less than 8 weeks prior to admission then this is equivalent to a negative MRSA screen after admission. In other words the patient is classified as low infection control risk if he/she has one negative pre-admission screen or one negative screen during the current admission.
- **Patients positive for MRSA on the current admission:** If the patient has a positive screen for MRSA during the current admission (or has a positive elective pre-admission screen) then they need 3 consecutive negative weekly MRSA screens during the current admission to be classified as low infection control risk for the purposes of the current admission. Such patients will still be classified as "previously MRSA positive" and will therefore only be classified as low infection control risk on future admissions if they fulfil one of the two criteria above.

ESBL

Extended Spectrum Beta Lactamase (ESBL). These are bacteria that are resistant to many forms of penicillin's and cephalosporins. Two main bacteria are klebsiella and Escherichia coli. These bacteria are normally found in the gastrointestinal tract. Infection commonly occurs via the faecal oral route or in patients with urinary catheters. Colonisation does not require treatment but infection will require antibiotics, with advice from the microbiology. These patients will require isolation.

- There are increasing numbers of patients who are colonised or infected with ESBL-producing coliforms, Amp C-producing organisms or other multi-resistant Gram negative bacteria (MRGNB) or with vancomycin-resistant Enterococcus (VRE). These patients should generally be isolated in a single room.
- Patients who fall into the groups below should be screened for carbapenemase-producing enterobacteria:
    - Previously colonised or infected with a carbapenemase-producing enterobacteria.
    - Admitted to a hospital abroad in the last 12 months.
    - Inpatient in a hospital in the UK known to have a serious outbreak of carbapenemase-producing enterobacteria in the last 12 months.
    - Any patient in the same bay as a patient found to be colonised or infected with a carbapenemase-producing enterobacteria.
- For organisms other than carbapenemase-producing bacteria, isolation should continue until the patient is deemed to be of low infection risk by the infection prevention and control team.
- A patient with any carbapenemase-producing enterobacteria or a carbapenemase-producing Pseudomonas aeruginosa must remain in isolation for the entire duration of the admission. Negative culture results do not enable the patient to be removed from isolation.

Plan

- Ask if the patient has a history of ESBL or MRSA colonisation / infection.
- Check for previous MRSA/ESBL status and dates of any recent swabs.
- A patient with MRSA may require eradication therapy in advance of surgery.
- Patients with colonisation of MRSA or ESBL will require isolation to prevent further spread.
    - Check operating list position – will need to be last on list.
    - Check theatre list shows infection control concern.
    - Inform the ward regarding infection control status.
    - Make sure all details documented in patients pathway document.

References

- Methicillin-resistant Staphylococcus aureus (MRSA) Guidance for nursing staff. (2005).
- Extended-spectrum beta-lactamases (ESBLs): guidance, data, analysis - GOV.UK. (n.d.). Retrieved March 19, 2021, from https://www.gov.uk/government/collections/extended-spectrum-beta-lactamases-esbls-guidance-data-analysis
- Varley, A. J., Williams, H., & Fletcher, S. (2009). Antibiotic resistance in the intensive care unit. Continuing Education in Anaesthesia, Critical Care and Pain, 9(4), 114–118. https://doi.org/10.1093/bjaceaccp/mkp017

Low weight and faltering growth

The North East has one of the highest child poverty rates within England (endchildpoverty.org, 2020). The prevalence of high poverty equates to poor nutrition leading to poor growth. Being underweight can cause problems whilst under anaesthetic and consideration needs to be taken of this at pre assessment.

History

- Does the child or young person have a reduced appetite?
- Does the child feel tired all the time?
- Does the child seem weaker than usual?
- Does the child or young person have lots of infections and take a long time to recover?
- Do wounds taking a long time to heal?
- How is the child managing in school? Poor concentration?
- Does the child feel cold? Increased clothing worn?
- What is the child or young person's mood like? Low mood or depression?
- Any recent changes in behaviour, such as being unusually irritable, slow or anxious?
- Any parental concerns regarding weight and eating?
- Has the child or young person seen a GP or paediatrician about weight? Please record details.
- Any diagnosis of eating disorder? Who do they see for this? Please take names and contact details and of current treatment plan.

Please also record details of:

- Long-term health conditions
- Mental health and eating disorders
- Behavioural conditions
- Consider social/safeguarding if any concerns
- Enquire more about foods being offered/mealtimes
- Is weight loss rapid?
- Normal dietary intake each day.
- Please document all medications – prescribed and non-prescribed including doses.
- Please document usual daily dietary intake.

Examination

ALL children should have a recorded weight (kg) and height or length (cm) and wherever possible, should have their BMI plotted (over 2 years old). Please document what they are wearing when this is done. Growth charts are available on evolve. Children with anorexia may be very frightened about being weighed and if you feel it is not appropriate please document this and discuss with Consultant team, Children who refuse to be weighed should be referred for Consultant notes review.

- Dental issues? Any signs of persistent vomiting?
- Look for any signs that may indicate safeguarding concerns and document these fully.

Investigations

- Please request any paediatric or CAMHS letters and reports from other Trusts.
- Review baby check book (if less than 2 years old) – please record birth weight and centile.
- Please check for any blood results and print if abnormal.

Plan

Please refer children meeting the criteria below or any other children where you have concerns regarding faltering weight (even without diagnosis) to Consultant pre assessment clinic.

Infants and children under 2:

- A fall across 1 or more weight centiles if birthweight was below the 9th centile.
- A fall across 2 or more weight centiles if birthweight was between the 9th and 91st centiles.
- A fall across 3 or more weight centiles if birthweight was above the 91st centile.
- When current weight is below the 2nd centile for age, whatever the birthweight.
- Parents who refuse to allow child to be weighed without valid reason.

For children over 2 years of age:

- if the BMI is below the 2nd centile this may reflect either undernutrition or a small build
- If the BMI is below the 0.4th centile this suggests need for assessment and intervention.
- Anorexia nervosa or other eating disorder – diagnosed or suspected.
- Children who refuse to be weighed.

Please also consider:

- Referral to Health visitor for increased input and monitoring at home.
- Please contact the GP if there are weight concerns to make them aware of these.
- Safeguarding referral if appropriate.
- Dietary advice should be provided to all carers of children who are underweight.

If weight loss is rapid or associated with other symptoms the child may need referral to Paediatrics. It may be appropriate to refer to on call paediatric team so that the child can be seen urgently.

References

- End Child Poverty (2019). Child poverty in your area 2014/15 - 2018/19 | Improving the lives of children and families. [online] Available at: https://www.endchildpoverty.org.uk/child-poverty-in-your-area-201415-201819/
- National Institute for Health and Car Excellence (2017). Faltering growth - NICE Pathways. [online] Available at: https://pathways.nice.org.uk/pathways/faltering-growth#content=view-node%3Anodes-interventions
- College of Physicians and Surgeons of British Columbia (2018) Low body mass index and anaesthetic-surgical risks | College of Physicians and Surgeons of British Columbia. [online] Available at: https://www.cpsbc.ca/for-physicians/college-connector/2018-V06-02/10 [Accessed 22 Mar. 2021].

Kidney (Renal) Conditions

Renal Failure: An inability of the kidneys to function as expected, leaving them unable to remove waste products, salts and water from the bloodstream.

Hemodialysis (HD): A process where blood is filtered through a machine to remove waste products, salt and water. It partially replaces the function of the kidneys.

Peritoneal Dialysis (PD): A process where a special fluid is places into the abdominal cavity via a surgically implanted tube (PD catheter of Tenkhoff Catheter) and then drained and is a way to remove excess salt and waste products from the body. It partially replaces the function of the kidneys.

History

- What is the kidney problem? Infections? Stones? Kidney failure?
- Where are they seen for their kidneys? Which consultant? When? Paediatrics? Urology? Renal/Nephrology? Haematology or Immunology? Please record contact details.
- Do they regular blood/urine tests? Results?
- Have they been investigated for recurrent infections or stones? Where? Results? Discharged?
- What medications does the child take? Doses?
- Any fluid or dietary restrictions? How much fluid per day?
- Have they ever needed dialysis or critical care for kidneys? When? Where?
- If they have haemodialysis, do they have a line or a fistula? How often do they dialyse? Where?
- If they have peritoneal dialysis, continuous or intermittent? How often?
- **What is the child's "dry" weight?** This is very important for post op care. What is their usual BP?
- If they dialyse, do they produce any urine? If they have a fistula, where is it? Working well?
- Any problems with cannulas or lines in the past? Any difficulties with venous access?
- Are they anticoagulated? If on warfarin, INR?
- Any history of transplant? When? Where? Still working?
- Any previous surgeries related to bladder or kidneys? What/what for? Where?
- Does the child use a catheter? Intermittent catheterisation or permanent? Where (suprapubic, mitrofanoff or urethral)?
- Any other agencies involved? Social worker? Specialist nurse?

Examination

- Height and weight. *Document if weight is pre or post dialysis or no dialysis.*
- Blood Pressure (do not check BP on an arm with a fistula, if checked on a leg please document this)
- Check any sites of lines or dialysis catheters or fistulas and document location/condition.
- Urine dipstick

Investigations

- Most recent clinic letter(s) and copy filed in notes from paediatrician and renal team.
- If child has not had previous anaesthetic at JCUH please obtain last anaesthetic chart.
- Most recent blood results and copies of any historic test results - scans, urodynamics, renal function tests, bloods, microbiology.

Plan

- Children, who only have recurrent urinary tract infections, have been investigated previously, and who only require antibiotics as treatment do not need referral to consultant pre-assessment.
- Children with recurrent UTIs should have urine cultures and sensitivities checked to ensure infection control measures are followed if ESBL or Amp C etc.
- Not all patients who have renal problems will be suitable for treatment at South Tees. Children who require post-operative renal support and involvement of paediatric nephrology should be referred to the Tertiary Centre. Please warn parents of this if the child is on regular dialysis and requires surgery.

Refer to Consultant pre assessment clinic:

- Children on any form of dialysis.
- Children who have fluid and dietary restrictions because of renal disease
- Children who still have an AV fistula (whether currently used or not)
- Children with renal transplants
- Children on an ACE inhibitor (drugs ending -pril)
- Children with complications of renal disease - high blood pressure, narrowed blood vessels, difficult venous access or problems with lines
- Children with reduced kidney function measured by previous renal investigations.
- Children with previous critical care admissions related to renal/kidney issues
- Children with renal/kidney syndromes or procedures including, but not limited to:
- Bladder Outlet Obstruction
- Horseshoe Kidney
- Polycystic Kidney Disease
- Syndromes - Alport Syndrome, Fanconi Syndrome, Good pasture's disease, Wilson's Disease, Oculocerebrorenal Syndrome (Lowe Syndrome), IgA nephropathy, Tuberous Sclerosis, Granulomatosis with Polyangiitis (Previously called Wegener's disease).
- Nephrotic Syndrome
- Nephritic Syndrome
- Haemolytic Uraemic Syndrome
- Mitrofanoff Procedure
- Recurrent renal stones
- Henoch Shönlein Purpura (HSP)
- VACTERL/VATER association

References

- https://www.nhs.uk/conditions/granulomatosis-with-polyangiitis/
- M. CLATWORTHY, Nephrology: Clinical Cases Uncovered, Wiley-Blackwell 2010.

Liver Conditions

Liver disease in children is uncommon. Care of these children is usually in partnership with a Children's Hospital and due to the complexities of their management most children will be referred there direct rather than listed at South Tees. Liver disease can be split into acute and chronic.

Acute liver disease/failure the liver is generally structurally normal but not working normally.

Chronic liver disease/failure there is a developed or developing process of cirrhosis which is irreversible. Causes of liver disease in children include:

Acute	Chronic
Vascular – CHD, asphyxia, Budd Chiari.	**Extrahepatic biliary atresia**
Cancers – lymphoma, leukaemia, hepatocellular carcinoma.	**Biliary obstruction** – *choledochal cyst, cystic fibrosis, sclerosing cholangitis.*
Infective – Sepsis, Hepatitis A-G, EBV, HIV, Adenovirus, Parvovirus B19, Leptospirosis, CMV.	**Infective** – Hepatitis B or C, CMV.
Metabolic - Wilson's disease, alpha-1-antitrypsin deficiency, haemochromatosis, tyrosinaemia, fatty acid oxidation.	**Metabolic** – Wilson's disease, alpha-1-antitrypsin deficiency, haemochromatosis, tyrosinaemia.
Drugs – paracetamol, drugs of abuse, isoniazid.	**Autoimmune**
Other – Sickle Cell, post cardiac surgery, toxins.	

There are a number of complications of a liver that is not working properly.

- Portal Hypertension.
- Swollen tummy due to accumulation of ascites. This can affect breathing.
- Changes in the way the body handles doses of drugs.
- Problems with blood clotting.
- Renal impairment.
- Encephalopathy – decreased conscious level.

History

- What is diagnosis? When was diagnosis made?
- What are current symptoms?
- What treatments are ongoing? Medications?
- Any weight loss recently?
- Diet? Any dietary restrictions or supplements?
- Any reflux or dyspepsia?
- Any ascites? Tummy swelling?
- Any problems with bleeding – gum bleeding when brushing teeth, nosebleeds?
- Any jaundice?
- Any problems with diarrhoea, constipation or nausea and vomiting?

Examination

As well as a standard set of observations and height and weight measurements look for signs of liver disease such as:

- Muscle wasting.
- Spider naevi
- Swollen tummy?
- Bruising?
- Jaundice?

Investigations

- Please request last anaesthetic chart if last anaesthetic not performed here at James Cook.
- Please request clinic letter from last paediatric consultation locally and last clinic letter from liver team.
- Please obtain blood results – FBC, U+E, LFTs, Coagulation, and Glucose.
- Please obtain last ECG and ECHO if performed.
- Please calculate Child-Pugh risk assessment once results available.

*Patients will not come to clinic with marked encephalopathy. Mild confusion is Grade 1.

Score	A 5-6	B 7-9	C >9
Mortality Score	**<5%**	**5-50%**	**>50%**
Bilirubin (micromoles/L)	<25	25-40	>40
Albumin (g/L)	>35	30-35	<30
PT (sec prolonged from max)	1-4	4-6	>6
Ascites	None	Moderate	Marked
Encephalopathy	None	Grade 1-2*	Grades 3-4*

Plan

Please refer all patients with liver disease to Consultant Paediatric Anaesthetic Clinic.

- Please warn parents of the possibility of being transferred to a Liver Centre or Children's Hospital, particularly if there is any blood abnormality.
- Care of these patients is by multidisciplinary approach and it is therefore very important to make sure that details are obtained of all professionals involved in the care of the child as early as possible.

References

- Continuing Education in Anaesthesia Critical Care & Pain, Volume 10, Issue 1, February 2010, Pages 15–19, https://doi.org/10.1093/bjaceaccp/mkp040
- Continuing Education in Anaesthesia Critical Care & Pain, Volume 14, Issue 5, October 2014, Pages 207–212, https://doi.org/10.1093/bjaceaccp/mkt057

Metabolic Conditions

The metabolic pathways within our body are responsible for the conversion of food and oxygen into energy, building blocks for other body processes and the elimination of waste. They consist of a series of life sustaining chemical and enzymatic reactions. Metabolic conditions occur when there is an error at some stage in one of these processes. This can either lead to a substance not being produced, a substance not being removed or a reaction not proceeding as usual. The effects of the metabolic condition depend on the number of 'errors' the position of errors in a pathway or the pathway affected.

Some of the more common metabolic conditions include:

- Galactosaemia
- Glycogen storage diseases
- Fatty acid metabolism disorders
- MMA
- Phenylketonuria
- Maple Syrup Urine disease
- Glycogen storage diseases (types 1-9)
- Mucopolysaccharidosis – Hunter, Hurler, Sanfillippo, Morquito A and B, Maroteaux-Lamy, Sly.
- Ornithine transcarbamylase deficiency
- Lipidoses (Tay-Sachs, Gaucher, Niemann–Pick, Fabry, Krabbe disease)

History

- Diagnosis (if known)? When was the child diagnosed?
- Name of local paediatrician and metabolic paediatrician. Details of last clinic visits?
- Any signs of infection at present? If child is unwell in any way surgery likely to be postponed.
- Current symptoms?
- Current treatment? Medications and doses? Dietary restrictions?
- Any recent problems or exacerbations?
- Any kidney support or dialysis? Renal team responsible? Dates of dialysis?
- Any recent or previous critical care admissions? Why? How long? Treatments?
- Any previous GA's? Problems?
- Any problems when meals missed/blood glucose issues?
- Any breathing problems/OSA?
- Any heart problems?

Investigations

- Please obtain copies of last anaesthetic chart if last anaesthetic was not done at James Cook.
- Please obtain copies of letters from last paediatrician consultation locally and also last consultation with metabolic paediatrician.
- Latest blood glucose result (if done).
- Latest FBC, U&E and any blood gasses. These may need to be repeated but this decision will be made at Consultant review.
- Latest ECG and ECHO if performed. If none have been done there is no need to order. This will be reviewed at Consultant assessment and referral made if needed.

Plan

All children with metabolic conditions should be referred to Consultant pre assessment clinic.

- Children with these conditions require multidisciplinary management so it is important to obtain as much information as possible about all professionals involved in their care as early as possible.
- Must be done on Consultant anaesthetist list.
- Must be FIRST on list.
- Should have overnight bed provisionally booked – Consultant will decide if PCCU bed also needed.
- **Please print out the information sheet for the condition from the following website and place in to the patients notes:**
  https://bimdg.org.uk/guidelines/guidelines-child.asp
  This link leads to the BIMDG site – British Inherited Metabolic Diseases Group. If you select the Emergency Guides section and then look for the leaflet for the condition within the Prospective Management of Surgery tab.

References

- Continuing Education in Anaesthesia Critical Care & Pain, Volume 11, Issue 2, April 2011, Pages 62–68, https://doi.org/10.1093/bjaceaccp/mkq055
- https://bimdg.org.uk/guidelines/guidelines-child.asp

Neuromuscular Conditions

Children may present with a number of neuromuscular conditions and sometimes with an unknown or suspected neuromuscular condition. These conditions generally fall into one of the following groups:

Condition	Cause	Effects
Myasthenic Syndromes e.g. Myasthenia Gravis Transient neonatal myasthenia gravis, juvenile myasthenia gravis.	Decreased absolute or relative level of acetylcholine	• Rare in childhood. • Often associated with Thymoma in children. • In neonate can occur due to maternal antibody transfer. • Girls more often effected. • Muscle weakness and fatigability.
Myotonia e.g. Myotonic Dystrophy (AD), Schwartz-Jampel syndrome, Thomsen's disease, Paramyotonia.	Delayed inactivation of sodium channels after action potential	• Difficulty initiating muscle contraction and delayed muscle relaxation.
Myopathies These are a group of inherited disorders affecting the function of muscles. They can be split into congenital myopathies, mitochondrial myopathies and metabolic myopathies.		
Mitochondrial myopathies e.g. MELAS, MERRF, Kearnes-Sayre, Leigh Syndrome.	Abnormality of mitochondrial function *(see separate guideline)*	• Most common cause of muscle weakness in children – 1:4000 incidence.
Muscular Dystrophies The two commoner presentations of this condition are Becker and Duchenne muscular dystrophy; however more unusual variants may also be reported. The pre assessment process for all is the same. e.g. Emery- Dreifuss muscular dystrophy, congenital muscular dystrophy, Facioscapulohumeral muscular dystrophy, autosomal recessive limb girdle dystrophy.		
Duchenne Muscular Dystrophy	Absent or reduced levels of dystrophin	• Chronic X linked recessive condition. • Weakness generally beginning before the age of 8. • Affects pelvis and thigh muscles (difficulty standing – wheelchair bound) initially. • Can affect respiratory and cardiac muscles. • Female carriers have increased cardiac risk later in life.
Becker Muscular Dystrophy	Absent or reduced levels of dystrophin	• X linked – slower onset than Duchenne muscular dystrophy – presents around age 11. • Can develop dilated cardiomyopathy as they get older.
Unknown/suspected condition	Unknown	• Muscle weakness • Slow development • Poor mobility

History and Examination

- Is there a diagnosis – what? Name of paediatrician and paediatric neurologist.
- Has the child been seen by the Newcastle Muscle or Mitochondrial team or at the Centre for life?
- How long as the child had muscle weakness?
- When is the weakness worse – early or late in day?
- Which muscle groups/areas are affected?
- Any medications?
- Is the weakness getting worse? At what rate?
- Any problems with cold?
- Any problems with blood sugars?
- What can the child do – walking, running, climbing, getting up from floor/chair?
- How does the child sleep? Position? Number of pillows?
- Does anyone else in the family have muscle problems? Who? Details?
- Has the child had a previous GA? Where? Any problems?
- Do the parents have a letter from an anaesthetist previously regarding anaesthetic issues?
- How often does the child get chest infections? Number per year?
    - How long do chest infections last (how many cycles of antibiotics?)
    - Does the child come into hospital with infections?
    - PCCU admissions?
    - Home oxygen?
- What is the child's functional capacity like – what can they do before they get tired?

Investigations

- Please get copies of last clinic letters for both paediatrician and any paediatric neurologist.
- Please obtain copy of most recent anaesthetic chart if not done at South Tees.
- Please request full notes.
- Please check last blood results – last CK, potassium, bicarbonate lactate, pH are particularly important (may be in notes as a blood gas).
- ECHO – please check whether child has had Echocardiogram or Cardiac review and obtain copy (Important for ALL Muscular dystrophy patients)
- ECG – particularly in muscular dystrophy patients. ECG changes common. Please get latest ECG.
- Spirometry result – if available.
- Blood glucose level – patients can be sensitive to fasting.
- Full set of observations, including blood pressure.

Plan

All children with a history of muscle weakness (whether investigated or not) or who are reported to easily get tired during exercise require referral to Consultant Anaesthetist pre assessment clinic. They may only require notes review.

References

- Anaesthesia for children with Neuromuscular disease, Vindra Ragoonanan and William Russell, Continuing Education in Anaesthesia, Critical Care and Pain, Vol 10, Number 5, 2010.
- Paediatric Anaesthesia, Edited by Edward Doyle. Oxford University Press, 2007.

Obesity / Elevated BMI

The North East has one of the highest prevalence of obesity in children in England (Public Health England, 2020), with the prevalence of severe obesity in year 6 pupils increasing year by year. It is essential to 'Make Every Contact Count' and provides health promotion information regarding healthy diet and regular exercise. Being overweight or obese can increase risks associated with surgery.

History and Examination

- **ALL** children should have a recorded weight (kg) and height (cm) and wherever possible, should have their BMI calculated.
- BMI should be plotted onto a BMI centile chart (available in each PAC room).
    - A child who has a BMI above the 91st centile is classed as overweight and clinical intervention should be considered.
    - A child who has a BMI which is at the 98th centile or above is classed as obese. Clinical intervention is required.
    - A referral to paediatrics can be made if BMI is 3 standard deviations above the mean centile.

Please also ask the following questions:

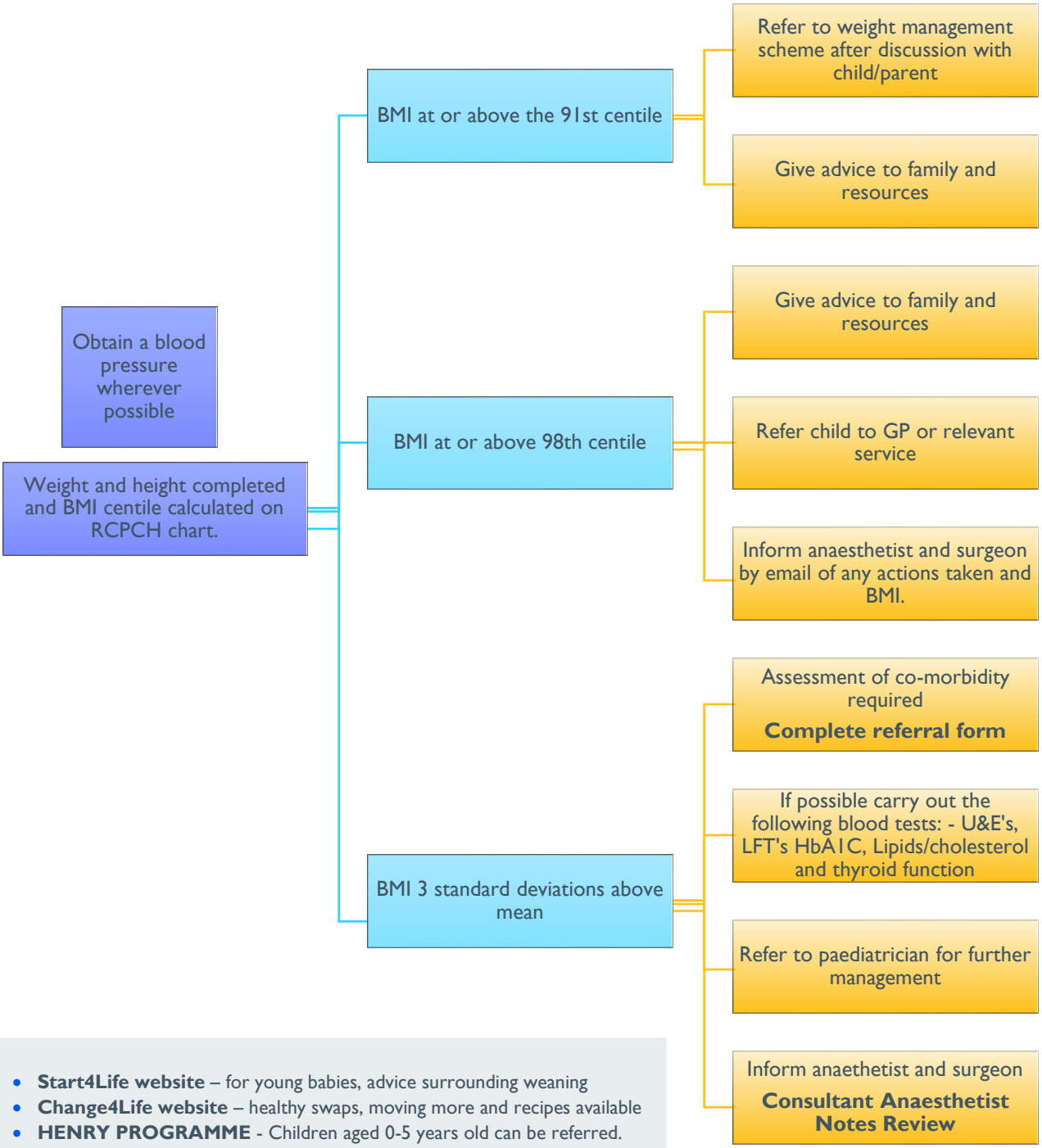
Complications of increased weight?

- Respiratory – any shortness of breath? Asthma?
- Snoring? Any apnoeas?
- Cardiovascular – funny heart feelings? Headaches? Blurred vision? Dizziness?
- Urinary – Increased drinking or going to the toilet?
- Skin - Any funny marks on skin? Rashes? Stretch marks? Jaundice?
- Any tummy pains? Nausea? Acid reflux?
- Feeling cold all the time?
- Lethargy? Going to bed early? Tired all the time?
- Pain in joints? Mobility problems?

Reasons for weight gain?

- Feelings/reasons behind weight gain.
- Has weight gain been rapid?
- Document eating patterns and activity levels.
- Have any previous weight loss methods been tried? Have they worked/not worked?
- Assess readiness to adopt change.
- Consider growth and pubertal status.

- Please document ALL medications, including non-prescribed in full (including doses).
- If the child has significant co-morbidities or complex needs – refer to an appropriate specialist.



- **Start4Life website** – for young babies, advice surrounding weaning
- **Change4Life website** – healthy swaps, moving more and recipes available
- **HENRY PROGRAMME** - Children aged 0-5 years old can be referred.
- **NHS website** has advice for parents around healthy eating and exercise for their family

References

- National Institute of Health and Care Excellence, 2015. Overview | Obesity in children and young people: prevention and lifestyle weight management programmes | Quality standards | NICE. [online] Available at: https://www.nice.org.uk/guidance/qs94 [Accessed 10 March 2021].
- Public Health England. 2020. Obesity Profile - PHE. [online] Available at: https://fingertips.phe.org.uk/profile/national-child-measurement-programme [Accessed 10 March 2021].

Pregnancy and Periods

Many children and young people undergo emergency and elective surgical, radiological and anaesthetic procedures. If a patient is pregnant there is a recognised, albeit small, risk to the patient and her pregnancy/foetus. Recognised pregnancy may require modified technique or delaying of the procedure. It has therefore been stipulated that pregnancy status must be ascertained prior to a procedure being undertaken. (NICE, Health Protection Agency).

All females should be asked if they have started their menstrual periods and subsequently the date of their last period if they have started menstruating. If this is more than 30 days then a pregnancy test must be carried out with appropriate consent. Patients have the right to discuss these issues in private, without parents/caregivers present. They should be warned that they will be asked this again if appropriate on the day of surgery.

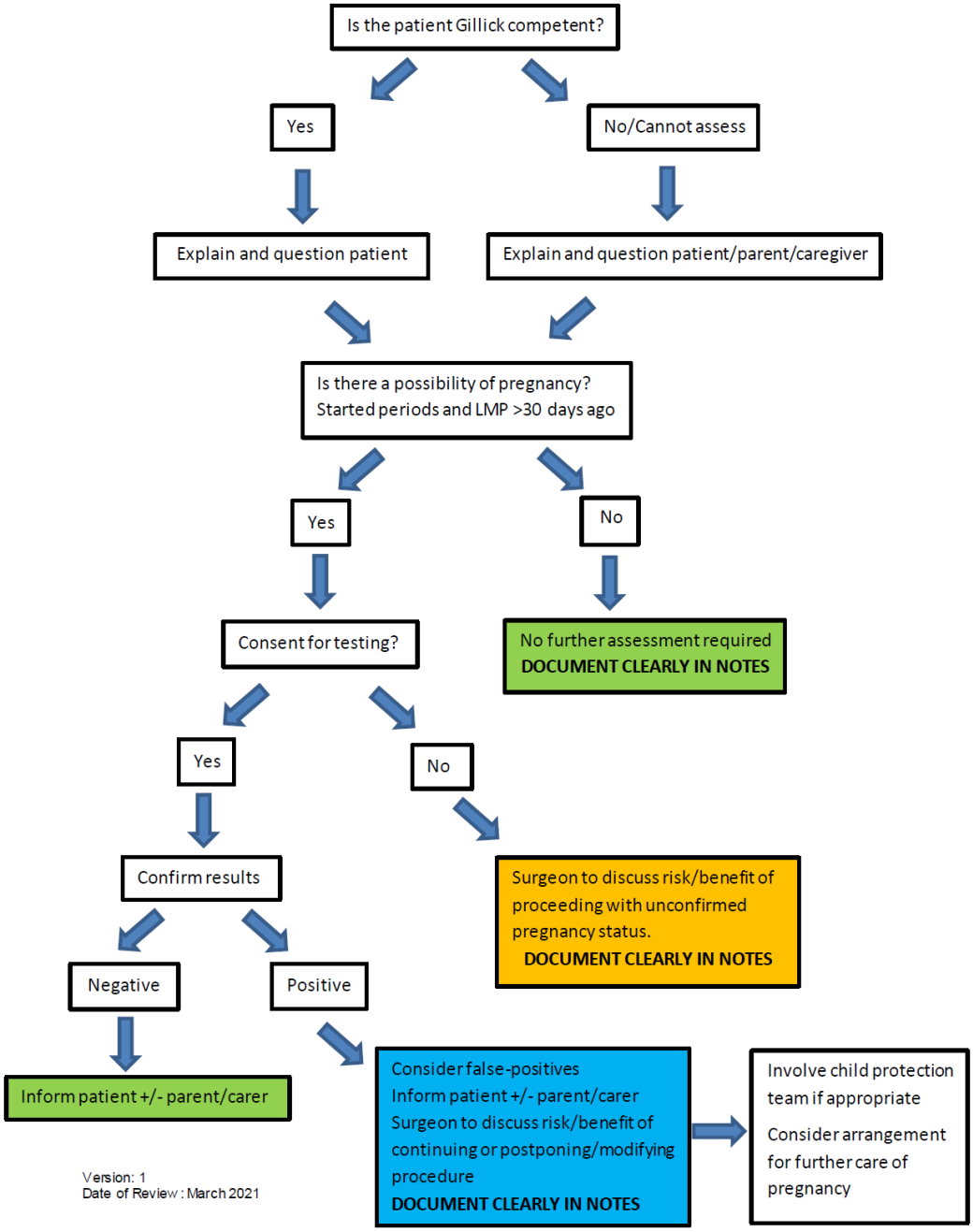
Pregnancy Testing Procedure

1. Consent must be taken from the child (if considered competent to make that decision and > 12 years of age) or from the adult with parental responsibility
2. Pregnancy testing information leaflet should be offered prior to testing
3. Urine sample provided by the child and the sample is then taken to be tested by the nursing staff
4. The results of the test will be discussed with child +/- their parent(s)/guardian in private
5. Clear documentation of discussion, consent and pregnancy test results should be made.

Consent is refused – if consent for testing is refused this must be discussed with the consultant surgeon. A decision regarding proceeding with the operation/scan should be made based on the risk/benefit of proceeding with unconfirmed pregnancy status and this should be discussed with the child and their caregivers. The risks of proceeding should be explained to the patient and her parents/carers, where appropriate, and an effort made to quantify this risk so that the patient/parent can make an informed decision. On an individual basis, the surgeon may offer the option to consent to the surgery, acknowledging and documenting the risks of unconfirmed pregnancy status. It would be very difficult to quantify any anaesthetic risk in these circumstances. In situations where the risk to an undetected foetus would be considered unacceptable, the surgeon is justified in refusing to undertake the procedure.

Pregnancy test is positive - The clinical team must be informed of the positive result. If the child is deemed of sufficient maturity/competence the result should be discussed with her privately. Decisions to involve parents/carers in discussion on sexual activity and positive pregnancy results must be taken using professional judgement and consideration of whether they meet Fraser guidelines (Gillick Competence). This should be based on the age, maturity and ability of the patient to appreciate what is involved in terms of the implications and risks to themselves. The decision of whether to proceed or not should be discussed by the surgeon with the patient +/- their parents/caregivers. This should include the risk/benefit of continuing, post-posting or modifying the operation or procedure. This should be clearly documented in the patient's healthcare records. The clinical team caring for the patient must also make a judgement about the need to involve the local safeguarding team in the patient's ongoing care and make sure that appropriate advice is given regarding pregnancy management. Children under the age of 13 are considered by law in England and Wales as unable to consent to sexual intercourse, and disclosure of sexual activity would usually require clinicians to take action under child protection criteria

FLOW CHART for Pre-operative Pregnancy Testing



Investigations

- Urinary pregnancy test or Serum pregnancy test (if appropriate)

Plan

- Please record date of LMP and result of any pregnancy test in care plan.
- If test is refused please refer to Consultant covering the list.
- Concerns about safety and welfare of patient – **contact Safeguarding team via Trust pathways.**

It is vital that good documentation is maintained throughout the process. Verbal consent to pregnancy testing should be documented in the admission documentation booklet, along with the result of the test and decisions made thereafter. Decision making regarding whether or not safeguarding referral is required must be made clear in the documentation.

References

- Parkes, A., Strange, V., Wight, D., Bonell, C., Copas, A., Henderson, M., Hart, G. (2011). Comparison of Teenagers' Early Same-Sex and Heterosexual Behaviour: UK Data from the SHARE and RIPPLE Studies. Journal of Adolescent Health, 48(1), 27–35. https://doi.org/10.1016/j.jadohealth.2010.05.010
- Rapid Response Report NPSA/2010/RRR011: Checking pregnancy before surgery April 2010
- Nice. (n.d.). CG3 Preoperative tests - Full guideline; CG3 Preoperative tests - Full guideline.
- Pre-procedure Pregnancy Checking in Under 16s: Guidance for Clinicians. (2012). Retrieved from www.rcpch.ac.uk
- Hot Topic. (2017). Retrieved from http://www.apagbi.org.uk/sites/default/files/images/Pregnancy Checking supplement a
- Pre-procedure Pregnancy Checking in Under 16s: Guidance for Clinicians. (2012). Retrieved from www.rcpch.ac.uk
- Pre-procedure Pregnancy Checking in Under 16s: Guidance for Clinicians. (2012). Retrieved from www.rcpch.ac.uk
- Sexual Offences Act 2003 CONTENTS. (n.d.).
- Gillick vs West Norfolk and Wisbech Area Health Authority 3 All ER 402 (HL) UKHL 7 (17 October 1985)
- Faculty of Reproductive and Sexual Health Service Standards on Confidentiality www.fsrh.org/pdfs/ServiceStandardsConfidentiality.pdf
- United Kingdom National Guideline on the Management of Sexually Transmitted Infections and Related Conditions in Children and Young People, BASHH 2010: www.bashh.org/guidelines
- Best practice guidance to doctors and other health professionals on the provision of advice and treatment to young people under 16 on contraception, sexual or reproductive health. 2004 www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4086914.pdf
- Confidentiality and young people toolkit, RCGP 2011: www.rcgp.org.uk/clinical-andresearch/clinical-resources/child-and-adolescent-health.aspx

Prematurity and Small Babies

Prematurity: Babies born at less than 37 weeks gestation.

Extremely Preterm: Born before 28 weeks gestation.

Very Preterm: Born between 28 and 32 weeks gestation.

Moderate to late Preterm: Born between 32 and 37 weeks gestation.

Small Babies: Babies born weighing less than 2500grams (5lbs 8oz)

History

- Gestation when born? Birth weight?
- Singleton or multiple pregnancy? If multiple, outcome of other babies?
- Planned early delivery? Why?
- If unplanned, any medical problems during pregnancy?
- Vaginal birth or caesarean section?
- Any admission to Neonatal Intensive Care Unit or Special Care Baby Unit? How long for?
- Intubated? How long for? CPAP? Oxygen? Home oxygen or nebulisers?
- Any problems with breathing after discharge? Apnoeas?
- Any problems with gut/bowels? Any NEC (Necrotizing Enterocolitis)? Any reflux? Any time on TPN?
- NG feeding at home? How long for? Any problems with blood sugars?
- Any surgeries? Which hospital? What for?
- Any follow up clinics or other specialties involved? Who? Where?
- Any developmental delay?
- Any visual/hearing problems?
- Any cardiac problems?
- Any renal problems?
- Any problems with limbs/movement?
- Any hospital admissions since discharge from the neonatal unit? Planned/emergency? Where? Reason?
- What medications does the child take? Doses?

Examination

- Weight, height, head circumference
- Document what the "due date" was
- Any pre-existing neurology - wobbly walking, weakness down one side, issues with speech etc. Examine and document
- Saturations on air. If on home O2, document how much and via what device.
- Any scars from lines or surgeries?
- Document any lines/feeding tubes still in situ.

Investigations

- Most recent clinic letter(s) from specialties seen in last 2 years.
- Discharge letter from neonatal unit
- Any recent blood results
- Anaesthetic charts from previous surgeries wherever possible if not done at JCUH.

Plan

- Children who were born late preterm, had no neonatal care and no follow up do not need referral to consultant pre-assessment.
- Children with significant respiratory problems following premature birth should not be booked as day case. If severe respiratory disease, may need HDU bed (please discuss).

Refer to Consultant pre assessment clinic:

- Children who were intubated for 4 weeks or longer
- Children who have had surgery as a neonate including:
  - Cardiac surgery
  - Ophthalmic surgery
  - Bowel surgery excluding simple hernia repairs
- Children who have difficult venous access as a result of long stay in a neonatal unit
- Children with multiple issues following premature birth.
- Children <60 weeks gestational age (equivalent to mum being 60 weeks pregnant)
- Children with ongoing feeding issues.
- Children with issues maintaining blood sugars.
- Children who have VP shunts in situ.
- Children with uncertain diagnosis or genetic syndrome.

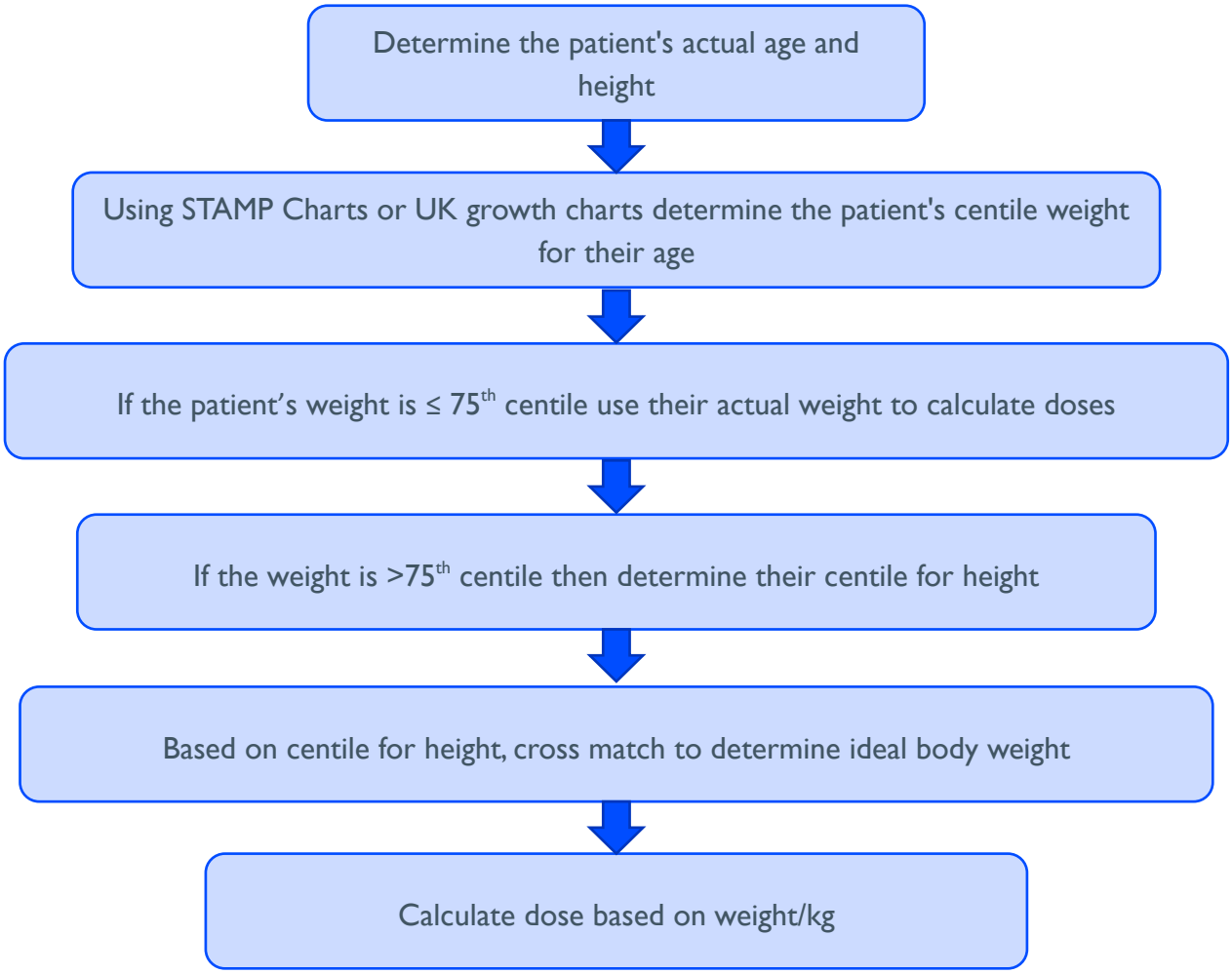
References

- https://www.who.int/news-room/fact-sheets/detail/preterm-birth
- https://academic.oup.com/bjaed/article/9/3/73/388412#5724248

Prescribing Weight

Please calculate a prescribing weight for all children if needed and record this on the pre assessment paperwork and note on the front of drug chart with the date that this was done. **The full policy for this can be found within the South Tees NHS Trust, Paediatric Pharmacy Team Guidelines on the intranet.**

Prescribing weight is calculated as follows:



Stamp charts are overleaf.

Please remember to use the correct chart. They are different for girls and boys and for those children under 2 years of age.

Weight centiles (kg)									
Age	0.4th	2nd	9th	25th	50th	75th	91st	98th	99.6th
Birth	2.1	2.4	2.7	3.04	3.36	3.68	4	4.3	4.6
2 months	3.6	3.9	4.3	4.7	5.12	5.6	6.1	6.6	7.2
4 months	4.6	5	5.45	5.9	6.45	6.98	7.6	8.2	8.9
6 months	5.3	5.7	6.2	6.73	7.3	7.94	8.6	9.3	10.1
8 months	5.8	6.2	6.75	7.32	7.95	8.64	9.4	10.2	11
10 months	6.2	6.6	7.2	7.8	8.47	9.2	10	11	11.8
12 months	6.5	7	7.6	8.25	8.95	9.72	10.6	11.5	12.5
14 months	6.85	7.3	8	8.65	9.4	10.2	11.1	12.1	13.2
16 months	7.2	7.9	8.35	9	9.8	10.7	11.6	12.7	13.8
18 months	7.5	8	8.7	9.4	10.2	11.1	12.1	13.2	14.4
20 months	7.8	8.3	9	9.8	10.65	11.6	12.6	13.8	15
22 months	8.1	8.7	9.4	10.2	11.1	12	13.1	14.3	15.6
24 months	8.35	9	9.75	10.6	11.5	12.5	13.6	14.9	16.2
Height centiles (cm)									
Age	0.4th	2nd	9th	25th	50th	75th	91st	98th	99.6th
Birth	44.7	46	47.3	48.6	50	51.3	72.7	54	55.3
2 months	51.6	53	54.3	55.7	57	58.5	59.8	61.1	62.5
4 months	56.3	57.5	59.2	60.6	62.1	63.5	65	66.5	67.9
6 months	59.7	61	62.7	64.2	65.7	67.3	68.8	70.3	71.7
8 months	62.5	64	65.6	67.1	68.8	70.3	71.9	73.5	75
10 months	65	66.5	68.2	69.8	71.5	73.2	74.8	76.4	78
12 months	67.1	69.5	70.5	72.3	74	75.7	77.4	79.2	80.8
14 months	69.3	71	72.8	74.6	76.4	78.2	80	81.7	83.5
16 months	71.3	73	74.8	76.7	78.6	80.5	82.4	84.2	86
18 months	73	75	76.8	78.7	80.7	82.7	84.6	87	88.5
20 months	74.8	76.5	78.6	80.7	82.7	84.7	86.7	88.7	90.6
22 months	76.3	78.3	80.5	82.5	84.6	86.7	88.8	91	92.8
24 months	77.2	78.9	81.3	83.5	85.7	87.9	90	92.5	94.3

Infant (0-2 years) girls centile table for weight and height

Weight centiles (kg)									
Age	0.4th	2nd	9th	25th	50th	75th	91st	98th	99.6th
Birth	2.17	2.5	2.83	3.16	3.5	3.84	4.17	4.5	4.84
2 months	3.95	4.3	4.7	5.12	5.56	6.05	6.55	7.2	7.65
4 months	5.15	5.5	6	6.5	7	7.55	8.15	8.75	9.4
6 months	5.9	6.35	6.85	7.4	7.94	8.55	9.2	9.85	10.6
8 months	6.45	6.9	7.45	8	8.6	9.26	9.95	10.65	11.45
10 months	6.85	7.3	7.9	8.5	9.2	9.8	10.6	11.45	12.2
12 months	7.2	7.7	8.3	8.95	9.65	10.4	11.2	11.95	12.9
14 months	7.5	8.1	8.7	9.37	10.1	10.9	11.7	12.6	13.5
16 months	7.85	8.4	9.1	9.75	10.5	11.4	12.2	13.2	14.05
18 months	8.1	8.7	9.4	10.1	10.95	11.8	12.7	13.7	14.7
20 months	8.4	9	9.75	10.5	11.35	12.3	13.2	14.15	15.25
22 months	8.7	9.4	10.1	10.9	11.75	12.7	13.7	14.7	15.9
24 months	9	9.7	10.4	11.3	12.1	13.1	14.2	15.3	16.4
Height centiles (cm)									
Age	0.4th	2nd	9th	25th	50th	75th	91st	98th	99.6th
Birth	44.8	46.1	47.9	49.5	51	52.5	54.1	55.9	57.1
2 months	53.1	54.5	55.8	57.1	58.4	59.8	61.1	62.5	63.7
4 months	58.3	59.5	61.1	62.5	63.9	65.3	66.7	68	69.4
6 months	62	63	64.8	66.2	67.6	69.1	70.5	72	73.3
8 months	64.7	66	67.6	69.1	70.6	72.1	73.5	75	76.5
10 months	67.2	68.5	70.2	71.7	73.3	74.8	76.4	77.8	79.3
12 months	69.5	70.8	72.5	74.1	75.8	77.3	78.9	80.5	82
14 months	71.5	73	74.8	76.4	78.1	79.7	81.4	83	84.6
16 months	73.4	75	76.8	78.5	80.2	82	83.6	85.5	87
18 months	75	76.8	78.6	80.4	82.2	84.1	85.8	87.8	89.5
20 months	76.8	78.5	80.5	82.3	84.2	86.1	87.9	89.8	91.6
22 months	78.3	80	82.1	84.1	86	88	89.9	92	93.8
24 months	79	81	83	85.1	87.1	89.2	91	93.5	95.3

Infant (0-2 years) boys centile table for weight and height

Boys (2-18 years) centile table for Weight

Weight centiles (kg)									
Age	0.4th	2nd	9th	25th	50th	75th	91st	98th	99.6th
2 years	9	9.7	10.4	11.25	12.2	13.14	14.2	15.3	16.4
2.5 years	9.75	10.5	11.4	12.3	13.3	14.4	15.6	16.9	18.1
3 years	10.4	11.2	12.2	13.2	14.3	15.5	16.9	18.3	19.9
3.5 years	11.1	12	13	14.1	15.3	16.7	18.1	19.9	21.4
4 years	12.4	13.3	14.2	5.3	16.5	17.9	19.4	21.1	23
4.5 years	13.1	14	15.1	16.2	17.6	19	20.7	23	24.6
5 years	13.9	14.9	16	17.2	18.6	20.2	22	24.1	26.5
5.5 years	14.6	15.5	16.8	18.1	19.7	21.5	23.5	26	29
6 years	15.4	16.5	17.7	19.1	20.8	22.7	25	27.8	30.7
6.5 years	16.1	17	18.5	20.1	21.9	24	26.5	29.5	33
7 years	17	18	19.5	21.1	23.1	25.4	28	31.9	35.5
7.5 years	17.6	19	20.5	22.2	24.3	27	30	34	38.7
8 years	18.5	19.5	21.5	23.3	25.6	28.4	32	36.5	42
8.5 years	19.4	20.5	22.5	24.5	27.0	30	34	39	45.8
9 years	20.2	21.8	23.5	25.7	28.4	31.8	36	42	49.5
9.5 years	21	22.5	24.6	27	29.8	33.5	38.3	44.5	53
10 years	22	23.5	25.8	28.3	31.4	35.3	40.5	47	57
10.5 years	23	24.8	27	29.7	33.0	37.2	42.8	50	60.5
11 years	24	26	28.2	31	34.6	39	45	53	64
11.5 years	24.8	27	29.4	32.5	36.3	41	47.5	55.5	67
12 years	25.8	28	30.8	34	38.1	43.2	50	58	70
12.5 years	27	29.5	32.5	36	40.4	46	53	61.5	73
13 years	28	31	34.3	38.1	43.0	49	56	65	76
13.5 years	29.8	33	36.5	40.8	46.0	52.3	60	69	80
14 years	31.5	35	39	43.6	49.2	56	63.5	73	84.5
14.5 years	33.5	37	41.5	46.5	52.3	59.5	67.5	77	88.5
15 years	35.5	39.5	44	49.1	55.4	62.7	71	81	92.5
15.5 years	38	42	46.7	52	58.1	65.5	74	84	95.5
16 years	40.5	44.7	49	54.5	60.6	68	76	86	97
16.5 years	43	47	51.5	56.5	62.6	69.5	77.7	87	98
17 years	45	49	53.2	58.3	64.3	71	79	88.1	99
17.5 years	46.5	50	54.7	60	65.7	72.5	80	89	100
18 years	48	52	56	61	66.7	73.5	81	90	101

Boys (2-18 years) centile table for height

Height centiles (cm)									
Age	0.4th	2nd	9th	25th	50th	75th	91st	98th	99.6th
2 years	79	81	83	85.1	87.1	89.2	91.2	93.5	95.3
2.5 years	83	85	87.4	89.6	91.9	94.2	96.5	99	101
3 years	86.1	88.5	91	93.6	96.1	98.6	101	103.5	106
3.5 years	89.2	92	94.5	97.2	99.9	102.5	105.1	108	110.5
4 years	91.5	95.5	97	99.7	102.5	105.2	108	111	113.5
4.5 years	94.5	97.5	100.3	103.1	106.0	108.9	111.8	115	117.5
5 years	97.5	100.5	103.5	106.5	109.6	112.5	115.7	119	121.8
5.5 years	100	103	106	109.2	112.4	115.5	118.5	122	124.8
6 years	103	106	109.5	112.6	115.9	119.2	122.5	126	129
6.5 years	105.5	109	112	115.5	118.9	122.3	125.5	129.3	132.2
7 years	108	113	115	118.5	121.9	125.4	129	132.5	135.8
7.5 years	111	114	118	121.3	124.9	128.5	132	136	139.5
8 years	113.5	117	120.5	124	127.9	131.5	135	139	142.5
8.5 years	116	119	123	127	130.6	134.5	138.2	142	145.5
9 years	118	122	125.5	129.4	133.3	137.2	141	145	149
9.5 years	120	124	128	131.8	135.8	140	144	148	152
10 years	122	126	130	134.3	138.4	142.5	146.8	151	155
10.5 years	124	128	132.5	136.7	141.0	145.3	149.5	154	158
11 years	126	130	134.5	139	143.4	148	152.5	157	161
11.5 years	127.5	132	136.5	141	145.8	150.5	155	160	164
12 years	129.5	134	139	143.5	148.4	153	158	163	167.5
12.5 years	131.5	136.5	141.5	146.5	151.4	156.5	161.5	166.5	171.5
13 years	134	139	144.5	149.5	154.8	160	165	170.5	175.5
13.5 years	137	142.5	147.5	153	158.6	164	169.5	175	180
14 years	140	146	151	156.7	162.4	168	173.5	179	184.5
14.5 years	144	149.5	155	160.2	165.9	171.5	177	182.5	188
15 years	147.5	153	158	163.5	168.9	174.5	180	185.5	190.5
15.5 years	150.1	156	161	166	171.4	176.7	182	187.5	192.5
16 years	153	158	163	168.3	173.4	178.5	183.5	189	194
16.5 years	155	159	165	169.8	174.8	179.7	184.6	189.3	194.2
17 years	156.7	161	166.3	171	175.9	180.7	185.5	190.2	195
17.5 years	157.5	162	167	171.8	176.6	181.5	186	190.6	195.2
18 years	158.5	163	167.5	172.4	177	181.8	186.5	191	195.5

Girls (2-18 years) centile table for Weight

Weight centiles (kg)									
Age	0.4th	2nd	9th	25th	50th	75th	91st	98th	99.6th
2 years	8.3	9	9.8	10.6	11.5	12.5	13.5	14.9	16.1
2.5 years	9.1	10	10.8	11.7	12.8	13.9	15	16.4	18
3 years	10	10.8	11.75	12.7	13.9	15	16.5	18	20
3.5 years	10.7	11.6	12.6	13.8	15.0	16.2	18	19.8	21.9
4 years	11.2	12.2	13.3	14.5	16.0	17.6	19.4	21.5	23.9
4.5 years	12.7	13.7	14.7	15.8	17.2	18.9	20.8	22.9	25.3
5 years	13.2	14.2	15.5	16.9	18.3	20	22	24.5	27.2
5.5 years	14	15	16.2	17.7	19.4	21.3	23.5	26	29.5
6 years	14.5	15.8	17	18.7	20.5	22.5	25	28	32
6.5 years	15.4	16.5	18	19.7	21.7	24	26.8	30	34
7 years	15.8	17.5	19	20.8	23.0	25.5	28.5	32.5	37
7.5 years	17	18.5	20	22	24.4	27.3	30.5	35	40.5
8 years	18	19	21	23.3	25.9	29	33	37.7	44
8.5 years	18.5	20	22.2	24.5	27.4	30.8	35	40	47.5
9 years	19.5	21.5	23.5	26	28.9	32.5	37	43	51
9.5 years	20.5	22.5	24.5	27.2	30.6	34.5	39.5	46	55
10 years	21.5	23.5	26	28.8	32.3	36.8	42	49	59
10.5 years	22.2	24.5	27	30.2	34.1	39	45	52	62
11 years	23	25.5	28.5	32	36.0	41	47.2	55	66
11.5 years	24.2	27	30	33.5	38.1	43.5	50	58	69
12 years	25.5	28.5	31.8	35.7	40.3	46	52.5	61	71
12.5 years	27.2	30	34	38	42.8	48.4	55	63	73
13 years	29.2	32.5	36	40.3	45.4	51	58	65.5	75
13.5 years	31.2	34	38.5	43	47.9	53.5	60	68	77
14 years	33.3	36.5	40.5	45	50.1	56	62.5	70	79
14.5 years	35	38.5	42.5	47	51.9	57.5	64	72	81
15 years	37	40	44	48.4	53.4	59	66	73.5	82
15.5 years	38	41.5	45	49.5	54.6	60.3	67	74.5	84
16 years	39	42.5	46	50.5	55.5	61.5	68	76	85
16.5 years	39.8	43	47	51.3	56.2	62	68.8	76.5	86
17 years	40.4	43.6	47.3	51.8	56.9	62.6	69.3	77	87
17.5 years	40.5	44	47.9	52.2	57.2	63	70	78	87
18 years	40.9	44	48	52.3	57.5	63.5	70.5	78	88

Girls (2-18 years) centile table for height

Height centiles (cm)									
Age	0.4th	2nd	9th	25th	50th	75th	91st	98th	99.6th
2 years	77.2	79	81.4	83.5	85.7	87.9	90	92.5	94.4
2.5 years	81.4	83.7	86	88.3	90.7	93.1	95.5	98	100
3 years	85	87.5	90	92.5	95.0	97.6	100.2	103	105
3.5 years	88.3	91	93.5	96.3	99.0	101.8	104.5	107.5	110
4 years	91	93	96.1	98.8	101.5	104.3	107	110	112.4
4.5 years	93.7	96.5	99.5	102.3	105.2	108	110.8	113.5	116.5
5 years	97	100	103	106	108.9	112	115	118	120.5
5.5 years	100	103	106	109	112.2	115.4	118.5	122	124.8
6 years	102.5	105	109	112	115.3	118.6	122	125	128
6.5 years	105	108	111.7	115	118.3	121.7	125	128.5	131.8
7 years	107.5	111	114.2	117.8	121.3	124.8	128	131.5	135
7.5 years	110	113	117.3	120.7	124.3	128	131.5	135	138.5
8 years	113	116.5	120	123.7	127.3	131	134.8	138	142
8.5 years	115	119	122.7	126.5	130.1	134	137.7	141.5	145
9 years	117	121	125	129	132.8	136.7	140.5	144.5	148.5
9.5 years	119.5	122.5	127.5	131.5	135.6	139.7	144	148	152
10 years	121.5	126	130	134	138.4	142.7	147	151	155.5
10.5 years	123.5	128	132.5	137	141.3	145.8	150	154.5	159
11 years	125.5	130	135	139.5	144.1	148.8	153.2	158	162.2
11.5 years	128	133	137.5	142	146.9	151.8	156.2	161	166
12 years	131	135	140	145	149.8	154.5	159	164	169
12.5 years	133.5	138.5	143	147.9	152.6	157.5	162	167	171.5
13 years	137	141.5	146	150.7	155.3	160	164.5	169	174
13.5 years	140	144	148.7	153	157.7	162	167	171	175.8
14 years	142	146.5	151	155	159.6	164	168.5	173	177
14.5 years	144	148.5	152.7	157	161.1	165.5	169.8	174	178
15 years	146	149	154	158	162.2	166.5	170.5	175	179
15.5 years	146.5	150.5	154.7	158.7	162.9	167	171	175	179.5
16 years	147	151	155	159	163.2	167.2	171.5	175.5	180
16.5 years	147.5	151	155.3	159.3	163.5	167.5	171.5	175.5	179.5
17 years	147.5	151	155.3	159.4	163.5	167.5	171.5	175.5	179.5
17.5 years	147.5	151	155.3	159.4	163.5	167.5	171.5	175.5	179.5
18 years	147.5	151	155.3	159.4	163.5	167.6	171.5	175.5	179.5

Previous Critical Care Admission

It is important to establish whether children have been admitted to critical care previously, either following birth or a childhood illness or accident. Long periods of ventilation may lead to subsequent breathing or airway problems, repeated cannulations may make IV access more challenging and long periods of significant systems support may affect organ systems and how they function. Anxiety may be an issue. These may all be relevant when anaesthetics and further surgery are being planned.

History

- How many times has the child been admitted to critical care?

- **For each admission it is important to establish the following facts:**
  - When was the admission to critical care?
  - How long was the child on ICU? Dates are useful if parents/carers can remember.
  - How old was the child?
  - Which critical care unit or hospital was the child treated in?
  - What was the reason for critical care admission?
  - Did the child have a breathing tube inserted? How long did this remain in for?
  - Did the child have medicines to support their heart and blood pressure?
  - Did the child need dialysis (kidney machine)?
  - Does the parent/carer remember anything else about the admission that they feel was important?

- Any home oxygen after discharge from critical care? How long for? How much?
- Any other post critical care support at home? What? How long?
- Any ongoing support?

Examination

- Look for scars (over vascular access sites/ neck scar may indicate tracheostomy)
- Listen for noisy breathing/ unusual breathing sounds.

Investigations

- Saturations in air and full set of observations.
- Please obtain copy of critical care discharge summary for last admission.

Plan

If the child was not managed on the critical care unit or neonatal unit at The James Cook University Hospital, please request the discharge summary from the unit in which they were treated.

These children should be referred for notes review - they may not require a full Consultant pre assessment, but parents should be warned that they may receive an additional appointment.

Screening and "Teachable moments"

Pre assessment clinic provides an excellent opportunity to screen for potential health issues and provide useful advice to parents, children and young people to help them improve their health. Screening also allows issues which may complicate the theatre journey to be identified and proactively managed. The following areas are subject to screening in pre assessment:

Area Screened	Plan	Outcomes
Chronic Pain	Questionnaire as part of nursing pre assessment.	• If child or young person answers yes to the majority of screening questions or there are nursing concerns, referral is made to the Paediatric Pain Consultant for further assessment/planning.
Elevated BMI **Low BMI Faltering growth**	Weight and Height recorded in nursing pre assessment. BMI calculated and plotted.	• If child or young person triggers low or high BMI or evidence of faltering growth, flow charts followed and referrals made to Consultant clinic, Paediatricians and external services as needed. • Advice regarding diet and exercise to parents. • Please refer to Obesity/Faltering growth guidelines.
Smoking	Parents and children asked about smoking and vaping in the household at nurse pre assessment.	• If parents or children identified as smoking then advice given regarding cessation. • Referral made if consent given via South Tees Smoking Cessation pathway (over 12 only). • GP/Health visitor informed. • Refer to Smoking/Drugs/Alcohol Guideline.
Alcohol	Parents and children asked about alcohol as part of nurse pre assessment.	• Verbal advice given regarding safe alcohol intakes and potential health benefits of alcohol reduction. • If concerns identified then health visitor/school nurse/GP to be informed as appropriate. • Consider safeguarding. • Refer to Smoking/Drugs/Alcohol Guideline.
Drugs use	Parents and children asked about drug use in household.	• Verbal advice given regarding drug use and potential health benefits of alcohol reduction. • If concerns identified then health visitor/school nurse/GP to be informed as appropriate. • Consider safeguarding. • Refer to Smoking/Drugs/Alcohol Guideline.
Anxiety	All children screened using faces scale. Assessment of mental health concerns by pre assessment nurses.	• Anxiety policy followed depending on result of faces scale. The response may be simple advice but can involve referral to Consultant Anaesthetist clinic or play specialist if severe anxiety issues identified. • Mental health leaflet and advice provided/CAMHS referral considered if mental health issues identified.

Sickle Cell Disease and Thalassaemia

Sickle cell disease (HbS/HbS) – patients with sickle cell disease have red blood cells which have an abnormal shape. When these cells are exposed to cold, low oxygen levels, acidosis or cellular dehydration they form a sickle shape – all these factors can occur during surgery. These cells are not as compliant as normal red cells and make the blood more sticky stopping flow in the microcirculation. This causes clots and blockages, which in turn causes pain and worsening hypoxia, creating a viscous cycle.

Sickle Cell Trait (HbS/HbA) - this is the benign carrier form of the condition. Patients often have no symptoms but may occasionally show a mild anaemia. They would only show sickling under severe hypoxic conditions.

Thalassemia - Thalassemia is the name for a group of inherited conditions where sufferers produce either no or too little haemoglobin. This can make them very anaemic (tired, short of breath and pale). There are two types. Alpha and Beta.

- **Alpha Thalassemia silent carriers** – no signs or symptoms.
- **Alpha or Beta Thalassemia Trait** – Often have no sign or symptoms but may have mild anaemia. In alpha thalassemia trait the anaemia is easy to mistake for iron deficiency anaemia but is not responsive to iron.
- **Beta Thalassemia Intermedia** – mild to moderate anaemia with other health problems such as slowed growth, delayed puberty, bone fragility, enlarged spleen.
- **Haemoglobin H disease (beta thalassemia major)** – severe anaemia, dark urine, poor appetite, slow growth, jaundice, enlarged spleen and bone problems.

Complications of thalassemia include:

- Heart and Liver disease.
- Iron overload.
- Infections
- Osteoporosis and brittle bones.

History

- Are parent's carriers of sickle cell or thalassemia?
- Has the child got a confirmed diagnosis of sickle cell disease or Thalassemia?
- Who is the child's regular haematologist?
- Is the child anaemic?
- Does the child have lethargy, fatigue?
- Has the child had any sickle cell crises? When was the last one? How was it treated?
- What brings on the child's sickle cell crises?
- Any critical care admissions?
- Usual analgesic regimen in sickle cell crisis?

Investigations

- Please obtain copies of last letter from regular paediatrician and last letter from haematologist.
- Bloods – FBC and Haematinics, blood film, Coagulation, U +E and LFT's. Please get latest results for these.
- Children born in the UK will generally have been tested for Sickle cell and haemoglobinopathies at birth as part of newborn screening. All new arrivals into the UK should have a haemoglobin electrophoresis and high performance liquid chromatography (HPLC) organised.

Plan

Refer to Consultant paediatric anaesthetic clinic:

- Children who have HbS/HbS – Sickle cell disease, Beta Thalassemia intermedia or Haemoglobin H disease.
- Any new diagnoses should be referred to the Consultant anaesthetist so that haematology referral and review can occur prior to surgery.

- Children with alpha or beta thalassemia trait do not need referral unless bloods show them to be significantly anaemic.

References

- Paediatric Anaesthesia, Edited by Edward Doyle. Oxford University Press, 2007.

Sleep apnoea

Sleep apnoea in children is a condition which occurs when the airway is partially (hypopnoea) or completely (apnoea) obstructed during sleep despite continued efforts by the child to breath. This causes desaturation, elevations in carbon dioxide and repeated overnight waking which can affect the child during the day. It can also lead to the development of mild chest wall abnormalities. It can affect educational performance if left untreated.

Children may present with a clinical or sleep study confirmed diagnosis or it may be suspected if the parent reports overnight snoring with pauses in breathing. It is important to note that many children snore but not all have sleep apnoea or sleep disordered breathing.

History

- Does the child have diagnosed OSA?
- Does the child snore?
- Does the child pause breathing whilst asleep?
- What position does the child sleep in? (extended neck positions commonly associated with OSA)
- Any family history of SIDS/OSA/Snoring?
- Does the child mouth breathe during the day?
- Is the child tired during the day? Extra naps? Problems with concentration?
- Does the child sweat at night?
- Does the child have problems with night terrors/sleepwalking/bedwetting?
- Does the child have a diagnosis of – Pierre robin, Treacher Collins, CHARGE, Hunter or Hurler syndromes?

Examination

- Please measure Weight, height and BMI.
- Saturations in AIR.
- Any facial asymmetry? Pectus?

Investigations

- Sleep study report – if this has been completed.
- Last letter from Paediatrician (if not seen here at James Cook).

Plan

- If listed for adenotonsillectomy – **no action required** – usual preoperative pathway.

Please refer children for Consultant notes review: if aged <3 years, Ex premature baby, Trisomy 21 diagnosis, craniofacial syndrome, Obese or a sleep study showing oxygen saturation nadir of sleep study less than 70%.

Smoking, Drugs and Alcohol

Smoking	• Is the child a smoker?
	• Any smokers in household (or who regularly visit household/care for child)?
	• For each smoker:
	  ○ When did they start smoking?
	  ○ What do they smoke? Do they vape?
	  ○ How many do they smoke each day?
	  ○ Have they ever tried to stop smoking? Successes? Methods?
	  ○ Any chest symptoms – cough, breathlessness?
	  ○ Do they smoke Cannabis?
	  ○ Do they want to stop smoking?
	  ○ Would they like a referral to smoking cessation services?
	
	If over 12 please see Trust Smoking Cessation sheet and follow instructions for referral and nicotine replacement if appropriate.
	
	Give smoking cessation advice to all smokers

Alcohol	• Does the child or young person drink alcohol?
	• Are there any heavy or regular drinkers in the household?
	• For each drinker:
	  ○ How much to they drink each day (on a bad day)?
	  ○ What do they drink?
	  ○ Do they binge drink? Drink early in the morning?
	  ○ Any signs of alcohol dependence?
	  ○ What happens if they stop drinking?
	  ○ Have they ever received help for alcohol dependence?
	
	Consider contacting GP and Health visitor if further help needed. Look for signs of Safeguarding concerns and refer if needed.

Recreational Drug use	• Are there any users of recreational drugs in the household? • Does the child or young person have access to recreational drugs? Consider Safeguarding issues. • What drugs are used and in what quantity? • Is the user on Methadone? • Is the user in a programme for those addicted to drugs? **Consider need for Safeguarding referral or referral to GP or Health visitor if you have concerns.**

INPATIENT

SMOKEFREE

NHS
South Tees Hospitals
NHS Foundation Trust

Inpatient Nicotine Replacement Therapy Decision Aid

For any patient identified as a smoker who has been given brief advice (and CO testing for maternity patients). Aim to be completed within 30 minutes of admission.

START

Patient accepted NRT for Temporary Abstinence or for Quit Attempt?

NO → Ensure patient is informed South Tees is a Smokefree Trust and smoking is not permitted on Trust grounds. Discuss referral to Stop Smoking Services upon discharge: Website: www.stopsmokingsouthtees.co.uk

YES

Do they have allergies to plasters or nicotine patches?

YES → Consider Nicorette inhalator 15mg PRN (max 6 cartridges/day) **OR ...**

Smokes >20/day:	Smokes <20/day:
Consider NiQuitin Lozenge 4mg PRN (max 15/day)	Consider NiQuitin Lozenge 2mg PRN (max 15/day)

NO

See interactions and cautions* (reverse of sheet).
Are you satisfied with appropriateness of NRT for this patient?

NO → Please see prescribing advice on reverse.

YES

Patient Smokes >20/day	Patient Smokes 10-20/day	Patient Smokes <10/day
Prescribe 25mg/16hr Nicorette Invisi Patch	Prescribe 25mg/16hr Nicorette Invisi Patch	Prescribe 15mg /16hr Nicorette Invisi Patch (Consider higher strength patch if patient requires a cigarette within 5 minutes of waking.)
Directions for use: Apply 1 patch once daily in the morning and remove after 16 hours. Reapply new patch following morning.		
Also consider the following according to patient preference:		
Nicorette Inhalator (15mg): Use PRN (max 6 cartridges/day)	Nicorette Inhalator (15mg): Use PRN (max 6 cartridges/day)	Nicorette Inhalator (15mg): Use PRN (max 6 cartridges/day)
NiQuitin Lozenge (4mg): 1 lozenge every 1-2 hours PRN (max 15/day)	NiQuitin Lozenge (2mg): 1 lozenge every 1-2 hours PRN (max 15/day)	NiQuitin Lozenge (2mg): 1 lozenge every 1-2 hours PRN (max 15/day)

Refer patient to Stop Smoking Services: Website: www.stopsmokingsouthtees.co.uk

Ensure discharge prescription prepared for 7 days' supply of NRT (to be provided for the patient at discharge)

FINISH

DRUG INTERACTIONS*

Check before prescribing:

Cigarette smoke (not nicotine) can speed the metabolism of certain drugs therefore during periods of cessation (with or without NRT) patients on these medications should be closely monitored. Please note this list is not exhaustive, if you have any concerns regarding drug interactions, contact the clinical pharmacy team

If your patient is prescribed any of the following drugs seek advice from the clinical pharmacy team PRIOR to prescribing NRT:
Aminophylline
Theophylline
Olanzapine
Clozapine

If your patient is prescribed any of the following drugs, prescribe NRT but monitor closely for increase in adverse effects:	
Benzodiazepines (e.g. diazepam)	Fluvoxamine
Carbamazepine	Opioids (e.g. codeine, morphine)
Haloperidol	Warfarin
Tricyclic Antidepressant (e.g. amitriptyline)	Chlorpromazine
Duloxetine	Flecainide

CONDITION	CAUTIONS	ADVICE
Cardiovascular Disease	Smokers presenting to hospital as a result of myocardial infarction, unstable or worsening angina including Prinzmetal's angina, severe dysrhythmia or CVA and who are considered to be haemodynamically unstable.	Encourage to stop smoking with non-pharmacological interventions. If this fails, offer Nicorette Invisi Patch. Initiate NRT and monitor ECG and FBC.
Type 1 Diabetes	NRT can affect carbohydrate metabolism.	Initiate NRT and monitor blood sugar levels more closely.
Renal or Hepatic Impairment	Clearance of nicotine or its metabolites may be decreased; increased risk of adverse effects.	Initiate NRT and monitor liver function tests and eGFR. NiQuitin Lonzenges contain 15mg of sodium. Patients on a low sodium diet should take this into account.
Phaeochromocytoma	NRT can cause increased release of catecholamines.	Initiate NRT with caution and monitor BP.
Uncontrolled Hyperthyroidism	NRT can cause increased release of catecholamines.	Initiate NRT with caution and monitor thyroid function tests.
Dermatological conditions	Patients with chronic generalised dermatological disorders such as psoriasis, chronic dermatitis or urticaria should not use Nicorette Invisi Patch. Angioedema, erythema and urticaria have been reported. Minor skin reactions are seen at the patch application site. If it is severe or persistent, treatment should be discontinued.	Initiate NRT with caution and observe patch site for reactions. If skin reactions become more severe or more generalized, patients should be advised to **discontinue** use of patches. Consider prescribing NiQuitin lozenge or Nicorette inhalator instead.
Gastrointestinal disease	Nicotine may exacerbate symptoms in patients suffering from oesophagitis, gastric or peptic ulcers.	NRT preparations should be used with caution in these conditions. NiQuitin lozenges contain mannitol which can have a mild laxative effect.
Lactation	The relatively small amounts of nicotine found in breast milk during NRT use are less hazardous to the infant than second-hand smoke.	Intermittent dose forms would minimize the amount of nicotine in breast milk and permit feeding when levels were at their lowest.
Patient undergoing Magnetic Resonance Imagining (MRI)		Nicorette Invisipatch should be removed prior to undergoing any Magnetic Resonance Imaging (MRI) procedures to prevent the risk of burns.
Phenylketonuria	NiQuitin Mint 4mg Lozenges are sugar free, but do contain aspartame which metabolises to phenylalanine, which is of relevance for those with phenylketonuria as aspartame contains phenylalanine.	Consider initiating Nicorette Invisipatch and the inhalator as an alternative.
Lung Disease	Patients with obstructive lung disease may find use of the Inhalator difficult.	Consider initiating Nicorette Invisipatch.

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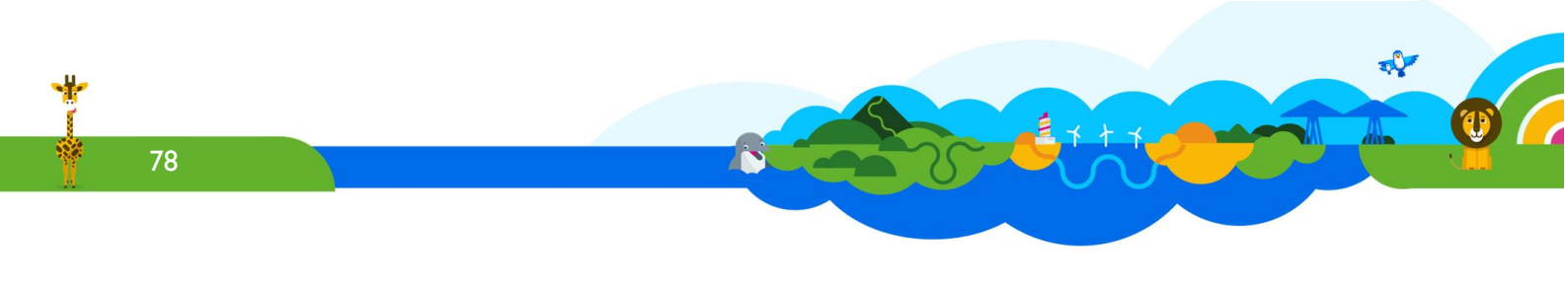


Steroids

Corticosteroids are medications that mimic the body's natural steroids. Used to replace a deficit or to dampen down an inflammatory response. They are often used in children who have had previous organ transplants, airway swelling, asthma or inflammatory bowel disease.

History

- What does the child take steroids for? Joint conditions? Transplant? Asthma? Allergy?
- If they have Addison's disease, do they have any associated conditions? Coeliac disease? Pernicious anaemia? Autoimmune hepatitis?
- Do they take them all the time or only for certain flare ups?
- Any history of adrenalectomy?
- How long have they been on steroids?
- If not on steroids all the time, how often have they had steroids in the last 12 months?
- Do they go into hospital for steroid injections or infusions? Where/when/how often?
- Do they have steroid inhalers? What does?
- Do they have a steroid alert card and/or "sick day rules"?
- Have they ever had a steroid withdrawal crisis or adrenal crisis? When? How long were they in hospital? Any critical care?
- Do they carry emergency steroid injections? Have they ever needed to use it? When?
- Do they have any other hormonal or pituitary issues?
- Any previous anaesthetics or problems after anaesthetics?
- What medications is the child on? Doses? Are they on a reducing regime?
- Any diabetes or blood sugar control issues associated with the steroids? *(See diabetes guideline)*
- Who do they see to manage their steroids? Endocrinology? Rheumatology? Transplant team? Respiratory? Names, hospitals, contact details. Include specialist nurse details if they have one.
- What happens if the child is unable to eat or drink? Does this cause a crisis?

Examination

- Weight, height, BMI and full set of observations including blood pressure
- Any easy bruising? Puffy face? Stretch marks?
- Urine dip - looking at protein and glucose in particular.

Investigations

- Any endocrinology clinic letters
- Perioperative steroid plan from endocrinology if they oversee steroid treatments
- Copy of steroid alert card / prescription sheet and emergency care plan if child has these.

Plan

- Any child who is steroid dependent (on lifelong steroids, long term steroids (>2 weeks or any previous crisis after stopping steroids) or high dose steroids 2mg/kg/24h or more, or >5mg prednisolone or equivalent/day if older child) should be placed first on the list and have this highlighted on the list. They should not be booked as day case.
- Children known to endocrinology should have a perioperative steroid plan and should not be booked for surgery without this.
- Children who are only on steroid inhalers do not need referral to consultant pre-assessment clinic.
- Children on short term single course (<2 weeks) of steroids for an acute condition (e.g. croup) should ideally have their surgery delayed until they are completely well and have been off steroids for 4 weeks.
- Children who are steroid dependent and need prolonged fasting should be planned for ward admission pre-operatively +/- IV fluid.

Refer to Consultant pre assessment clinic:

- Children who have required critical care admission for a crisis/Addisonian Crisis
- Children who cannot tolerate being fasted due to their steroids (causes crisis or feeling unwell)
- Children with ++ protein or any glucose in their urine who have not been investigated.
- Children who have complex need for steroid medications, including:
  - Addison's disease with or without related disorders
  - Adrenalectomy
  - Transplant
  - Severe rheumatoid disease
  - Severe respiratory disease
  - Severe gastrointestinal disease (e.g. Crohn's/Ulcerative Colitis)
  - Autoimmune disease such as autoimmune hepatitis, renal disease
- Children with complications of long term steroid use.

References

- https://www.addisonsdisease.org.uk/Handlers/Download.ashx?IDMF=0c16e6d2-6de9-4b18-b200-7c489e731c59
- https://www.addisonsdisease.org.uk/Handlers/Download.ashx?IDMF=e5cb094e-f146-43db-8c34-f387485fb4a9
- https://www.addisonsdisease.org.uk/what-is-addisons-disease
- https://www.pituitary.org.uk/information/pituitary-conditions/cushings-disease/
- https://www.nhs.uk/conditions/cushings-syndrome/

Tracheostomies and Home Oxygen

Tracheostomy: A tube placed into the trachea, below the vocal cords. There are many reasons for tracheostomy - to allow ventilation, to help with secretion management, to bypass upper airway obstruction.

Home Ventilation: A child may have a need for ventilation at home. This could be for muscle weakness, sleep apnoea or other conditions. It is usually via face mask, nasal mask or tracheostomy. It could be needed 24/7 or only at specific times (e.g. during sleep).

History

- Does the child have a tracheostomy? When/where was it put in? Why?
- Is the upper airway blocked or patent? Can they be intubated (note tracheostomy box colour)
- Who cares for the tracheostomy? Parents/carers or a home nursing team?
- Who is their tracheostomy nurse? Contact details?
- Are they ventilated via the tracheostomy? When? (Day/night/ 24/7?)
- Any problems with tracheostomy? Granulation tissue? Frequent blockages? What size suction catheters do they use? How often does the tube need changing usually? Any recent emergency changes?
- Any anaesthetics since the tracheostomy? Where/when/what for? Any problems?
- Do the parents/carers have an oxygen saturation monitor? What's normal for the child? If they have episodes of low saturations how low do they go, how quickly, how do the parents improve them?
- Does the child have home ventilation without a tracheostomy? When (Day/night/ 24/7?) What for? Nasal or full face mask?
- Who is their home ventilation consultant/nurse? Contact details.
- Have they had a sleep study? Where/when? Results?
- Does the child have oxygen? How is it delivered? Tracheostomy/nasal cannula/facemask?
- How much oxygen? All the time or just certain circumstances? Normal saturations on and off oxygen?
- What condition leads to the need for home oxygen? ***Refer to other Guidelines as needed***
- Any recent chest infections or hospital admissions? Where/when? Why?
- Any chest physio? At home, hospital or school? How often?

Examination

- Heart rate, respiratory rate, saturations on and off oxygen (document how much).
- Tracheostomy tube size and type, what humidification device, if ventilated or spontaneously breathing
- Inspect tracheostomy site - any signs of infection/granulation tissue
- Any noisy breathing? Lots of secretions?
- Document if child is able to speak/swallow if tracheostomy in situ

Investigations

- Discharge letter from tracheostomy insertion
- Copy of care plan for tracheostomy if patient has one
- Size and type of tracheostomy tube and date of most recent tube change. Need to know if cuffed or uncuffed, brand, diameter, length, if any speaking/swallow valve used, if any inner tube or not.
- Copy of any home ventilation team letters
- Type of ventilator used at home and settings
- Copy of respiratory clinic letters
- Copy of any sleep study reports
- Latest paediatrician letter and anaesthetic chart if patient not previously anaesthetized at JCUH.

Plan

Ensure parents know to bring spare tracheostomy, tracheostomy emergency kit/box, ventilator, suction catheters and spare ties/securing devices on the day of surgery

- Print out and fill in (if able) the paediatric tracheostomy bedhead sign and file it in the notes. You can find it on the National Tracheostomy Safety Project website here http://www.tracheostomy.org.uk/NTSP-Algorithms-and-Bedheads. Place a blank copy in the notes if you do not have the information to fill it in.
- Children who have home ventilation or home oxygen for any reason should not be booked as a day case. They should have a ward bed booked and may require a side room or critical care bed depending on nurse numbers.

Refer to Consultant pre assessment clinic:

- Children with Tracheostomies and in particular issues such as:
- New tracheostomy
- Frequent emergency tube changes or blockages
- Frequent desaturations
- Any tracheostomy complications in the past or now
- Home oxygen or ventilation
- Children with sleep apnoea requiring overnight CPAP at home
- Children with tracheostomies for neuromuscular disorders or spinal injuries
- Children were concerns have been raised regarding airway management or have been documented to be un-intubatable in the past.
- Children who are home ventilated or require home oxygen 24/7

References

- https://onlinelibrary.wiley.com/cms/asset/b358173e-8af8-40a2-aa78-a912c733deda/anae14307-fig-0004-m.jpg
- http://www.tracheostomy.org.uk/storage/files/RMCH%20Your%20child's%20tracheostomy.pdf
- https://onlinelibrary.wiley.com/doi/full/10.1111/anae.14307

Usual Medicines

Children may be taking a variety of medications for other conditions which they would usually take on a daily basis. Most of these should not be stopped just because a child needs to fast prior to theatre.

It is a mistake to think that a child has an empty stomach just because they are starved. Gastric secretions are always present. By fasting children we aim to reduce gastric contents as much as possible but small amounts of water or medication will not make a significant difference to this and patients may suffer adverse effects from missing medication.

History

- What are the child's usual medications – dose and frequency?
- Has the child missed any doses recently/ are the medications being taken as prescribed?
- Is the child taking any herbal remedies or alternative medications – substance, dose, frequency and reason?
- Have any doses been altered recently? When Amount of change? By whom?
- Does the child have blood tests to determine the levels of any medications? What? Result?

Plan

Even if the patient will be NBM parents should be encouraged to give most medications at usual times.

Exceptions to this include:

High volume medications
Please discuss with Consultant if medications must be given in high volumes as, depending on timing they may need to be given in a different form.

Drugs that affect platelets or blood clotting
E.g. Aspirin, Clopidogrel, Warfarin, Heparins, Dipyridamole.

These need to be stopped 5-7 days before surgery. If a child is taking any of these medications they need to be discussed with the Consultant Anaesthetist so plan can be made.

Diabetic medications
Children on insulin or other diabetic medications should be referred to the Paediatric Diabetic Team for a perioperative care plan. Once available, a copy should be placed in the notes and a copy given to the parents so they are aware of the plan.

Herbal remedies
Patients should be discouraged from taking non prescribed herbal remedies on the day of surgery. If they feel they must take these please discuss with Consultant anaesthetist.

Analgesia
If children take regular paracetamol and ibuprofen and/or Morphine based drugs these should be taken as usual unless advised otherwise by the surgeon. Patients who do not take these agents regularly should not take them on the morning of surgery as we will prescribe them in the hospital for an appropriate time and they may mask results of arrival observations. **Consider referring those on regular analgesia (particularly if opiates) to the Paediatric Pain Consultant for a peri operative plan.**

If you are not sure about any medication, please discuss with Consultant anaesthetist.

SOUTH TEES CHILDREN & YOUNG PEOPLE'S UNIT

NHS South Tees Hospitals NHS Foundation Trust

GUIDELINE FOR MANAGEMENT OF ELECTIVE ANAESTHESIA IN CHILDREN WITH INFECTIONS

Please warn all parents that their child may be cancelled on the day of surgery if they are not felt to be fit for anaesthesia

FIRST POTENTIAL CANCELLATION → **PROCEED TO MANAGEMENT FLOWCHART**

SUBSEQUENT POTENTIAL CANCELLATION URGENT / EMERGENCY / CANCER CASE / NURSING CONCERN → **DISCUSS CASE WITH ANAESTHETIST**

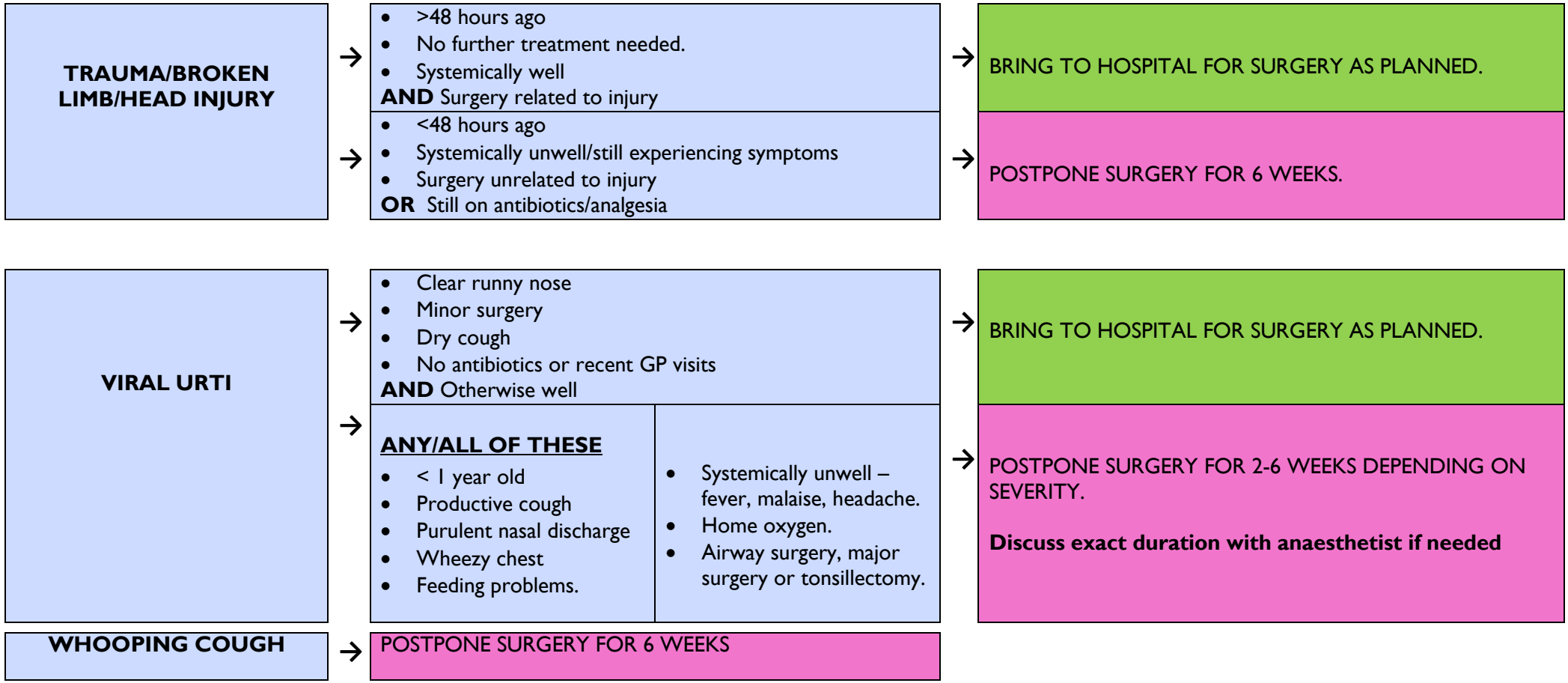
ANAESTHETIC (RECENT)	BRING TO HOSPITAL FOR SURGERY AS PLANNED.	
ADMISSION TO HOSPITAL	• >7 days since admission • Child well • No further treatment planned imminently **AND** Not on antibiotics or analgesia	BRING TO HOSPITAL FOR SURGERY AS PLANNED.
	• Admission in last 7 days • Still on treatment or antibiotics **OR** Child not returned to normal behaviours.	POSTPONE SURGERY FOR 2 WEEKS.
ANXIETY	Mild anxiety on faces scale /parent or child report	Nursing reassurance and information – bring in as planned.
	Moderate anxiety on faces scale / parent or child report	• Nursing reassurance and information – bring in as planned. • Email to anaesthetist covering list
	• Severe anxiety on faces scale / parent or child reporting. • Multiple pre medications for previous anaesthetics **OR** Significant failure of previous anaesthetic	• Nursing reassurance and information • Email to anaesthetist covering list • Offer of appointment at Paediatric Consultant Anaesthetist pre assessment clinic and postpone surgery until completed.
ASTHMA (EXACCERBATION)	• Currently well • Back on usual asthma medications for 48 hours **AND** Systemically well with no other signs of infection.	BRING TO HOSPITAL FOR SURGERY AS PLANNED.
	• Continuing wheeze • On steroid or antibiotics • Systemically unwell / signs of infection **OR** Hospital admission in last 7 days	POSTPONE SURGERY FOR 6 WEEKS

SOUTH TEES CHILDREN & YOUNG PEOPLE'S UNIT

NHS South Tees Hospitals NHS Foundation Trust

BRONCHIOLITIS	→	POSTPONE SURGERY FOR 6 WEEKS.
CHEST INFECTION	→	POSTPONE SURGERY FOR 6 WEEKS.
CHICKEN POX	→	POSTPONE SURGERY FOR 6 WEEKS.
COLD SORES	→ • Minor peripheral surgery (not head and neck) **AND** Otherwise well	→ BRING TO HOSPITAL FOR SURGERY AS PLANNED.
	→ • Major or head and neck/airway surgery • Likely to need epidural **OR** Systemic symptoms – not eating etc.	→ POSTPONE SURGERY FOR TWO WEEKS *(symptoms need to resolve)*
CONJUNCTIVITIS	→ • >48 hours antibiotic treatment • Systemically well child **AND** Minimal redness and discharge from eye	→ BRING TO HOSPITAL FOR SURGERY AS PLANNED.
	→ • Antibiotic treatment for <48 hours • Child systemically unwell **OR** Significant purulent eye discharge and redness	→ POSTPONE SURGERY FOR 2 WEEKS
DIARRHOEA AND VOMITING	→ • Systemically well **AND** No diarrhoea or vomiting for OVER 48 hours	→ BRING TO HOSPITAL FOR SURGERY AS PLANNED.
	→ • Diarrhoea or vomiting within last 48 hours • Any other systemic symptoms (fever, malaise, off food) **OR** Confirmed E.coli as cause	→ POSTPONE SURGERY FOR 7 DAYS **Child must be well and free of symptoms for 48 hours pre new date.** E.coli cases require negative stool sample before re listing.
EAR INFECTION	→ • Systemically well **AND** Not on antibiotics	→ BRING TO HOSPITAL FOR SURGERY AS PLANNED.
	→ • On antibiotics **OR** Systemic symptoms – fever, malaise, headache, pain, off food	→ POSTPONE SURGERY FOR FOUR WEEKS
FEVER	→ • No fever for last 24 hours **AND** Systemically well	→ BRING TO HOSPITAL FOR SURGERY AS PLANNED.
	→ • Systemically unwell • <1 year old • On antibiotics **OR** Recent foreign travel	→ POSTPONE SURGERY FOR 2 WEEKS **Discuss case with anaesthetist if complicating factors/to determine exact length of postponement.**

HAND, FOOT AND MOUTH	POSTPONE SURGERY FOR 3 WEEKS.	
HEPATITIS A	POSTPONE SURGERY UNTIL SIX WEEKS AFTER SYMPTOM ONSET	
IMPETIGO /SKIN INFECTION	POSTPONE SURGERY FOR 2 WEEKS (Lesions to heal pre re-listing).	
MEASLES	POSTPONE SURGERY FOR 6 WEEKS	
MENINGITIS (VIRAL)	POSTPONE SURGERY FOR 2 WEEKS	
MUMPS	POSTPONE SURGERY FOR 6 WEEKS	
PEG SITE INFECTION	• Surgery at distant site from PEG **AND** Patient systemically well	BRING TO HOSPITAL FOR SURGERY AS PLANNED.
	• Orthopaedic surgery or surgery at site close to PEG **OR** Any systemic symptoms	POSTPONE SURGERY FOR 2-4 WEEKS (DEPENDING ON SEVERITY)
RINGWORM (ANY SITE)	POSTPONE SURGERY FOR 2 WEEKS AFTER TREATMENT COMPLETED. **IF CHRONIC DISCUSS WITH ANAESTHETIST**	
RUBELLA	POSTPONE SURGERY FOR 6 WEEKS	
SCABIES	POSTPONE SURGERY TILL 7 DAYS AFTER TREATMENT COMPLETED	
SCARLET FEVER	POSTPONE SURGERY FOR 6 WEEKS	
SLAPPED CHEEK PARVOVIRUS	POSTPONE SURGERY FOR 2 WEEKS	
TONSILLITIS	• Otherwise systemically well • On no antibiotics **AND** Not having throat or nasal surgery	BRING TO HOSPITAL FOR SURGERY AS PLANNED.
	• Systemically unwell • On antibiotics **OR** Having Tonsillectomy or Adenoidectomy	POSTPONE SURGERY FOR 6 WEEKS.



References

1. Health Protection in Schools and other childcare facilities, Public Health England, May 29 2018. https://www.gov.uk/government/publications/health-protection-in-schools-and-other-childcare-facilities

2. Nandlal Bhatia, Nicola Barber; Dilemmas in the preoperative assessment of children, Continuing Education in Anaesthesia Critical Care & Pain, Volume 11, Issue 6, 1 December 2011, Pages 214–218, https://doi.org/10.1093/bjaceaccp/mkr039

Forms

1. Pre assessment referral form (any case) – does not need completion as information usually emailed but details required information.
2. One Stop Paediatric Pre assessment referral form.
3. Elevated BMI referral.
4. Blood refusal checklist

Paediatric pre assessment Referral Template

So that we can keep track of referrals - ALL referrals (even those also telephoned) should be emailed with the following information to:

Date / time of referral			
Name of referring person			
Patient name			
Patient date of birth			
Patient Hospital number			
Patient address (please check)			
Name(s) of parent/guardian/carers			
Best contact telephone number for patient/parent or carer (please check)			
Proposed procedure			
Date of proposed procedure (if known)			
Name of surgeon			
Type of pre assessment required	Face to Face		Telephone only
	Face to Face + Consultant		
Copy of Consultant clinic letter forwarded *(if Consultant anaesthetist assessment needed)*	Yes		No
Additional information *(Examples include: Best times to contact family, previous anxiety issues/problems following surgery, Autism, Safeguarding concerns etc.)*			
Is referral urgent?	Yes		No
Notes sent to pre assessment team?	Yes		No
Any Covid isolation needed?	None	48-72h	14 days

Telephone Paediatric Pre assessment Service

The telephone paediatric pre assessment service is designed to reduce the disruption to families which can occur if they are required to make multiple trips to the hospital in advance of planned surgery. It is aligned with the family friendly aims of the paediatric surgical service at South Tees and is designed with families in mind. It is designed for children and young people who are:

- Likely to receive a surgical date within the next three months.
- Travel from out of area to attend specialist clinics.
- Are currently medically fit and well.
- Have no significant past medical history.
- Do not have significant social or consent issues.

If a clinician feels that a child or young person meets this criteria they should review the form overleaf. If this form confirms eligibility then the following steps should be taken:

- Confirm that the parent or carer is happy with telephone pre assessment and obtain the best current contact numbers (ideally two contact numbers).
- Confirm the best days and times to contact the parent/carer. The pre assessment service is open 8am-7pm Monday to Friday. At present we do not offer appointments out with these times.
- Organise referral to paediatric pre assessment by emailing details to:
- Please clearly identify that telephone pre assessment is suitable and provide the information outlined above.

If you have any questions about a patient's eligibility. Please contact the paediatric pre assessment service.

Eligibility assessment - Telephone Pre-Assessment

If **ANY** answer falls into a shaded zone the child will need a standard pre assessment.

Name		Hospital number		Date of birth	
Procedure				Proposed date	

	Criteria	Yes	No	Comments
Theatre	Is the child due for theatre within the next 3 months?			
Age	Child is aged over 60 weeks post conceptual age and under 19 years of age?			
Medical History	Is the child under the care of multiple services/consultants?			
	Child has poorly controlled illness? e.g. asthma, cardiac, metabolic			
	Child has kidney/liver or genetic problems?			
	Child has severe learning difficulties or autism?			
	Child or carer has complex physical disabilities?			
	Child has diabetes mellitus or any other endocrine problems?			
	Child has a Haemoglobinopathy? E.g. bleeding and clotting problems such as anaemia? If yes, consider referral for anaesthetic medical review.			
	Child has an un-investigated heart murmur. If yes, consider referral for anaesthetic medical review.			
	Child has history/family history of problems with GA? If yes, consider referral for anaesthetic medical review.			
Infection Control	Child known to be positive or previously positive for any health care acquired infection?			
	Does child or parent have symptoms of Covid-19? Refer to Covid-19 pre assessment pathways.			
Social	Are there any safeguarding/social concerns? e.g. social worker, care order, fostering etc.			

Best Contact numbers for parent/carer	
Preferred contact days/times *(We will do our best to work within these times but due to the nature of the service this is not always possible)*	

Paediatric Elevated BMI - Referral Form

Referral sent to: **Date:**

Patient details				Weight (kg)			
Name							
Date of Birth				Height (m)			
Hospital number							
Address				BMI and BMI Centile			
				Blood Pressure			
				Heart rate			
				Saturations in air			
Contact number							
Respiratory				Cardiovascular			
Asthma		Sleep apnoea		Palpitations		Chest pain	
Shortness of breath		Snoring		Hypertension		Known cardiac issue	
Other (specify)				Other (specify)			
Gastrointestinal /endocrine				Musculoskeletal/Neurological			
Hot flushes		Fatigue/Exhaustion		Joint pains		Paraesthesia	
Signs of Diabetes		Acid Reflux		Muscle aches			
Other (specify)				Other (specify)			
Comments				Blood tests/investigations (not all always needed)			
				FBC		Thyroid function	
				U and E		HbA1C	
				LFT		Fasting blood sugar	
				Lipids /Cholesterol		Random Blood sugar	
				Other (specify)			
				ECG		Echocardiogram	
Parents/Child/Young person aware of referral				Yes		No	
Surgeon aware of referral				Yes		No	
Anaesthetist aware of referral				Yes		No	
Proposed operation							
Proposed date for Surgery							
Surgeon in charge of care							
Referral made by							
NMC				Date/Time			
Please file copy of form in patient notes after referral has been made.							

Blood Refusal - Pre assessment checklist

Please complete the following checklist for all patients who decline the administration of blood products for any reason. All patients who refuse blood products should be referred to the Consultant clinic as soon as possible so that surgery is not delayed.

Name			Referral to Consultant Anaesthetist made		
Hospital Number			Consultant surgeon aware		
Date of Birth			Advised to bring paperwork to clinic		
Address			Last Hb result		
			Date		
Procedure					
Surgeon			Proposed date		
Bleeding risk					
High		Medium		Low	

Does the patient wish to have a representative from the Liaison Committee present at Consultant pre assessment clinic? (Circle)

Yes No Details/booked:

For completion at Consultant Clinic

Full details of consent and consultation will be recorded in the Consultant pre assessment letters.

	Tick when complete	Notes
Full history and examination (as needed)		
Haemoglobin checked		
Consideration of Iron therapy		
Other risk factors (Coagulation/infection/ bleeding history etc.)		
Consideration of need to delay surgery		
Risks explained to patient and carer		
Details taken of specific requests		
Explanation of local policy		

Specific directives

Product	YES	NO	Notes
Auto transfusion			
Blood tests			
Whole blood or product transfusions			
Blood fractions: • Albumin • Immunoglobulins • Anti D • Fractions prepared to treat individual factor deficiencies			
Haemodialysis			
Haemodilution			
Cardiac Bypass			
Cell Salvage (include details)			
Serums			
Erythropoietin			
Expanders (Saline/Dextran/Gelatin/Haemacel/Hetastarch)			

Further actions required:

Signed	
Print name/GMC	
Date	

Useful Contact Numbers/Emails

Name/Details	Contact Number	Email

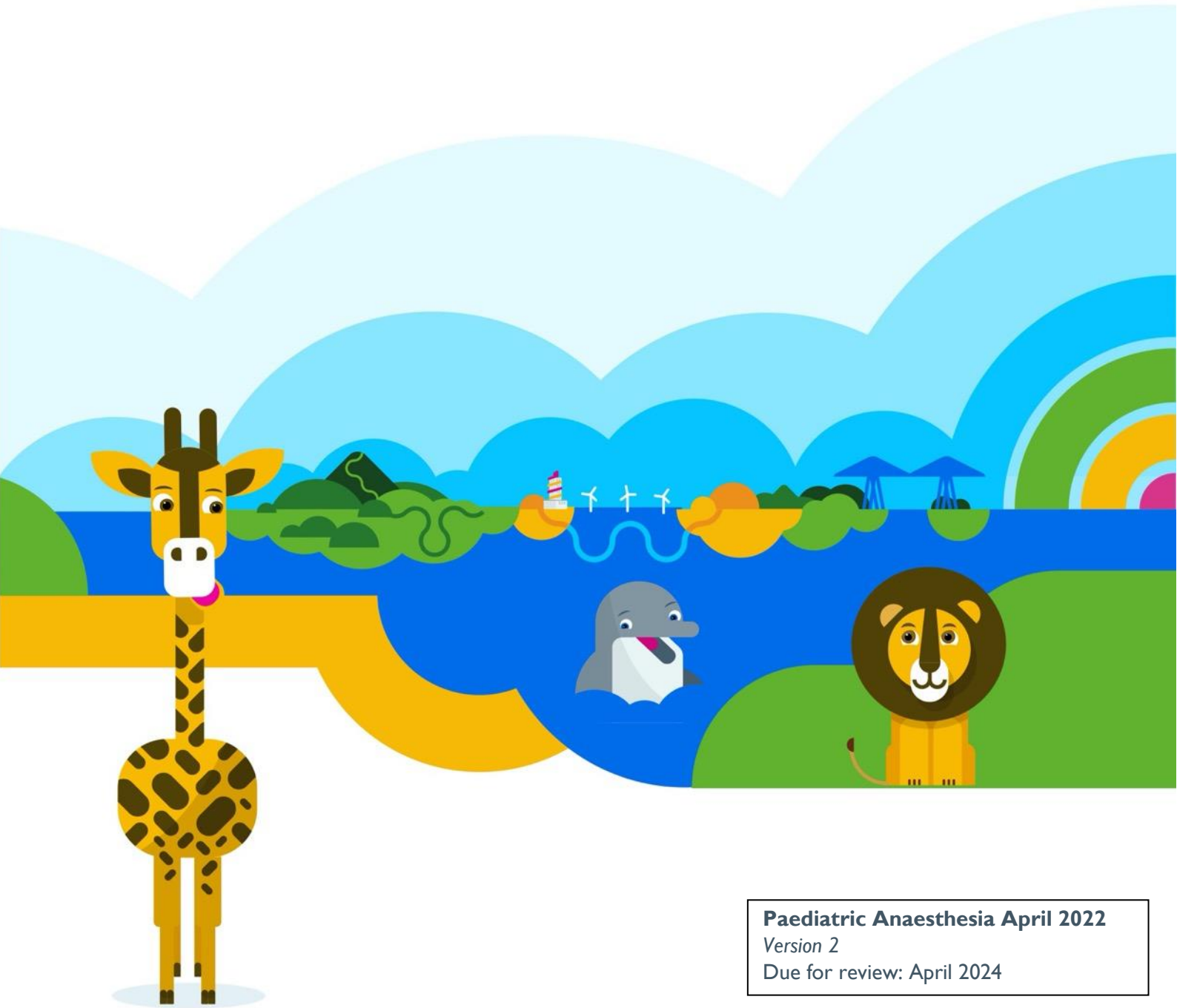
These guidelines are designed for general information within South Tees NHS Trust and are not intended to replace the professional judgement of individual clinicians.

They are as comprehensive as we can make them but may still contain errors. If errors or omissions are noted please contact the Paediatric Pre assessment service so that appropriate updates and corrections can be made.

Staff should use their knowledge, experience and assessment of each individual patient as a basis for variance from the guidelines.

Patients with more complex needs may have additional interventions and these will be noted within the patient notes or nursing pathway.

Patients will need dose adjustments for medication according to age and weight.



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