

Bristol Royal Hospital for Children Guidelines for General Paediatric Surgery of Childhood in the Regional Centre/DGH – Eleri Cusick

Note: These are general guidelines which have been requested by general surgeons in the South and West with an interest in paediatric surgery/ paediatricians. They are not intended to be either prescriptive or exhaustive.

Elective Patients for referral to Regional Paediatric Surgical Centre (BCH)

- All neonates i.e. infants less than 44 weeks gestational age
- All infants/children requiring complex general surgical operations
- All oncological procedures
- All specialist urology
- Consider referral in: All children with complex medical problems requiring even simple surgical procedures e.g. Diabetes, Congenital Heart Disease, Cerebral palsy etc.
- All children likely to need perioperative PICU

Elective Patients for surgery in local DGH

- **Inguinal Herniotomy:** Incarceration is common in first 6 months of life (greater than 60%). In children under 1 year of age we would try and repair these as soon as conveniently possible, usually within 2 weeks of out-patient referral. The younger the child the more urgent the operation. Surgery should never be delayed because the child is too small or too young. Our only exception to this rule is a preterm infant who is an inpatient in SCBU. We would aim to repair all SCBU hernias before the infant is discharged – some notice is helpful to facilitate beds/list time. Children older than one year may safely be placed on the waiting list. Always warn parents of risks of strangulation and need for urgent reduction.

Incarcerated = irreducible hernias should be reduced by gentle pressure. There is no place for Gallows traction. A second attempt after 1 hour following analgesia and being left quiet is acceptable. If you fail to reduce the hernia transfer to immediately to the tertiary centre.

- **Orchidopexy:** We would recommend that an undescended testis is brought down into the groin in the second year of life or as soon as identified in an older child. In the case of an **impalpable testis** the investigation of choice is diagnostic laparoscopy (not ultrasound) and they should be referred to the tertiary centre.
- **Epigastric Hernia:** We do not routinely repair these unless shown to be symptomatic i.e. point tenderness, or major cosmetic concern (child not parent)
- **Umbilical Hernia:** We do not usually repair these until pre-school age and only then if parent/child keen for surgery. Incarceration is extremely rare.
- **Circumcision:** Remember only 1-2% of boys need circumcision. Excluding religious circumcision 5% boys are circumcised in this country i.e. half of all circumcisions undertaken on medical ground are unnecessary. The following are **NOT** of themselves indications for circumcision:
 - Non-retractility in a young boy with a healthy pliable foreskin
 - Ballooning on micturition
 - Occasional episodes of balanitis

Balanitis Xerotica Obliterans (BXO) is a definite medical indication for circumcision. Further guidance on circumcision will be forthcoming.
- **Lumps and bumps:** e.g. pre-auricular skin tag. External Angular Dermoid should be excised electively as they continue to grow slowly and can erode through the skull with a dumbbell component intracranially.

Emergency patients for referral to Regional Paediatric Surgical Centre

- All neonates i.e. infants less than 44 weeks gestational age
- All infants/children requiring complex general surgical operations
- All oncological procedures

- All specialist urology
- Consider referral in:
- All children with complex medical problems requiring even simple surgical procedures
- e.g. diabetics, congenital heart disease, severe cerebral palsy etc
- All children likely to need perioperative PICU

If there is any doubt please phone and discuss with paediatric surgeons. We will not suggest immediate transfer in all cases. In many cases we will be happy to hold a watching brief and accept the patient if the situation changes. If we are unable to accept the patient (bed crises are always with us) we will do our best to direct you elsewhere/ manage long distance as appropriate. Remember if you can see and examine the infant you are hugely advantaged and the ultimate call to transfer (elsewhere) or not must be yours.

Consultant to Consultant referrals are infinitely better than registrar to registrar (or heaven forbid SHO to SHO) referrals.

Multiple Trauma: Only in the rare case of immediate exsanguination should such patients be operated on outside a regional centre. The majority (>97%) of children with blunt abdominal trauma and solid organ injury can be managed expectantly in the presence of immediately available specialist input. The children should be in a PICU.

Initial management of a few critical conditions

- **Bilious Vomiting:** This must **always** be considered a surgical emergency when occurring in a previously well infant or child. Bilious vomiting, especially in a neonate/infant, must be considered to be midgut volvulus secondary to malrotation until excluded by an upper GI contrast study, even in the middle of the night! It only takes 6 hours for ischaemia to lead to necrosis. A plain abdominal XR cannot exclude this condition. The diagnosis is made on the basis of a contrast meal correctly interpreted by a skilled radiologist.

Very premature babies with a feeding NG tube may have bile tinged aspirates particularly in association with NEC. Where another diagnosis has been made then contrast meal is rarely indicated/practical. If in doubt discuss with the Paediatric Surgeons.

Obviously there are many other causes of bilious vomiting but these are largely surgical reflecting intestinal obstruction from whatever cause.

- **Acute paediatric GI bleed:** These guidelines refer to a child with an **acute** GI bleed usually evidenced by frank haematemesis and/or melaena. A child with a large brisk rectal bleed may also be included.

They are **not** intended to apply to:

1. children with NG tubes who have a trace of blood or coffee grounds in the NG aspirate
2. children with known reflux who have a trace of blood or coffee grounds in vomitus
3. children who pass a little fresh blood PR (probable anal fissure)
4. children with blood streaked diarrhoea

A. History is of paramount importance. Try and quantify the volume of blood produced, use everyday objects e.g. spoonful, cupful to help parents. Establish if vomitus was largely blood or merely contained streaks of blood. Were clots present (implies significant bleed)? If PR establish if fresh or tarry black.

B. Is there any relevant past medical history (taking NSAIDs) or family history (e.g. DU). Are there any symptoms suggestive of shock (e.g. dizzy, lightheaded, thirsty, agitated)

C. Examination. A B C. Remember isolated tachycardia may be the only hard sign of a significant GI bleed, BP is usually maintained. An active bowel sounds++ implies an on-going bleed. Always do a rectal examination to look for blood/melaena

D. Investigations. Never assume that a low Hb reflects a chronic anaemia if the history suggests a significant bleed. Always repeat the Hb 12 and 24 hours

later – it may take time to equilibrate. A Hb within normal range does not exclude a major GI bleed.

- E. Resuscitation. APLS, remember that if blood is lost ultimately blood is required. A bolus of crystalloid/colloid is a short term holding measure only.
- F. Management. Once resuscitation and preliminary blood tests are available **all these children need to be assessed by a paediatric surgeon/paediatric gastroenterologist on presentation, with a view to urgent endoscopy. Keep them fasted for theatre.**
- G. Some of these children will have oesophageal varices/ bleeding duodenal ulcer necessitating surgery. **A rebleed may be fatal**

Emergency Cases suitable for DGH with appropriate expertise

- **Pyloric Stenosis:** Diagnosis is usually made on test-feed which may be carried out using clear fluid or milk. Ultrasound may be helpful – remember you need an experienced radiologist and measurements will vary with age. All infants are dripped and an NG tube is passed and left on continuous drainage plus hourly aspiration. Infants >44 weeks receive 5% dextrose/0.45% saline + KCl 10mmol/500ml at 150ml/kg/24hr until base excess &/or HCO₃ is in the normal range
Infants < 44 weeks receive 10% dextrose/0.45% saline + KCL 10mmol/500ml at 150ml/kg/24hrs until base excess &/or HCO₃ is in the normal range.
If serum K is <3.5mmol/l then 20mmol KCl/500ml dextrose saline is used.
Once serum electrolytes are normal the infusion rate is reduced to 120ml/kg and standard fluids prescribed.
Note in addition all NG losses are replaced ml/ml with Normal saline/KCl 10mmol/500ml
If the baby is clinically dehydrated then additional fluid will be required.
Post-operatively we routinely remove the NG tube at the end of the case, we do not routinely offer feeds until around 12hrs post op. If the baby is breast fed it may then be put to the breast. If formula fed it may receive one clear feed (optional) before

receiving increasing volumes of formula milk. Babies are usually established on full feeds within 12hrs of recommencing feeds. It is not unusual to have the occasional vomit but persistent vomiting suggests gastro-oesophageal reflux and may require treatment. In the event of inadvertent mucosal breach recognised at surgery we would keep the baby on antibiotics for 24hrs and leave it nil by mouth for 48hrs.

- **Intussusception:** Children die every year from intussusception in the UK, the majority involve medical mismanagement. Diagnosis is made on ultrasound scan prompted by clinical suspicion. Most intussusceptions should be transferred to the tertiary centre as these children can be extremely unwell. This is a time critical transfer. In rare instances where an experienced radiologist and experienced surgeon are on standby an air enema may be done locally. Ba enema is not an acceptable alternative. We would recommend antibiotic cover (aerobic and anaerobic) for the procedure and of course the child will have an IV infusion. If the history is long and the child is shocked commence resuscitation and transfer to Bristol immediately. **This is not an indication for urgent surgery locally.** If the child is well with a short history and air enema is unsuccessful a choice needs to be made; operative reduction versus transfer. Feel free to phone and discuss.
- **Appendicitis:** This is a common condition well managed in all the regional hospitals. In a child < 5 years the diagnosis may be difficult and is often delayed - consider transfer particularly in a toddler or complicated pre-/post-operative course.
- **Testicular Torsion:** Often suspected, this frequently turns out to be a torted Hydatid Cyst of Morgagni nonetheless diagnosis can usually only be made at exploration which is indicated as a matter of urgency even with a relatively long history > 24-48hrs.

These are general guide lines for surgical patients in the District General Hospital they are not intended to be either prescriptive or exhaustive.