

Clinical Guideline

GASTROINTESTINAL HAEMORRHAGE - MANAGEMENT OF ACUTE UPPER GASTROINTESTINAL HAEMORRHAGE - IN BRHC AND REGIONAL HOSPITALS

SETTING	General paediatrics, Bristol Royal Hospital for Children and South West region
FOR STAFF	Doctors in secondary care in discussion with paediatric gastroenterology
PATIENTS	Children with Gastro-intestinal bleeding

What is this guideline for?

This guideline is for the initial assessment and management of children who present with upper gastro-intestinal (GI) bleeding. This guideline is based on the 2017 consensus guideline of the British Society of Paediatric Gastroenterology, Hepatology & Nutrition.

Appendix 1 provides a flow chart of management. Appendix 2 provides details of management.

Upper gastrointestinal bleeding is an uncommon but potentially serious, life-threatening condition in children. Common signs and symptoms of **significant** acute upper GI bleed are fresh haematemesis, **accompanied** by haemodynamic instability with drop in haemoglobin and/or melaena. Other presentations can include coffee-ground emesis; however, patients may also experience epigastric pain, abdominal tenderness or dizziness.

Immediate management

Rapid assessment, stabilisation and resuscitation according to the principles of Advanced Paediatric Life Support should precede ALL diagnostic interventions in unstable children.

Initial management of a suspected upper GI bleed is outlined in the flow chart: appendix 2

Request emergency review using local protocol (Bristol request paediatric medical emergency team 2222)

Obtain IV access and treat shock with fluid bolus/blood transfusion following **the local major haemorrhage protocol** where appropriate. Do not over transfuse, aiming for an initial Hb of 90g/L, if Hb has dropped below 70g/L

What should happen once the patient is physiologically stable?

The child should be kept nil by mouth.

Secure intra-venous access x2

Bloods to be sent (if have not gone already) for Full Blood Count, renal profile, liver profile, clotting profile, blood gas and cross-match

Give intra-venous omeprazole

If there is any suspicion of button battery ingestion an urgent chest x-ray should be performed – please see updated [South West Paediatric Major Trauma Network guideline on Button Battery Ingestion](#) by N.Jain, P.Davis, J. McNally and R.Garrett-Cox

An urgent abdominal ultrasound should be performed to evaluate liver and spleen size to assess risk of portal hypertension, if clinically unclear on examination.

Insert large bore draining NG tube **if** bleeding appears to be continuing

How to assess the severity of gastro-intestinal bleeding

Tachycardia is the most sensitive indicator of blood loss in children; hypotension is a late sign of decompensation.

Temperature (infection is a serious complication with significant mortality)
Watch out for confusion/ irritability. GI bleeding can trigger encephalopathy if underlying liver disease.

The Sheffield scoring system (Appendix 3) may be helpful to assess the significance of gastro-intestinal bleeding and to decide how soon the patient may require endoscopy and hence appropriate transfer.

Ongoing management

If a patient stabilises following fluid resuscitation, and is alert and responsive, with no oxygen requirement, they should be admitted to the local paediatric High Dependency Unit from the Emergency Department. Surgical review may be indicated.

If a patient remains unstable or becomes less conscious, the patient should be discussed with the local anaesthetic/intensive care team and WATCh.

Monitor urine output. Placement of urinary catheter may be required if urine output is poor or uncertain.

If a patient is febrile or in pain, paracetamol at the normal recommended dose can be prescribed.

DO NOT GIVE NSAIDs!!

Is it likely this is a variceal bleed?

If the patient has pre-existing liver disease, a variceal bleed should be suspected. The patient is likely to be under shared care with one of the 3 national quaternary liver units (Birmingham; Kings; Leeds), usually Birmingham. Telephone the Liver registrar on - call at the appropriate Liver centre to alert them of the patient and follow their advice.

A significant gastro-intestinal bleed may be the first presentation of liver disease. If the child has an enlarged spleen and/or deranged liver function tests, including serum bilirubin, ALP, ALT, AST, GGT & albumin, low platelet count and/or prolonged clotting, a variceal bleed should be suspected. If the patient is not known to a specific Liver Unit, please contact the **Birmingham Paediatric Liver Unit** for advice.

Subsequent management of a variceal bleed will include administration of intra-venous antibiotics and an intravenous infusion of octreotide. Bleeding usually stops with these measures. In rare cases, if bleeding is not controlled, it may be possible to tamponade oesophageal bleeding with a Foley catheter or a Sengstaken-Blakemore tube but only after ET intubation. Conscious level should be monitored and concern should be discussed with the liver team and local intensive care.

When does a non-variceal upper GI bleed require endoscopy?

Patients with variceal bleeding should only undergo endoscopy in a dedicated liver centre unless it is a life threatening situation.

Timing of endoscopy for non-variceal bleeding will be made in discussion with paediatric gastroenterology consultant.

Where should the child be transferred?

If the child is suspected to have variceal bleeding, they will require definitive care in a liver centre. They should not be transferred to Bristol apart from exceptional circumstances, as paediatric gastroenterology in Bristol, does not provide emergency management of variceal bleeding.

If this is a significant, non-variceal bleed, the child may be transferred to Bristol for endoscopic assessment. Transfers should be co-ordinated by the WATCh team.

Who to contact in Bristol for further advice

Currently Bristol does not have a 24 hour, seven day a week, dedicated GI bleed rota.

In hours – contact Paediatric Gastroenterology Consultant via on –service mobile phone 07789876406 or through switchboard

Out of hours – contact either Surgical team or specialty on-call paediatric registrar to discuss, if referring hospital is requesting transfer. It is possible in certain situations, the referral will be redirected.

Table A

REFERENCES	<ul style="list-style-type: none"> Diagnosis and Management of Upper Gastrointestinal Bleeding in Children. <i>Susan Owensby, DO, Kellee Taylor, DO, and Thad Wilkins, MD, MBA</i>. <i>J Am Board Fam Med</i> 2015; 28:134 –145. Cheung J, Soo I, Bastiampillai R et al. Urgent vs. non-urgent endoscopy in stable acute variceal bleeding. <i>Am J Gastroenterol</i> 2009;104(5):1125-9. Ferrnandez J, Ruiz dA, Gomez C et al. Norfloxacin vs ceftriaxone in the prophylaxis of infections in patients with advanced cirrhosis and hemorrhage. <i>Gastroenterology</i> 2006;131(4):1049-56. de Franchis R. Revising consensus in portal hypertension: report of the Baveno V consensus workshop on methodology of diagnosis and therapy in portal hypertension. <i>J Hepatol</i> 2010;53(4):762-8. Ibrahim M, El Mikkawy A, Mostafa I et al. Endoscopic treatment of acute variceal hemorrhage by using hemostatic powder TC-325: a prospective pilot study. <i>Gastrointest Endosc</i> 2013;78(5):769-73. McKiernan PJ. Treatment of variceal bleeding. <i>Gastrointest Endosc Clin N Am</i>. 2001 Oct;11(4):789-812, viii. McKiernan PJ, Beath SV, Davison SM. A prospective study of endoscopic esophageal variceal ligation using a multiband ligator. <i>J Pediatr Gastroenterol Nutr</i>. 2002 Feb;34(2):207-11. Villanueva C, Colomo A, Bosch A et al. Transfusion strategies for acute upper gastrointestinal bleeding. <i>N Engl J Med</i> 2013;368(1):11-21. Ranbaxy (UK), 2018. Summary of product characteristics – Esomeprazole 40mg powder for solution for injection/infusion. Available at: https://www.medicines.org.uk/emc/product/4095/smpc [Accessed 5/6/2020] Medusa, 2016. Paediatric Intravenous monograph – Octreotide Version 6 Available at: https://medusa.wales.nhs.uk [Accessed 05/06/2020] Novartis, 2020. Summary of product characteristics – Sandostatin 100microgram/1ml, solution for injection/infusion. Available at: https://www.medicines.org.uk/emc/product/7825/smpc [Accessed 05/06/2020]
RELATED DOCUMENTS AND PAGES	No
AUTHORISING BODY	Paediatric Gastroenterology Governance Group
SAFETY	No
QUERIES AND CONTACT	Paediatric Gastroenterology secretaries 01173429451

Appendix 1 - GI Bleeding Management Pathway

Monitoring: Suspected variceal or high risk bleed needs continuous monitoring HR BP RR. AVPU at regular intervals. Reassess Sheffield Score if status changes.
Progression:
 Do not delay in working through flow chart. Proceed with management where possible whilst awaiting results.

Any child vomiting any blood

Assess & Manage ABC

Keep NBM

IV Access

Fluid / blood bolus and 2 large cannulae if shocked.
 Consider major haemorrhage protocol.

Button battery present above diaphragm **Arrange Emergency removal.** (usually by ENT or paed surgeon)
 Large Cannula X 2 Crossmatch and FBC, Coagulation, U+E, blood gas

Perform URGENT CXR to Check for button battery unless ingestion can confidently be excluded.

No button battery apparent

If uncontrollable bleeding use Foley Catheter or Sengstaken Blakemore tube to tamponade oesophageal bleeding (insert then inflate balloon)

Assess likelihood of portal hypertension:
 Enlarged liver, spleen, history of liver disease
 Bloods: FBC, Coagulation, Group and save, LFT, U+E
 IV omeprazole
 Urgent US abdomen

Portal Hypertension likely
 Enlarged spleen +/- liver de-arranged LFTs. Known liver disease or portal hypertension.
 Discuss with variceal bleeding centre and follow guidance
 IV Antibiotics and octreotide, correct coagulopathy. Uncontrollable bleeding use Sengstaken Blakemore tube or foley catheter to tamponade bleeding

Portal hypertension unlikely
 Assess risk eg with Sheffield Score. More detailed history of bleeding.

High risk: requires urgent endoscopy with endoscopist and surgeon able to manage acute bleeding. Consider octreotide and tranexamic acid to control bleeding. Consider transport discuss with PICU transport team

Low risk: Endoscopy not urgent. Can remain in local centre and discuss further management with Paed endoscopist after considering other reasons for reported blood eg epistaxis.

GI Bleeding Pathway V1 31st March 2018

Appendix 2 Assessment and Management of Oesophageal Varices in Children 2017: Guideline of British Society of Paediatric Gastroenterology, Hepatology and Nutrition (BSPGHAN)

AIRWAY, BREATHING & CIRCULATION (ABC)

- ABC patient assessment
 - o Airway: Ensure airway is patent
 - o Breathing: Visually assess patient for breathing efficacy and effort. Obtain respiratory rate and oxygen saturation. Administer oxygen via a face mask if required
 - o Circulation: Obtain heart rate, manual pulse, capillary refill and blood pressure. Start continuous monitoring of heart rate and oxygen saturation

FLUID RESUSCITATION and INITIAL MANAGEMENT

- Insert two wide bore peripheral intravenous cannulas and commence intravenous fluids: either crystalloid or colloid as clinically indicated and fluid bolus if required. Ensure sample for full blood count, coagulation and cross match is obtained ASAP.
- Aim initially to transfuse to haemoglobin level of 90g/L: commence transfusion slowly to reduce risk of increasing portal pressure and re-bleeding. **Do not over-transfuse.**
- If no blood group matched blood is available, use O Negative blood.
- Give platelets, Fresh Frozen Plasma (FFP), and cryoprecipitate where indicated (platelets $<100 \times 10^9/L$ or INR >1.5 and bleeding not controlled).
- Commence patient on 2/3 maintenance intravenous (IV) fluids
- Keep child nil by mouth
- Monitor blood sugars 2-4 hourly. Aim for a blood sugar of 4-8mmols/L. Consider changing to 10% glucose concentration in IV fluids if patient is hypoglycaemic
- Correct any electrolyte or pH abnormalities
- Strict fluid balance (monitor input and output)

INVESTIGATIONS

- Obtain blood gas (processed urgently) and blood sugar
- Bloods: FBC, U&Es, INR, renal, liver and bone profiles and blood cultures. Consider sending an ammonia sample (stored on ice) if encephalopathy suspected

PHARMACOLOGICAL THERAPY

OCTREOTIDE INTRAVENOUS INFUSION

- Commence in children with possible varices as cause of gastrointestinal bleed.
- Give peripherally via a large dedicated vein and monitor injection site. Do not run with other medicines or fluids.

Octreotide dose:

Stat dose: 1microgram/kg IV over 5 minutes (maximum 50 microgram) followed by

Intravenous infusion at 1-3microgram/kg/hour (max 50microgram/hour)

To prepare:

- Patients weighing 10kg or more:** dilute 500micrograms to a **final volume** of 40ml with 0.9% sodium chloride
- Patients weighing less than 10kg:** dilute 300micrograms to a **final volume** of 24mL with 0.9% sodium chloride

2ml/hour of these infusion strengths = 25microgram/hour

0.08ml/kg/hr of these infusion strengths = 1microgram/kg/hr

Syringe must be changed **every 8 hours** (see Medusa)

Use octreotide 100micrograms/mL ampoules to make the infusion,

Note that dilution instructions are specific to the preparation – seek pharmacy advice if considered using a different strength preparation. Multidose vials (1mg/5mL) should **not** be used for intravenous infusion due to phenol content.

Continue Octreotide Infusion until 24 hrs after bleeding is controlled, then wean slowly over 24 hours to reduce risk of rebound bleeding.

Octreotide has a short half- life, therefore re-site cannula immediately if cannula tissues

OTHER DRUGS

- Intravenous antibiotics: Start Tazocin (cover for gram positive and negative cover)
- Intravenous proton pump inhibitor
- omeprazole (1mg/kg od max 40mg OD) **or**
- Vitamin K (phytomenadione): 300microgram/kg as slow IV injection (max 10mg) once daily

ADDITIONAL MANAGEMENT

NASOGASTRIC TUBE

If a nasogastric tube is in situ, it may be used to aspirate and be put on free drainage. **Do not insert a new nasogastric due to risk of further bleeding.**

SENGSTAKEN TUBE

If bleeding continues and the patient is not responsive to all of the above management, consider placing a Sengstaken-Blakemore Tube. This however is **RARELY** needed. Patient must be intubated and transferred to intensive care setting prior to Sengstaken-Blakemore tube insertion. This should only be passed on an **intubated child** when rapid blood loss continues in spite of medical management. Control of the airway and volume replacement are essential. Once the tube has been passed well into the stomach, inflate the **Gastric balloon** and tube with 40mls sodium chloride and 10mls contrast (available via radiographer. The gastric balloon will need to be pulled into position and secured so pressure is maintained at the OG junction and maintained on skin traction. **DO NOT INFLATE OESOPHAGEAL BALLOON**

Leave gastric and oesophageal lumen on free drainage. Portable check x-ray required immediately to assess the size and position of gastric balloon. Regular release of traction is essential to avoid skin injury from continuous pressure. The balloon is deflated at time of endoscopy.

Weight of Child	SENGSTAKEN TUBE Size
10-30 kg	Foley Cather – to discuss
> 30 kg	paediatric size 16F

For infants < 10kg in whom use of a Sengstaken tube is not possible because of size, a Foley catheter inserted orally may be effective. This however is NOT a licensed use of Foley catheter.

FURTHER ADVICE

Ongoing management, including transfer, should be discussed with a centre that can offer endoscopic treatment at the earliest opportunity. Local arrangements and pathways should be in place, and may include referral to colleagues in paediatric surgery depending on local practice, to tertiary paediatric gastroenterology centre or to specialist liver service.

The following are the contact details of specialist hepatology centres for children: contact details of your referral centre could be inserted into a local version of this guideline.

BIRMINGHAM

The Liver Unit, Birmingham Children's Hospital

Consultant Paediatric Hepatologist: switchboard 0121 333 9999

Registrar: via switchboard 0121 333 9999 and request registrar phone or bleep 55200

Nursing team: Liver Direct 0121 333 8989 or email bwc.liverdirect@nhs.net

Ward: Liver Unit Ward 8: 0121 333 9066

Office Fax: 0121 333 8251

LEEDS

Children's Liver Unit, Leeds Children's Hospital.

Consultant Paediatric Hepatologist: switchboard 0113 2432799

Registrar: via switchboard or ward and request paediatric hepatology registrar (9am-5pm weekdays) OR Paediatric Specialty Registrar On Call (5pm-9am weekdays and weekends).

Clinical Nurse Specialist Team: 0113 3926151 / 3926138

Ward 50: tel 0113 3927450

Fax 0113 3925129 (Admin Office) or 0113 3923110 (Ward Doctors Office)

KING'S, LONDON

Paediatric Liver, Gastroenterology and Nutrition Centre, King's College Hospital, London

Phone 020 3299 9000

Fax 0202 3299 4228

Bleep 426 weekdays 9am-5pm

Phone 07866792368 (5pm-9am)

Appendix 3 **Sheffield Scoring Scheme**

History

Significant pre-existing condition	1
Presence of Melaena	1
History of large bloody vomit	1
Clinical examination	
HR>20 from mean for age	1
Prolonged capillary refill	4
Lab tests	
Hb drop >20g/L	3
Management	
Requirement for IV fluid bolus	3
Requirement for transfusion (Hb<80)	6
Need for other blood product	4

Maximum score 24.

High risk of needing endoscopic intervention >8