

Button Battery or Magnet Ingestion Clinical Guideline

V2.0

July 2025

Ingestion of a Button Battery or a Magnet is a clinical emergency. Batteries lodged in the oesophagus must be removed within 2 hours of ingestion to avoid serious and delayed complications including death. Batteries in the oesophagus may be asymptomatic initially, do NOT wait for symptoms.

1. Aim/Purpose of this Guideline

- 1.1. This guideline has been written to cover the uncommon presentation of button battery or multiple magnet ingestion in a child. As the case of button battery ingestion and in particular impaction in the oesophagus has such a critical time pressure, we have agreed locally that the adult Gastroenterologists (+/- involvement from ENT) will perform an emergency endoscopy on a child for this particular emergency. This is because delaying until transfer to Bristol Children's Hospital could be fatal or result in life altering injury. We have included the situation of multiple magnet ingestion as this can also lead to rapid intestinal perforation and needs early senior decision-making.
- 1.2. This version supersedes any previous versions of this document.

Data Protection Act 2018 (UK General Data Protection Regulation – GDPR) Legislation.

The Trust has a duty under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team.

Royal Cornwall Hospital Trust rch-tr.infogov@nhs.net

2. The Guidance

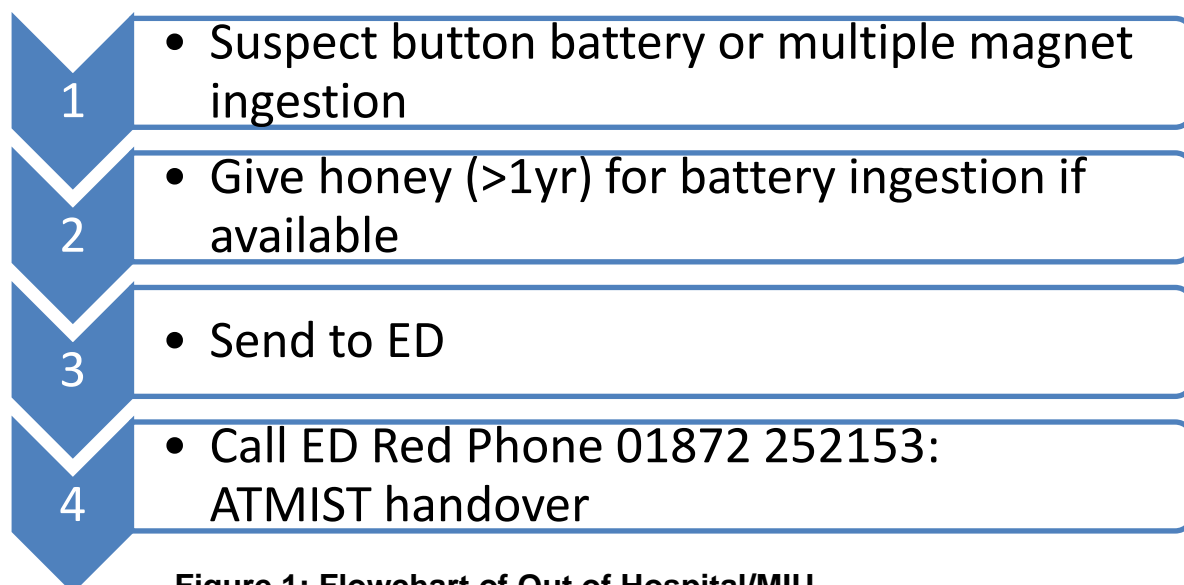


Figure 1: Flowchart of Out of Hospital/MIU

- 2.1. Do not induce vomiting.
- 2.2. Administer honey on route to ED if immediately available and child >1yr of age, if:
 - A lithium coin cell may have been ingested (if unknown, assume it is unless it is a hearing aid battery). AND,
 - The child is 12 months of age or older (honey is not safe in children younger). AND,
 - The battery was swallowed within the prior 12 hours (because the risk that oesophageal perforation is already present increases after 12 hours).
- 2.3. How to dose honey: Give 10 mL (2 teaspoons) of honey by mouth every 10 minutes for up to 6 doses. Honey is NOT a substitute for immediate removal of a battery lodged in the oesophagus. It slows the development of battery injury but won't stop it from occurring. Efficacy is based on a 2018 study [3].
- 2.4. Other than giving honey, keep the patient Nil By Mouth (NBM) until an oesophageal battery position is ruled out by x-ray.
- 2.5. Organise the most rapid method of transfer to the ED. If the child is seriously unwell or there are concerns about airway obstruction (any of stridor, wheezing, drooling) then transfer must be via 999 ambulance.
- 2.6. Ring the ED Red Phone and provide a "Medical ATMIST" handover – this will be passed to the most senior ED doctor who will coordinate an emergency response.
- 2.7. **In hospital Management**

Please see flow chart on the next page.

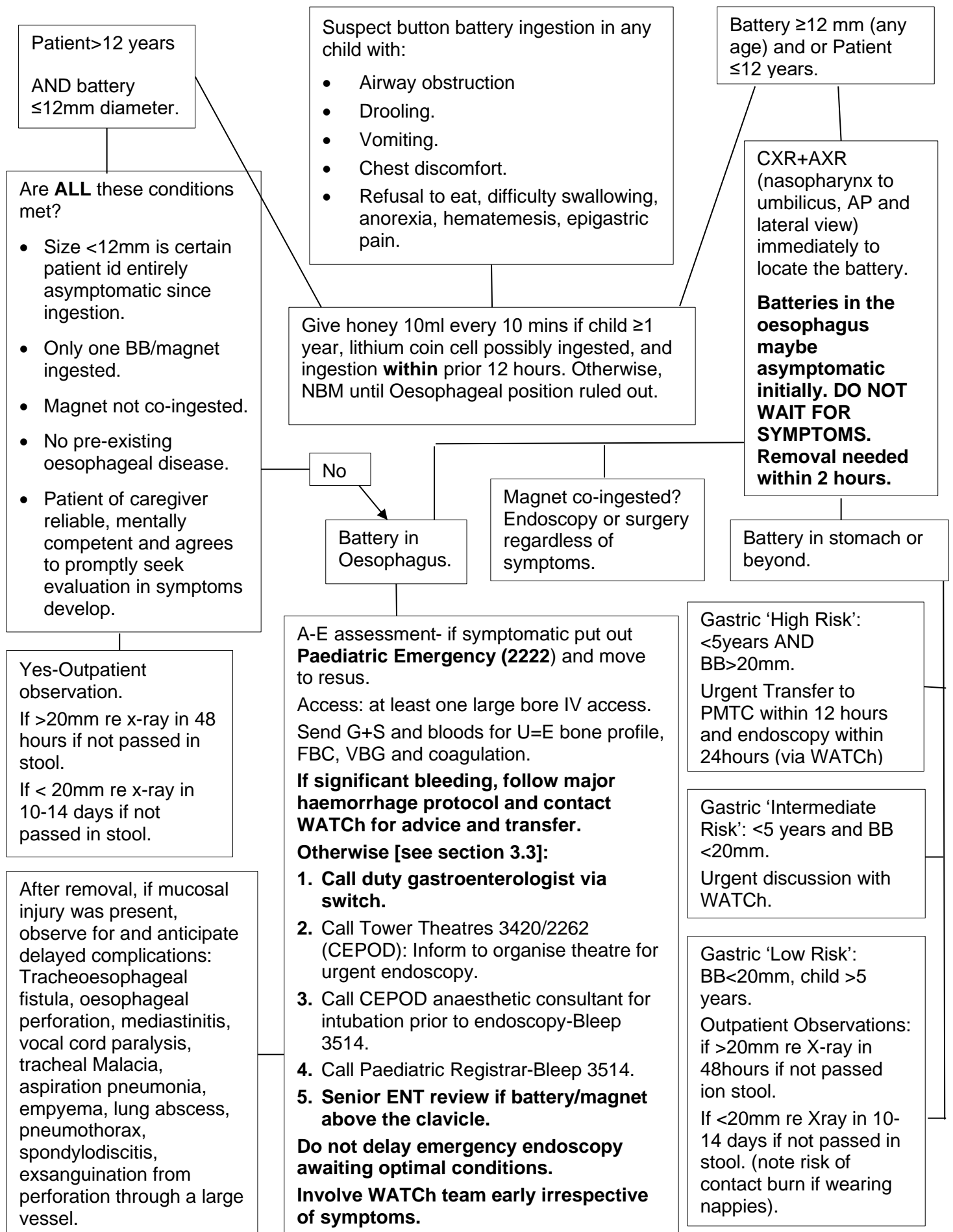


Figure 2 Summary of in-hospital Management of suspected Button Battery/magnet ingestion

2.7.1. Who to call

In Hours (0800-1800):

- Paediatric Emergency 2222 if unwell or Paeds Reg (bleep 3514) if not unwell. Always involve Paediatric team.
- Call duty gastroenterologist [GOF1] via switchboard.
- Call Trelawney Nursing co-ordinator baton phone (07584 888634) and inform of urgent endoscopy requirement needing mobilisation of most suitable anaesthetist and interruption of first available list to facilitate immediate removal of the battery.
- Senior ENT review if battery / magnet above the clavicle.

Out of hours (1800-0800 / Weekends / Bank Holidays):

- Paediatric Emergency 2222 if unwell or Paediatrics Registrar (bleep 3514) if not unwell. Always involve Paediatric team.
- Inform on call Consultant Gastroenterologist (on call for Gastrointestinal (GI) bleeds) via switchboard.
- Inform Collaborative Effort for Patient Outcome Development (CEPOD) consultant 07979 707573 / bleep 3513 / Th7 ext. 2262.
- Senior ENT review if battery / magnet above the clavicle.

2.7.2. When to suspect battery / magnet ingestion:

2.7.2.1. Suspect Button Battery / magnet ingestion in any child < 16 yrs with any of these symptoms and no history of viral illness:

- Airway obstruction/wheezing.
- Drooling.
- Vomiting.
- Chest discomfort.
- Refusal to eat, difficulty swallowing, anorexia.
- Haematemesis, epigastric pain.
- Any parental suspicion of button battery ingestion.

2.7.2.2. Note: a history of no batteries in the environment is not always reliable – hearing aids, toys, gadgets and children's interactive books all contain button batteries and spare batteries are often mislaid. Likewise, small powerful magnets are now commonly sold as children's toys or jewellery.

- 2.7.2.3. Metal Detector may help to identify rough location and can exclude low-risk metallic foreign object ingestion but cannot be used to exclude a button battery or magnet when the child meets one of the above criteria.

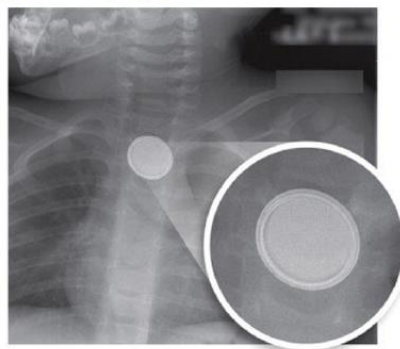
2.8. ED: If battery ingestion is suspected:

- 2.8.1. All Staff: This is an emergency – Call a Paediatric Emergency (2222) now for an unwell child or Paediatric Registrar via bleep 3514 if not acutely unwell, enlist senior help immediately and triage as Category 1 / Resus priority.
- 2.8.2. Manage the child in Resus if symptomatic, but do not be fooled by lack of symptoms – serious damage may be occurring: batteries lodged in the oesophagus may cause serious burns in as little as 2 hours. Do not wait for symptoms to develop. Patients with a battery in the oesophagus may be fully asymptomatic initially.
- 2.8.3. Manage Airway, breathing, Circulation(ABC). If airway symptoms or GI bleeding – ensure Paediatric Emergency 2222 and refer to Resuscitation section below.
- 2.8.4. Do not induce vomiting.
- 2.8.5. Administer honey if immediately available if:
- A lithium coin cell may have been ingested (if unknown, assume it is unless it is a hearing aid battery) AND,
 - The child is 12 months of age or older (honey is not safe in children younger) AND,
 - The battery was swallowed within the prior 12 hours (because the risk that oesophageal perforation is already present increases after 12 hours).
- 2.8.6. How to dose honey:
- Give 10 mL (2 teaspoons) of honey by mouth every 10 minutes for up to 6 doses. Honey is NOT a substitute for immediate removal of a battery lodged in the oesophagus. It slows the development of battery injury but will not stop it from occurring. (Efficacy is based on a 2018 study [3].)
- 2.8.7. Other than giving honey, keep the patient NBM until an oesophageal battery position is ruled out by x-ray.
- 2.8.8. Perform rapid physical examination: check both ear canals and the nasal cavity to exclude battery insertion.
- 2.8.9. Perform emergency x-ray (to be the next patient in the x-ray room, or portable in Resus for child with airway obstruction):
- If the patient is < 12 years immediately obtain an x-ray to locate the battery. Do not rely on metal detector to rule out battery ingestion.

OR

- If the patient is > 12 years AND the ingested battery is <12 mm, no x-ray is required to locate the battery if all of the following conditions are met:
 - The patient is entirely asymptomatic and has been asymptomatic since the battery was ingested.
 - Only one battery or magnet was ingested.
 - A magnet was not co-ingested.
 - The battery has been reliably identified based on imprint code or measurement of an identical cell, and the diameter is < 12 mm (assume hearing aid batteries are less than 12 mm).
 - There is no history of prior oesophageal surgery, oesophageal stricture/narrowing, motility disorders, or other oesophageal disease.
 - The patient (or caregiver) is reliable, mentally competent, and agrees to report symptoms that develop prior to battery passage, or over the subsequent month if passage is not documented and understands the importance of promptly seeking evaluation for symptoms possibly related to the ingested battery.
- X-rays obtained to locate the battery should include the entire neck, oesophagus, and abdomen from nose to umbilicus.
 - Batteries located above the range of the x-ray have been missed, as have batteries assumed to be coins or cardiac monitor electrodes. Obtain both Anteroposterior (AP) and lateral x-rays for batteries in the oesophagus to determine orientation of the positive and negative poles. On the lateral film, the step-off is on the negative side of the battery. (The negative pole has a slightly smaller diameter, fitting within the battery can which forms the positive pole).

AP view - double halo (Image 1)



LATERAL view "step off" (Image 2)



2.9. ED: Oesophageal Location (High Risk):

2.9.1. Criteria:

- Battery >12mm (any age child) in the oesophagus.
- Any size battery in the Oesophagus in Child <12yrs of age.

(If Battery and Magnet co-ingested, or multiple magnets this may also be a time critical presentation irrespective of location in alimentary canal; consultant-level discussion for time to removal required).

TIME CRITICAL For emergency endoscopy in theatre LOCALLY.

Aim to remove batteries WITHIN 2 HOURS of ingestion.

2.9.2. In Hours (0800-1800 Mon-Fri):

- Call duty gastroenterologist [GOF1] via switchboard.
- Call Trelawney Nursing Co-ordinator baton phone (07584 888634) and inform of urgent endoscopy requirement needing mobilisation of most suitable anaesthetist and interruption of first available list to facilitate immediate removal of the battery to inform of urgent endoscopy requirement needing mobilisation of most suitable anaesthetist and interruption of first available list to facilitate immediate removal of the battery.
- Call anaesthetic team 07979 707573 / Th7 ext. 2262 / bleep 3513.
- Call Paediatric Registrar (bleep 3514) for urgent assessment and co-ordination with Wales and West Transport for Children (WATCH) and Paediatric Surgeons Bristol Children's Hospital (BCH).
- Senior ENT review if battery / magnet above the clavicle.

2.9.3. Out of hours (1800-0800 / Weekends / Bank Holidays):

- Inform on call Consultant Gastroenterologist via switch.
- Inform CEPOD consultant (via switch) or try 07979 707573 / bleep 3513 / Th7 ext. 2262 for intubation prior to endoscopy.
- Call Paediatric Registrar (bleep 3514) for urgent assessment and co-ordination with WATCH BCH and Paediatric Surgeons (BCH).
- Senior ENT review if battery / magnet above the clavicle.

2.9.4. If possible, and if the child is able to swallow, administer sucralfate or honey.

- Give sucralfate (suspension 1 g/10 mL). 10 mL orally every 10 minutes, up to 3 doses, from the time of x-ray determination that a battery is lodged in the oesophagus until sedation is given for endoscopy.

- Honey has comparable efficacy [3] and may be substituted for sucralfate suspension in children 12 months of age or older, dosed as outlined in #2, above.
- **Do not give** sucralfate or honey if the battery was possibly in the oesophagus for more than 12 hours.
- Sucralfate or honey administration is not a substitute for emergency battery removal as these agents slow but do not eliminate tissue damage.

2.9.5. If unwell or delayed presentation prepare iv access and send blood samples:

- Crossmatch 4 units of Packed Red Cells (PRC) (x2 samples).
- FBC, Coagulation (PT/APTT/Fibrinogen).
- U+Es, LFTs, Calcium, phosphate.
- Blood gas incl. ionised Calcium.

2.10. **ED: Resuscitation:**

2.10.1. A: Maintain airway. Intubate for emergency endoscopy (see RSI) +/- transfer.

2.10.2. B: High flow oxygen 15L/min via face mask as needed pre-intubation.

2.10.3. C: **Do not delay emergency endoscopy awaiting optimal conditions.**

- Access: At least one large bore IV access.
- **If any bleeding** (Usually late presentation): **monitor actively and resuscitate.**
 - Give tranexamic acid.
 - Loading dose: 15mg/kg (max 1g) as bolus.
 - Maintenance infusion 2mg/kg over 8 hours.
 - **ACTIVATE MAJOR HAEMORRHAGE PROTOCOL.**
- If “unwell”, signs of bleeding or delayed presentation send blood samples:
 - Crossmatch 4 units of Packed Red Cells (PRC) (x2 samples).
 - FBC, Coagulation (PT/APTT/Fibrinogen).
 - U+Es, LFTs, Calcium, phosphate.
 - Blood gas incl. ionised Calcium.

- Give blood products via blood warmer:
 - Group O negative (or O Positive for boys) for immediate use.
 - 10ml/kg bolus of PRC.
 - 1:1 ratio of PRC: Fresh Frozen Plasma (FFP).
 - 5ml/kg aliquots of each to total 30ml/kg (FFP takes 30mins to defrost, PRC alone may be used initially).
- Insert Sengstaken tube /balloon catheter at level of injury.

2.10.4. D: Assess and document GCS/pupils/neurology prior to RSI.

2.10.5. E: Maintain normothermia (36-37°C).

2.11. **ED: Lower Risk ingestion: Gastric or Beyond**

(or child >12yrs with battery <12mm fulfilling all low risk criteria (see flow chart)).

2.11.1. If patient does not meet high-risk criteria for local removal they must be urgently discussed with On-call Paediatric Surgery Consultant and Paediatric Trauma Team Leader (ED Consultant) via WATCH (0300 0300 789 option 1).

2.11.2. If decision for the child to have ANY length of inpatient stay at Treliske Hospital, then the Paediatric Registrar (bleep 3514) must be involved in the above discussion for appropriate local management.

2.12. **Post Endoscopic Management**

2.12.3. Concurrently or immediately following procedure.

Gastroenterology/ENT should transfer images taken from theatre to the Bristol Paediatric Surgeons and call them via WATCH conference call including RCHT paediatrician (registrar or consultant) to guide ongoing management (and establish urgency of transfer to a Bristol, our Paediatric Major Trauma Centre).

2.13. **Monitoring: Who and Where**

2.13.1. If the child is deemed appropriate for a delayed transfer to BCH then Gastroenterology and/or ENT remain jointly responsible with Paediatrics for the patient's care, and should directly liaise with Paediatric Surgeons (via WATCH) to provide a clear, written management plan (eg steroids, antibiotics, fluids, NBM etc). Include RCHT Paediatrician on the WATCH.

2.13.2. After removing a battery from the oesophagus, if mucosal injury was present, patients' need direct transfer to Bristol Children's Hospital or admission to HDU (or higher) due to the high risk of local oedema developing with worsening symptoms, especially airway compromise before delayed transfer to Bristol.

2.14. Monitoring: What for?

- 2.14.1. **Airway Compromise:** Patients with batteries removed from the upper oesophagus should be monitored carefully for voice changes, respiratory distress, or stridor. If any of these are present, the cords should be visualized under direct laryngoscopic view in the awake patient to confirm bilateral vocal cord mobility. Unilateral or bilateral vocal cord paralysis is a common complication of battery ingestion due to damage to the recurrent laryngeal nerve(s). Paralysis may be delayed and not detected for days or weeks.
- 2.14.2. **Bleeds:** Always consider the possibility of battery proximity to the aorta or other major vessels. If this is anatomically likely due to the position of the battery, use a contrast CT or MRI diagnostically to confirm there is at least 3 mm of tissue between the area of oesophageal injury and adjacent vessels. Watch for sentinel bleeds, which may be subtle.

2.15. When to feed

This decision will be led by Paediatric surgeons. If in doubt, keep NBM.

In stable, well-appearing children, a clear liquid diet can likely be started after an oesophagram shows no evidence of perforation. Diet may be advanced to soft as tolerated, but all children who have had an oesophageal battery removed should be limited to soft foods for a full 28 days to avoid mechanical damage to a healing oesophagus.

2.16. Delayed Complications

Be aware of delayed complications. These can occur days to months after removal. They include:

- Tracheoesophageal fistula.
- Oesophageal perforation (98% present within 48 hours).
- Mediastinitis.
- Vocal cord paralysis.
- Tracheal stenosis or tracheomalacia.
- Aspiration pneumonia.
- Empyema.
- Lung abscess.
- Pneumothorax.
- Spondylodiscitis.
- Exsanguination from perforation into a large vessel (e.g. aorto-oesophageal fistula (up to 1 month)).

3. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Audit of clinical presentation.
Lead	Emergency Department Audit Lead.
Tool	Periodic audit of notes.
Frequency	Within 6 months of verification- and yearly thereafter.
Reporting arrangements	Report to Emergency Department Governance Meeting and reporting to peninsular network.
Acting on recommendations and Lead(s)	Emergency Department audit lead bears responsibility for this.
Change in practice and lessons to be shared	Emergency Department audit lead will take changes forward when relevant and shared learning will be shared with all relevant stakeholders.

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the [Equality Diversity And Inclusion Policy](#) or the [Equality and Diversity website](#).

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Button Battery or Magnet Ingestion Clinical Guideline V2.0
This document replaces (exact title of previous version):	Button Battery Ingestion Clinical Guideline V1.1
Date Issued/Approved:	April 2025
Date Valid From:	July 2025
Date Valid To:	July 2028
Directorate / Department responsible (author/owner):	Dr Mark Jadav, Consultant Emergency Physician
Contact details:	01872 25(2452)
Brief summary of contents:	Actions to take in the presentation of Button Battery In-gestion or magnet ingestion.
Suggested Keywords:	Button Battery, Magnet Ingestion.
Target Audience:	RCHT: Yes CFT: No CIOB ICB: No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Care Group Governance. Emergency Medicine Governance.
Manager confirming approval processes:	John Clague
Name of Governance Lead confirming consultation and ratification:	Paul Evangelista
Links to key external standards:	None required
Related Documents:	This guidance has been collated from: Peninsula Trauma Network guideline, http://www.peninsulatraumanetwork.nhs.uk/network-guidelines Toxbase https://www.toxbase.org/Poisons-Index-A-Z/B-Products/Battery/ (last update Dec 2020)

Information Category	Detailed Information
	<p>The guideline written by the National Capital Poison Centre which can be found at https://www.poison.org/battery/guideline</p> <p>Bristol Children's Hospital Foreign Body Ingestion – acute management including button battery and magnet ingestion guideline. https://uhbw.mystaffapp.org/diliboards/86/diliboard_contents/8493/document_view.pdf</p> <p>Blood Transfusion for Children and Neonates Policy V8.0</p> <p>https://doclibrary-rcht.cornwall.nhs.uk/Documents/Library/RoyalCornwallHospitalsTrust/Clinical/Paediatrics/HaematologyAndOncology/BloodTransfusionForChildrenAndNeonatesPolicy.pdf</p>
Training Need Identified?	No
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical / Emergency Department

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
July 2021	V1.0	Initial issue	Dr Mark Jadav, Consultant Emergency Physician
July 2024	V1.1	Updated to reflect regional service changes, streamline management, and provide post operative guidance. New flow chart Fig 2.	Dr Katie Sales, Paediatric Registrar
May 2025	V2.0	Altered Fig 3 for consistency with 2.9.11 Changed "S3" to "category 1" on p6. Re-drew flow chart for accessibility. Clarified that Paeds reg still to be called if PERT not reqd.	Mark Jadav, ED Consultant

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust [The Policy on Policies \(Development and Management of Knowledge Procedural and Web Documents Policy\)](#). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team
richt.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	Button Battery or Magnet Ingestion Clinical Guideline V2.0
Directorate and service area:	Emergency Department, Urgent, Emergency and Trauma
Is this a new or existing Policy?	Existing
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Mark Jadav, ED Consultant
Contact details:	01872 250314

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	This is pathway to guide assessment and management of paediatric patients presenting with Button Battery and Magnet Ingestion.
2. Policy Objectives	To ensure that paediatric patients ingesting button batteries or magnets receive the correct care in the correct time frame. Improve the quality, continuity, and coordination of care for the patient by a multidisciplinary team and reduce the risks associated with incorrect management.
3. Policy Intended Outcomes	To ensure that paediatric patients within RCH ingesting button batteries or magnets receive the correct care in the correct timeframe. Improve the quality, continuity and coordination of care for the patient by a multidisciplinary team and reduce the risks associated with incorrect management.

Information Category	Detailed Information
4. How will you measure each outcome?	As per audit schedule within the policy.
5. Who is intended to benefit from the policy?	Patients who have ingested button batteries or magnets.
6a. Who did you consult with? (Please select Yes or No for each category)	<ul style="list-style-type: none"> Workforce: Yes Patients/ visitors: No Local groups/ system partners: No External organisations: No Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	Please record specific names of individuals/ groups: Representatives from ED, Anaesthetics, Paediatrics, General Surgery and Gastroenterology.
6c. What was the outcome of the consultation?	Update of this guideline
6d. Have you used any of the following to assist your assessment?	National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys: No.

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	

Protected Characteristic	(Yes or No)	Rationale
Religion or belief	No	
Marriage and civil partnership	No	
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Mark Jadav, ED Consultant.

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
[Section 2. Full Equality Analysis](#)