

LRI Emergency Department and Children's Hospital

Potential Button Battery or Magnet Ingestion or Insertion (children aged 0-16yrs)

Staff relevant to:	Emergency Department medical and nursing staff, Children's Hospital Medical and Surgical staff
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1. Introduction and Who Guideline applies to

This guideline relates to (potential) ingestion or insertion of button batteries or magnets in children aged 0-16years.

Please see the SOP on **swallowed foreign bodies for advice on other objects.**

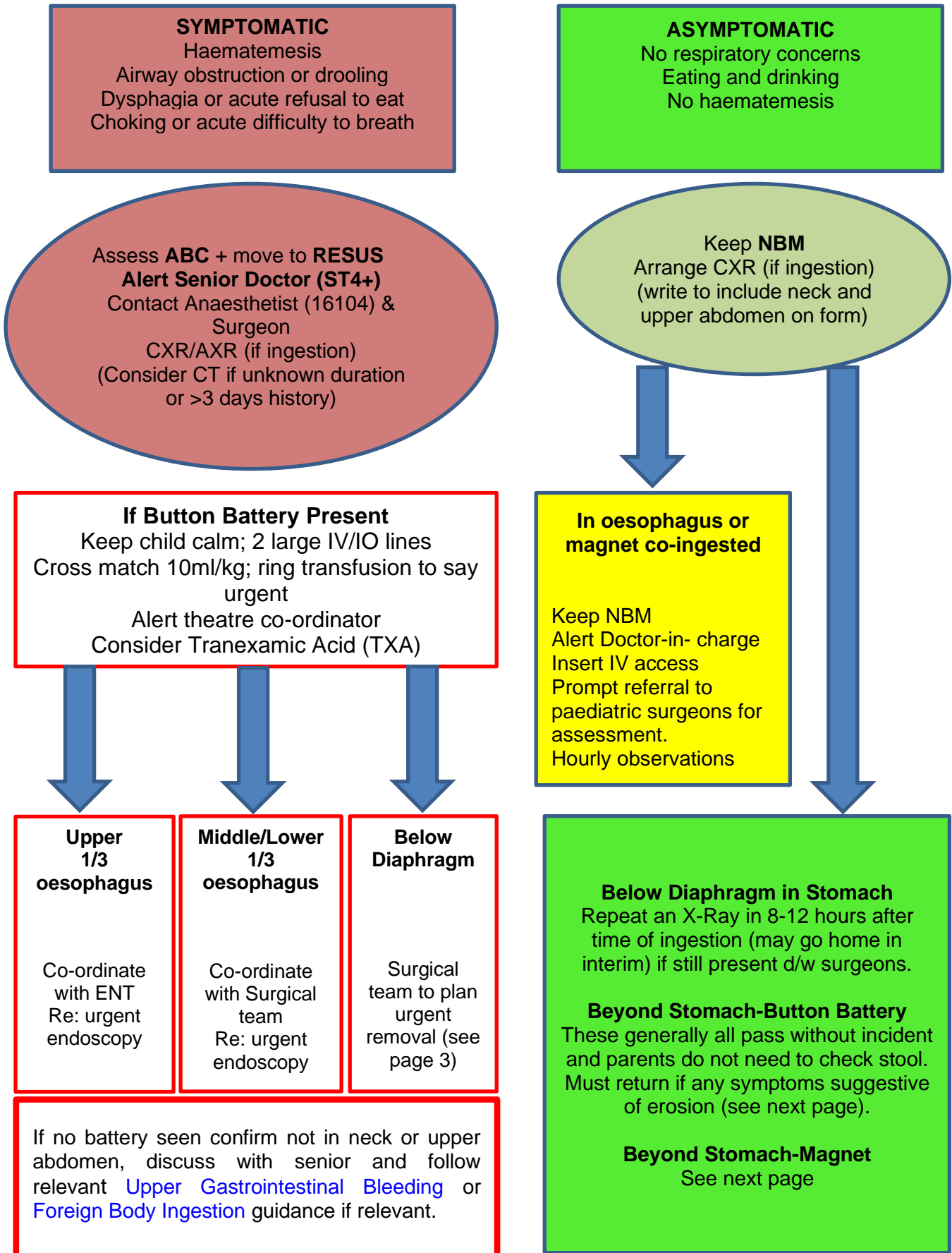
Key Points

Ingestion of button batteries or super strong magnets can kill even if the child presents asymptotically. There may be **no** history of swallowing the object at all. Be aware problems can occur up to 3 weeks after removal.

Don't Miss

A battery lodged in the oesophagus can cause a devastating aorto-enteric fistula and in the nose/ear can cause serious burns **within 2 hours so do not delay** removal.

Button Battery/Magnet Ingestion or Insertion



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Super Strong Magnets

Neodymium magnets (also known as NdFeB, NIB, Neo magnet or Super Strong Rare Earth Magnets) have become easy to purchase. The ingestion of a single rare earth magnet is unlikely to cause significant harm, however, if multiple magnets are ingested, or if a magnet is swallowed along with a metal object, significant injury can occur.

A lateral AXR should be requested if a single magnet/suspected magnet is identified on the AP AXR.

All patients who are being discharged with rare earth magnet ingestion require follow-up imaging after 6-12 hours, repeated earlier imaging is not indicated.

Follow up abdominal X-ray should be requested (only repeat CXR if magnets seen in the chest on the first image). It is essential that the abdominal radiographs are always performed in the same position (lying down, ideally prone).

Interpretation of the abdominal X-ray and the finding of progression of the rare earth magnet through the gastrointestinal tract should be formally confirmed by a radiologist. Follow-up AXRs should continue to be performed until it can be demonstrated (and confirmed by a radiologist) that the magnet has passed through the stomach and serial X-rays (at least 6-12hrs apart) show that it is progressing through the small bowel or beyond. Failure of the magnet to progress through the gastrointestinal tract (the magnet having not moved from the last demonstrated position on AXR irrespective of location in GI tract after a period of 6-12hrs and confirmed by a radiologist) is an indication for discussion with the paediatric surgical team.

Surgical Management

A symptomatic child who has ingested a button battery or magnet should be treated as a surgical emergency.

The following are of **no benefit**:

1. Ipecac administration (ineffective).
2. Blind battery removal with a balloon catheter or a magnet affixed to a nasogastric tube (can't determine extent of injury).
3. Blood or urine concentrations of mercury or other battery ingredients (unnecessary)
4. Chelation (unnecessary).
5. Laxatives (ineffective) or polyethylene glycol electrolyte solution (unproven effectiveness and unknown if solution enhances electrolysis)

Turn over for Discharge Advice and Audit Priorities

Button Battery/Magnet Ingestion or Insertion

Discharge Advice

Parents should be advised to bring their child back immediately for medical review if the child develops:

Breathing difficulty
Features of intestinal obstruction
(e.g. persistent vomiting, Distended tender abdomen)
Blood stained vomiting
Abdominal pain
Parental concern about change in behaviour/refusing fluids or food

These symptoms may develop after a battery has been removed or passed and should warrant review as well.

3. Education and Training

None

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Correct management of symptomatic versus asymptomatic ingestions.	Review of medical records	ED Cons	As incidents occur.	Departmental cpm
Time to removal of battery (symptomatic ingestion or insertion)	Review of medical records	ED Cons	As incidents occur.	Departmental cpm

5. Supporting References

[https://www.rcem.ac.uk/docs/RCEM%20Guidance/RCEM_BPC_Ingestion of Super Strong Magnets in Children 170521.pdf](https://www.rcem.ac.uk/docs/RCEM%20Guidance/RCEM_BPC_Ingestion_of_Super_Strong_Magnets_in_Children_170521.pdf)

<https://www.poison.org/battery/guideline>

<http://pediatrics.aappublications.org/content/early/2010/05/24/peds.2009-3037.abstract>

<http://pediatriceducation.org/2012/12/24/what-are-the-treatment-guidelines-for-button-battery-ingestion/>

http://www.uptodate.com/contents/button-and-cylindrical-battery-ingestion?source=search_result&search=button+battery&selectedTitle=1%7E150

Schmidt YM, Muensterer O, Wendling-Keim D. The use of honey in button battery ingestions: a systematic review. *Front Pediatr.* 2023 Sep 28;11:1259780. doi: 10.3389/fped.2023.1259780. PMID: 37842023; PMCID: PMC10569471.

Mubarak A, Benninga MA, Broekaert I, Dolinsek J, Homan M, Mas E, Miele E, Pienar C, Thapar N, Thomson M, Tzivnikos C, de Ridder L. Diagnosis, Management, and Prevention of Button Battery Ingestion in Childhood: A European Society for Paediatric Gastroenterology Hepatology and Nutrition Position Paper. *J Pediatr Gastroenterol Nutr.* 2021 Jul 1;73(1):129-136. doi: 10.1097/MPG.0000000000003048. PMID: 33555169.

6. Key Words

Diaphragm, Haematemesis, Neodymium, NdFeB, NIB, Neo magnet, Oesophagus, Stomach, Super Strong Rare Earth Magnet

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs. As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) D Roland – Consultant in Paed Emergency Medicine Farah Roslan ST4	Executive Lead Chief Medical Officer
Details of Changes made during review: Clarified guideline is for children aged 0-16years of age	