MANAGEMENT GUIDELINES FOR INGESTED FOREIGN BODIES IN CHILDREN AND ADULTS

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

Introduction

This guideline is for the management of children and adults presenting after ingestion of foreign bodies.

This guideline is for use by the following staff groups:

The clinicians both Nurses, and Doctors, in the departments of Emergency Medicine at WRI, AGH, and Kidderminster Minor Injury Unit

Lead Clinician(s)

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Approved by Paediatric Directorate on:	11th July 2022
Approved by Urgent Care Governance Meeting on:	15th June 2022
Review Date: This is the most current document and should be used until a revised version is in place	15th June 2025

Key amendments to this guideline

Date	Amendment	Approved by:

MANAGEMENT GUIDELINES FOR INGESTED FOREIGN BODIES IN CHILDREN AND ADULTS

AIM:
To develop multidisciplinary consensus agreement on current best-practice in the management of ingested foreign bodies

INCIDENCE:
- Peak incidence: 6 months to 36 months
- 80-90 % of patients pass foreign bodies without intervention.
- 1% requires open surgery
- 10-20% requires endoscopic removal.

NB: All Children and Young People requiring urgent endoscopy/surgical removal should be discussed directly with the surgeons at Birmingham Children's Hospital.

RISK FACTOR FOR FOREIGN BODY INGESTION:
1. Toddlers exploring their surroundings by mouthing objects.
2. Children with developmental delay, still exploring their surroundings by mouthing objects.
3. Previous history of foreign body ingestion or insertion in ear, nose etc.
4. Act of deliberate self-harm.
5. Adults with learning difficulties or history of Pica disorder

RISK FACTORS FOR COMPLICATIONS:
1. Underlying GI tract abnormalities
2. Previous complicated foreign body ingestion
3. High risk foreign bodies (large or long, sharp, pointed, button batteries)
4. Abnormal anatomy (tumour, Meckel`s diverticulum)
5. Surgery (pyloromyotomy)

CLINICAL FEATURES

History:
- **What** (metal, nonmetal)
- Size
- Shape and edges
- **When**
- Last meal
- Ingestion vs aspiration
- Circumstances **(NEGLECT/SAFEGUARDING CONCERNS)**
- **DON'T SPECULATE**

Symptoms:
- Asymptomatic 35%
- Sore throat
- FB sensation
- Drooling

- Gagging
- Dysphagia
- Food refusal
- Chest pain
- Vomiting
- GI bleed
- Abdominal pain and distention
- **Rule out inhalation**: Inability to talk, change in voice, stridor, drooling, and associated unexplained collapse

Examination:

- **Pharynx:** visible FB, local trauma
- **Ear & nose:** additional FB
- **Neck:** Swelling, erythema, tenderness, crepitus
- **Airway:** Stridor, drooling
- **Chest (rule out aspiration/obstruction):** wheeze, decreased unilateral air entry, hyperinflation

TYPES OF FOREIGN BODIES

Coins:

- Most ingested foreign body in children
- Likely to pass spontaneously if ~~cross~~ passed the oesophagus.
- >=25 mm (diameter) is unlikely to pass through pylorus (esp. Under 5 years old)
- HHMD (handheld metal detector) extremely sensitive and specific for presence and location
- X-rays (neck and PA chest) need to be performed for above Xiphisternum FB.
- Symptomatic coin in oesophagus needs urgent referral. (Removal in 2 hours)
- Lower oesophageal coins (asymptomatic) usually pass after eating and drinking but if they do not, it needs referral for endoscopic removal in 24 hours.
- Consider oblique or lateral view to confirm coin and not button battery.
- Coins distal to oesophagus are conservatively managed unless obstruction or peritonitis

Button Batteries:

- Resemble coins
- Cause severe damage (burns in 2 hrs.) due to local hydrolysis by action of hydroxide, caustic injury due to high pH and minor electrical burn due to lithium.
- Generally small (diameter <15 mm) do not cause serious complications.
- CXR confirms the location: Halo sign around the battery due to hydrolysis
- Triple N (narrow, negative, necrosis) narrower side on lateral Xray causes the maximum damage. Step off sign on the Xray, slightly smaller diameter helps identifying negative electrode which causes maximum damage.
- Oesophageal button batteries need removal within 2 hours irrespective of symptoms.
- Symptomatic Gastric button batteries need urgent removal 2 hrs.

- Asymptomatic (< 15mm in >6 years) old can be managed conservatively at home with regular diet and activity, confirmation of passage by inspecting stools and repeat X-ray in 10-14 days if passage not confirmed.
- Asymptomatic (>15mm diameter and < 6 years child) needs X-ray in 4 days. If still in stomach, needs endoscopic removal.

Sharp and pointed foreign bodies:

- Sharp or pointed FBs such as safety pins, nails, hairpins, razor blades, screws, pine needles, thumbtacks, or dental prostheses can cause serious complications such as oesophageal ulceration and/ or perforation, trachea-fistula, and/or abscess formation, peritonitis, an aorto-oesophageal fistula, and even death.
- High index of clinical suspicion with urgent X-ray will help locate a radiopaque foreign body.
- Radiolucent FBs such as plastic, glass, fish bones or wood cannot be identified using X-ray examination.
- Esophagogastric sharp/pointed foreign body needs immediate referral and urgent endoscopic removal as they can cause perforation.
- If a sharp FB has passed into the small bowel (distal to the ligament of Treitz), surgical removal can be considered in symptomatic children. In asymptomatic patients, close clinical follow-up with serial X-rays obtained after admitting the patient are recommended.
- The mean GI transit time for FBs in children is approximately 3.6 days. Therefore, if the FB does not show the expected passage after 4 days, a bowel perforation or a congenital anomaly is suspected, and surgical removal of the FB needs to be considered.

Magnets:

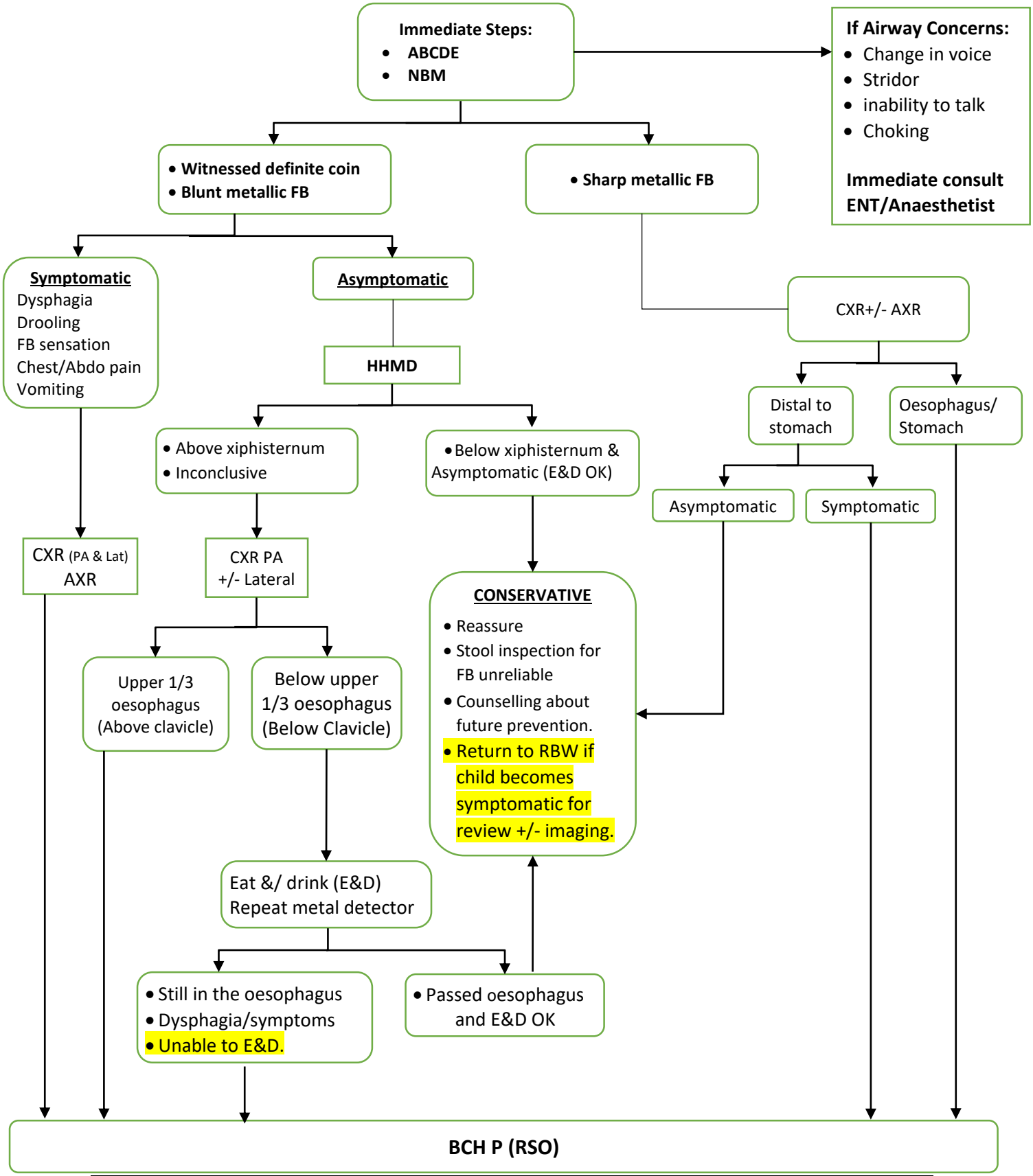
- **Do not use metal detector**
- Single magnets mostly pass spontaneously.
- 2 magnets or a magnet with another FB co-ingested can cause necrosis, perforation, and fistula
- Orogastric multiple magnets warrant endoscopic removal even if asymptomatic.
- Multiple/single magnet beyond stomach if symptomatic need surgical consult, however, asymptomatic cases can be monitored by serial X-rays 6-12 hours later.
- Patients living a distance from hospital or clinical concern may need admission for observation on Riverbank Ward.

Fish bones:

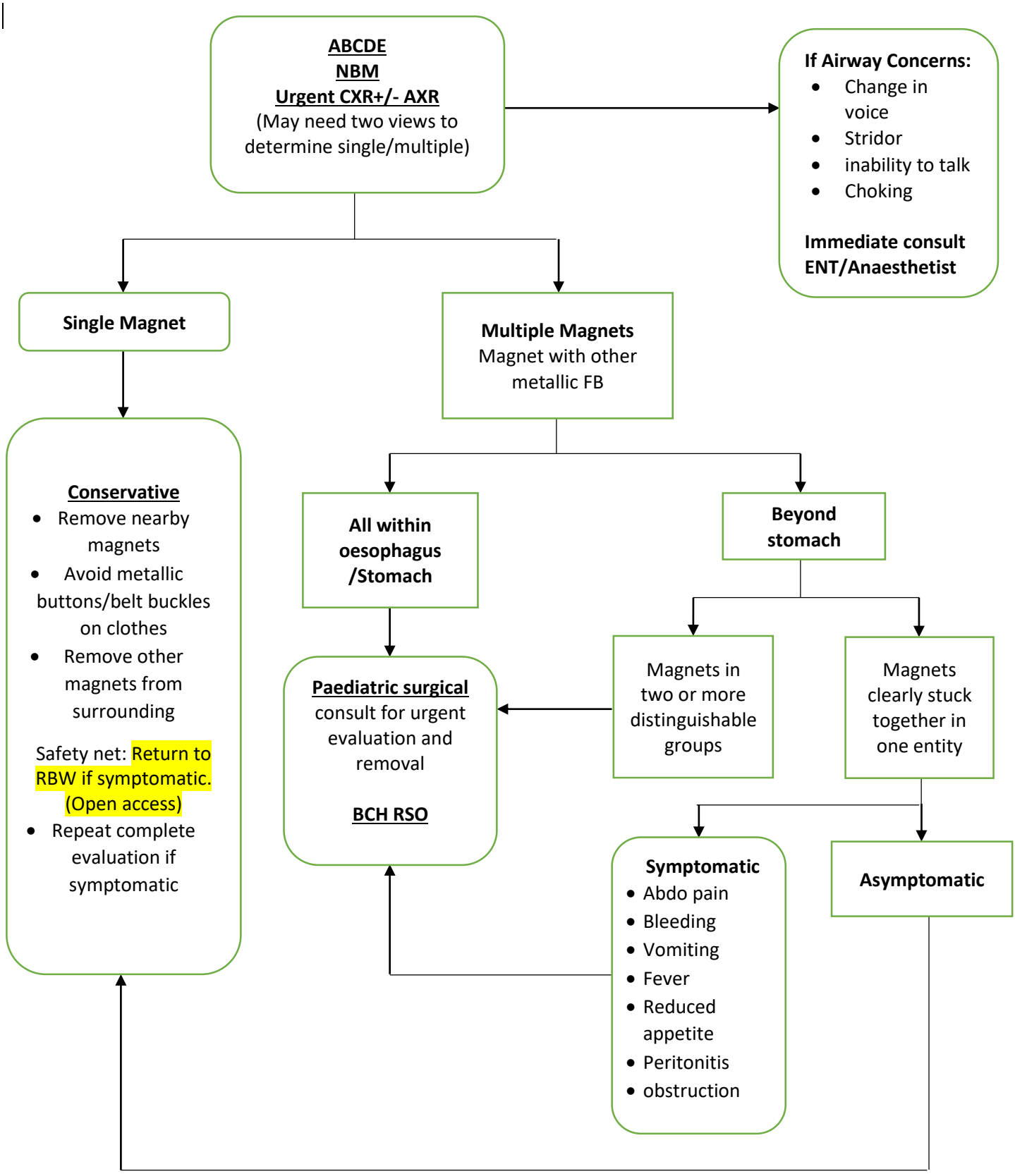
- Children usually show fish bone impaction in the palatine tonsils, tongue base, vallecula and pyriform sinus because the laryngopharynx is narrower, and the tonsils are larger in children than in adults. In such cases ENT/anaesthetic consult is required.
- Fish bones lodged in the oesophagus can cause mucosal ulceration or a topical inflammatory reaction leading to oesophageal stenosis, perforation, a deep neck abscess, mediastinitis, a lung abscess or even aortic fistulae.

Safety netting; A small proportion of children, requiring follow up, need to be seen in RBW for planned follow up, unless they become unwell, when they will come to ED at WRH.

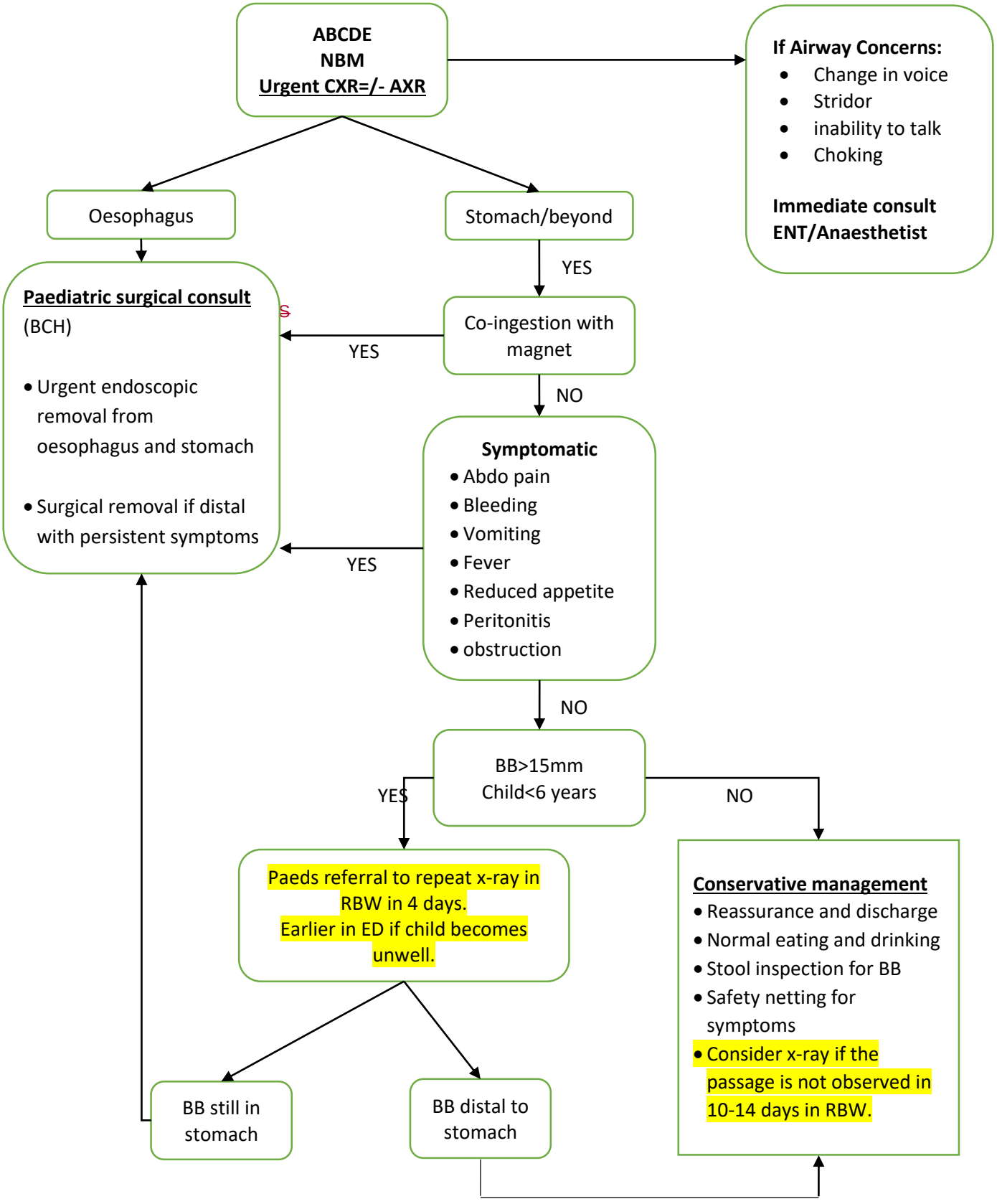
INITIAL MANAGEMENT OF INGESTED METALLIC FOREIGN BODIES



INITIAL MANAGEMENT OF MAGNETS INGESTION IN CHILDREN, DO NOT USE METAL DETECTORS



INITIAL MANAGEMENT OF BUTTON BATTERY INGESTION IN CHILDREN



APPENDIX 1

INTRODUCTION OF EQUIPMENT
ALEXANDRA HOSPITAL REDDITCH
EMERGENCY DEPARTMENT

HHMD (handheld metal detector)

Product: The Garrett Super Scanner V is extremely robust in construction.

Dimensions & weight: Width: 3.25 inches (8.3cm). Thickness: 1.625 inches (4.13cm). Length: 16.5 inches (42cm). Weight: 17.6oz (500g).

Tuning: Automatic.

Features:

- A reduction switch to help minimize sensitivity interference while scanning at ankle level.
- Large scan surface enables quick and thorough scanning.
- Maximum sensitivity & ruggedness. Automatic re-tuning & battery check.
- Audible and visual alarm indicators.
- 9-volt operation (rechargeable unit optional).
- Earphone (optional).
- **Price 100-150 from different sellers**.

Indication:

- To determine whether swallowed metallic foreign body is in the oesophagus (above the diaphragm) or in stomach /intestines (below the diaphragm)

Method:

- Undress the patient/ gown. No metallic buttons, jewellery, zipper, glasses, watch.
- Perform away from metal objects e.g. chairs, cabinets, etc. preferably in centre of room.
- With extended neck, slowly pass from chin down to neck, chest, abdomen, flanks, back, sacrum and perineum.
- In case of positive signal, approach from various directions to confirm exact location.

Advantages:

- No ionizing radiations
- Cheap and portable
- Little training required
- Low cost

Limitations:

- Obese patients
- Indwelling metallic devices or prosthesis
- Very small foreign bodies

References

1. Detection of coins ingested by children using a handheld metal detector: a systematic review J B Lee, S Ahmad, C P Gale. Emerg Med J 2005;22:839–844

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4.Benito Navarro J, Porras Alonso E. Esophageal foreign bodies: our ten years of experience. Acta Otorrinologologica Espanola 2003;54:281–5.

5. Uba AF, Sowande AO, Amusa YB, et al. Management of oesophageal foreign bodies in children. East Afr Med J 2002;79:334–8.

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12. Obiako MN. Tracheoesophageal fistula. A complication of foreign body. Ann Otol Rhinol Laryngol 1982;91:325–7.

13. Dahiya M, Denton JS. Esophageal perforation by foreign body (coin) causing sudden death in a 3-yr-old child. Am J Forensic Med Pathol 2001;120:184–8.

Contribution List

This key document has been circulated to the following individuals for consultation;

Designation
Consultant Paediatrician and POSCU Lead - W&C
Consultant Emergency Medicine, Clinical Lead WRH ED
Consultant Emergency Medicine
Consultant Paediatrician
Quality Governance Radiographer
Consultant Colorectal Surgeon

This key document has been circulated to the chair(s) of the following committee's / groups for comments:

Committee

Supporting Document 1 - Equality Impact Assessment Tool

To be completed by the key document author and included as an appendix to key document when submitted to the appropriate committee for consideration and approval.

Please complete assessment form on next page;

Herefordshire & Worcestershire STP - Equality Impact Assessment (EIA) Form
Please read EIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust	✓	Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust		Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	**Dr Ross Hodson; Mr Abdul Jalil**

Details of individuals completing this assessment	**Name**	**Job title**	**e-mail contact**
Date assessment completed	070/4/2022		

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	**Title:** Management Guidelines for Ingested Foreign Bodies in Children and Adults			
What is the aim, purpose and/or intended outcomes of this Activity?	To develop multidisciplinary consensus agreement on current best-practice in the management of ingested foreign bodies			
Who will be affected by the development & implementation of this activity?	❑ ❑✓ ❑ ❑	Service User Patient Carers Visitors	❑✓❑ ❑ ❑	Staff Communities Other _____
Is this:	❑ Review of an existing activity ❑✓ New activity ❑ Planning to withdraw or reduce a service, activity or presence?			
What information and evidence have you reviewed to help inform this assessment? (Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	NatPSA/2021/002/NHSPS – Patient Safety Alert Urgent assessment/treatment following ingestion of 'super strong' magnets Royal College of Emergency Medicine. Best Practice Guideline: Ingestion of Super Strong Magnets in Children. May 2021			
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	The guidelines were shared with all divisions, with comments received, discussed and included in the final version.			
Summary of relevant findings	Super strong magnets are a risk to children and adults if ingested, but actions can be taken to mitigate the potential harm that can occur.			

Section 3

Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age	✓			Persons will be treated as per guidelines irrespective of age
Disability	✓			Persons will be treated as per guidelines irrespective of disability
Gender Reassignment		✓		Not applicable to the treatment provided in this guideline
Marriage & Civil Partnerships		✓		Not applicable to the treatment provided in this guideline
Pregnancy & Maternity		✓		Not applicable to the treatment provided in this guideline
Race including Traveling Communities		✓		Not applicable to the treatment provided in this guideline
Religion & Belief		✓		Not applicable to the treatment provided in this guideline
Sex		✓		Not applicable to the treatment provided in this guideline
Sexual Orientation		✓		Not applicable to the treatment provided in this guideline
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling communities etc.)		✓		Not applicable to the treatment provided in this guideline
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)		✓		Not applicable to the treatment provided in this guideline

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce/eliminate negative impact	Who will lead on the action?	Timeframe
	Not applicable	.		
How will you monitor these actions?	Not applicable			
When will you review this EIA? (e.g in a service redesign, this	On guideline review			

EIA should be revisited regularly throughout the design & implementation)	

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation

1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.

1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	
Date signed	
Comments:	None
Signature of person the Leader Person for this activity	
Date signed	
Comments:	

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	None

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval.