

Children's Mercy Kansas City

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Clinical Pathways

Evidence-Based Practice Collaborative

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7-2024

### Foreign Body Ingestion

Children's Mercy Kansas City

These guidelines do not establish a standard of care to be followed in every case. It is recognized that each case is different and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time. It is impossible to anticipate all possible situations that may exist and to prepare guidelines for each. Accordingly, these guidelines should guide care with the understanding that departures from them may be required at times.

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**Foreign Body Ingestion  
Clinical Pathway Synopsis**

**Foreign Body Ingestion Algorithm**

**Exclusion criteria:**

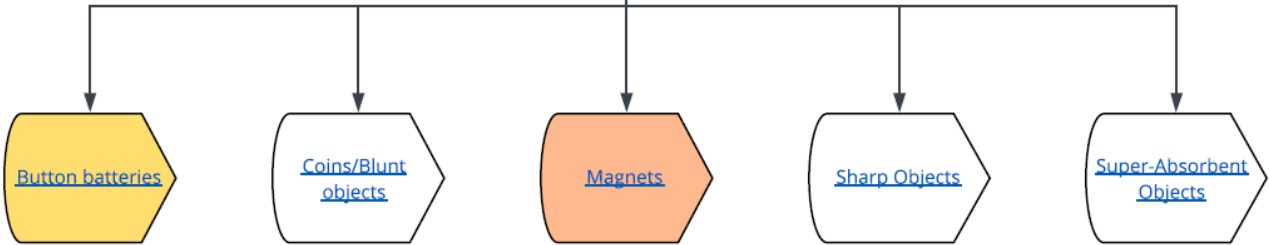
- Respiratory distress or failure
- Known abnormal GI anatomy
- Previous GI surgery
- Suspected aspiration of foreign body (See [Foreign Body Aspiration Clinical Pathway](#))

Patient presents with suspicion of foreign body ingestion

Obtain [history, physical exam and imaging](#) to determine type and size of foreign body



QR code for mobile view



**Pre-Hospital Recommendations for Ingestion of Button Batteries**  
Children ≥ 1 yr, ingestion in prior 12 hrs:

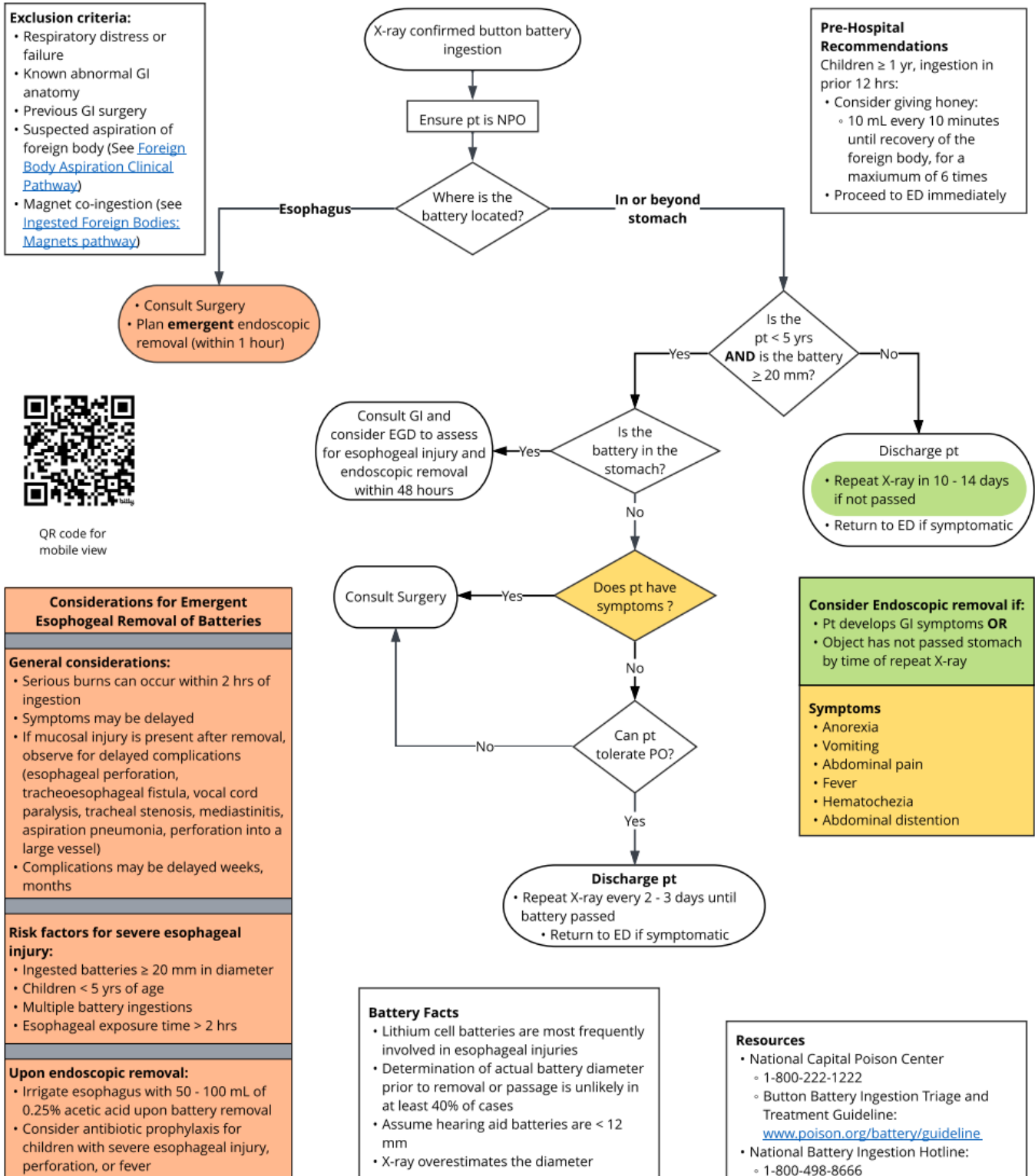
- Consider giving honey:
  - 10 mL every 10 minutes until recovery of the foreign body, for a maximum of 6 times
- Proceed to ED immediately

**Magnet Precautions**

- Remove all metallic, magnetic objects from child's environment
- Ensure no magnets, metal on child's clothing (buckles, snaps, buttons)
- Ensure no magnets available for ingestion
- Continue precautions until magnets are passed

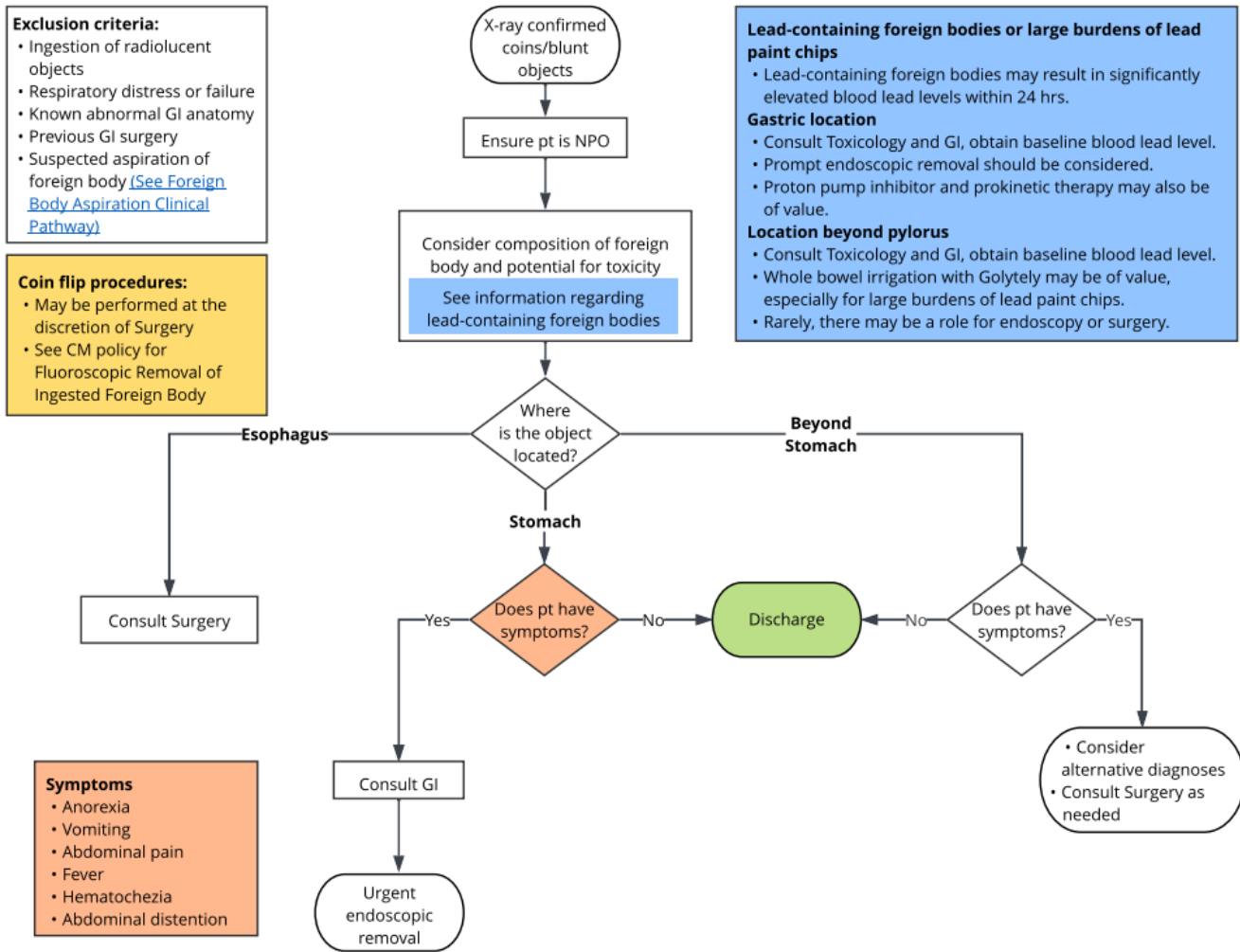
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**Foreign Body Ingestion: Button Batteries Algorithm**



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**Foreign Body Ingestion: Coins/Blunt Objects Algorithm**



**Exclusion criteria:**

- Ingestion of radiolucent objects
- Respiratory distress or failure
- Known abnormal GI anatomy
- Previous GI surgery
- Suspected aspiration of foreign body (See Foreign Body Aspiration Clinical Pathway)

**Coin flip procedures:**

- May be performed at the discretion of Surgery
- See CM policy for Fluoroscopic Removal of Ingested Foreign Body

**Symptoms**

- Anorexia
- Vomiting
- Abdominal pain
- Fever
- Hematochezia
- Abdominal distention

**Lead-containing foreign bodies or large burdens of lead paint chips**

- Lead-containing foreign bodies may result in significantly elevated blood lead levels within 24 hrs.

**Gastric location**

- Consult Toxicology and GI, obtain baseline blood lead level.
- Prompt endoscopic removal should be considered.
- Proton pump inhibitor and prokinetic therapy may also be of value.

**Location beyond pylorus**

- Consult Toxicology and GI, obtain baseline blood lead level.
- Whole bowel irrigation with Golytely may be of value, especially for large burdens of lead paint chips.
- Rarely, there may be a role for endoscopy or surgery.

Diameters of standard US coins	
Quarter	24 mm
Nickel	21 mm
Penny	19 mm
Dime	18 mm

*Coins may appear larger on X-ray*



QR code for mobile view

**Discharge Instructions:**

- No endoscopy needed
- Follow up with GI or PCP and repeat X-ray at 2 weeks
- Endoscopic removal if not passed within 2 - 4 weeks
- Repeat X-ray immediately before removal to ensure object still present

**Items in Stomach**

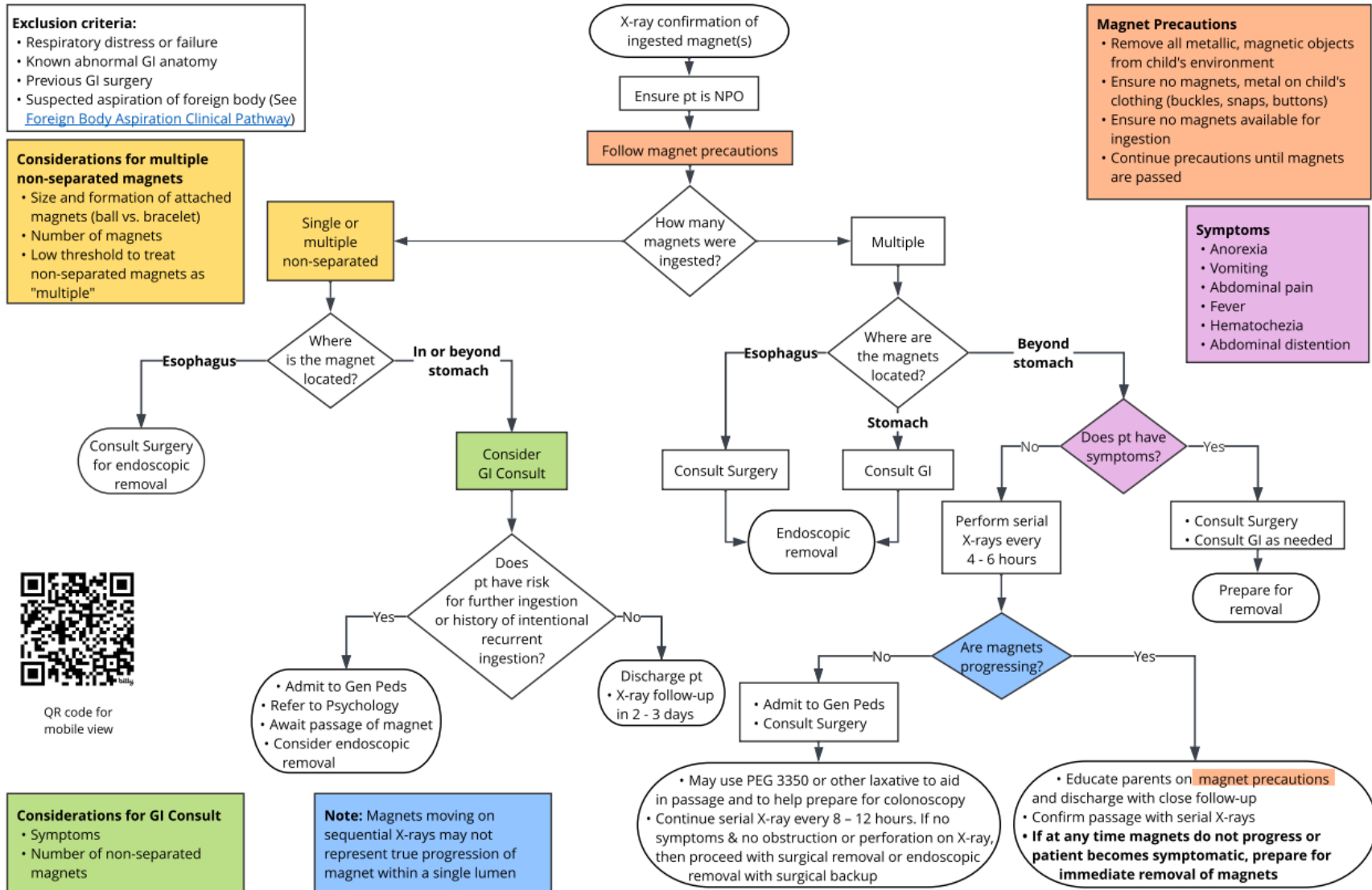
- Cylindrical battery
  - Repeat X-ray 3 - 4 days
- **Note:** Width > 2 cm, length > 5 cm, less likely to pass pylorus/duodenum

**Items Beyond Stomach**

- Will likely pass
- Return if symptomatic

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Foreign Body Ingestion: Magnets Algorithm



**Considerations for GI Consult**

- Symptoms
- Number of non-separated magnets

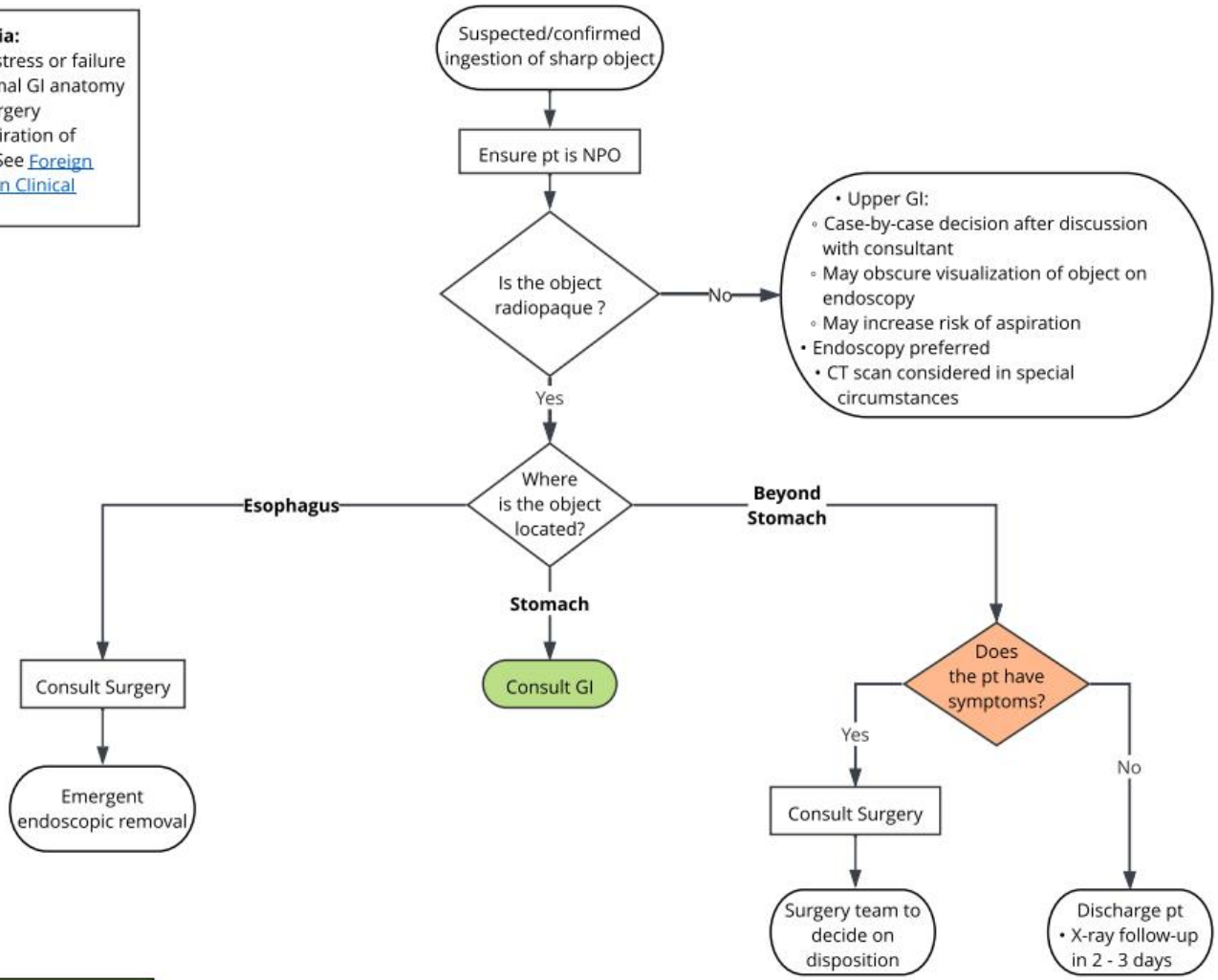
**Note:** Magnets moving on sequential X-rays may not represent true progression of magnet within a single lumen

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Foreign Body Ingestion: Sharp Objects Algorithm

- Exclusion criteria:**
- Respiratory distress or failure
  - Known abnormal GI anatomy
  - Previous GI surgery
  - Suspected aspiration of foreign body (See [Foreign Body Aspiration Clinical Pathway](#))



- Considerations for GI:**
- Consider urgent endoscopic removal for items  $\geq 3$  cm in length or  $\geq 2$  cm in width
  - For short objects with a heavier blunt end (like a nail), consider discharge and follow-up X-ray in 2 - 3 days

- Symptoms**
- Anorexia
  - Vomiting
  - Abdominal pain
  - Fever
  - Hematochezia
  - Abdominal distention

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### **Objective of Clinical Pathway**

The objective of this clinical pathway is to provide the care team with a framework for standardized care of the patient suspected to have ingested a foreign body. The Foreign Body Ingestion Clinical Pathway aims to minimize variation of care through guidance for evaluation, diagnosis, and treatment based on the foreign body's characterization, size, and location.

### **Background**

Foreign body ingestion is a significant concern in pediatric healthcare, leading to numerous emergency department visits each year. Young children, particularly those under the age of six, are naturally inclined to explore their surroundings by placing objects in their mouths, which increases the risk of ingesting non-food items such as coins, batteries, and small toys. Foreign body ingestion can result in severe complications, including airway obstruction, gastrointestinal perforation, and chemical injuries, making prompt and effective medical intervention crucial (Orsagh-Yentis et al., 2019).

To improve patient outcomes, the development of a standardized care pathway for pediatric foreign body ingestion is essential. These pathways ensure the rapid identification, assessment, and management of ingested foreign bodies, thereby reducing the risk of complications and the need for invasive procedures. Evidence-based guidelines provide clear protocols for healthcare providers, enhancing diagnostic accuracy, streamlining treatment, and facilitating timely interventions. Additionally, standardized pathways help minimize variability in care, optimize resource utilization, and improve overall patient safety and satisfaction (Kramer et al., 2015).

### **Target Users**

- Physicians (Emergency Medicine, Hospital Medicine, Radiology, Fellows, Residents)
- Nurse Practitioners
- Nurses

### **Target Population**

#### **Inclusion Criteria**

- Suspected foreign body ingestion

#### **Exclusion Criteria**

- Respiratory distress or failure
- Known abnormal anatomy
- Previous GI surgery
- Suspected aspiration of foreign body (See [Foreign Body Aspiration Clinical Pathway](#))

### **Practice Recommendations**

A clinical practice guideline has not been established for the care process for patients presenting with suspected ingestion of a foreign body. Children's Mercy utilized the following resources to inform and provide models for this clinical pathway:

- The North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) clinical report for pediatric management of ingested foreign bodies (Kramer et al., 2015)
- Poison Control Button Battery Ingestion Triage and Treatment Guideline (National Capital Poison Center, 2018)
- The Foreign Body Ingestion Clinical Pathway (Children's Hospital of Philadelphia, 2024)

Practice recommendations specific to Children's Mercy are based on expert opinion and consensus of the providers involved in the care of these patients.

### **Recommendations Specific for Children's Mercy**

Practice recommendations, which were based on the expert opinion of the Foreign Body Ingestion Clinical Pathway Committee, include guidance for:

- Early characterization and determination of the size and location of ingested foreign bodies
- Appropriate recognition of symptomatic patients
- Early recognition and management of complications
- Early notification and coordination of appropriate medical teams
- Early determination of the need for removal procedures
- Appropriate designation and communication of follow-up care

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### **Measures**

- Utilization of the Foreign Body Ingestion Clinical Pathway

### **Value Implications**

The following improvements may increase value by reducing healthcare costs and non-monetary costs (e.g., missed school/work, loss of wages, stress) for patients and families and reducing costs and resource utilization for healthcare facilities.

- Decreased risk of overdiagnosis or underdiagnosis
- Decreased risk of inappropriate removal procedures and missed opportunities for appropriate removal
- Decreased frequency of admission
- Decreased inpatient length of stay
- Decreased unwarranted variation in care

### **Organizational Barriers and Facilitators**

#### **Potential Barriers**

- Variability of acceptable level of risk among providers
- Challenges with follow-up faced by some families

#### **Potential Facilitators**

- Collaborative engagement across care continuum settings during clinical pathway development
- High rate of use of the clinical pathway

### **Diversity/Equity/Inclusion**

Our aim is to provide equitable care. These issues were discussed with the Committee, reviewed in the literature, and discussed prior to making any practice recommendations.

### **Power Plans**

- There are no power plans associated with this clinical pathway.

### **Associated Policies**

- There are no policies associated with this clinical pathway.

### **Clinical Pathway Preparation**

This pathway was prepared by the Evidence-Based Practice (EBP) Department in collaboration with the Foreign Body Ingestion Clinical Pathway Committee, which is composed of content experts at Children's Mercy Kansas City. If a conflict of interest is identified, it will be disclosed next to the committee member's name.

### **Foreign Body Ingestion Clinical Pathway Committee Members and Representation**

- Nadia Ibrahim, MD | Gastroenterology | Committee Chair
- Thomas Attard, MD, FAAP, FACG | Gastroenterology | Committee Member
- Jonathan Hartley, DO | Hospital Medicine | Committee Member
- Erin Opfer, DO | Radiology | Committee Member
- Tolu Oyetunji, MD, MPH, MBA | Surgery | Committee Member
- Shawn St. Peter, MD | Surgery, Administration | Committee Member
- Erin Scott, DO | Emergency Department | Committee Member

#### **EBP Committee Members**

- Todd Glenski, MD, MSHA, FASA | Anesthesiology, Evidence Based Practice
- Megan Gripka, MT (ASCP) SM | Evidence Based Practice

### **Clinical Pathway Development Funding**

The development of this clinical pathway was underwritten by the following departments/divisions: Emergency Department, Gastroenterology, Hospital Medicine, Surgery, and Evidence Based Practice.

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**Conflict of Interest**

The Foreign Body Ingestion Clinical Pathway contributors have no conflicts of interest to disclose related to the subject matter or materials discussed.

**Approval Process**

- This pathway was reviewed and approved by the Foreign Body Ingestion Clinical Pathway Committee, Content Expert Departments/Divisions, and the EBP Department, after which they were approved by the Medical Executive Committee.
- Pathways are reviewed and updated as necessary every 3 years within the EBP Department at CMKC. Content expert teams are involved with every review and update.

**Review Requested**

Department/Unit	Date Obtained
Emergency Department	July 2024
Evidence Based Practice	July 2024
Gastroenterology	July 2024
Hospital Medicine	July 2024
Radiology	July 2024
Surgery	July 2024

**Version History**

Date	Comments
July 2024	Version one – Development of Foreign Body Ingestion algorithms, including separate algorithms for ingestion of Batteries, Coins/Blunt Objects, Magnets, Sharp Objects, information for obtaining the history/physical exam/imaging and management of ingestion of super-absorbent objects

**Date for Next Review**

- July 2027

**Implementation & Follow-Up**

- Once approved, the pathway was presented to appropriate care teams and implemented. Care measurements will be assessed and shared with appropriate care teams to determine if changes need to occur.
- Education was provided to all stakeholders:
  - Nursing units where the Foreign Body Ingestion Clinical Pathway is used
  - Departments of Emergency Medicine, Gastroenterology, Hospital Medicine, Radiology, and Surgery
  - Resident physicians
- Additional institution-wide announcements were made via email, the hospital website, and relevant huddles.

**Disclaimer**

When evidence is lacking or inconclusive, options in care are provided in the supporting documents and the power plan(s) that accompany the clinical pathway.

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