Suspected Foreign Body Ingestion Clinical Pathway

Effective Date: 7/15/2022 Next Review Date: 7/15/2023

Outcomes/Goals	1. Streamline interdisciplinary evaluation of patients with foreign body ingestions 2. Rapidly determine whether foreign body requires removal and stratify urgency
Inclusion Criteria	Any patient aged < 18 with suspected or known ingestion of an alimentary tract foreign body
Exclusion Criteria	Patients with aspirated foreign bodies
NURSE documentation	Chief complaint. Witnessed or suspected object and time of ingestion. Airway and breathing assessment. Drooling? Document diet/last PO, appetite history or refusal to eat; number of wet diapers; stool history—bloody or non-bloody; hydration status, level of consciousness/alertness; choking or gagging episodes.
INTERVENTIONS Initiate on arrival	All patients: ESI Triage Level II Full set of vitals Continuous cardiac monitoring, pulse oximetry HOB 30 degrees NPO Suspected or confirmed esophageal button battery: Administer 10 mL Sucralfate suspension every 10 minutes for 3 doses or honey 10ml every 10 minutes x 6 doses if > 1 year of age Place 2 large bore PIVs Initiate pre-op lab draws including type and cross for possible blood transfusion in the OR
DIAGNOSTICS	*If radiograph from referring has already located button battery in esophagus, do not order repeat imaging. Patient should go the OR ASAP.* For all other foreign bodies and for suspected button battery ingestions without outside imaging: • If battery, magnets, coins, or other radiopaque object suspected, obtain AP nose to rectum radiograph. Add lateral views of neck, chest, and abdomen if esophageal position suspected or battery/magnet/coin suspected. • If fish bone, food impaction, or small or radiolucent foreign body suspected and not visualized with plain radiography, determine if patient has history of esophageal surgery. If yes, consult Peds Surgery. If no, consult Peds GI. Discuss need for esophogram.
PHYSICIAN (LIP)	
Fluids (if indicated)	Normal Saline Bolus of 20ml/kg
Consults	For non-button battery foreign bodies, consult may be indicated depending on object and location of foreign body- see diagram on page 3 Above thoracic inlet and/or respiratory symptoms: IP Consult to Peds Oto Below thoracic inlet but above stomach: IP Consult to Peds Surgery In stomach or intestines AND symptoms: IP Consult to Peds GI In stomach or intestines with NO symptoms: IP Consult to Peds GI For known or suspected esophageal button battery: IP Consult to Button Battery Paging Group (Emergent consultation to gastroenterology, pediatric surgery, pediatric cardiothoracic surgery, and interventional cardiology)
ADMISSION	See page 2 and 3 for specific admission criteria and appropriate service. Generally, for foreign bodies requiring admission, esophageal foreign bodies are admitted to Peds ENT or Surgery, gastric and intestinal FBs WITH symptoms are admitted to Peds Surgery, and gastric and intestinal FBS WITHOUT symptoms are admitted to Peds GI

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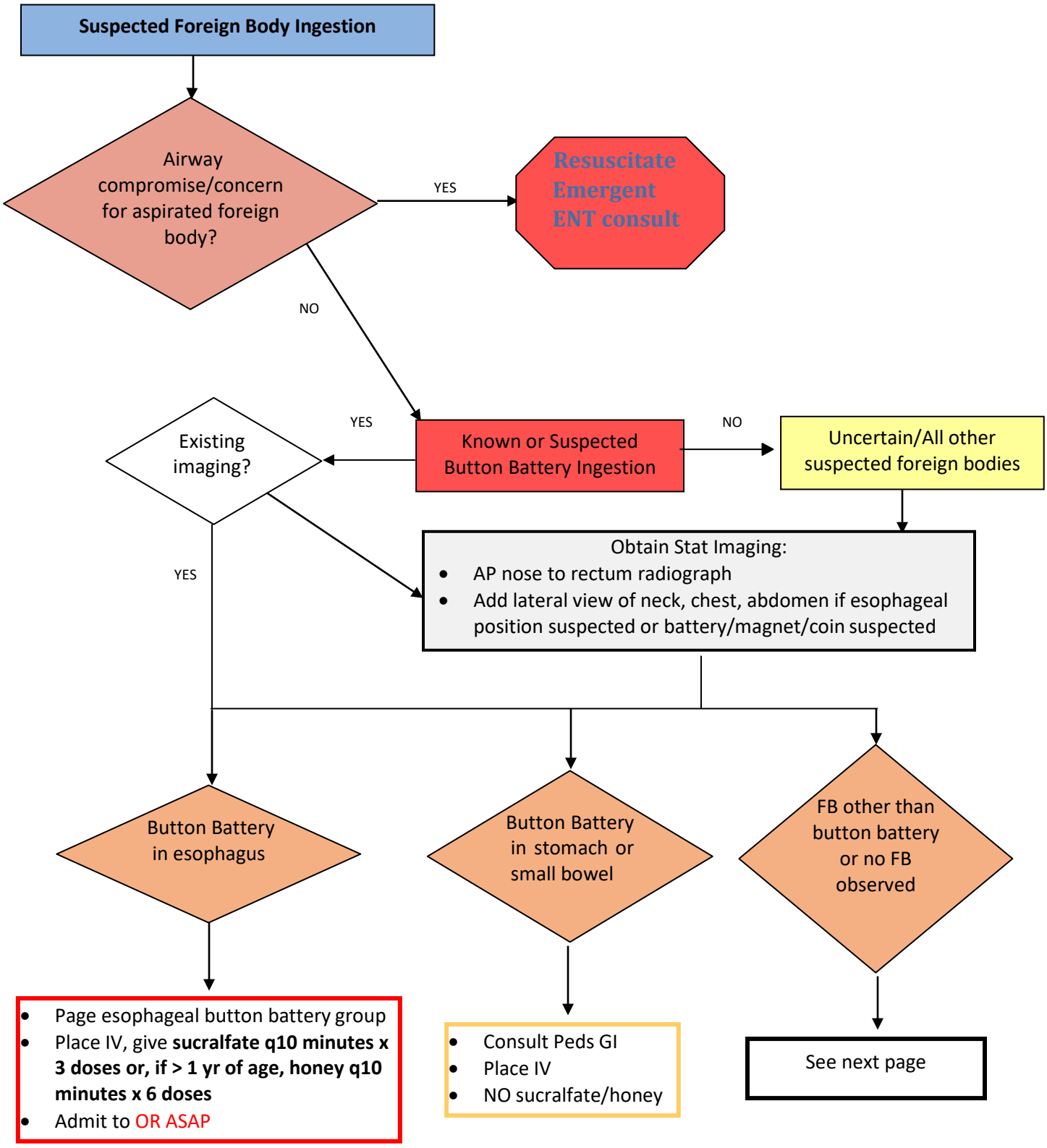

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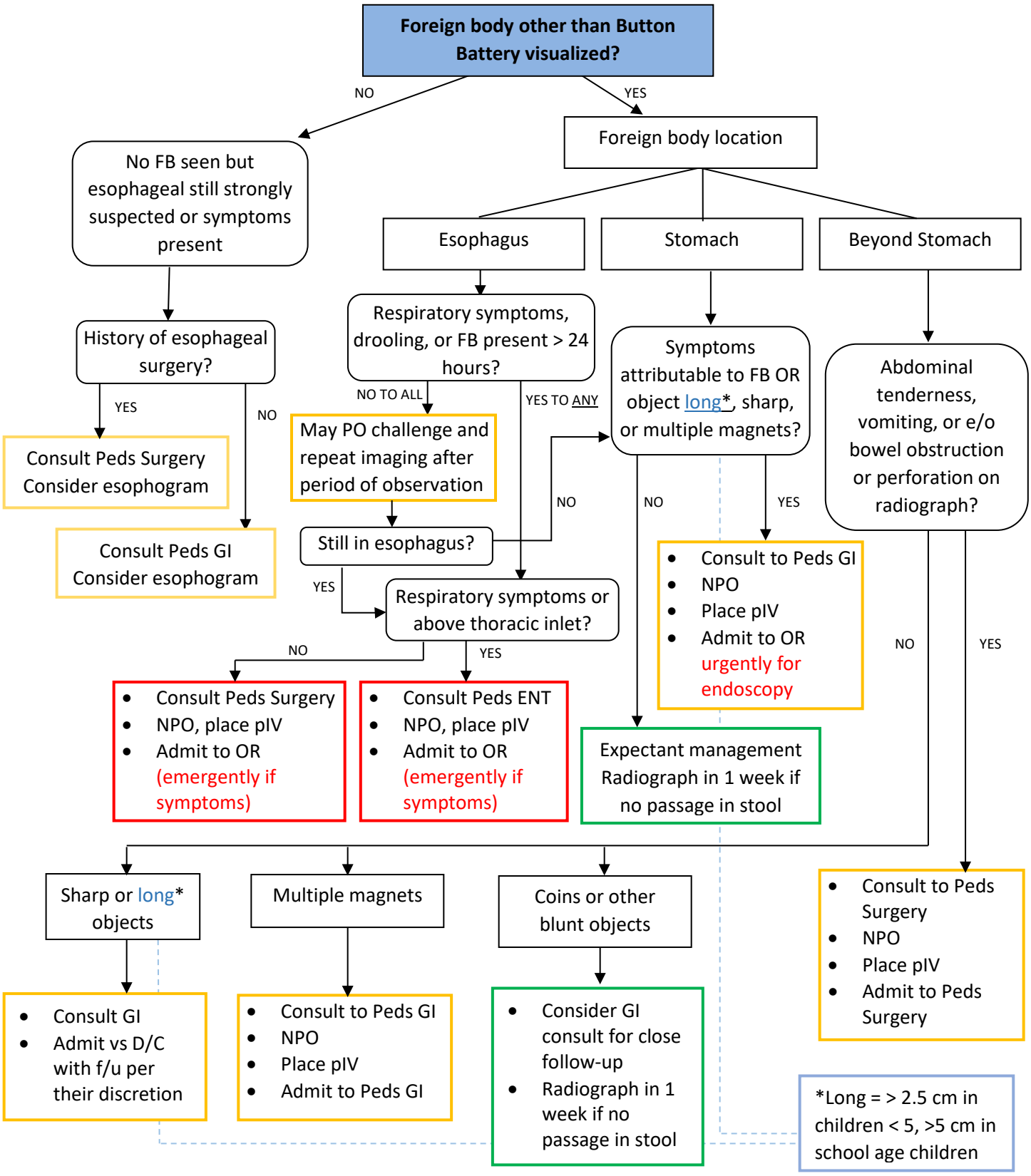

Foreign Body Ingestion Rationale and Data

Goals of Clinical Pathway

1. Streamline interdisciplinary evaluation of patients with foreign body ingestions
2. Rapidly determine whether foreign body requires removal and stratify urgency

Diagnostic and Treatment Techniques	Use and Accuracy/ Effectiveness
Radiographs	AP and lateral views are essential to locate the anatomical position of a foreign body and differentiate alimentary from respiratory tract. Evaluate for radiopaque foreign bodies, indirect evidence of radiolucent foreign bodies (e.g. air-fluid levels in esophagus), and free air suggestive of perforation. In one study of 325 children, only 64% of ingested foreign bodies were radiopaque, so a high index of suspicion should be maintained.
Radiographic features of coin vs button battery	Coins are the most commonly ingested foreign bodies in children. It is vital to distinguish them from button batteries, which far more commonly can result in serious complications. Radiographic features suggesting a button battery include the 'double ring' or 'halo' sign on AP films and the 'step-off' sign on the lateral film, both suggesting the bilevel contour characteristic of button batteries.
Size of coin vs button battery	Size alone cannot reliably distinguish between button batteries and coins, and the magnification of radiographs tends to overestimate size. For reference, a U.S. penny is 19mm, a nickel 21mm, a dime 18mm, and a quarter 24mm. The most commonly ingested button battery is the 20mm lithium coin cell.
Sucralfate or honey	A 2018 study by Angang et al demonstrated significant benefit of both honey and sucralfate compared to other solutions in preventing esophageal injury and perforation in vitro and in vivo. Both prevented battery-induced pH increase and depth of esophageal injury.
Emergent removal of esophageal button batteries	Serious esophageal burns can occur within 2 hours of ingestion and complications include tracheoesophageal fistula, vocal cord paralysis, subglottic or tracheal stenosis, esophageal perforation or stenosis, mediastinitis, aortic arch perforation, and gastric or intestinal hemorrhage and perforation. Factors associated with complication and death include battery diameter ≥20mm, patient < 4 years of age, ingestion of > 1 button battery, delayed battery removal, unknown ingestion time, and coingestion of a magnet, among others.
Endoscopic removal of FBs if present > 24 hours	Duration of lodgment in the esophagus is one of the strongest predictors of complication, including injury to esophageal mucosa, bleeding, stricture, and obstruction
Proteolytic enzymes and glucagon for FBs including food impaction	Proteolytic enzymes have been associated with hypernatremia, erosion, esophageal perforation, and aspiration pneumonitis. Glucagon has not been shown to be efficacious and can commonly cause nausea and vomiting.

References:

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