If Active and/or Sentinel Bleed, Esophageal Perforation, Patient Clinically Unstable:
• MTP Activation
• Emergent General Surgical Consult
• Include Cardiothoracic/Vascular Surgery
• Transfer to ECH PICU

If button battery is located beyond the pylorus, guideline does not apply, consult GI

For ingestion <12 hours:
• ≥12 mo. give honey 10 ml PO Q10 min
• <12 mo. give Carafate 1g PO Q10 min

Keep patient NPO (except honey/Carafate) Provide oral suction as needed.

Obtain Foreign Body Series per radiology protocol

If CTA is abnormal consult CV surgery and Button Battery Guideline Team for a Case Review

Post Endoscopy Management
• Admit:
  • PICU if concern for airway management
  • Gen Care, admit to GI service within 24hrs of admission
  • If NG is in place, begin enteral feeds
  • Within 72hrs Perform Lateral neck X-ray and Esophagram (complete prior to starting PO feeds)
  • Consider swallow study (OPMS) if symptomatic (dysphagia) and normal esophagram
  • Start IV antibiotics-Unasyn™ as clinically indicated

If Metal Fragments are present: X-ray must be repeated to confirm fragments have cleared before MRI on day 13 post removal

If button battery is located beyond the pylorus, guideline does not apply, consult GI

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### 1. Suspect Button Battery (BB) Ingestion
- Patient with abrupt onset of any one of the following: refusal of oral intake, difficulty swallowing, chest pain, drooling, airway obstruction, or wheezing or stridor without typical prodromal symptoms of viral illness.
- Presumed “coin” shape ingestion.
- For patients presenting to an Urgent Care center with BB ingestion, immediately begin Honey/Carafate and contact Transfer Center for Emergency transfer to ECH or SR.
- Batteries located in the esophagus may be asymptomatic initially. Do not wait for symptoms to appear. Serious burns can occur within 2 hours.
- Do not induce vomiting or give cathartics.
- Consult the National Battery Hotline at 800-498-8666 (or 202-625-3333) as needed for assistance in battery identification & patient management.

### 2. Determine BB Size and Location
- Honey/Carafate is recommended for all known or suspected BB ingestions within the past 12 hours (increased risk of esophageal perforation if >12 hours). See [ED CIP 5-10: Patients Presenting with Suspected Foreign Object](#).
- Begin honey/Carafate once BB ingestion suspected. If X-ray shows esophageal location, continue until patient reaches the OR. Discontinue if battery located in the stomach.
  - If ≥12 mo. give honey 10 ml PO Q10 min, max 6 Doses*
  - If <12 mo. give Carafate 1g PO Q10 min, max 3 doses*
- *May exceed max doses per MD order
- 1 honey packet (9.2 ml) is acceptable substitute for 10 ml dose
- Chemical content & diameter of the BB can be determined from imprinted code found on the battery case
- Assume hearing aid BB size may become trapped in the ear canal.
- Cylindrical batteries pose a lower risk of esophageal perforation if >12 hours. Do not induce vomiting or give cathartics.
- Batteries located in the esophagus may be symptomatic initially. Do not wait for symptoms to appear. Serious burns can occur within 2 hours.
- Do not induce vomiting or give cathartics.
- Consult the National Battery Hotline at 800-498-8666 (or 202-625-3333) as needed for assistance in battery identification & patient management.

### 3. Radiology
- For all suspected BB ingestions, Foreign Body Series to include: AP x-ray nose to rectum & lateral x-ray neck. If circular metallic foreign body identified in chest, obtain lateral x-ray of chest to evaluate position of negative battery pole.
- Esophagram should be performed as “pull back” esophagram with contrast injected through enteral tube by radiology.
- MRI on Day 13-15 post removal for all patients with BB removal (not to be done afterhours or on weekends without direct permission of radiology attending physician).
- MRI to be limited sequence study (about 20 minutes in length).
- Need for sedation/analgesia for MRI is at the discretion of clinical team.

### 4. Inpatient Management
- All NG tubes placed under endoscopy must be non-weighted, MRI compatible, Bridle feeding tubes.
- If NG tube becomes dislodged, contact provider. Caregiver should not attempt to replace NG at bedside.
- Patients with button battery removal esophageal should be admitted.
- Once PO feedings advanced, patient must remain on soft diet until D/C.
- If battery removed from upper esophagus, monitor closely for voice changes, respiratory distress, or stridor due to possible vocal cord paralysis.
- Antibiotics: Unasyn 50 mg/kg IV Q6H (max dose 2000 mg). If PCN allergy: Clindamycin 10 mg/kg IV Q6H (max dose 900 mg). Length of antibiotics should be determined by extent of injury.
  - If severe inflammation, mediastinitis, suspected perforation, and/or s/s of SERS or systemic infection (i.e. fever, ↑WBC, ↑CRP), antibiotics may be administered for a min. of 7-10 days.
  - In other cases, course of antibiotics to be determined by care team.

### 5. Discharge Criteria
- MRI shows stable or improved inflammation around aorta/great vessels.
- Patient tolerating soft diet
- Patient to follow up with GI 4 weeks after battery removal for a repeat Esophagram to evaluate for persistent mucosal irregularity, stricture, and delayed perforation.

### 6. Outpatient Management
- Button batteries that have cleared the stomach usually pass the GI tract within 1 week without complications.
- Anticipatory guidance to include close monitoring for bloody emesis, melena, cough, and fever, and/or abdominal pain.
- Patients with symptoms of abdominal pain, hematochezia, or fever should seek immediate medical attention for emergent X-rays.
- Prompt surgical removal is indicated for symptomatic patients with radiographic confirmation of a retained intestinal Button Battery.

### Potential Complications
- After removal, if mucosal injury was present, observe for and anticipate delayed complications: tracheoesophageal fistula, esophageal perforation, mediastinitis, vocal cord paralysis, tracheal stenosis, tracheomalacia, aspiration pneumonia, empyema, lung abscess, pneumothorax, spondylodiscitis, or exsanguination from perforation into a large vessel.
- Complications may be delayed for up to 30 days post ingestion.
- Consider battery proximity to the aorta or major vessels. If less than 3 mm tissue between area of esophageal injury and adjacent vessels on MRI/CTA monitor closely for sentinel bleeds. Involve cardiothoracic and vascular surgery early if possibility of impending esophageal-vascular fistula.