**QUESTIONS and ANSWERS**

1. Button battery ingestion usually presents with clear symptomatology.    
   **False:** Children can present with breathing difficulties, gastrointestinal upset or generally unwell.
2. Most button battery ingestions suffer few complications.  
   **True:** Data from the US indicates that only 2.8% of button battery ingestions suffer moderate complications, severe complications, or death. Those at particular risk of complications are children under 6 years of age, and those with ingestion of a button battery larger than 20mm diameter.
3. A stable child with radiological evidence of button battery in the oesophagus can be fasted for 6 hours prior to endoscopy to prevent aspiration of caustic material.  
   **False:** In oesophageal impaction, vascular-oesophageal fistula can form rapidly. The child may be well, just prior to haematemesis and a major haemorrhage. In these cases, the aim is to remove the button battery endoscopically within 2 hours.
4. If a stable child presents with a history of button battery ingestion, localisation of the battery with imaging is immediately warranted.  
   **True:** This will determine whether the button battery needs to be removed immediately, or if the child may be monitored.
5. It is difficult to differentiate radiologically between a coin and a button battery.  
   **True:** Button batteries may appear similar to coins on radiographs; discerning radiological findings are the presence of a ‘halo’ or ‘double ring’ on a posterior anterior view (high specificity but low sensitivity, as not all button batteries show this feature), or ‘step off’ appearance on lateral view
6. If a button battery is in the stomach, the risk of complications is low.   
   **True:** A repeat radiograph may be performed in 2 days in asymptomatic children to ensure passage along the GI tract. Endoscopic removal may rarely be required if there is no progression.
7. Oesophageal injury associated with alkali ingestion has a poorer prognosis than ingestion of acid.    
   **True:** Alkalis produce a liquefaction necrosis which penetrates through layers of tissue, whereas acids produce a coagulation necrosis which produces a barrier limiting further penetration.
8. A button battery has run out of charge when it is no longer able to power a device, and so cannot cause injury.   
   **False:** “Dead” batteries may still retain residual voltage which can produce hydroxide ions.
9. Doses of honey or sucralfate should be given prior to endoscopy to protect the friable oesophagus from iatrogenic injury.    
   **False:** Endoscopic removal is the definitive management of an impacted button battery and must never be delayed. However, honey and sucralfate are appropriate to mitigate chemical (not iatrogenic) injury while this is being arranged.
10. Hydroxide ions are produced at the anode when a button battery is in contact with the mucosa.    
    **True:** This is the site of most severe tissue injury.
11. Insertion of a nasogastric tube to aspirate stomach contents in preparation for rapid sequence induction is prudent in children presenting with button battery ingestion.   
    **False:** This should only be done by the endoscopist under direct visualisation. Further trauma to the oesophagus with blind nasogastric tube insertion could provoke a major haemorrhage, mediastinitis or pulmonary injury.
12. A button battery in the stomach does not necessarily require endoscopic intervention.    
    **True:** However, a button battery can transiently lodge in the oesophagus, causing severe injury - endoscopy is indicated if children are symptomatic.
13. Following endoscopy for button battery ingestion, steroids are indicated to reduce the inflammation at injured sites and prevent stricture formation.   
    **False:** Steroids may only be indicated in the context of mediastinitis.
14. Irrigation of the oesophagus with 0.25% acetic acid during endoscopy can neutralise residual OH- ions.   
    **True:** This can be done by the endoscopist if there are no signs of perforation.
15. Ingested button batteries frequently impact in the pylorus.  
    **False:** Although this is possible points of impaction, once past the oesophagus, the majority of ingested batteries pass spontaneously, and intervention is rarely required.
16. Honey is a useful interim measure in the management of button battery ingestion in all paediatric patients.  
    **False:** This recommendation is for children over the age of 1 year, due to the risk that clostridium botulinum spores in honey can colonise the infant gut and produce toxin leading to infant botulism.
17. Vocal cord palsy is a known complication of button battery ingestion    
    **True:** Although rare, unilateral and bilateral vocal cord palsy has been reported along with complications such as spondylodiscitis and vertebral osteomyelitis.
18. CT scans are warranted to identify complications and plan appropriate management for delayed presentations.     
    **True:** CT scans may be entirely appropriate. However, magnetic resonance imaging (MRI) scans must never be carried out in patients with a retained button battery.
19. There is still a risk of major haemorrhage after the removal of a button battery.    
    **True:** Fatal haemorrhages from aorto-oesophageal fistula can take place even after battery removal.
20. A 3-year-old child presents irritable and is found to have radiographic evidence of a button battery in the stomach. He requires admission, monitoring, with imaging the following day to ensure passage of the button battery down the GI tract.   
    **False:** This situation is dangerous and warrants CT imaging, liaison with an appropriate centre and urgent endoscopic evaluation. The irritability could be due to damage that has occurred in the oesophagus prior to passage of the button battery into the stomach. A symptomatic child as well as one with an unknown duration since ingestion should be approached with a high index of suspicion.