Management of Button Battery Ingestions (BBIs): Provincial Clinical Care Pathway

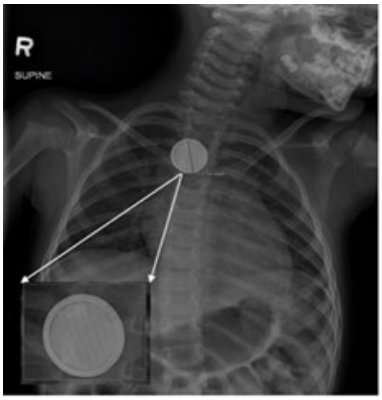
SCNergy, Fall 2021

In order to address the increasing number of Button Battery Ingestions (BBIs), including two fatalities in Alberta since 2018, the Maternal Newborn Child and Youth Strategic Clinical Network (MNCY SCN) and Emergency SCN (ESCN) worked together to develop and implement a provincial clinical care pathway.

The pathway addresses the management of BBI from the initial presentation to health care workers; through to the phase of battery removal; to the follow up and management of complications of the BBI or re-presentations to health care facilities as a result of the BBI.

In recent years, the use of household electronic devices and toys requiring button batteries has risen, particularly those requiring the larger more powerful '20mm CR2032' lithium/manganese dioxide batteries. This increase has resulted in severe and even fatal injuries in children.

Button batteries are often used to power small electronic devices such as watches, cameras, calculators, hearing aids and computer games. Because of their appearance and size, children can mistake button batteries for food or candy and swallow them.



The shape and size of the button battery allows it to become lodged in the esophagus, potentially causing severe tissue damage and life threatening injury if not treated and removed within two hours of ingestion.

The tell-tale "halo ring" around the circular image picked-up on x-ray (see left image) confirms the battery is a 'button' type.

According to Dr Steven Martin, pediatric gastroenterologist at Alberta Children's Hospital, the most important first step, is the prompt identification that the child has swallowed a button battery and to seek medical attention as soon as possible.

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Parents and guardians should know that, after swallowing a button battery, a child might have one or more of these symptoms: trouble breathing; wheezing and/or drooling; coughing and gagging when eating; trouble swallowing; chest pain; belly pain; nausea and/or vomiting; loss of appetite; and fever. These symptoms mimic many common childhood illnesses and can obscure the correct diagnosis. As injury progresses, gastrointestinal bleeding may cause blood in vomit and stools.

A child might also exhibit no symptoms after a button battery is swallowed but injury can still occur, even if the battery is dead or expired. If it is suspected that someone has swallowed a button battery, the care provider should not induce vomiting, and immediately take the child to an emergency department.

Key take-away summary points on the pediatric BBI pathway and development collaboration efforts

Parent Caregiver Identification

In the case of suspected BBI, it is vital to access emergency care promptly. Online content for information on BBI was added in MyHealthAB and Healthy Parents Healthy Children to ensure that appropriate safety information and guidance is available for parents and caregivers when they need information quickly. Collaboration with Health Link staff to update clinical protocols on BBI guidance when accepting calls from parents and care givers was completed.

Initial presentation to health care workers

Through the development of the BBI pathway and accompanying Emergency Nursing Protocol, BBI is triaged higher than other foreign body ingestion. Alert messaging for health care providers has also been built into Connect Care to ensure rapid response.

Treatment begins with a teaspoon of honey

For stable patients with suspected BBI, teaspoons of honey or a medication used to treat ulcers is given which helps reduce tissue damage in the esophagus and buys some time before removal can be performed.

Transfer

All suspected or confirmed BBI ingestions should trigger an immediate call to the Referral, Access, Advice, Placement, Information and Destination (RAAPID) line to consult Pediatric Gastroenterology at the nearest tertiary children's hospital to discuss the best management/transfer plan.

Follow up and repeat diagnostic imaging

Repeat imaging including MRI and pediatric subspecialty follow up is crucially important to ensure that the esophageal tissue remains healthy and is healing. Esophageal bleeding and complications may also occur as late as six weeks following button battery removal.

The patient's family needs clear instructions regarding the need to return immediately to the emergency department with symptoms of complications. The pathway includes an education handout for parents and caregivers upon discharge (Page 33).

Next Steps

Each step along the patient journey is important to avoid severe injury and death in the case of ingested button batteries. The development and implementation of the provincial pathway for Button Battery Ingestion seeks to address all steps of the patient journey to ensure the best possible outcome.

Although there is not currently a national ICD 10 code for BBI, discussions about the evaluation of the pathway are underway, including potentially using documentation in the electronic record with data capture. Dr Martin continues to advocate for precise diagnostic coding which would assist in the appropriate identification of these events allowing more precise tracking of numbers and outcome evaluation.