The Battery Controlled
Supported by Energizer in partnership with Safe Kids WORLDWIDE to prevent injury

National Capital Poison Center
Battery Hotline
202-625-3333
www.poison.org

Risk of Serious Injury from Battery Ingestion
What Medical Professionals Need to Know

The National Capital Poison Center is working with The Battery Controlled, a national partnership to raise awareness about the risks associated with ingestion of coin lithium batteries and prevent serious injuries.

A GROWING DANGER

As demand for smaller, slimmer and sleeker electronic devices has grown, so has the number of button batteries that power them — and the number of serious button battery ingestions that have been reported to the National Capital Poison Center (NCPC).

- Approximately **3,500 button battery ingestion cases** are reported each year to U.S. poison control centers. (All sizes and types of button batteries.)
- The number of children with serious injury or death has **more than quadrupled** in the past five years (2006-2010) compared to the five years prior.
- It is likely the number of cases is much higher, as many of these ingestions are never reported to poison centers.

The most serious injuries are usually associated with 20 mm diameter batteries, about the size of a nickel, because they are likely to get lodged in the esophagus. When this happens, saliva immediately begins to work with the battery to trigger an electrical current. The battery generates hydroxide through an electrolysis reaction that occurs when the battery is in contact with tissue fluids. The hydroxide which forms causes alkaline burns and perforations of the esophagus. **Serious injuries can occur in as little as two hours.**

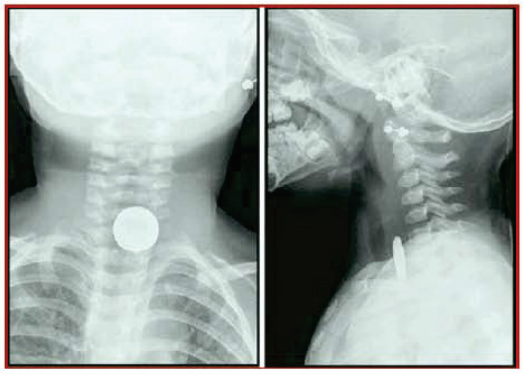
	Popular Sizes CR 2016 CR 2025 CR 2032	The recommendations of this overview apply to any 3 volt CR or BR type lithium coin battery.

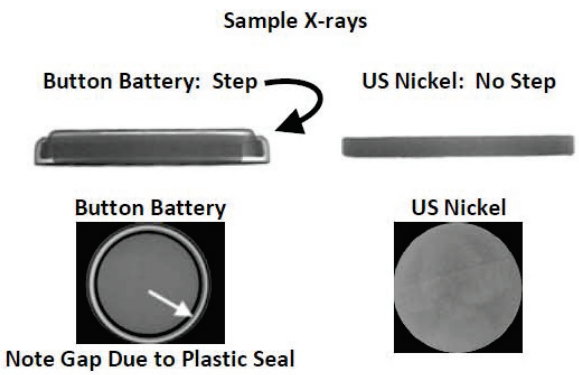
MEDICAL COMPLICATIONS

Complications may develop immediately, or they may not appear for days or weeks following battery removal. They include: tracheoesophageal fistulas, esophageal perforation, esophageal strictures, mediastinitis, vocal cord paralysis, tracheal stenosis, spondylodiscitis, and exsanguination from fistulization into a large blood vessel.

MAKE AN X-RAY DIAGNOSIS AND REMOVE FAST

Most button batteries pass through the gut uneventfully and are eliminated in the stool. However, a battery that gets stuck in the esophagus is likely to cause tissue damage. When a battery is swallowed, it is impossible to know whether it will pass through — although a larger diameter battery (around 20 mm) in a child younger than 4 years increases the risk. In making an x-ray diagnosis, it is important to look for the characteristics that distinguish a battery from a coin.





TREATMENT GUIDELINES

If battery ingestion is suspected, consult detailed treatment guidelines found at www.poison.org/battery/guideline.asp or call NCPC's National Battery Ingestion Hotline at 202-625-3333 for expert advice 24 hours a day, 7 days a week. In summary, physicians should:

1. Direct parents and caregivers to immediately seek emergency medical attention.
2. Keep the patient NPO until an esophageal battery position is ruled out by x-ray.
3. If the patient is asymptomatic, take up to five minutes to determine the battery identification number from the package or a matching battery. Consult the National Battery Ingestion Hotline for assistance with battery identification.
4. Obtain an immediate x-ray for all children 12 years or younger who have ingested a battery*. Do **not** wait for symptoms to develop. Patients may be asymptomatic initially or may have vomiting, cough, decreased appetite, drooling, stridor, dysphagia, fever or hematemesis. Look for the double rim and step-off to distinguish a battery from a coin.
5. Immediately remove batteries found in the esophagus. Endoscopic removal is preferred, as direct visualization determines subsequent treatment. Expect esophageal perforations and fistulas involving the trachea or major vessels to be delayed up to 18 days after battery removal. Monitor aggressively for these complications. Esophageal strictures may not manifest for weeks to months post ingestion.
6. Allow batteries to pass spontaneously if they have moved beyond the esophagus and no clinical indication of significant gastrointestinal injury is evident. Retrieval is indicated only if a magnet is coingested, symptoms develop or a large diameter battery (more than 15 mm) fails to pass the pylorus in four days. Manage all other batteries beyond the esophagus at home with regular diet and activity. Confirm passage by stool inspection. Consider repeat x-rays if passage is not documented in 10-14 days.

OTHER RISKS

Button batteries may also cause permanent injury when placed in the nose or ear. Young children and the elderly are particularly at risk. Symptoms to watch for are pain and/or discharge from the nose or ear. Avoid using nasal or otic drops until a battery in the ear or nose is ruled out on exam, as these fluids accelerate injury if a battery is involved.

REPORTING INCIDENTS

NCPC continues to gather detailed statistics to guide the standard-setting process, refine treatment guidelines and share expertise with physicians managing these cases. Please report all swallowing cases to NCPC (202-625-3333).

LEARN MORE

Battery and device manufacturers, in cooperation with NCPC, the U.S. Consumer Product Safety Commission and others, are taking steps to address this hazard. Prevention efforts are focusing on strengthening warnings, securing battery compartments, and public education.

The Battery Controlled partnership welcomes any questions or feedback you may have. Contact us at info@thebatterycontrolled.org. Videos, tip sheets and more information can be found at www.thebatterycontrolled.com

National Capital Poison Center | www.poison.org/battery

US Consumer Product Safety Commission | www.cpsc.gov/cpscpub/prerel/prhtml11/11181.html

The Battery Controlled | www.thebatterycontrolled.com

INFORMATION PROVIDED BY DR. TOBY LITOVITZ AND THE NATIONAL CAPITAL POISON CENTER.

* For older children and adults, check the detailed treatment guideline for specific indications.

Distributed by:

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