THE OFFICIAL NEWSMAGAZINE OF THE AMERICAN ACADEMY OF PEDIATRICS
AAP News

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AAP News 2013;34;13
DOI: 10.1542/aapnews.2013345-13

THE OFFICIAL NEWSMAGAZINE OF THE AMERICAN ACADEMY OF PEDIATRICS
AAP News
DEDICATED TO THE HEALTH OF ALL CHILDREN
Volume 34 • Number 5
May 2013
www.aapnews.org

Focus On Subspecialties

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by **James S. Reilly, M.D., FAAP**

Ingestion of button batteries is an increasingly common hazard to children. Every three hours, a child or teenager will visit an emergency department (ED) to be examined or treated for battery ingestion (Sharpe SJ, et al. *Pediatrics.* 2012;129:1111-1117).

In 2009, EDs saw nearly 6,000 U.S. children for button battery-related exposures. Some of these children have permanent damage to their esophagus. Children also have died after swallowing these batteries.

Stronger batteries, more injuries

Button batteries are found in many household items, such as toys, TV remote controls, watches, calculators, hearing aids, flashlights and key fobs. Many of these products contain newer and stronger batteries. Compared to the 1.5-volt button batteries, the larger 3-volt lithium batteries have increased the risk of life-threatening injuries dramatically.

These coin-size lithium batteries possess a strong electrical charge when out of the electronic unit. If swallowed by children, they become lodged in the upper esophagus and react quickly with saliva. The battery discharges a current that hydrolyzes water and generates hydroxide, creating a caustic (alkaline) injury to the tissue. Serious damage occurs in just two hours.

If a caregiver does not know that a child has swallowed a button battery, the erosive injury from the battery progresses rapidly over several hours. The child may vomit, refuse food, develop a fever or cough and become listless. These symptoms mimic many common childhood illnesses and obscure the correct diagnosis.

RESOURCES

- Button battery triage and treatment recommendations from the National Battery Ingestion Hotline are available at www.poison.org/battery/guideline.asp.
- For assistance or to report battery ingestion injuries, call the National Battery Ingestion Hotline at 202-625-3333.
- Information for parents on the dangers of button batteries is available on the Healthy Children website, www.healthychildren.org.
- For recycling information, go to www.earth911.com and click on Batteries.

Facts about button batteries

Myth: Button batteries often develop a leak, which leads to tissue injury.
Fact: Leaks usually do not occur. Instead an electrical and chemical reaction takes place at the anode surface, which creates tissue erosion.

Myth: Musical greeting cards are a common source of ingested button batteries, leading to severe injuries in children.
Fact: Musical cards usually have non-lithium batteries with secure compartments. They rarely are a source of injuries.

Myth: A "dead" battery cannot injure children if ingested.
Fact: A battery below 3 volts power may not be able to run an electronic device, but it still can cause tissue erosion in less than two hours.

Every minute counts

Prompt medical intervention is essential when parents find an opened remote control or a missing battery that may have been swallowed by an infant or young child. Children with suspected battery ingestions must be taken to the nearest pediatric ED for *immediate* evaluation.

The correct diagnosis cannot be made by a history or physical examination alone. X-rays are essential and need to include the child's entire body — from the nose to the rectum. Batteries frequently are mistaken for coins on X-ray. Look for the distinctive "halo rim" around the battery on a high-quality X-ray.

Batteries beyond the esophagus usually pass without complications. However, batteries in the esophagus must be removed emergently endoscopically to avoid injury to the esophagus. Delayed removal from the esophagus leads to strictures, perforations, tracheoesophageal fistulas, aortoesophageal fistulas, vocal cord paralysis and spondylodiscitis.

Safe removal can be difficult and even hazardous. Physicians with specialized skills often are needed. Critically ill children may need

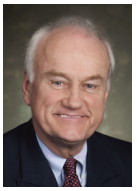
to be hospitalized in a pediatric intensive care unit after removal to ensure that an injured esophagus heals without perforation or scarring.

Prevention is the best medicine

Ensuring that children do not have access to button batteries is the best way to prevent battery-related injuries.

Parents should check products that use button batteries to see if the battery compartment requires a tool such as a screwdriver to open and that it is securely closed.

In addition, batteries should be stored out of children's reach and disposed of safely.



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