

New research identifies risks, interventions for children's GI health

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An increasing number of U.S. children are experiencing gastrointestinal issues that require interventions to resolve, according to research presented at Digestive Disease Week (DDW).

In one study targeting obesity, researchers at the Cleveland Clinic Children's Hospital found that obese children have a unique pattern of exhaled breath compared to their lean counterparts. The pattern showed differences in volatile organic compound levels that can be correlated to potential complications associated with obesity, such as diabetes and [fatty liver disease](#).

"Childhood obesity has reached [epidemic levels](#) in the U.S., with 17 percent of children being obese and at risk for serious health complications," said Naim Alkhouri, MD, director of the Pediatric Preventive Cardiology and Metabolic Clinic at Cleveland Clinic's Children's Hospital. "A quick, non-invasive breath test that identifies specific risks could help clinicians identify effective interventions while also motivating families to take preventative action."

Funded by the Cleveland Clinic Respiratory Institute and the Ohio Third Frontier program, the study compared the [volatile organic compounds](#) in the breath of obese and lean children and found differences in the concentration of more than 50 compounds. The test identified the [obese children](#) with a 92 percent rate of accuracy. Dr. Alkhouri said that while more research is needed to validate the findings, the [breath test](#) could be an invaluable research tool.

"The findings promise to shed more light on the causes and complications of [childhood obesity](#)," he said. "Ultimately, this could have huge implications for early interventions for obesity-related complications that could be effectively targeted to combat risk as these children get older."

Study identifies high rate of surgical intervention for magnet ingestions

DDW is also featuring research in a very different area of pediatric risk: the ingestion of high-powered magnets.

What started as a concern posted by a few pediatric gastroenterologists on a community bulletin board became the first study to document the frequency of medical and surgical interventions for children and adolescents who swallow magnets, a common component of adult desk toys. Investigators found that more than 79 percent of magnet ingestion cases ultimately required surgical and/or endoscopic procedures. Only 21 percent of cases could be managed by observation alone or by observation and pumping of the stomach, or lavage.

"We seemed to be seeing more and more of these cases, some of which were very serious, even life-threatening," said R. Adam Noel, associate professor of pediatrics at Louisiana State University Children's Hospital. "Our research not only confirms our concern, but also shows that early intervention is particularly important with these magnet ingestions."

Funded by the department of pediatrics at the Louisiana State University Health Science Center in New Orleans, the study surveyed pediatric gastroenterologists around the country, tracking their medical and surgical interventions with patients who had swallowed neodymium magnets. These magnets are 10 to 20 times stronger than typical

refrigerator magnets and are typically found in desk toys marketed to adults as stress relievers. If ingested, the magnets can become lodged in the digestive system and perforate the intestine. Severe damage can be fatal.

In 31 percent of cases, the study found, surgery was only needed to remove the magnets. But 43 percent of surgical cases required another major procedure, including fistula (abnormal connection between an organ, vessel or intestine and another structure) repair, and 15 percent needed a bowel resection.

The high surgical rate may be explained by the magnets' unique potential for harm. In cases involving other foreign objects, 85 percent of the time, those objects pass through a child's digestive track without complication. But the neodymium magnets, which are often swallowed in multiples, can pull together through the wall of the intestine.

"The findings send a strong message to clinicians and parents," said Dr. Noel. "Although they look harmless on an X-Ray, these magnets are powerful enough to cause serious damage to the digestive track in a short amount of time."

While children between the ages of 13 months and 6 years are at the highest risk for ingestion, older children's risk also appears to be increased as adolescents use the magnets for body jewelry and fake piercings. Analyzing the same data, a companion study found that 24 percent of children treated had ingested magnets as a result.

Last month, in response to the increasing reports of this hazard, the U.S. Consumer Product Safety Commission and several retailers announced the voluntary recall of high-powered magnet sets.

Provided by Digestive Disease Week

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