

Case Study | Beyond MRI Safety Best Practices

Enhancing MRI Safety: How Children's Mercy Tackled Alarm Fatigue with help from Metrasens



Children's Mercy

KANSAS CITY, MISSOURI

FACILITY STATS

Level 1 Pediatric Trauma and Children's Surgery Center, with 8,319 employees, 766 pediatric specialists staff, 390 inpatient beds, and four magnets across facilities.

APPLICATION

MRI, Zone II patient screening, and Zone IV entry control

CASE STUDY AT A GLANCE

Children's Mercy recognized that staff was experiencing alarm fatigue with their existing FMD entry-control system. Alarms happened so frequently it was difficult to know when a real danger was present. Recognizing alarm fatigue as a threat to patient safety, they wanted to find FMD systems that were not only effective but also designed to reduce alarm fatigue. They selected Ferroguard Screener and Ferroguard Assure, Metrasens FMD systems, to enhance their safety. Together with a comprehensive set of MRI safety policies and procedures, Children's Mercy is able to provide the highest levels of safety in their suites, not only preventing projectile incidents but keeping safety top of mind for all staff—reducing alarm fatigue and making staff actively involved in understanding and detecting potential danger.



ADDRESSING ALARM FATIGUE FOR ENHANCED SAFETY

Children's Mercy has a stated goal to cause no harm to patients. In 2014, when reviewing their MRI screening processes, they realized they had work to do to ensure that magnetic screening was as safe as possible. At the time, they had FMD systems that were triggering many alarms, and their staff was experiencing alarm fatigue. Constant lights and alarms reduced screen efficiency and left staff uncertain about what was making it through to Zone 4. Children would sometimes even comment on the "pretty Christmas lights." They realized alarm fatigue could cause missed critical alarms, staff burnout, delayed responses, and could give a false sense of security—all aspects that could impact MRI safety. Recognizing the need to address alarm fatigue to guarantee a safe operation; they needed precise FMD systems that could offer the sensitivity needed to keep patients, visitors, and staff safe from injuries and projectile incidents without an excess of unclear and unnecessary alarms.

CHILDREN'S MERCY ELEVATES MRI SAFETY STANDARDS

In addition to alarm fatigue, Children's Mercy faced other challenges—challenges unique to pediatric hospitals. A higher number of people are often present in the MRI suite. Wanting to create a comfortable experience for children, a parent or guardian may accompany a patient. Regularly, non-MRI medical staff, including nursing, anesthesia, anesthesia support, respiratory therapy, and potentially OR personnel, are in the area with the patient. The volume of people required efficient screening that also elevated awareness of the dangers of patient injuries and projectiles. "While we go to great lengths to educate everyone on MRI safety, we wanted all the reinforcements we could offer to keep everyone safe," says Dan Smock, Children's Mercy MRI Supervisor/MRSO.



"The challenge with ferromagnetic screening is that it requires human interpretation," said Smock, noting that MRI exams require the right process and equipment to empower staff to see alarms and efficiently interpret the results. Using Metrasens FMD systems, Children's Mercy updated their policies and procedures to address the interpretation of alarms.

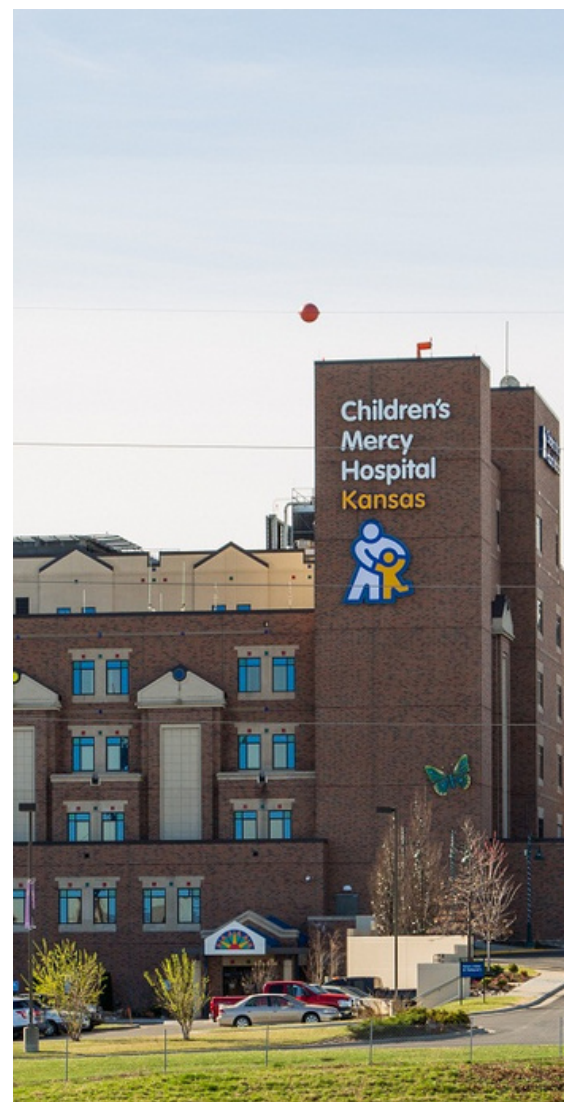
The hospital examined its MRI screening strategy and decided to implement entirely new processes with the addition of Metrasens ferromagnetic detection systems. The new systems and processes would elevate safety to the top of mind for everyone and—with fewer false alarms and more precise detection capabilities—help staff to understand and interpret alarms.

Children's Mercy implemented the following changes:

1. Ferroguard Screener was added to Zone II as a patient and staff screener to detect small ferrous objects and undocumented medical implants prior to entry into Zone 3.
2. They added a procedural timeout to Zone 3 as a safety check to ensure everyone is ready to enter the magnet room. "A procedural timeout is extremely important in an MRI setting," says Smock. "This is especially where we use ferromagnetic detection to identify risks not previously identified by other screening methods." He notes this in particular for critically ill people, who can't tell you of their history, and for children, who don't know or are unable to communicate about potential ferrous objects.
3. After everyone has been screened and a visual inspection is completed, Ferroguard Assure is used in the entry to the magnet room, screening the area before Zone 4 as a final check. The early warning and forward sensitivity detect any risk item in advance, giving staff time to react.

"One of our challenges at Children's Mercy is to offer zero harm to patients. This is a tool that gets us much closer to that mark."

Dan Smock | Children's Mercy
MRI Supervisor, MRSO.





"Time and time again in the pediatric population, we have been saved by these safety processes," says Smock. "It's not uncommon that children have a positive ferrous detection, and we find they have eaten items that could have potentially been harmful—and parents don't know." He cites one specific example where Metrasens screenings detected the presence of a small metallic ball that was part of a doll set. The child had swallowed it and didn't know of the danger, and the parents were completely unaware.



Smock notes that Assure at the magnet room door is a great final check. "This is a great system—we are very impressed with the quality," says Smock. Smock appreciates the value of the forward sensitive screenings—since other entry control systems don't alert until after an object has crossed into Zone 4. Ferroguard Assure alerts as dangerous ferrous objects approach the door, rather than at entry—before it's too late.



The new processes that implement Metrasens systems detect ferrous objects, both big and small, preventing potential patient injuries and projectile incidents. The biggest impact, according to Smock, is the increased awareness. "This brought attention to MRI safety on a whole new level," says Smock. "As the MRI safety officer, part of my role is to create awareness. Alarm systems help do that. They remind people that this is a magnetic environment—we can't see it, but it's here. Our FMD systems have had a huge impact on how our entire team approaches MRI safety."

"It is such a pleasure to work with Metrasens. I am most impressed with the sensitivity of their systems. They help keep our staff and patients safe, and ultimately that's what matters the most."

Dan Smock | Children's Mercy
MRI Supervisor, MRSO.



THE RISING SIGNIFICANCE OF FERROMAGNETIC DETECTION

As an MR Safety Officer credentialed by the American Board of MR Safety, Smock believes ferromagnetic detection will only increase in importance and points to a few modern challenges that make precise screening and excellent processes more essential than ever. Procedure volumes are increasing. "With that, there is more opportunity for things to go wrong," says Smock. Hospitals also are experiencing staffing challenges. This makes standard processes even more important, as different people are rotating through them. "Best practices and processes help us control equipment and staff in the suite, making sure they are appropriate to go in," says Smock. More hospitals are also implementing remote scanning. "In this case, a licensed tech doesn't see the patient as they go in the room. This leaves weighty responsibility on someone else, as well as the institution," says Smock. At the same time, medicine continues to advance, and implants are becoming smaller and more complex, which, if unreported, can be a risk to the patient. Because of all these reasons, Metrasens FMD systems are more necessary than ever.

Smock often recommends the processes at Children's Mercy that implement Metrasens. Rather than experiencing alarm fatigue, technologists and staff are actively involved in detecting when there is a problem. "Once people are immersed in an environment where processes use ferromagnetic detection, technologists quickly lock into the value of it. It helps them perform heightened magnetic screening and prevent incidents efficiently," says Smock.



About Children's Mercy

Children's Mercy is one of the best children's hospitals in America by U.S. News and World Report, ranking in 9 specialties. Children's Mercy offers 367 licensed beds, more than 40 pediatric subspecialty clinics, a Level IIIc intensive care nursery, and the only Level I pediatric trauma center between St. Louis and Denver.

About Metrasens

Metrasens is a world-leading provider of advanced detection technologies that, combined with tailored solutions, address the deficiencies in conventional screening methods. Metrasens takes science from the laboratory and uses it to create revolutionary products that are effective, flexible, easy to use, and exceed the needs of our customers.

