

Optimizing an MRI Safety Program at a Tertiary Children's Hospital



DALLAS, TEXAS

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No disclosures

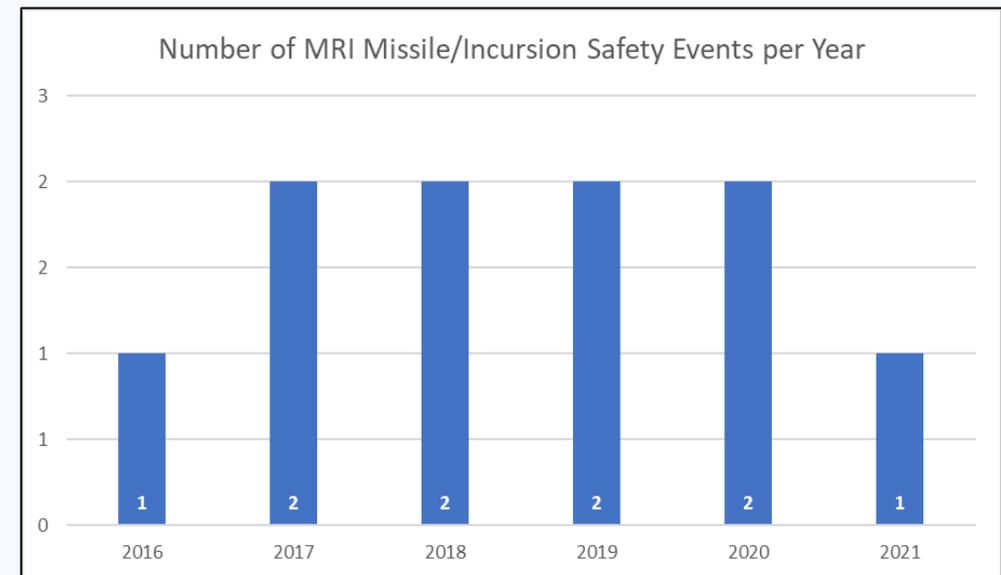
PROBLEM DESCRIPTION

Pediatric MRI departments are uniquely complex with many nursing, anesthesia, and radiology staff members involved in patient care.

Since 2016, we have experienced yearly preventable missile events including an IV pole projectile in 2020, prompting reflection and a renewed commitment to improve MRI safety.



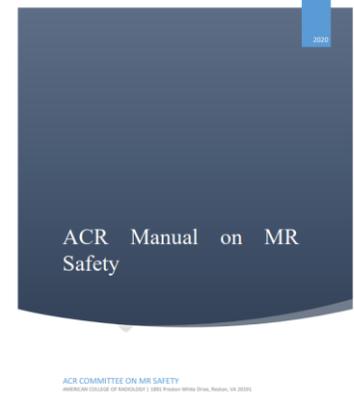
Past Ferrous Incursions in MRI 2016-2020



RATIONALE

- We sought to align with a renewed hospital-wide emphasis on building a culture of safety.
- We reviewed and updated safety policies based on the latest ACR Manual on MR Safety
- We reviewed data from past ferrous incursions to determine root causes. Multiple deficiencies were revealed, including a high volume of nonessential personnel in Zones III and IV, confusion about equipment MR safety status, alarm fatigue, and a lack of a central MRI safety authority.
- **Our GOAL for 2021: ZERO ferrous incursions**

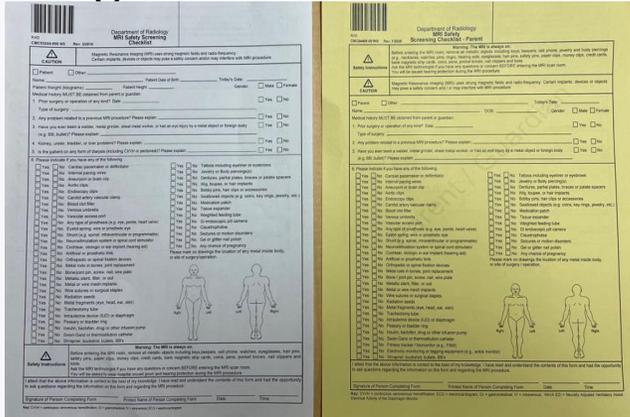
INTERVENTIONS

Date	Intervention	
October 2020	Nonferrous masks 	Staff and patient ferrous material in masks caused alarm fatigue. Nonferrous masks were implemented in MRI.
October 2020	Zone IV Ferrogaurds Re-calibrated 	Ferrogaurds detection systems were re-calibrated to reduce alarm fatigue.
October 2020	Safety meetings	Began holding MRI safety meetings based on the ACR manual on MRI safety – adverse events were discussed during the meetings for continued improvement

INTERVENTIONS

Date	Intervention	
November 2020	IV poles painted and labeled 	Due to a ferrous incursion by an IV pole, all IV poles were color-coded and labeled to indicate MRI status: MR Safe , Conditional or Unsafe 
December 2020	Zone IV Barriers	Physical barriers placed at Zone IV entrances

INTERVENTIONS

Date	Intervention	
December 2020	Screening form 	Updated screening form and instituted verbal review with patient (white) Introduced accompanying parent/guardian screening form (yellow)
January-March 2021	Consistent team of providers	Created a dedicated team of anesthesia and nursing providers for MRI
January-March 2021	Breakroom door closed	Closed breakroom door to stop flow of nonessential personnel

INTERVENTIONS

Date	Intervention	
May 2021	MRSO appointed	Appointed an MRSO to enforce safety measures in MRI – MRSO to evaluate MRI department twice daily to ensure all protocols are followed
June 2021	Tagging procedure	Started tagging all equipment in Zone III as MR Safe , Conditional or Unsafe



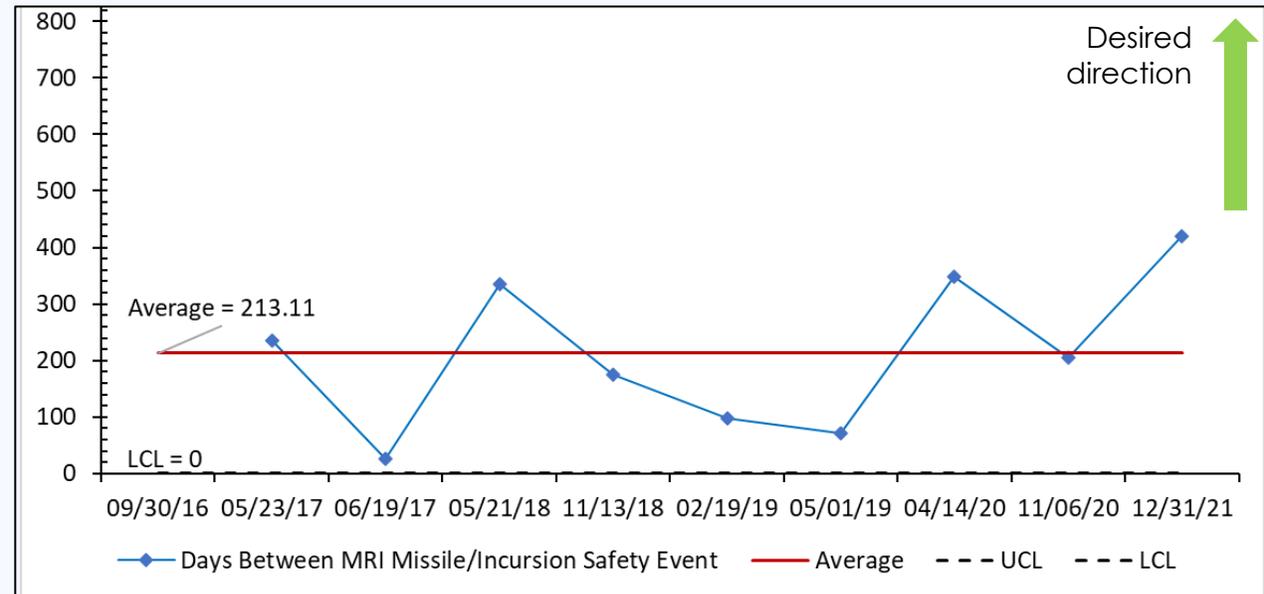
INTERVENTIONS

Date	Intervention
July 2021	MagResource Subscription obtained Obtained a subscription to a web-based searchable database for MRI safety status of various medical implants to aid in patient screening
November 2021	365 days without any MRI ferrous incursions or other adverse events
December 2021	Goal accomplished!!

RESULTS

After implementing these new MRI safety protocols, we have surpassed prior “days between events” records, now at more than 15 months, with no ferrous incursions or patient injuries.

Average Days Between MRI Missile/Incursion Safety Events



CONCLUSION

After implementing our MRI safety interventions, we reached our goal of having no ferrous incursions or patient injuries in 2021.

We learned that effective MRI safety programs are advanced by strong institutional support, empowered local MRI leadership with dedicated Zone III/IV providers, and continuous analysis of failure modes.

In a complex pediatric MRI environment, adherence to stringent safety protocols reduces adverse MRI safety events.

THANK YOU!

