Improving On-Time Starts for Pediatric Cardiac MRI

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Disclosures

• None
Background and Aim

- Delays in starting MRI exams impacts scheduling completion of subsequent exams
- Delays result in extended fasting for children and poor synchronization of time-based care appointments

Aim: Improve the percentage of pediatric cardiac MRI starting on time* from 10% to 70% over a 6-month period

On time*: Cardiac MRI exams starting within 5 minutes of scheduled time
Methods

• This project was a quality improvement initiative conducted following the *Realizing Improvement Through Team Empowerment (RITE)* methodology.

• A multidisciplinary team including cardiovascular imagers, cardiologists, radiology technologists, an anesthesiologist, a radiology nurse, a cardiac preparation and recovery unit nurse, a scheduling manager, a human factors engineer, a data analyst, a patient safety specialist, and a radiology manager was assembled.

• The team performed Gemba walks and applied PDSA cycles to improve each step of the followed process.
Problem Analysis

Workflow Processes:
- Order placed
- Exam scheduled
- Exam protocolled
- Provide instructions for day of appointment
- Patient arrives
- Registration
- Patient preparation (non-sedate)
- Patient preparation (sedate)
- Begin scan
- End scan

Causes of cardiac MRI delays:

- Patient arrived to registration late: 28%
- Scan table time exceeded slot: 55%
- Patients have to have appointment moved: 80%
- Preparation exceeded time allotted: 93%
- Anesthesia notice time insufficient: 100%

Instances vs Cumulative %
### Key Drivers and Interventions

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Key Drivers</th>
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<tbody>
<tr>
<td>Analytics dashboard enhanced and constantly updated</td>
<td>Accessible performance data for each step of the process</td>
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<td>Timely patient preparation: patient ready for induction 40 minutes prior to scheduled MRI start time</td>
<td>Providing schedulers with necessary information at the time of scheduling</td>
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<td>Scheduling process redesign: Protocol before scheduling</td>
<td>Ensuring patient arrival on scheduled time</td>
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<td>Script changed for patient/parent arrival to improve arrival time for cMRI</td>
<td>Patient preparation must happen within allotted time</td>
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<td>Develop timestamp measure to signal when patients are ready for cMRI</td>
<td>Imaging must conclude before or at the expected end time</td>
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Cardiac MRI exams starting on time improved from 10% to 34% over a 6-month period.
Results

Average time difference between scan time and scheduled appointment time decreased from 40 minutes to 27 minutes over the 6-month period.
Limitations

• Schedulers still lack necessary information for optimally scheduling patients into time slots, as redesigning the scheduling process was not applied.
Conclusion

- Providing parents/patients with navigational instructions on the day of their scheduled exam can significantly reduce arrival delays.

- Increasing anesthesia lead time helped improve on-time starts even though it was assessed as a less common issue during problem analysis.

- Inter- and intra-departmental communication is vital for ensuring timely preparation of patients requiring anesthesia before a cardiac MRI examination.