Improving order to completion time for urgent/stat in-patient and ED pediatric MRIs requiring anesthesia/sedation

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Disclosure

Jay Pahade - Consultant for:
GE healthcare
Bioclinica
Introduction

• Completion of ED and inpatient pediatric MRI requiring sedation reflects a complex workflow in healthcare requiring interaction and communication between multiple distinct healthcare teams

• Our department was a frequent recipient of complaints in failing to provide timely care for this cohort of children triggering a Quality Improvement project

• Model for Improvement methodology was utilized with multidisciplinary team composed of Radiology, Pediatric Anesthesiology, Pediatric Hospitalists, MRI operations, Scheduling, and the Quality and Safety teams from Yale Radiology and our Yale New Haven Children’s Hospital
SMART Goal

Decrease weekday mean order to begin (O to B) MRI time for high clinical acuity (stat/urgent) inpatient/ED pediatric MRI requiring sedation/anesthesia by 25% (current mean=1125 minutes) and reduce standard deviation (SD) by 50% (currently 1198 minutes) within 12 months.
Fishbone analysis on why exams get delayed

NP= North Pavilion MRI
Safe, timely, efficient MRI exams are needed for pediatric patients to ensure accurate diagnosis, medical management and decreased length of stay. Delays in timely completion of MRI exams in patients requiring sedation/anesthesia result in unnecessary delays in care with the current process resulting in scan completion outside of the pediatric MRI suite.

Background

SMART goals that are Specific, Measurable, Achievable, Relevant, and Time-bound.

- Decrease mean order to begin time for high clinical acuity (stat/urgent) in/ed pediatric MRI patients requiring anesthesia/sedation/anesthesia by 25% (current avg= 1125 minutes) and reduce standard deviation (SD) by 50% within 12 months.

Goal/Objective

High Level Process Map

What are the root causes of the gap? May include visuals such as cause/effect diagram, Pareto chart, Graphical/Statistical Analysis

Key Issues/Drivers

- Delays exist in timely completion of MRI exams in pediatric ED and in-patients when the study requires anesthesia/sedation for completion.

Problem Statement

Reducing delays in completing in-patient and ED pediatric MRIs requiring anesthesia/sedation

Interventions / Action Items

- Activity to sustain Owner Sustain method and frequency Report to Scheduled data audit/report DF SB, MP, DW

- Maturity Bars:
  - 0: Untested idea
  - 1: Early tests / PDCA
  - 2: Multiple PDCAs
  - 3: Early implementation
  - 4: Working well in operation

- Reliability Level:
  - (1) Individuals: Feedback, checklists, training, basic standards
  - (2) Procedures: Embedded standard work, reminders, constraints
  - (3) Systems/culture: Process redesign, built-in quality, automated systems, fail safes, physical structure, social norms, "mindfulness"

Progress

- FISHBONE ANALYSIS, 5 WHY ANALYSIS AND SHORT PERIOD OF DATA COLLECTION WITH SCHEDULING ALLOWED US TO FOCUS OUR KEY DRIVERS AND INTERVENTIONS USING A3 FORMAT

Barrier Sponsors:
- C. Granucci
- Leader(s): Dr. Waisel, Dr. Pahade, Coach: Facchini, Nardecchia
- Other Team Members: Sandi, Maureen, Rebecca C, Jason M., Jaspreet Loyal

Current State

- See slide 7
- Delays in other in-patient MRI cases not involving anesthesia/sedation
- Need to track this

Risks

- Lack of standard protocol for add on cases (including after hours)
- No MRI slot available
- Improper priority use of case (routine vs urgent/stat/life threat) by ordering LIP Peds anesthesia notification and clinical team notify of NPO

- Re-write protocol/flow map for add on anesthesia cases-
- Agile use case- DF/JM
- Create 1 standing add on slot - 2pm Tue/Wed (sedation day) release 11am. Add 12pm M/Th/Fri (peds anesthesia days) - Release 10am. MP, SB, DW- started 5/1/21
- EPIC cascade on priority selection triggered by anesthesia request- DF, NN, RC, JM
- EPIC trigger on NPO to avoid delays (KH, KT, RC)- started 9/7/21
- CSA communication with team when slot booked about NPO rules
- Detail work flow for scheduler to change priority after anesthesia assesses clinical acuity- KT, KH, SB, MP, RC, JM

See slide 9
## Key Issues/Drivers

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Baseline (07/2020 to 10/2020) weekday mean Order to Begin time for was 1125 minutes with SD of 1198 minutes. Post intervention (09/2021-2/2022) mean Order to Begin time decreased to 559 minutes (50% reduction) and SD decreased to 388 minutes (68% reduction).
Conclusion

• This QI project successfully reduced mean order to begin time and standard deviation for ED/in-patient high clinical acuity pediatric MRI requiring sedation/anesthesia.

• Our key drivers for other institutions looking to improve their performance for similar exams were:
  
  • **New daily slot** – held for add on cases in the middle of the day. This time worked best for our MRI operational team and Anesthesia and has made it easier to accommodate requests in timely fashion.

  • **NPO order set linked to MRI order** – Promote use of the order set when requesting MRI’s with sedation/anesthesia with information on approximate time case will be performed. Has decreased delays due to NPO violations and allowed provider to time NPO orders to expected MRI start time.

  • **Simplify process map** – Decrease steps needed to book case and improve communication between MRI operations, MRI scheduling, Anesthesia, and pediatric ED/in-patient teams.