

REDUCTION OF PEDIATRIC MRI SEDATION RATES THROUGH UTILIZATION OF CHILD LIFE INTERVENTIONS

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RADIOLOGY
MR-I CAN
DO IT!



C.S. MOTT CHILDREN'S HOSPITAL
MICHIGAN MEDICINE

IDENTIFIED PROBLEMS & RISKS

- Problem: In reviewing the usage of general anesthesia for pediatric outpatients over a 12-month period, it was found that a large majority of patients, **approximately 26%**, were anesthetized for scheduled MRI scan.
 - Risks associated with the Problem:
 - Increased clinical complications, thus decreasing patient safety measures
 - Low utilization of CRNA resources due to wait times, delays, and cancellations
 - E.g. Staff was often waiting for work due to the limitations on number of patients.
 - Decreased revenue for health system
 - Overuse of medical supplies and equipment
 - Decreased appointment availability due to limited general anesthesia slots
 - High outputs for additional staff, hospital bays, and supplies for preparation & recovery time
 - Lower patient satisfaction scores
 - Heightened patient distress due to caregiver separation
 - Long wait times for patients and families



PROGRAM DEVELOPMENT

- Target Population: Patients aged **6-17 years** accounted for 18% of the patients utilizing general anesthesia, which equated to 779 total patients.
- Primary Goal: Reduce anesthesia utilization by **8% within six months** for the targeted patient population, chronologically aged six to seventeen years
 - Secondary Goals Included:
 - Child Life interventions and support, pre- and post-procedure
 - Early identification of candidates to attempt MRI without anesthesia
 - Improved, shortened, and “targeted” protocols
 - Decrease wait time for scheduling
- Collaborative Partners: Hospital Administration, Radiology Directors, MRI Leadership (peds & adult), Michigan Medicine Project Manager, Anesthesiologists, Child Life Leadership, MRI technologists, Scheduling teams, and Radiology Certified Child Life Specialists

METHODS

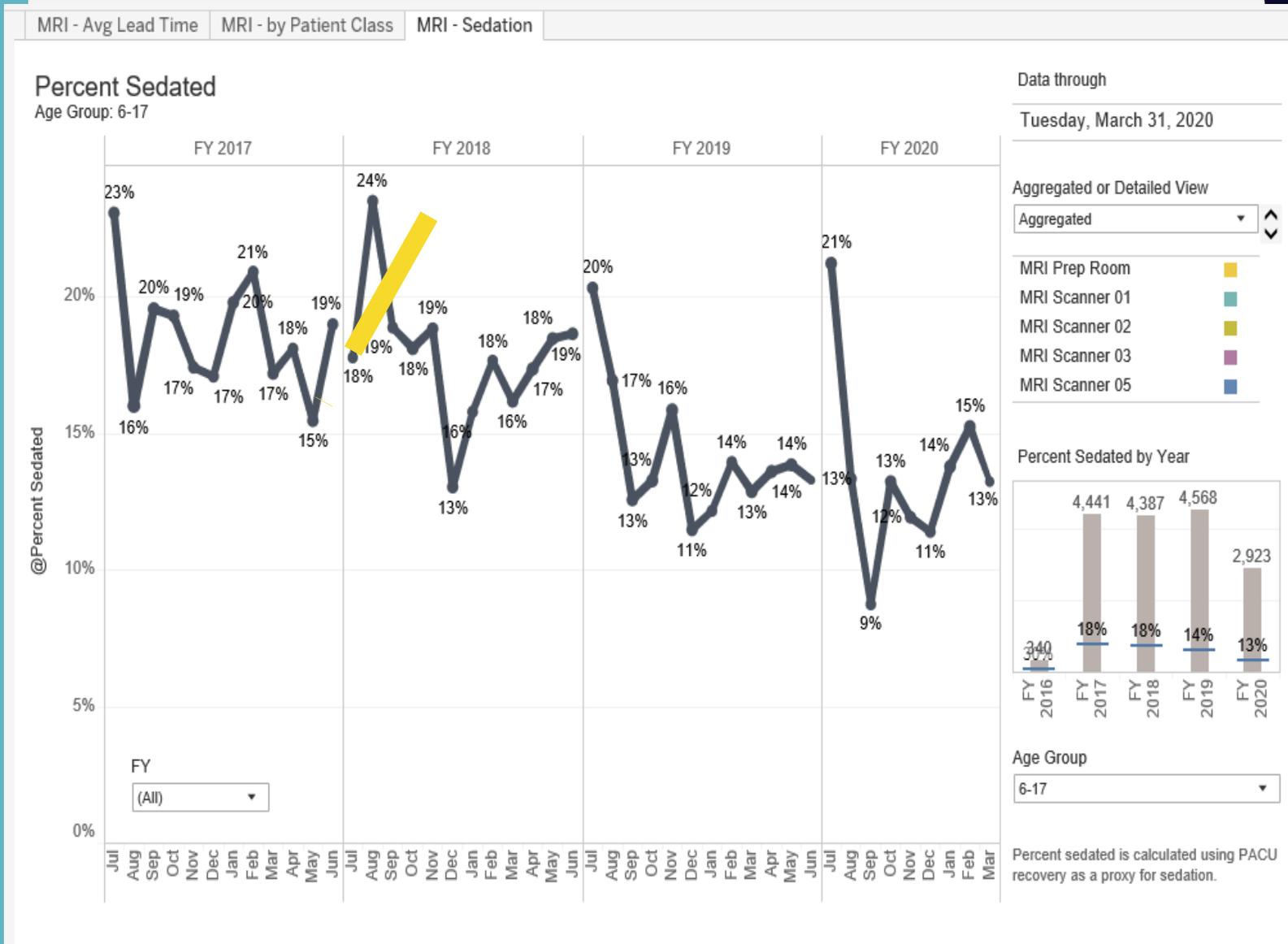
- Early patient identification: MR-I Can Do It program
 - General Anesthesia Utilization Lead Technologist (GAULT): The MRI technologist that works alongside the child life team to complete a chart review on all patients, review patient history for MRI safety, and to share information about ordered MRI (length of scan, necessary coils, and potential for IV placement).
 - Certified Child Life Specialist (CCLS): Professionals that provide developmentally appropriate preparation, coping strategies, distraction, and comfort for patients and families within various settings.
- Improved MRI protocols
 - “Targeted” protocols were outlined to eliminate unnecessarily given contrast, which reduces contrast material remaining in a patient’s body, as well as unnecessary painful procedures.
- Additional scheduling resources
 - Ordering providers can now select “Child Life - no sedation required” when ordering an MRI, which helps to facilitate conversation with families, create individualized treatment plans, and increase patient satisfaction.
 - Please note, conscious sedation is NOT an option for pediatric populations at Mott Children’s Hospital.
 - Specific blocks of times for Child Life patients were added to the schedule to prevent overlap of appointments and to ensure appropriate coverage.

PREPARATION RESOURCES

- Child life specialists provide the following resources to families via phone calls, email for at-home preparation, and are reviewed on day-off patient's appointment to increase chances of success and allow for patient mastery of MRI appointment.
 - Length of scan, type of coils, & need for IV placement
 - Developmentally appropriate education and coping resources for IV placement
 - Ability to watch movie or listen to music during MRI scan
 - Parental presence allowed within the scanning room (based on medical clearance)
 - Samples of MRI sounds + Usage of ear plugs and headphones for safety
 - Preparation Photos
 - C.S. Mott MRI Preparation Video - <https://vimeo.com/383376950>



ANESTHESIA REDUCTION RATES

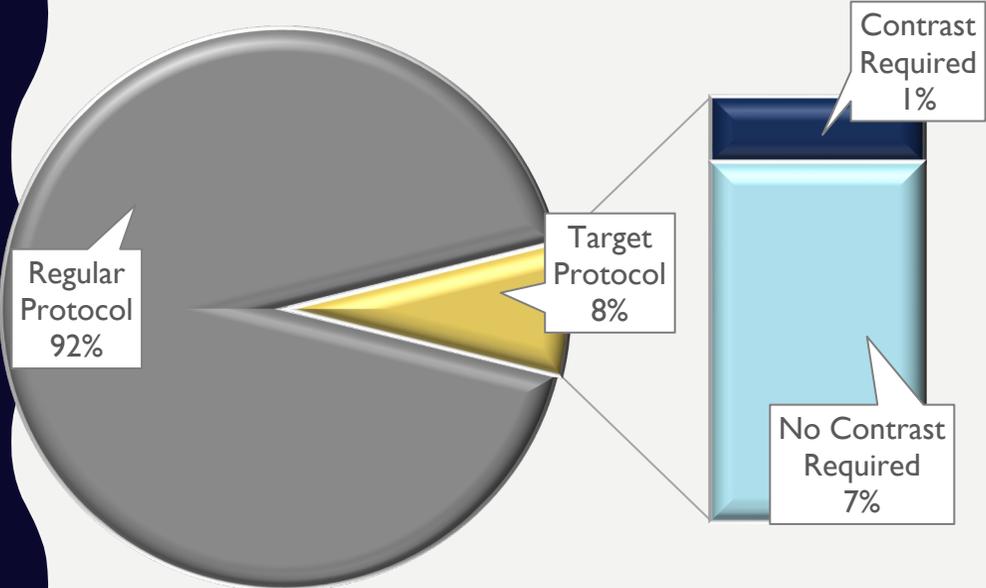


- These results are specific to first 18 months of the program and highlight the anesthesia reduction rates of the targeted population of patients aged 6 years – 17 years.
- The introduction of the MR-I Can Do It program has consistently lowered the rates of anesthesia by at least a **5% reduction**.
- Monitoring the reduction in rates allows for the identification of trends, such as high anesthesia utilization in July months, which generates further program development due to the investigation into the “why” of these higher rates.

*The **yellow line** denotes the beginning of the MR-I Can Do It program.

ADDITIONAL OUTCOMES

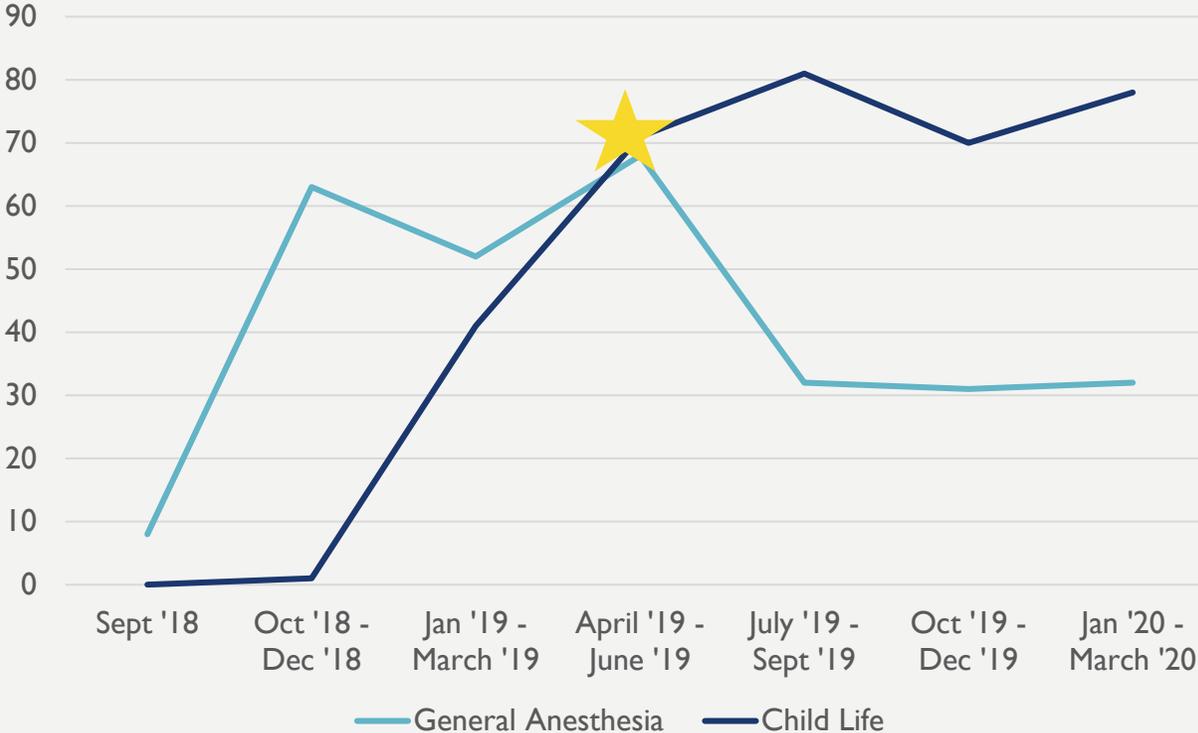
TARGET PROTOCOL



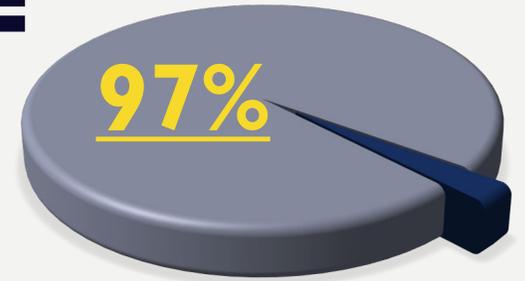
Onsite radiologists were included to reduce the need for contrast when not diagnostically relevant. Upon analyzation, it was found that **44 out of 52** patients avoided unnecessary IV placements and/or contrast, accounting for about **7%** of patients within the program.

ORDERING PROVIDER REQUESTS

Within **three quarters**, there was a clear shift noted in Ordering Provider requests, highlighting a dramatic decrease in general anesthesia requests.



OVERALL PROGRAM SUCCESS =



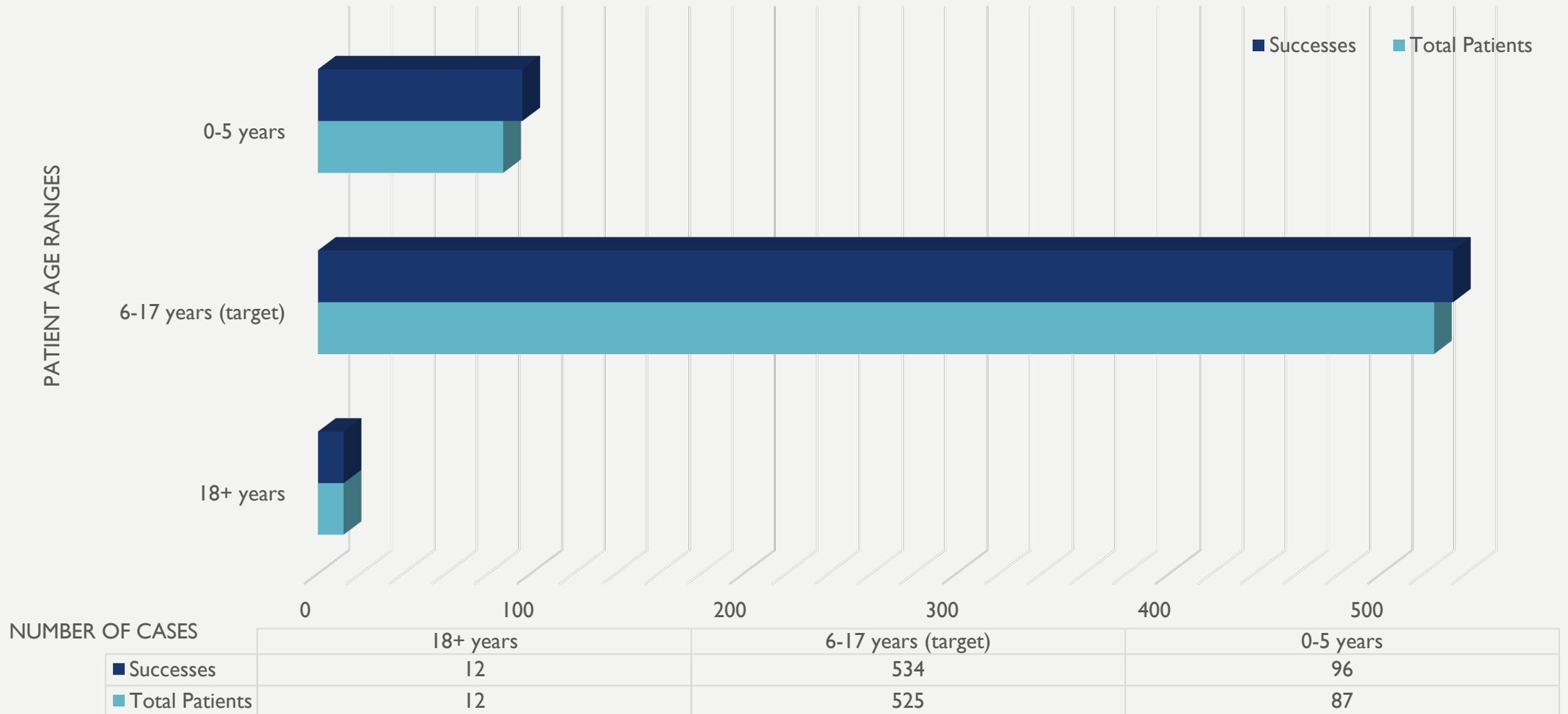
During the first 18 months of the MR-I Can Do It program, a total of 642 pediatric patients, aged eight months to twenty-one years, participated in the intervention program.

Of those, 97%, or 624 patients, successfully completed MRIs of varied length and scan type.

When analyzing the patients that fell outside of the target population, it was found that 99 patients, both younger and older, attempted MRIs without the use of general anesthesia. Only nine were unable to complete the ordered scans.

Although we chose not to include the months since COVID-19 in the data, we can unofficially report that since April, we have served an additional 264 patients, only 7 of which were unable to complete the scans, maintaining the success rate of 97%.

The following chart demonstrates the ability for patients of varied ages to **SUCCESSFULLY** complete MRI scans without the use of generalized anesthesia.



NUMBER OF CASES	18+ years	6-17 years (target)	0-5 years
■ Successes	12	534	96
■ Total Patients	12	525	87

CONCLUSION

Overall, the data conclusively supports the utilization of **Certified Child Life Specialists** to effectively reduce the need for general anesthesia resources for pediatric patients receiving MRI scans.

To continue decreasing the rates by which pediatric patients need general anesthesia, future initiatives include program-specific presentations, promotional materials, and the development of a tour-based program.



For questions or to learn more about implementing a similar program, please contact:

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