According to Research, brain MRI with and without contrast was one of the most frequently ordered examinations, and costs on average $1,599.00 less when performed without sedation. For example, in our population, a brain MRI with and without contrast is scheduled for the examination, and costs on average $1,599.00 less when performed without sedation. This program also decreased the overall cost of the MRI examination. For patients who are scheduled for a sedated MRI, we assumed the cost was $1,599.00. The results of this program show that the average cost of a sedated MRI is $1,599.00 less when performed without sedation. This decrease in cost is significant and has a positive impact on the healthcare system.

Appropriate preparation allowed the patient to become familiar with and desensitized to the MRI environment, as well as helped the patient choose positive coping skills to decrease motion artifact. Research has shown that, “preparation is a safe and effective method to reduce the need for sedation and general anesthesia in children undergoing a clinical MRI exam. It provides a positive medical experience for children, parents and staff, and results in cost savings for the hospital.”

Non-pharmacological strategies such as play-based therapy, desensitization and cognitive behavioral therapy were used to increase patient and family familiarity with the MRI machine and decrease overall patient anxiety. According to Cancer, et. al., “play-based therapy can involve children an exploration of their environment in a play-based manner and can include the use of medical tools or playing in a simulated or real environment.” Desensitization is a “gradual exposure to a feared stimulus allowing the child to gradually and develop coping strategies at a suitable pace.” Cognitive-behavioral therapy is a “psychological procedure that assists children in developing strategies to manage stressful situations.” These positive coping strategies included breathing techniques, audio distraction through the use of headphones to listen to music, and positive reinforcement from the MR technologist to yield a successful and positive MRI examination.

After a practice session during which the child was taught these strategies, the child attempted the MRI examination without sedation. If successful, the child, originally scheduled sedated MRI appointment was then cancelled and the entire examination was given to another patient who required sedation.

We considered input from multiple sources to be integral to our success. Using the multidisciplinary approach increased compliance and encouraged the different areas to promote the program to staff, caregivers, and patients.

Initiative Description
Patients between the ages of 4-17 years old were asked to participate in the MR-I Am Ready! program to attempt to reduce the need for and use of sedation. The certified child life specialist (CCLS) prepared the patient for the upcoming MRI examination by using an age-appropriately appropriate approach, including a three-dimensional (3D) toy-like MRI scanner and recorded sounds of an MRI scanner.

Results: January 2013-February 2014
The success rate of the program provides evidence that utilization of a play-based approach in conjunction with developmentally appropriate preparation can decrease the need for and use of sedation. 143 patients participated in the program from January 2013- February 2014. 126, or 88%, successfully completed the program and did not require sedation. 134 patients successfully completed the program and were able to obtain an MRI in 2-hours or less, an average of 1.73 days sooner than the original scheduled examination with sedation.

A total of 142 one-hour time slots were utilized to complete these examinations, which equates to 77.5 days of outpatient sedation time. At the initiation of the program, the average wait time for an outpatient sedated MRI for patients 4-17 years old was 9.7 weeks. After 14 months (March 2014), the wait time decreased to approximately 5-7 weeks for the same age group.

Future of Initiative
Use of MedVac Infant Immobilizer to allow infants 0-6 months old to complete brain MRI, and CT without sedation.
Installation of CinemaVision Goggles and the Invivo Entertainment System to allow patients to view movies during care.
Increase the number of patients participating in the program and expand the program to include more patients 4-6 years old and those with developmental delays, such as Autism Spectrum Disorder.

Revisions:
- The authors were concerned about the use of sedation. Our child is young and has marginal health problems and also several allergies. We did research on our options and prayed that our worries would be healed.
- "It was a great experience since I was so worried about my daughter having to get an MRI done. I hope the hospital always offers this option to save people a lot of time, money, and anxiety!!"
- "... turned a scary process into something manageable."