



Alexy is installed onto the table, a fake coil is placed on top of his head, the table is advanced into the tunnel, Alexy start hearing the load noise of various sequences. Any motion is monitored and displayed on a graph shown to him: red and yellow boxes mean motion, Alexy is invited to try again to obtain green boxes as he stands still.



**Implication for practice:** decrease sedation rate in MRI, optimize selection of patients who need anesthesia

## MRI SIMULATOR TO REDUCE THE RATE OF ANESTHESIA IN CHILDREN UNDERGOING AN MRI: THE FIRST NORTH AMERICAN CLINICAL EXPERIENCE

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**Objectives:** to decrease the sedation rate in young children who undergo an MRI.

**Material:**

INCLUSION criteria	EXCLUSION criteria
- 4 to 5.5 years of age, normal development - Older children, mild developmental delay	- Severe developmental delay or Severe autism spectrum disorder, Movement disorder - contrast medium injection

**Method:** Simulation was performed within the hour prior to the scheduled diagnostic exam, and was explained to both the parents and the child upon arrival by one technologist who accompanied the child until the end of the diagnostic exam.

Simulation was considered successful when the patient could stay in the simulator without motion for 5 continuous minutes. A successful simulation was immediately followed by the diagnostic exam. Image quality was assessed by a pediatric radiologist according to the below grading. A failed simulation was explained to the parents and MRI under anesthesia was scheduled on a different day.

**Results:** success rate of simulation was 68,75%. Mean simulation time was 14 minutes. There was no significant difference in the mean age between the group of successful evaluation (4.5 years) and the failure group (4.8 years). There was however a difference in the sex ratio with higher proportion of male patients in the failure group (ratio = 1.5) compared to the success group. (ratio = 1)

31 patients 32 MRIs	Successful simulation (n=24)			Failed simulation (n=8)
	Grade A (9)	Grade B (13)	Grade C (2)	
<b>Image quality</b>	No motion, perfect	Minimal motion artifacts not compromising the diagnostic	Severe motion artifacts, non-diagnostic images	No images acquired
<b>Conclusion</b>	Successful simulation and diagnostic exams (n=22)		Failed diagnostic exam (n=10)	

**Discussion:** This is the first reported clinical experience with a MRI simulator in North America. Compared to both the European and the Australian clinical and research experiences, our pilot study shows that doing the simulation and the diagnostic MRI tests on the same day is feasible and accurate, benefits to both the patient and the health system by decreasing the sedation rate and optimizing selection of patients for anesthesia in pediatric medical imaging.