

Quality Story 1

Development and implementation of a minimal sedation/analgesia (MSA) protocol for intra-articular corticosteroid injections (IACIs) in pediatric patients with juvenile rheumatoid arthritis JIA

Goal: To develop a high value model of care for patients with JIA that require IACIs, with the aims of:

1. Decreasing use of the operating room and general anesthesia
2. Decreasing cost
3. Maintaining procedure efficacy
4. Maintaining safety and
5. Maintaining high levels of patient/family and provider satisfaction.

Project Description: The (MSA) protocol included the use of nitrous oxide, intranasal fentanyl (single dose of 2 mcg/kg IN), a topical numbing agent, acetaminophen, ibuprofen, ondansetron and child life intervention.

Protocol development and implementation were developed as a collaborative effort with the departments of Rheumatology, Child Life, Radiology, Sedation Service, Radiological Nursing and Anesthesiology.

Metric measured: The following metrics were analyzed after 1 year of protocol implementation and data collection from 80 consecutive patients.

1. Reduction in OR and general anesthesia use.
2. Cost reduction per procedure.
3. Protocol efficacy: degree of pain and motion during procedure (See Table 1).
4. Safety: adverse event data were collected including oxygen desaturation, change greater than 30% in heart rate, emesis, agitation, and change in the intended level of sedation. (Emesis was the only documented adverse event, occurring in 2.5% of the patients).
5. Satisfaction as described by the patient, caregiver, rheumatologist and sedationist (see Figure 3).

Results:

1. Sixty percent (60%) reduction in OR and general anesthesia use for IACIs in patients with JIA, after implementation of the MAS protocol. (See Figure 1.)
2. 33 % Cost reduction per IACI performed with the MAS protocol compared to the same procedure performed in the OR under GA. (See Figure 2.)
3. Monitored degree of motion and pain during the procedure according to the patient, parent and providers (See Table 1.)
4. The vast majority of patients (93 to 97%), parents, rheumatologists, and sedationists were very satisfied. (See Figure 3.)

Challenges:

Difficulties in schedule coordination between the different services involved. Difficulty with the staff adjusting to a new process and new protocol for patient care.

Lessons learned:

Change in practice towards high value care models is possible. Effective and successful implementation of a new protocol requires interdisciplinary involvement, education and communication with the entire team, including medical and non- medical providers and well as the patient and family.

Current practice and CQI: We have continued to use this protocol for majority of our patients since and monitor protocol efficacy and provider and patient/family satisfaction on every case. The patients who are younger than 3 years or have severe behavioral issues receive deep sedation as opposed to the protocol. Under this protocol, patients do not require to be NPO or have intravenous lines inserted. This protocol is run by a sedation PA and NP service independently.

The protocol is efficient, safe, value based, family centered and can be adapted by hospitals and services across the country.

Figure 1.

Rheumatological Joint Injections with N₂O-Fentanyl Protocol

n=80 Jan 2016-Aug 2017

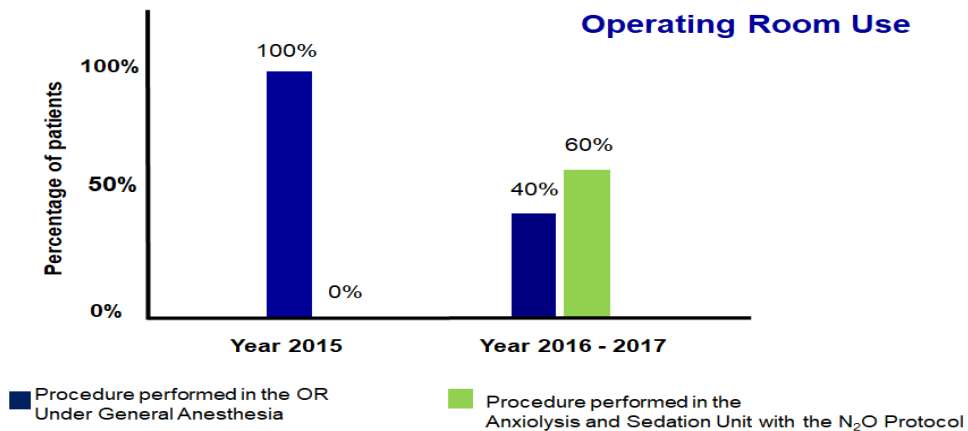


Figure 2:

Rheumatological Joint Injections with N₂O-Fentanyl Protocol

n=80 Jan 2016-Aug 2017

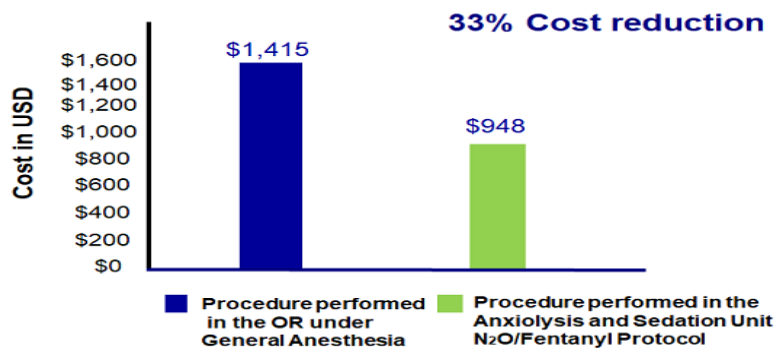


Table 1. Degree of motion and degree of pain during the procedure according to the patient, parent and providers

Pain Scoring of procedure	
Pain score (range 0-10)	Median (IQR)
Patient (n=72)	1 (0 – 2.5)
Parent (n=73)	0 (0 – 2)
Rheumatologist (n=78)	0 (0 – 1)
Sedationist (n=72)	0 (0 – 1)

Scored outcomes				
Degree of pain	None	Mild	Moderate	Severe
Pain score range	0	1-3	4-6	7-10
	N(%)	N(%)	N(%)	N(%)
Patient (n=72)	27 (37.5%)	33 (46%)	7 (9.5%)	5 (7%)
Parent (n=73)	38 (52%)	23 (30%)	9 (13%)	3 (5%)
Rheumatologist (n=78)	46 (59%)	23 (29.5%)	9(11.5%)	0
Sedationist (n=72)	49 (68%)	19 (26%)	4 (6%)	0
Degree of motion	None	Mild	Moderate	Severe
Rheumatologist (n=78)	53 (68%)	20 (35.5%)	5 (6.4%)	0 (0%)
Sedationist (n=78)	53 (68%)	20 (35.5%)	5 (6.4%)	0 (0%)

Figure 3. **Level of satisfaction** with the procedure as reported by the patient, parent, rheumatologist, and sedationist.

