



# Development of an Enhanced Recovery Protocol Following Pediatric Surgical Procedures: A Change in Practice

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## Background/Evidence

Shriners Hospitals for Children – Houston, is a JCAHO accredited, pediatric teaching hospital providing orthopedic, cleft lip/palate and sub-acute/inpatient rehabilitation services. The hospital is located in Houston, Texas in the heart of the Texas Medical Center.

Enhanced Recovery after Surgery (ERAS) pathways have demonstrated a strong potential for improving patients' early mobilization as well as enhanced analgesic control following orthopedic surgical interventions in the adult population.<sup>1</sup> The concept of ERAS was pioneered by Danish Surgeon Henrik Kehlet in 1997 for patients undergoing colonic surgeries.<sup>2</sup> After a review of the literature, it was determined that there were limited studies showing ERAS in the pediatric surgical patient population. In 2013 the surgical team at Shriners Hospitals for Children (SHC) Houston reviewed the evidence and began a process improvement project to develop an ERAS pathway for use in the pediatric surgical patient population.

## Objectives

The objectives of the pediatric ERAS pathway at SHC-Houston were to:

- Implement an optimized pain relief process as a prerequisite for an enhanced recovery, accelerated rehabilitation, multimodal and perioperative care program.
- Decrease emergent agitation following the use of inhalation agents which has been identified as problematic in the pediatric population.
- Decrease post operative nausea and vomiting.
- Increase early mobilization.

## Clinical Pathway Development



- Preoperative assessment visit including a thorough clinical assessment as well as a consultation with anesthesia and other services
- Patient/family involvement in clinical decision making.
- Liberal NPO times – Clear liquids up to 2-3 hours preoperatively
- Non-narcotic pain sparing analgesics prior to surgical intervention
- Restrictive intraoperative fluids
- Prevention of nausea and vomiting
- Warm air heating modalities in the operating room
- Use of Dexmedetomidine (Trade name: Precedex) in both the pre and postoperative stages has shown improvement in preoperative sedation, postoperative shivering and a decrease in PCA pain management utilization

## Results

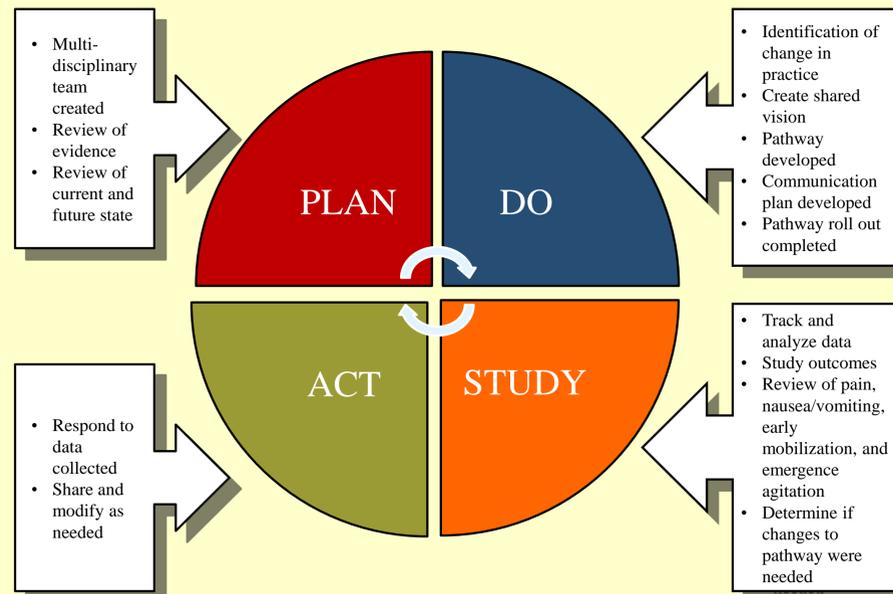
- 2013: A retrospective chart review of 10 patients with Cerebral Palsy who underwent 5-7 soft tissue procedures during a single surgical event was completed.<sup>4</sup>
  - Each patient received IV Dexmedetomidine at 0.2 mcg/kg/hr.
  - Each patient mobilized on post op day 1 and achieved ambulation on post op day 2
- 2015: Press Ganey Pain Control Score increased 1%
- 2015: Overall ambulatory surgery satisfaction scores have increased. (Figure 1)
- Since implementation of the ERAS pathway:
  - Average monitored PACU time decreased from 1 hour to 30 minutes
  - No surgical complications have occurred

## Conclusion

Implementation of the ERAS pathway has improved efficiency in the orthopedic ambulatory surgery program. Our data validated early mobilization, improved pain scores, evidence of best practices at each stage of the perioperative encounter with no evidence of perioperative complications. Modifying our practices and providing our patients with high-quality outcomes has streamlined our program while improving patient

## References

1. White, J., Houghton-Clemmey, R., Marval, P., Enhanced recovery after surgery (ERAS): an orthopaedic perspective, BJPN, 2013, 23 (10); 288-232.
2. Kehlet, H., Morgegensen, T., Hospital stay of 2 days after open sigmoidectomy with a multimodal rehabilitation programme, British Journal of Surgery, 1997, 86 (2); 227-230.
3. Scott AC, Vakamudi S. *The Use of an Adrenergic Agonist in Postoperative Pain Control after SEMLS for Cerebral Palsy*. Poster presented at POSNA Annual meeting, Toronto, Canada, May, 2013



Quarterly Ambulatory Surgery Overall Satisfaction

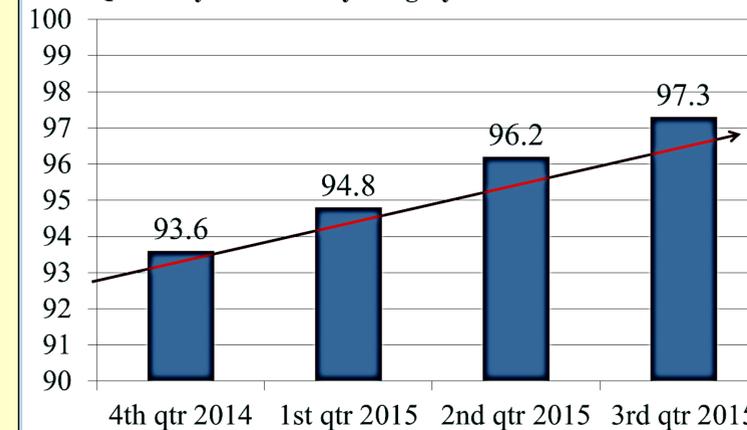


Figure 1: Press Ganey Satisfaction Scores