

Introduction of a Comprehensive Enhanced Recovery Program in Cardiovascular Surgery Resulted in Measureable Improvements

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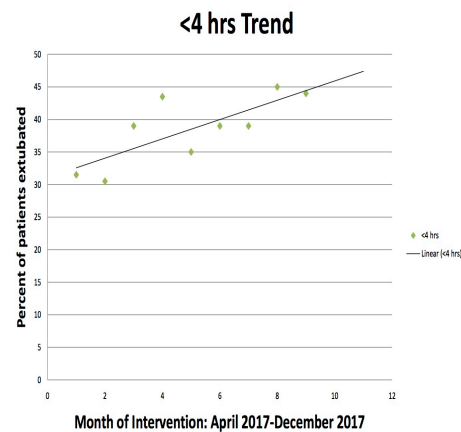
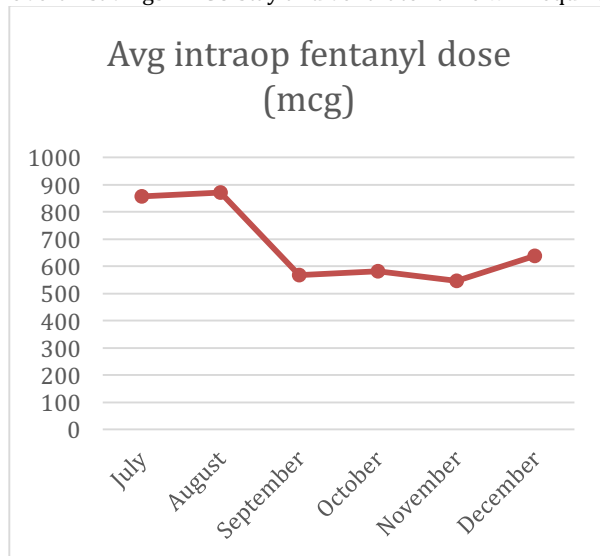
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Introduction: A perioperative management algorithm designed as a comprehensive approach to patient optimization accomplished measureable improvements in key areas in short order. The goals included reduction in the stress response¹, decreased extubation times, decreased narcotic use, blunting of the muscle loss, and a reduction in postoperative cognitive dysfunction (POCD). The most easily measureable goals of reduced ventilator times and decreased narcotic use, were evident in the first month. Postoperative delirium reduction attributable to lower narcotic use was more difficult to measure in part due to the rather coarse measurement of the CAM-ICU tool. The effects of the nutritional support on muscle mass preservation included in the new algorithm were not measured. We relied upon the evidence-based information in the literature to justify this aspect of the algorithm.^{2,3,4,5}

Methods: Ketamine and dexmedetomidine were used to reduce perioperative narcotic use and to decrease CNS inflammation from cardiopulmonary bypass. A preoperative nutritional scheme was initiated for all elective cardiac cases. The concept of the pathway was introduced in September with launch in October.

Results: Extubation times as a proxy for recovery were shorter and improved upon the already aggressive program in place. The trend line demonstrates an increased percentage of patients extubated in less than 4 hours. Intraoperative narcotic doses decreased significantly after the initial team briefing of the anesthesia department, without an increase in postoperative narcotic requirement in this interval. Delirium reduction in the short period we report here was not significant.

Conclusions: The early results have been very positive reinforcing the value proposition with ICU staff surgeons and anesthesia providers. Patient reactions have been overwhelmingly positive. Overall extubation times have steadily decreased. Intraoperative narcotic use decreased by 33% and benzodiazepine use decreased by 53%. Overall savings in ICU stay and ventilator time will require a longer sample time.



¹ Desborough JP Br J Anaesth 2000;85:109-17

² Cruz-Jentoft AJ et al. Aging Clin Exp Res 2017;29:43-48

³ Marzetti E et al. Aging Clin Exp Res 2017; 29:11-17

⁴ Drover JW et al. J Am Coll Surg 2011;212:385-399

⁵ Tepaske R et al. Lancet 2001;358:696-701