

Introduction and Implementation of an Enhanced Recovery Program to a General Surgery Practice in a Community Hospital

Authors: Patrick Shanahan, MD., MBA, Anesthesiologists Consultants Enterprises, PLLC. John Rohan, DO, Anesthesiologists Consultants Enterprises, PLLC. Desirée Chappell, CRNA, Anesthesiologists Consultants Enterprises, PLLC. Carrie Chesher, ARNP, Norton Audubon Hospital.

Background: The practicing general surgeons at this hospital had length of stay greater than NSQIP averages for DRGs 329-331. This variance was the primary motivation for an enhanced recovery (ER) initiative. A team of anesthesia providers collected evidenced-based practice literature then designed and developed a comprehensive enhanced recovery pathway to present to their organization.¹ Eight general surgeons, practicing in three separate practice groups, were introduced to the ER concepts with the desire for the entire general surgery team to adopt and implement the designed pathway. Initially, only one surgeon became an early adopter. However, after preliminary results were shared with the other surgeons, two additional surgeons became early adopters as well. The results of the early adopting surgeons demonstrated consistency with previously published positive results from ER. All surgeons fully adopted the enhanced recovery pathway into their practice within three months maintaining consistent results.

Methods: The anesthesia team modeled the ER pathway after accepted and published ER guidelines¹. The pathway was designed over three months and initiated in January 2015. Individual surgeons were presented with the evidence, their LOS data for colorectal patients and predetermined order sets to manage the ER patients. Participation was determined by their compliance with the pathway for the non-emergent colorectal surgical patients. The authors provided ER education for surgeons, anesthesia, nursing (all phases of care), managers, administration and other adjunct facility departments. The authors closely followed the ER patients during the earlier phases of implementation to ensure compliance. Slight modifications to the protocol, using feedback from all practitioners, occurred in the early stages of implementation. The continual process of audit and refinement ensure compliance and any needed improvements within the pathway.

Results: Adoption of an ER program by the institution and all of the general surgeons was realized and accepted within the first several months of implementation. Within the first nine months, the ER program had a greater than 50% reduction in LOS and a variable direct cost reduction of \$4357 per case (Figure 1). In addition, the reduction in other cost buckets resulted in substantial savings for the hospital (Figure 2).

¹Varadhan KK1, L. D. (2010 Jul;26(3):). Enhanced recovery after surgery: the future of improving surgical care. *Crit Care Clin.*, 527-4.

Conclusion: The general surgeons adopted the ER program into their practice during 2015 and are now active, enthusiastic participants within this initiative. Initially, several of the surgeons disagreed with the well-established ER principles, but after use of the pathway by competing practitioners and the revelation of the results, adoption was universal. The use of evidence based practice information presented by a team of dedicated professionals can achieve rapid positive results in cost savings, reduced length of stay and broad based surgical adoption.

Clinical Effectiveness ERAS Report - ERAS patients and patients with a DRG in 329,330, or 331 Audubon Hospital
Improvement Period : Jan 1, 2015 - Sep 30, 2015

Measure	Baseline				Improvement			
	Average	Std dev	% Outliers	# Discharges	Average	Std dev	% Outliers	# Discharges
Variable direct cost	\$10,788	\$7,337	0.8%	120	\$6,431	\$3,162	0.0%	51
Measure	Average	Std dev	% Outliers	# Discharges	Average	Std dev	% Outliers	# Discharges
Length of stay	11.40	7.10	0.8%	120	5.06	3.78	0.0%	51

Figure 1

Figure 2

Clinical Effectiveness ERAS Report - ERAS patients and patients with a DRG in 329,330, or 331 Audubon Hospital
Improvement Period : Jan 1, 2015 - Sep 30, 2015

Buckets - variable direct cost								
Cost bucket	Baseline				Improvement			
	Total n	Total cost - bucket	Cost per case	# pts in cost bucket	Total n	Total cost - bucket	Cost per case	# pts in cost bucket
Room and board	120	\$485,156	\$4,043	120	51	\$79,239	\$1,554	51
Supplies	120	\$292,701	\$2,439	120	51	\$134,155	\$2,630	51
Pharmacy	120	\$165,661	\$1,381	120	51	\$34,621	\$679	51
Surgery	120	\$125,505	\$1,046	120	51	\$52,795	\$1,035	51
Implants	120	\$46,324	\$386	49	51	\$17	\$0	6
Blood	120	\$41,664	\$347	44	51	\$3,946	\$77	7
Respiratory	120	\$33,235	\$277	92	51	\$3,191	\$63	32
Lab	120	\$30,198	\$252	118	51	\$4,618	\$91	50
Recovery	120	\$23,865	\$199	116	51	\$9,698	\$190	51
PT and OT	120	\$10,899	\$91	53	51	\$322	\$6	4
All other	120	\$39,410	\$328	.	51	\$5,358	\$105	.
Total	120	\$1,294,618	\$10,788	.	51	\$327,960	\$6,431	.

Note: Cost per case calculated on total n. The # pts in cost bucket noted for informational purposes only.