

## **How the Implementation of an Enhanced Recovery After Surgery (ERAS) Protocol Can Improve Outcomes for Patients Undergoing Cystectomy**

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**Background/Introduction:** Despite improvements in surgical techniques and perioperative care protocols, radical cystectomy (RC) is still associated with higher morbidity than other urological procedures. In our hospital, RC had accounted for 38.2% of postoperative complications but only 13.6% of the total urological case volume as demonstrated in the risk-adjusted reports (07/2011-06/2014) from the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP). Morbidity impacts patient's safety and experience, increases hospital length of stay and health care costs.

The multimodal evidence-based perioperative care pathway Enhanced Recovery After Surgery (ERAS) offers opportunity to reduce complications after major surgery, which has been validated in the elective colorectal cases in our hospital.

**Methods:** A multidisciplinary team was formed in April 2014. A project charter and an implementation plan were initiated. ERAS documents such as order sets, patient education booklet and clinical pathway were developed. Comprehensive and ongoing education on ERAS principles and our local experience were shared with the surgical staff. In October 2014, we implemented our ERAS protocol to all Urology patients undergoing elective radical cystectomy surgery. Real time auditing of compliance with the 21 ERAS components and measuring of post-operative complications, hospital length of stay and readmission as defined by the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) were started immediately post ERAS implementation. Results for pre- and post-ERAS cohorts were compared, using Fisher's exact test. The goal was to decrease the overall morbidity for target patient population by 50% by September 2015.

**Results:** For the first 13 months post implementation, 91 consecutive radical cystectomy patients had been enrolled in the ERAS program. Patient demographics and co-morbidity counts were similar in both cohorts. Process measures showed that the pre-operative and intra-operative components had met and sustained our goal of a minimum of 80% compliance within first month post implementation. Post-operative components have been the slowest to change, but they are trending towards our goal. The rates of post-operative overall morbidity fell from 31.3% to 18.7% ( $p=0.059$ ). UTI declined from 10% to 1.1% ( $p<0.05$ ), which was statistically significantly lower post implementation as seen in table 1.

**Table 1: Patient Outcomes Pre- and Post-ERAS Implementation**

	Pre-ERAS May 2011-Sept 2014 n=90	Post-ERAS Oct 2014-Nov 2015 n=91	P Values
Age (mean)	69	67	
NSQIP Co-morbidity Count (mean)	1.1	1.06	
NSQIP 30-day Morbidity Incidence	31.1%	↓ 18.7% (40% reduction)	p=0.059
Urinary Tract Infections (UTI)	10%	↓ 1.1%	p<0.05
Transfusion (72hr of OR start time)	43.3%	↓ 29.7%	p=0.0695
Readmissions Within 30 Days	16.7%	↓ 12.1%	
Median LOS Post-OR Days	7.5	↓ 7	

**Conclusion:**

Teamwork and communications of a multidisciplinary team are crucial to a culture of patient safety. Use of real-time auditing and the Plan-Do-Study-Act (PDSA) cycles enhance our rate of improvement. Aggregation of marginal gains can result in dramatic improvements in patient outcomes, which has proven in elective radical cystectomy cases after ERAS implementation in our hospital.