

Impact of a Novel Preoperative Patient-Centered Surgical Wellness Program

Kelley KE, Fajardo AD, Strange N, Harmon CA, Pawlecki K, Sieber M, Walke N, Fadel WF, Wooden WA, Sadowski J, Birdas TJ, Stevens LH, Rozycki GS and Schmidt CM. *Ann Surg* 2018;268(4): 650-56
Indiana University (IU) Health

Objective: To retrospectively measure the effect of providing a preoperative patient supply kit on hospital acquired infections (HAI).

Methods:

Patients having major elective surgery (n=12,396) were provided with preoperative education in the preadmission testing (PAT) clinic corresponding to kit contents: chlorhexidine bathing solution, topical mupirocin, incentive spirometer, oral immunonutrition supplements (IMPACT Advanced Recovery® Drink) and smoking cessation information. The hospital executive team covered all costs for provision of kit contents in a roller bag to assist transport. Intervention group patients with documented compliance (n=6538) were compared with a retrospective Pre-intervention group (n=9202, not matched) that attended PAT clinic prior to kit introduction. Top service lines were general surgery, neurosurgery, orthopedics, urology, thoracic and cardiovascular surgery. A separate analysis compared the Intervention group with a Non-intervention group (n=53,326) that did not attend PAT clinic prior to kit introduction.

Results:

• Compliance

- Patient compliance to individual kit elements was mupirocin (80%), immunonutrition (72%), chlorhexidine bath (71%) and spirometer (67%). Average compliance to all elements was 62.3%.

• Pre-intervention vs. Intervention PAT analysis

- SSI, CAUTI, CDI and PSI were significantly reduced in the Intervention group
- Specifically, SSI rates for colon and abdominal hysterectomy reduced from 9.4 to 4.9 per 100 cases.
- Total compliance to kit elements lowered the risk of expected HAI by 50% (RR=0.50, p=0.003).
- Total compliance to kit elements decreased risk of actual HAI by 33%, but was not statistically significant (RR= 0.67, p=0.126).

• Non-intervention vs Intervention analysis

- When compared with the Non-intervention group, the Intervention group had significantly higher American Society of Anesthesiologists (ASA) scores, and was older in age.
- When HAI were risk stratified by ASA score, an increase in all harm events (SSI, CAUTI, CDI VAE, CLABSI, MRSA) were found with ASA categories 3 and 4 compared with 1 and 2 (p=0.0001).
- Intervention group patients with an ASA 4 who completed ≥ 3 kit elements had a 50% lower rate of all harm events vs. non-intervention patients with an ASA 4 (p=0.0001).

Outcome Measure	Pre-intervention Group (n=9202)	Intervention (n=6538)	P value
Surgical site infection (SSI)	52	22	0.044
Catheter associated urinary tract infection (CAUTI)	27	6	0.007
Clostridium difficile infection (CDI)	78	34	0.016
Patient safety indicators (PSI)	55	0	<0.001
Ventilator associated event (VAE)	14	6	0.367
Central line associated bloodstream infection (CLABSI)	7	3	0.538
Methicillin resistant staph aureus (MRSA)	3	2	1.000

Adapted from Table 3

Conclusions:

- Providing a preoperative patient supply kit and educating on the contents specified yielded significant reductions in HAIs.
- Delivery of multiple interventions in one kit or bundle increases ease of delivery and patient adoption.
- Cost of kits (\$323,631) was recovered in addition to \$1,023,000 in further cost savings from improved outcomes.

The complete study is accessible on line at: <https://www.ncbi.nlm.nih.gov/pubmed/30138164>