



Pre and Post Implementation ERAS results

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VGH Colorectal NSQIP Risk Adjusted Data

<i>Colorectal</i>	07/11-06/12	07/12-06/13	07/13-06/14
Mortality	1.16	0.89	0.81
Morbidity	1.5	1.49	1.47
Length-of-Stay	2.23H	1.68	1.75H
Pneumonia	N/A	N/A	1.45
Unplanned Intubation	N/A	N/A	1.34
Ventilator > 48 Hours	N/A	N/A	1.52
Venous Thrombembolism	N/A	N/A	0.98
Renal Failure	N/A	N/A	0.86
Urinary Tract Infection	1.39	0.79	1.18
Surgical Site Infection	1.49	1.62	1.61H
Sepsis	N/A	N/A	1.41
Return to OR	N/A	1.36	1.26
Readmission	N/A	N/A	0.98

N/A = Not available

Exemplary
Needs Improvement
As expected
Decile 8 & 9

Implementation Plan

	February-October 2013	June 2013-Ongoing
Phase 1	<ul style="list-style-type: none">▪ Provided ongoing education for surgical staff on the ERAS protocol▪ Developed ERAS documents▪ Identification of ERAS cases<ul style="list-style-type: none">○ Standardized order sets○ Clinical pathway & kardex○ Patient teaching booklet○ Poster highlighting change in practice○ Automation	<ul style="list-style-type: none">▪ Implemented intra-operative components by a core group of anesthesiologists▪ Audited compliance with intra-operative components▪ Measured patient outcomes in post-anesthesia care unit (PACU)
Phase 2	November 2013-Ongoing	
	<ul style="list-style-type: none">▪ Implemented pre-operative and post-operative components▪ Audited compliance with all ERAS components▪ Measured patient outcomes within 30 days after surgery	

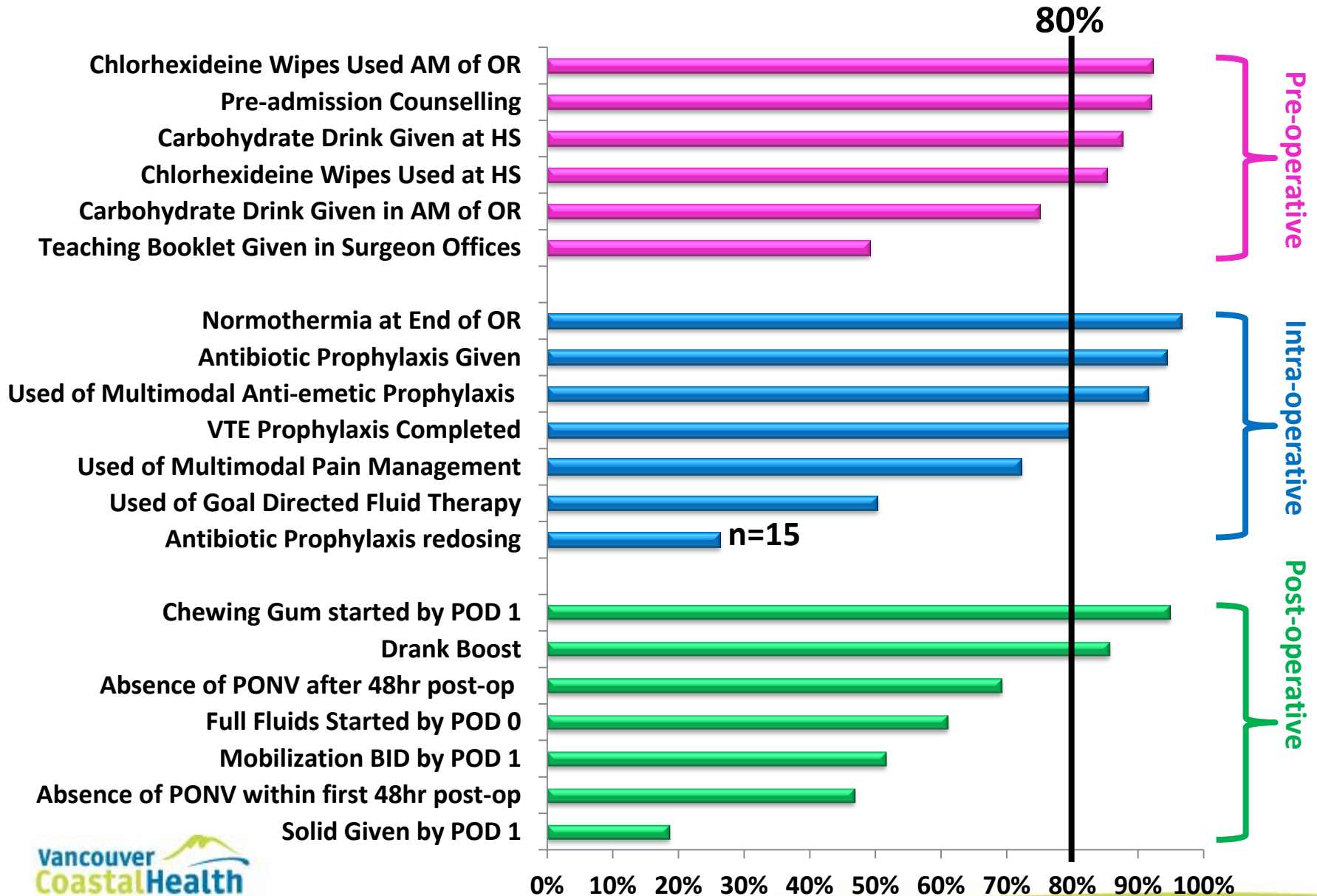
NSQIP data –pre- implementation cohort

- Using CPT ERAS codes all cases done between July 2011 and June 2013 were selected (153 cases)
- Non GS cases, urgent < 4 and <8 hour cases removed. As well as cases that had other significant surgical procedures (hepatobiliary, gynecology oncology, urology etc)
- 99 cases, 96 were truly elective, and 3 were < 24 hrs cases that had were operated on 24-72 hours after admission

Post implementation cohort-- all elective cases Nov 2013-August 2014

- N=179 cases
- Compliance with ERAS variables tracked
- All were followed up for 30 days post procedure as per NSQIP standards, and morbidity, mortality, LOS, and readmission rates were tracked.

ERAS Audit Summary for Nov 2013-Aug 2014 (n=179)



RESULTS

	Pre-implementation	Post implementation
Number of pts	99	179
NSQIP Morbidity	27.3%	14% 50% reduction p< 0.05
Superficial SSI	11.1%	7.3%
Deep SSI	2.0%	0.6%
Organ space SSI	7.1%	3.4%
Total SSI	20%	11% 45% reduction p<0.05

RESULTS

	Pre-implementation	Post-implementation
Pneumonia	5.1%	2.8%
Unplanned intubation	5.1%	1.7%
Ventilator > 48 hrs	4.0%	0.0 p<0.05
Sepsis	3.0%	2.8%
Median LOS	7 days	5 days
(IQR 25-75)	5-11	4-8
Readmissions	7%	11.7%



Risk-adjusted

	Pre-implementation	Post-implementation
Age (mean)	64.9	66.9
Male/female ratio	52/48	53/47
ASA median	2	2
Co-morbidity count	0.73	0.69
MIS resections	53%	62%
MIS/open anterior and AP resections	33%	41%

Compliance Trends for Preoperative ERAS components

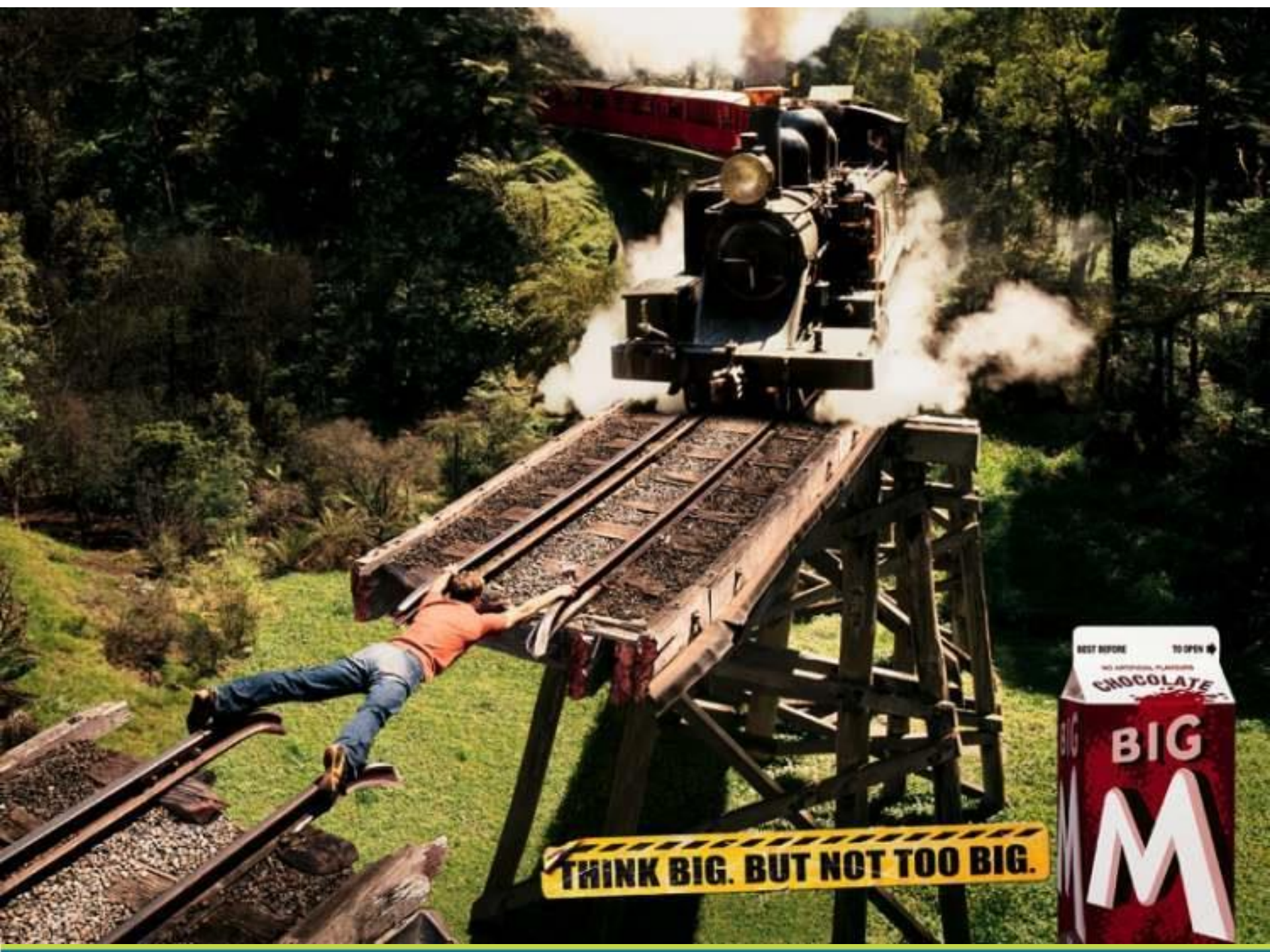
	Nov 2013-Aug 2014 compliance (n=179)	Sep14-Feb15 compliance (n=102)	% change
Carbohydrate Drink Given at HS	87.6%	89.9%	2.6%
Chlorhexidine Wipes Used at HS	85.3%	89.8%	5.3%
Chlorhexidine Wipes Used AM of OR	92.2%	99.0%	7.4%
Pre-admission Counselling	92.0%	100.0%	8.8%
Carbohydrate Drink Given in AM of OR	75.0%	81.6%	8.8%
Teaching Booklet Given in Surgeon Offices	49.2%	60.2%	22.5%

Compliance trends of Intraoperative ERAS components

	Nov 2013-Aug 2014 compliance (n=179)	Sep14-Feb15 compliance (n=102)	% change
Used of Multimodal Anti-emetic Prophylaxis	91.6%	85.4%	-6.8%
Normothermia at End of OR	96.6%	97.1%	0.4%
VTE Prophylaxis Completed	79.9%	83.2%	4.1%
Antibiotic Prophylaxis Given	94.4%	100.0%	5.9%
Used of Multimodal Pain Management	72.1%	76.5%	6.2%
Used of Goal Directed Fluid Therapy	50.3%	77.6%	54.4%
Antibiotic redosing	26.3%	68.4%	160.0%

Compliance of Postoperative ERAS Components

	Nov 2013-Aug 2014 compliance (n=179)	Sep14-Feb15 compliance (n=102)	% change
Chewing Gum Started by POD 1	94.8%	84.8%	-10.6%
Drank boost	85.6%	82.6%	-3.5%
Absence of PONV 48hr post-op	69.2%	68.8%	-0.6%
Solid Given by POD 1	18.7%	18.9%	1.0%
Full Fluids Started by POD 0	61.0%	64.6%	5.8%
Absence of PONV within first 48hr post-op	46.8%	50.5%	8.0%
Cases with both PPO	69.8%	83.0%	18.9%
Mobilization BID on POD 1	51.6%	87.4%	69.3%



THINK BIG. BUT NOT TOO BIG.

