

UC San Diego Health

UC San Diego Pharmacoeconomic Forum

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UC San Diego Health

- 563 licensed beds
- 28,988 Discharges/year
 - ~25% Medicare patients
 - ~20% MediCal patients
- 8992 Inpatient surgeries/year
- Medicare CMI 2.01
- Average LOS 5.5-6 days
- 1700 Surgeries/month
 - Approximately 800 inpatient
- Pharmacy Budget >\$100,000,000
 - Inpatient: >\$30,000,000



***Enhanced Recovery Program
Implementation
Colorectal Surgery Group***

Elisabeth C. McLemore, MD, FACS, FASCRS

Minimally Invasive Recovery After Surgery Enhanced Recovery Program

Sponsored by The Office of the President, Center for Health Quality and Innovation

M.I.R.A.S. Objectives

Minimally Invasive Recovery after Surgery

An Enhanced Recovery Program



Minimize post-operative complications by reducing Post Operative Ileus:

- #1 Promote early ambulation and other physical activities after surgery
- #2 Promote the utilization of enhanced gastrointestinal recovery protocols
- #3 Promote standardized post-operative care protocols specific to discipline, surgical procedure, and surgeon preference



M.I.R.A.S. *Endpoints*

Minimally Invasive Recovery after Surgery



MIRAS impact on post-operative complications:

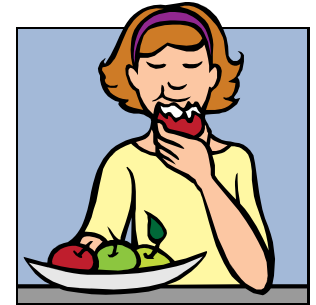
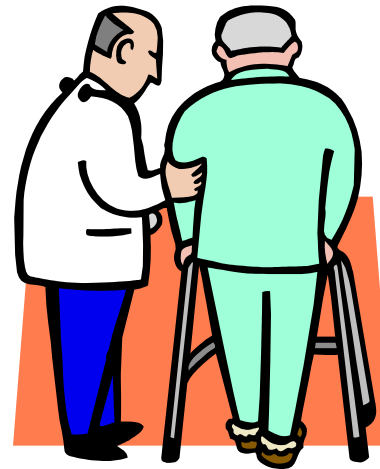
- Length of stay / Hospital Re-admission Rates
 - UHC data, National Logs
 - Surrogate marker of Post Op Ileus
- SCIP Quality Assurance Measures
 - UTI, DVT / PE, Wound Infection, Central Line Infection
- Hospital Patient Satisfaction Surveys
- Post-operative Complications
 - DVT / PE
 - Aspiration Pneumonia
 - Prolonged Ileus

Post Operative Ileus (POI)

Prevention Strategies

Medical Therapy

Immediate Ambulation &
Early PO Intake

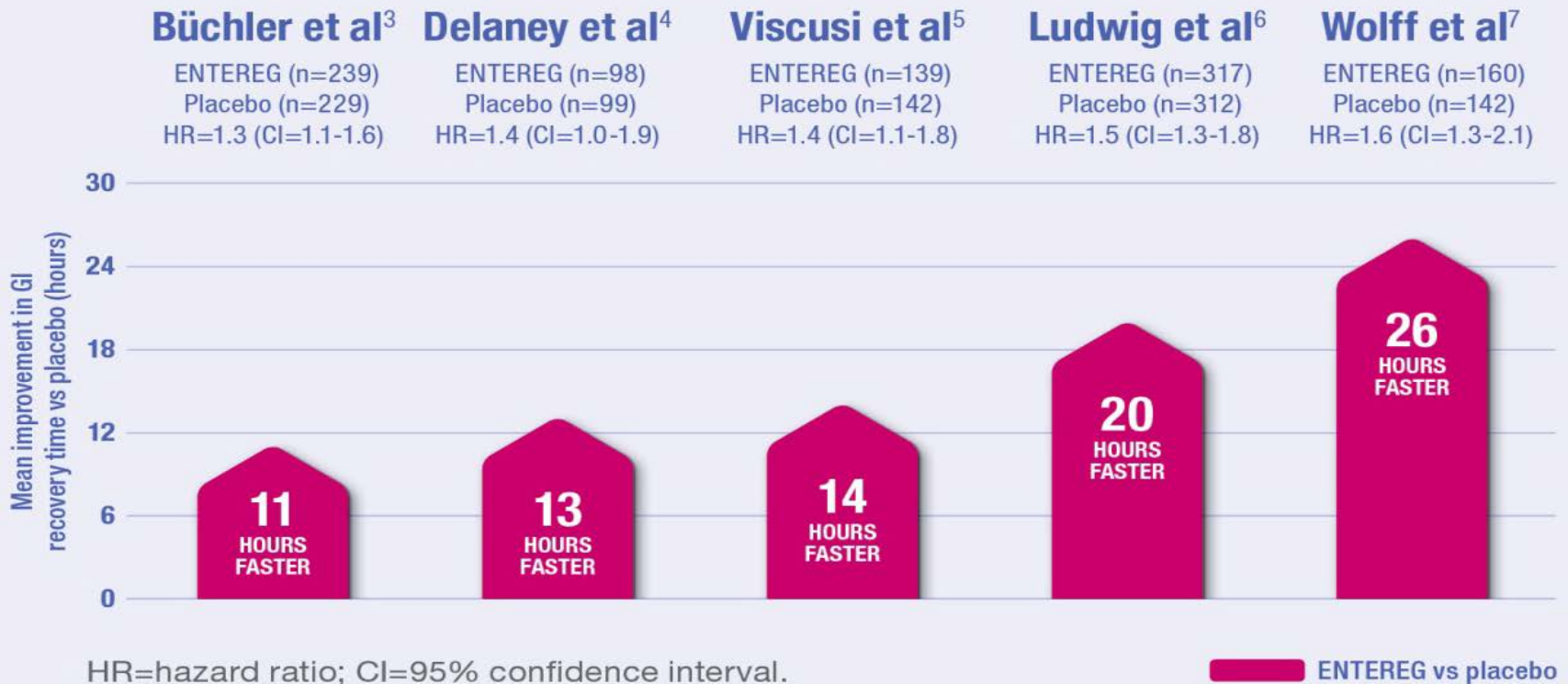


Medications Related to MIRAS



- **Alvimopan: peripheral mu-opioid receptor antagonist**
 - Accelerates time to GI recovery after open bowel resection with primary anastomosis
 - Dosing: 12 mg by mouth pre-operatively, followed by 12 mg twice daily thereafter

Alvimopan: Improved Mean Time to First Bowel Movement

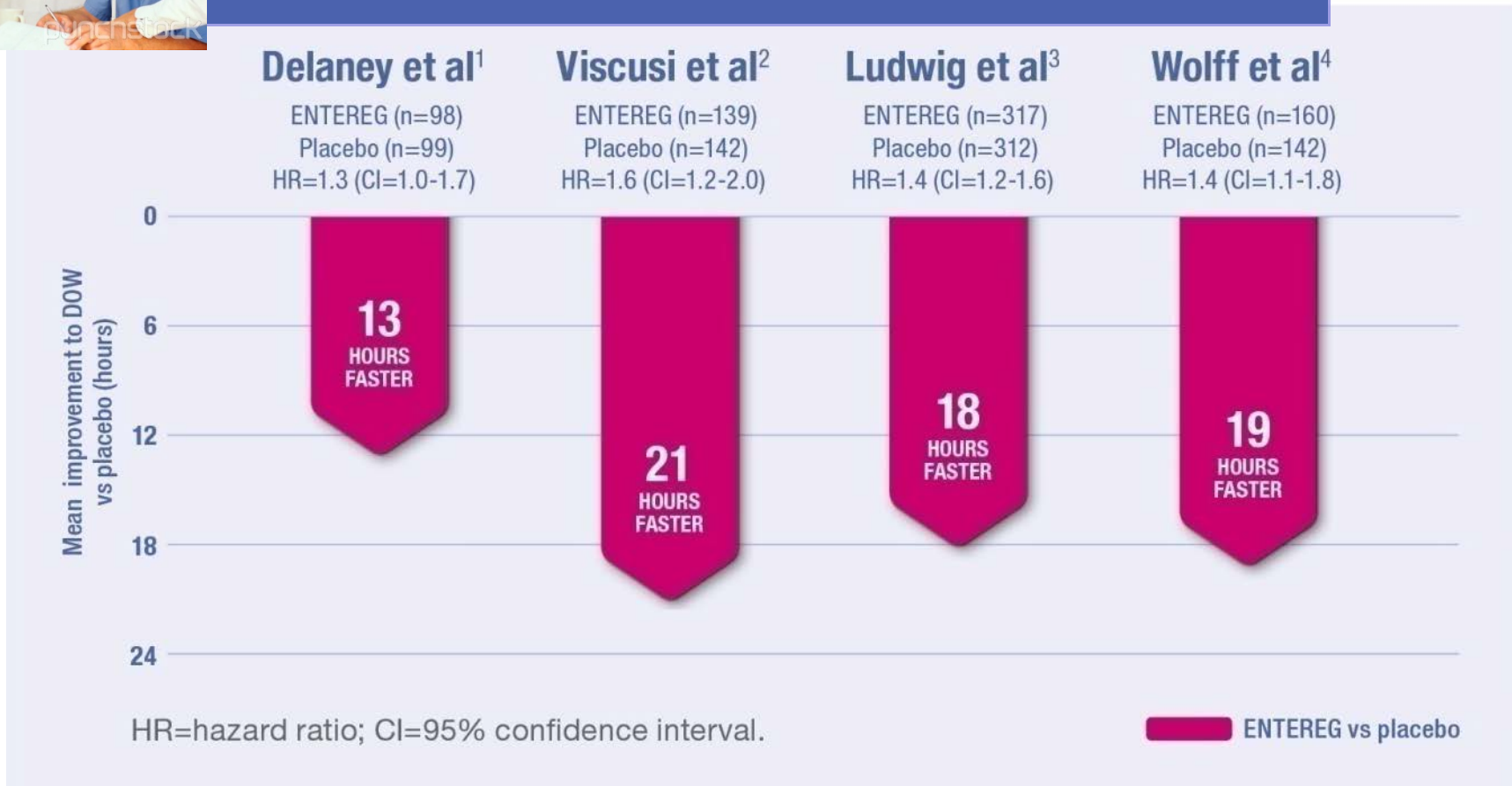


1. ENTEREG [prescribing information]. Exton, PA: Adolor Corporation; 2009. 2. Data on file. Adolor Corporation. 3. Büchler MW, et al. *Aliment Pharmacol Ther.* 2008;28:312-325. 4. Delaney CP, et al. *Dis Colon Rectum.* 2005;48:1114-1129. 5. Viscusi ER, et al. *Surg Endosc.* 2006;20:64-70. 6. Ludwig K, et al. *Arch Surg.* 2008;11:1098-1105. 7. Wolff BG, et al. *Ann Surg.* 2004;240:728-735.

Alvimopan Reduced Time to Discharge Order Written

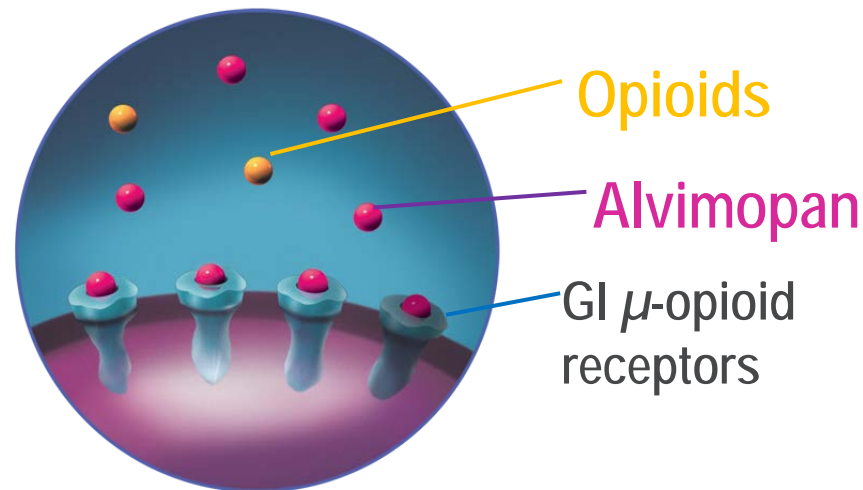


Mean improvement in time to DOW approximately 13 to 21 hours



1. Delaney CP, et al. *Dis Colon Rectum*. 2005;48:1114-1129. 2. Viscusi ER, et al. *Surg Endosc*. 2006;20:64-70. 3. Ludwig K, et al. *Arch Surg*. 2008;11:1098-1105. 4. Wolff BG, et al. *Ann Surg*. 2004;240:728-735. 5. ENTEREG [prescribing information]. Exton, PA: Adolor Corporation; 2009. 6. Data on file. Adolor Corporation.

Alvimopan blocks the peripheral effects of **opioids** on GI motility and secretion by competitively binding to GI tract μ -opioid receptors



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- **Alvimopan: peripheral mu-opioid receptor antagonist**
 - Accelerates time to GI recovery after open bowel resection with primary anastomosis
 - Dosing: 12 mg by mouth pre-operatively, followed by 12 mg twice daily thereafter

- **IV Acetaminophen: increase pain threshold by inhibiting prostaglandin synthesis through cyclooxygenase pathway**
 - Mechanism for pain control in the NPO patient
 - Dosing: 1000 mg IV every 6 hours

Kehlet H, *Am J Surg* 2001; 182:3S–10S

11 Alvimopan (*Entereg*), *package insert*. Adolor/GlaxoSmithKline; 2008

Medications Related to MIRAS

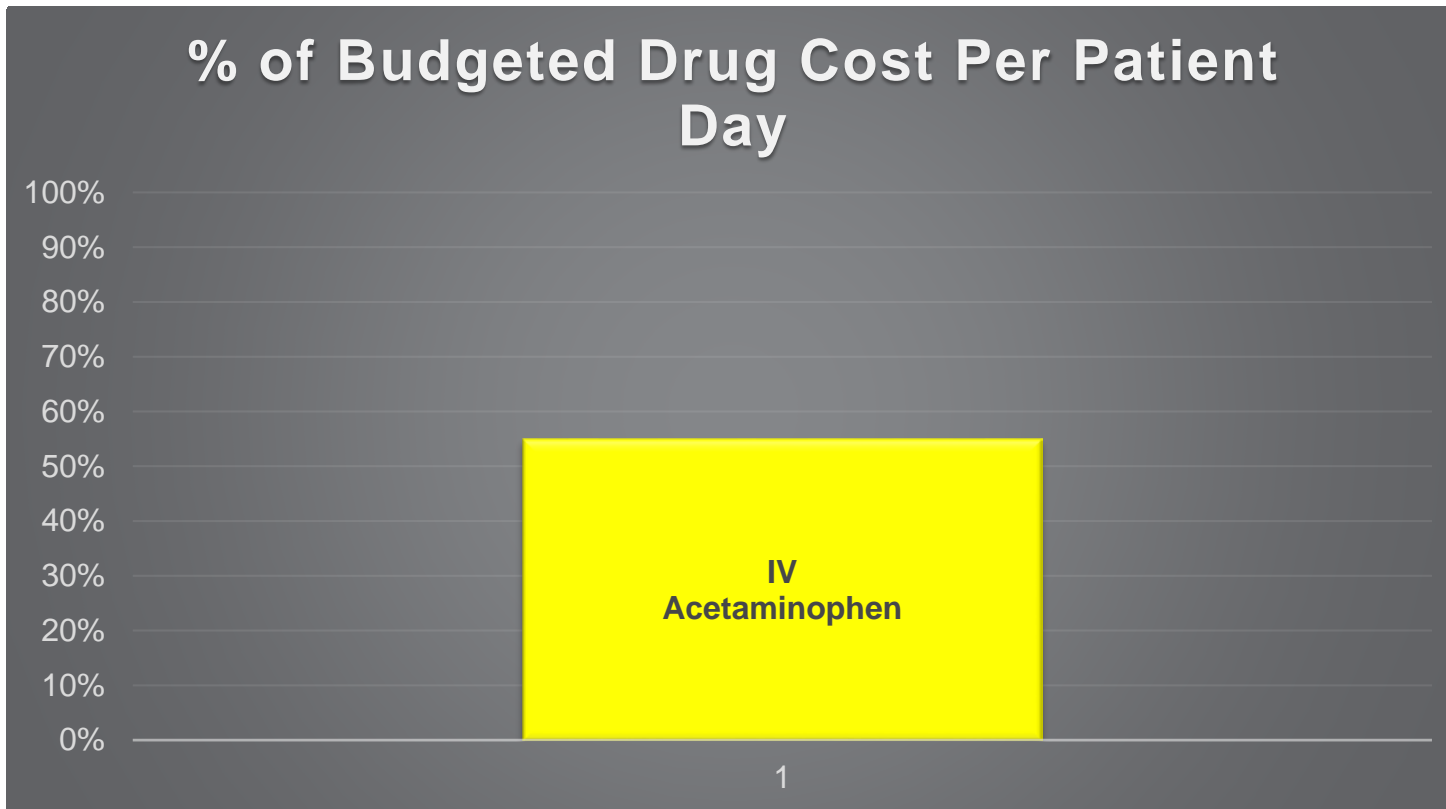


- Alvimopran: peripheral mu-opioid receptor antagonist

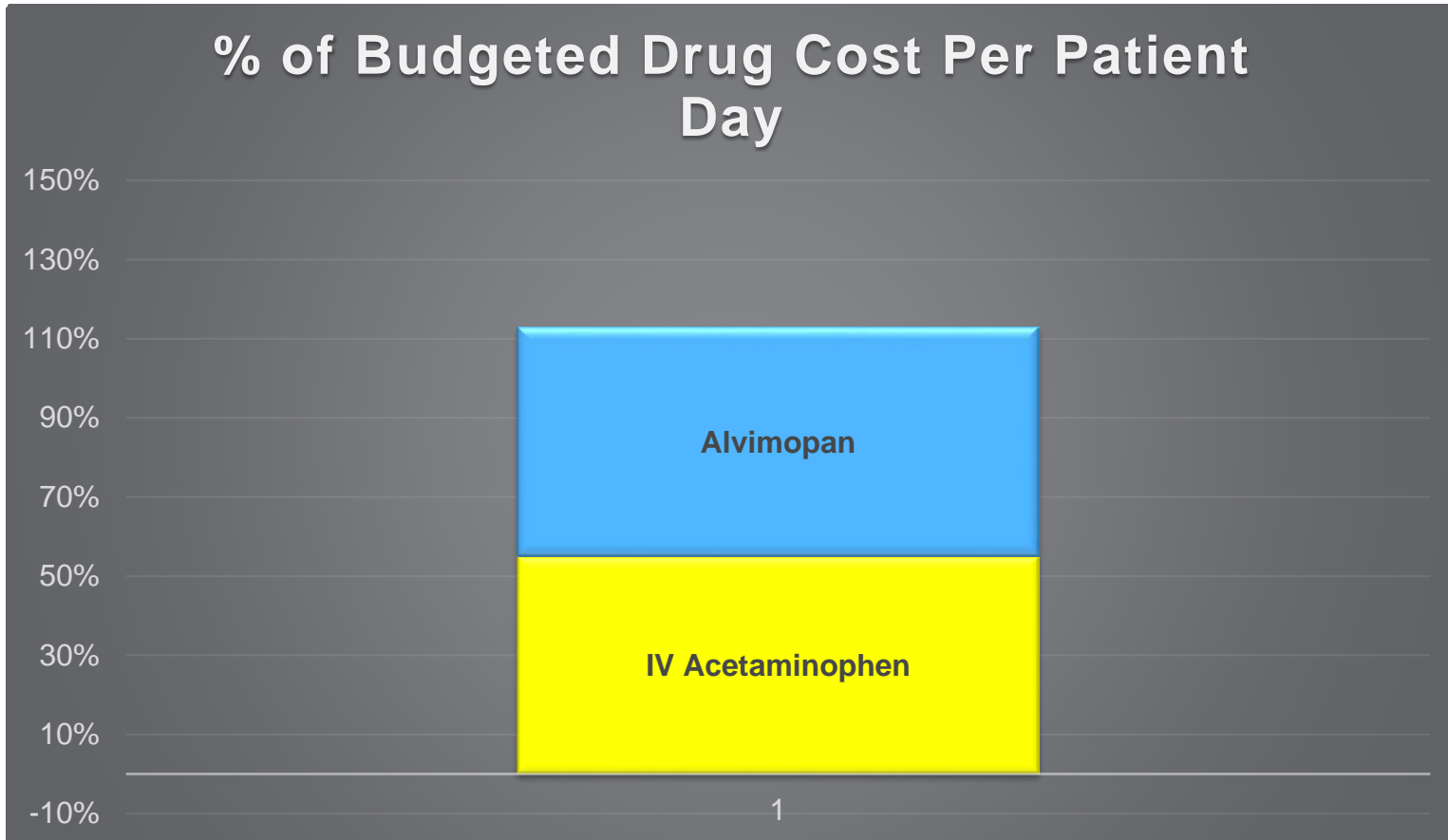
\$62.50 per tablet = \$125 per day with

- Dosing: 12 mg by mouth pre-operatively, followed by 12 mg twice daily thereafter
- IV Acetaminophen: increase pain threshold by
\$29.80 per dose = \$119.20 per day
 - Mechanism for pain control in the NPO patient
 - Dosing: 1000 mg IV every 6 hours

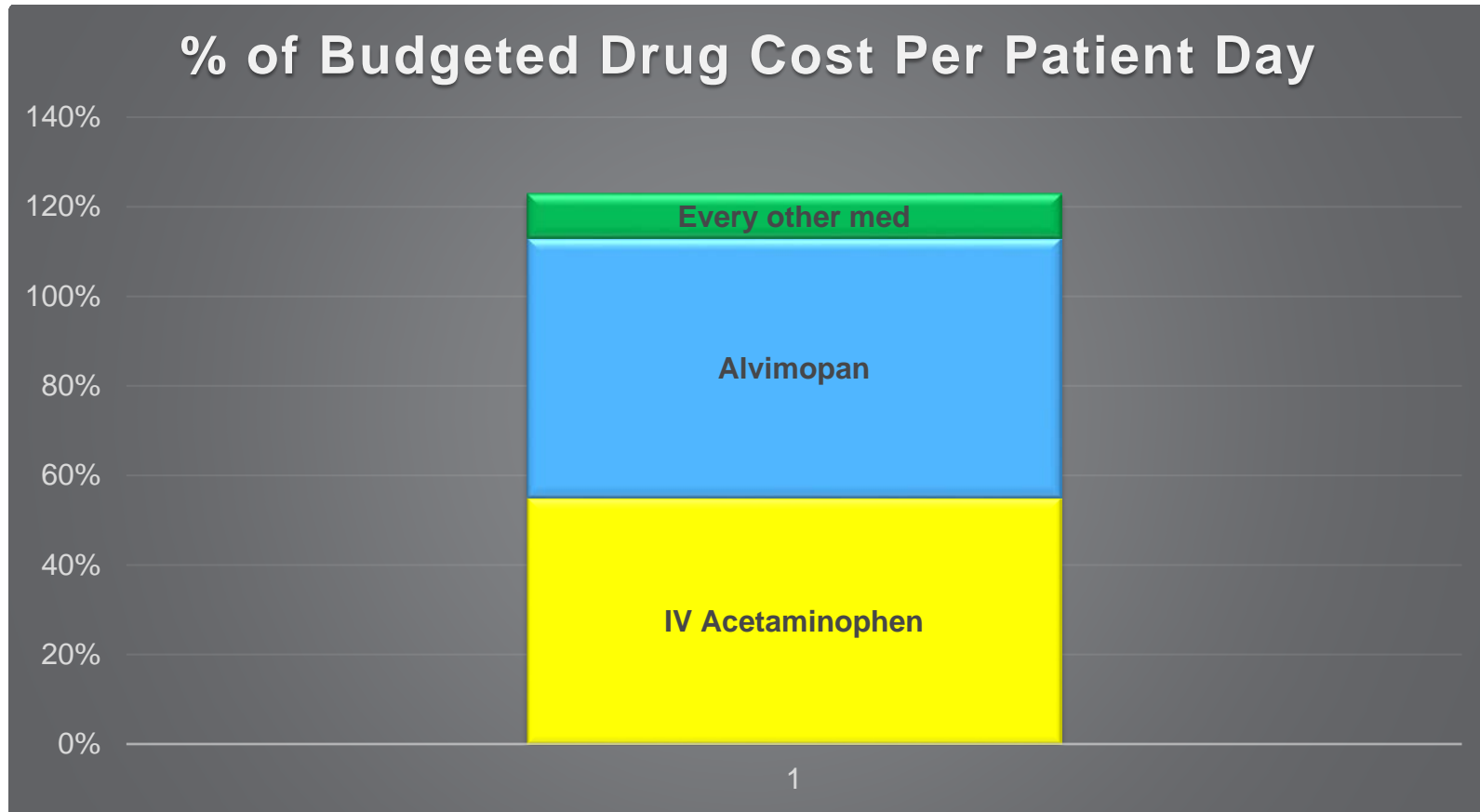
Drug Cost per Patient Day – Pharmacy Budgeting



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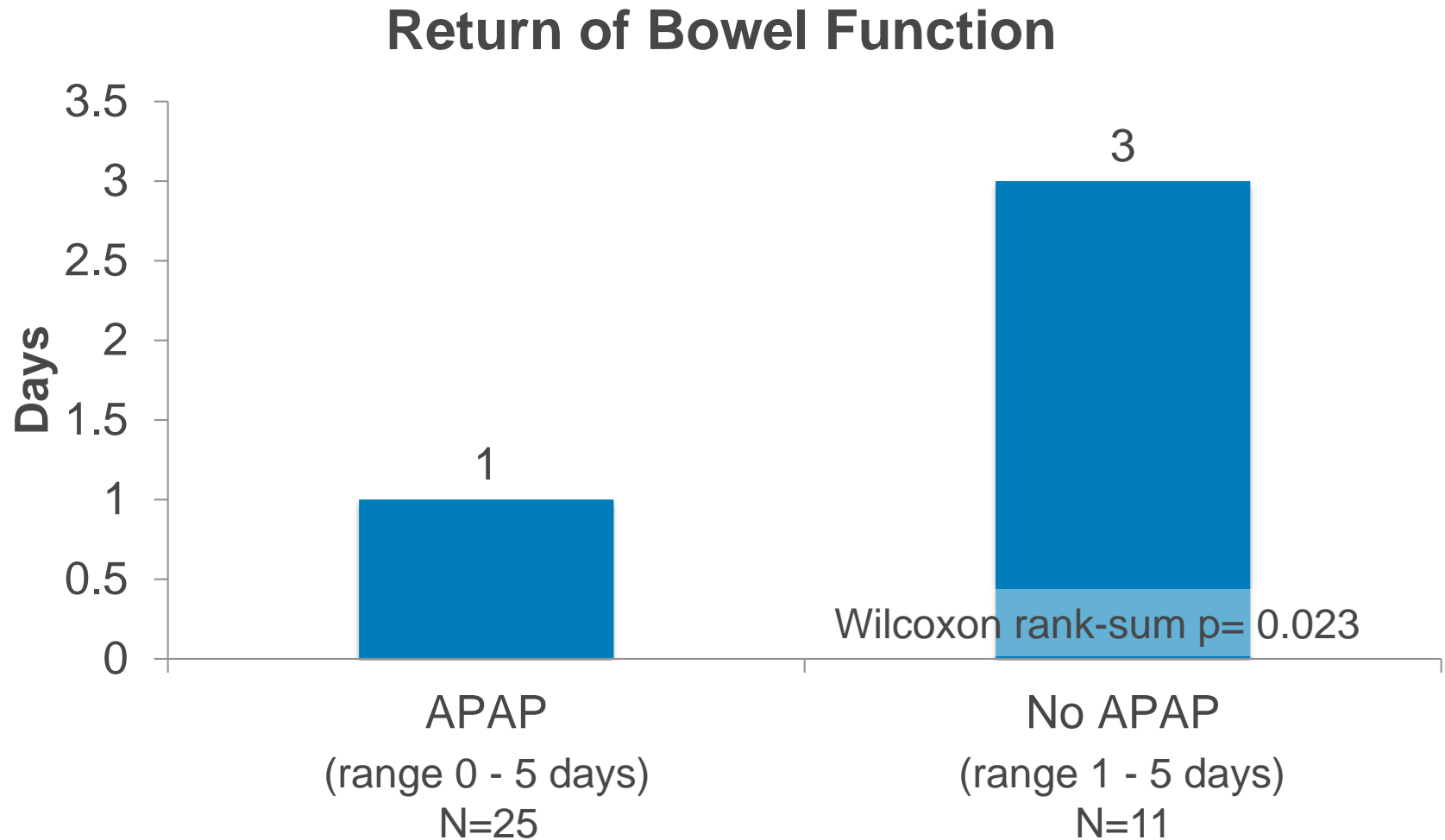


Thinking Outside of the Pharmacy Silo...

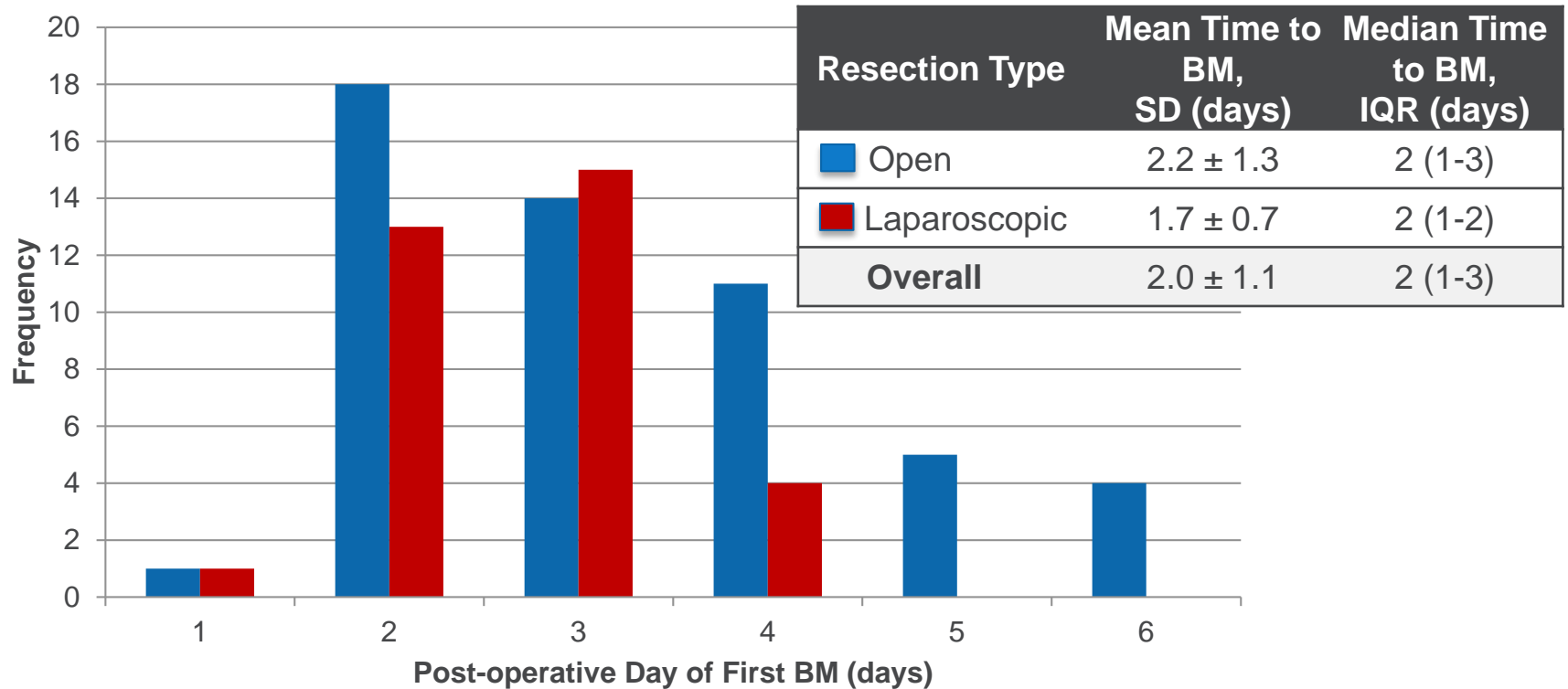
- Goal is to reduce hospital length of stay and hospital readmission rates
- Improve SCIP quality assurance measures
 - UTI, VTE, infection, central line infection
- Patient satisfaction
- Prevent prolonged ileus

How do you account for the impact of each change made in the MIRAS program?

IV Acetaminophen: Return of Bowel Function

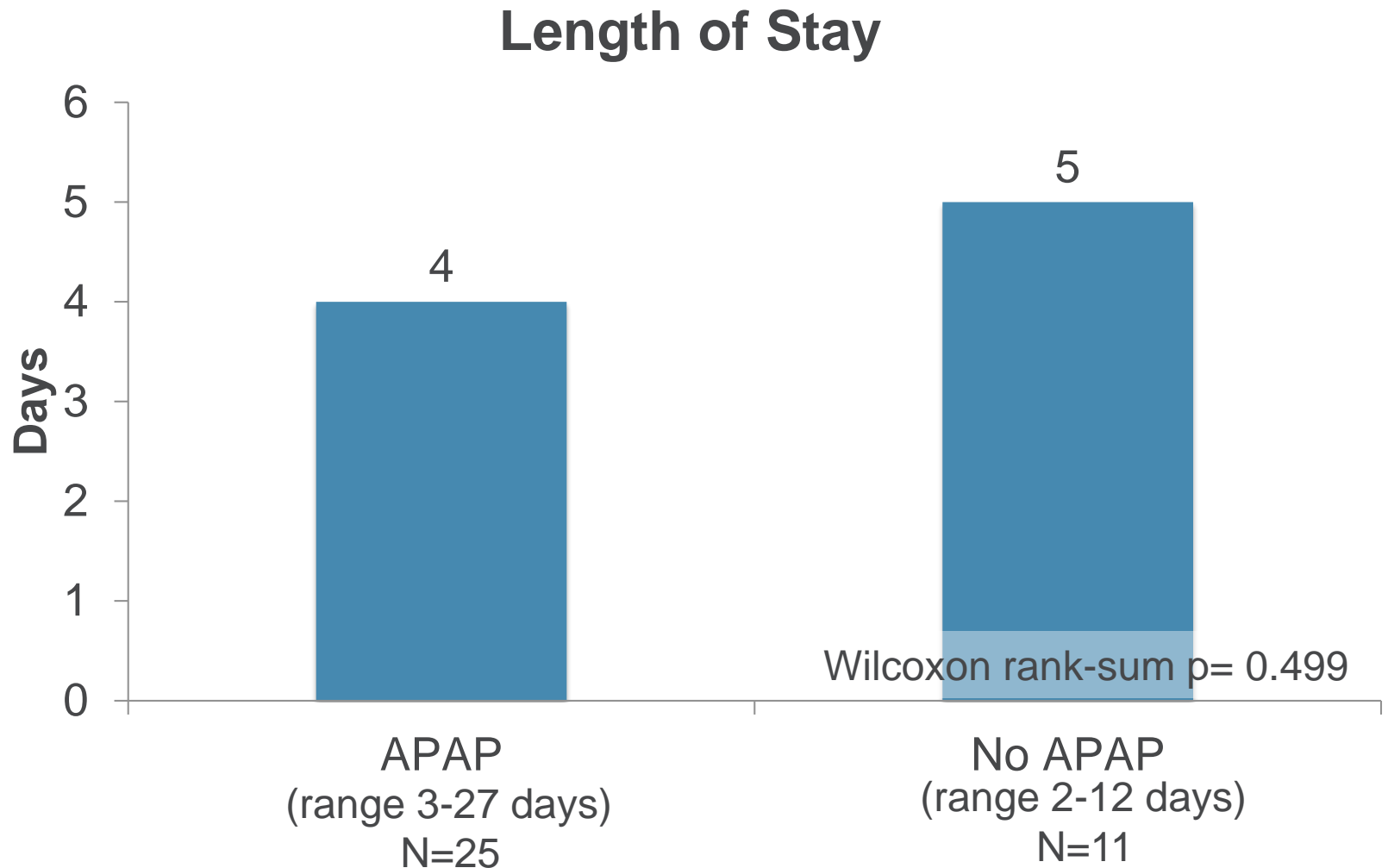


Alvimopan: Time to First Bowel Movement (BM)

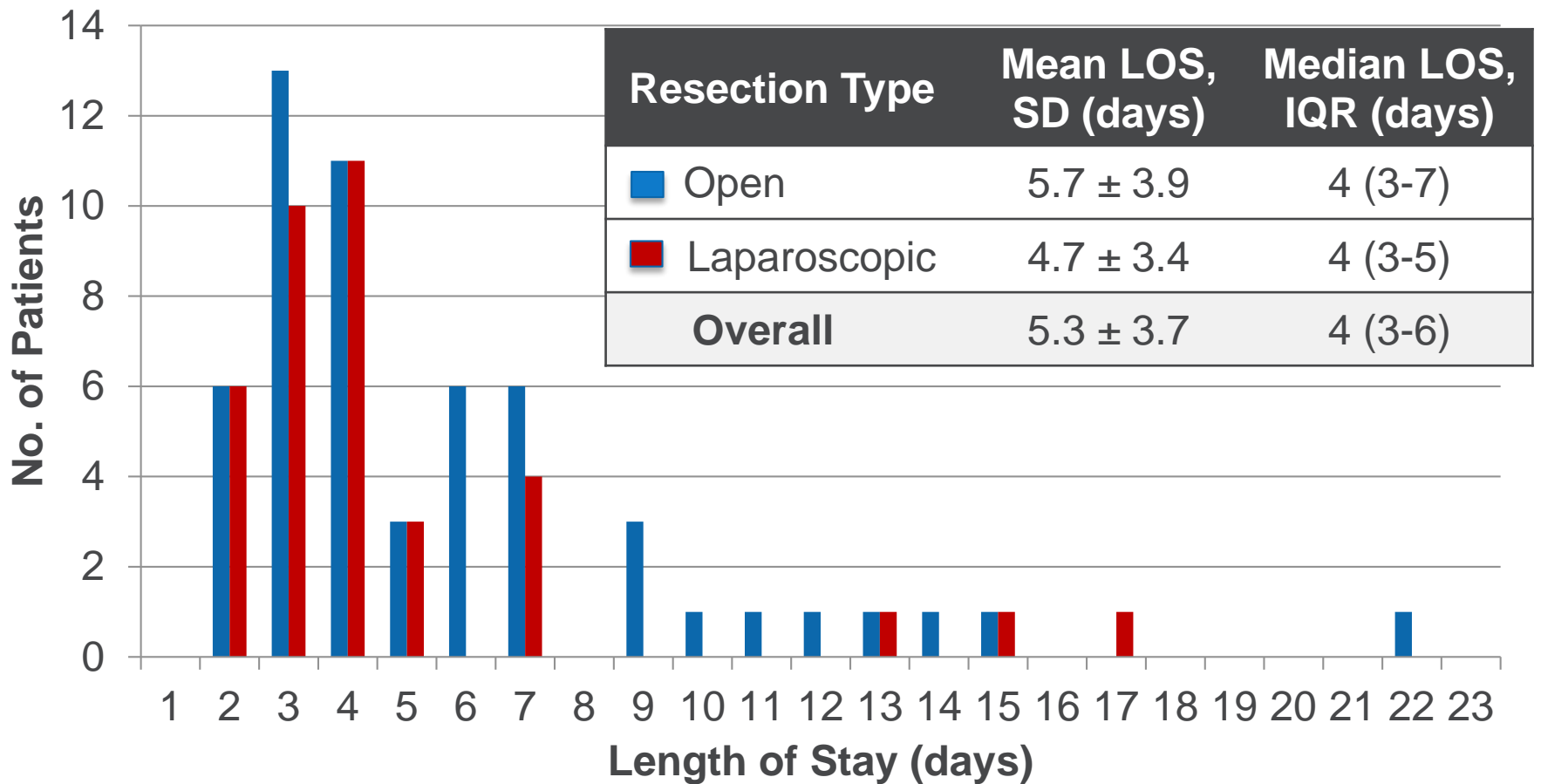


Kelley et al. 2013	Mean Time to BM, SD (days)	Median Time to BM, IQR (days)
Control (N=64)	2.4	2 (1-7)
Alvimopan (N=26)	1.5	1 (1-4)

IV Acetaminophen: No difference in length of stay



Alvimopan: Length of Stay



Comparing Outcome to Historical Data

Resection Type	Mean Length of Stay	
	Alvimopan	Historical*
■ Open	5.7 ± 3.9 days (N = 55)	8.79 days (N = 47)
■ Laparoscopic	4.7 ± 3.4 days (N = 37)	5.41 days (N = 32)

- Historical UCSDHS length of stay in 2011
 - Data reported to University HealthSystem Consortium



Associated Costs

Resection Type	Mean* Difference in LOS (days)	Mean Alvimopan Doses (N)	Cost# Difference/Case (\$)
■ Open	- 5.74	7.6	- \$6,323
■ Laparoscopic	- 0.77	7.0	- \$1,124

*Compared to 2011 UCSDHS data

#Based on mean costs for medical/surgical bed hospitalization of \$2,200/day and \$62.50/dose of alvimopan

Who's the Winner?

- Hospital budgets account for patients in 'silos'
- What is good for one department, may be bad for another
- Is the patient the winner?
- What about the outpatient arena where reimbursement is different?

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