

Opioid Free Surgery

Intermountain Health Care

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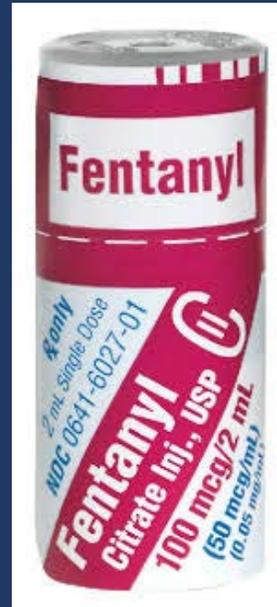


The speakers have no relevant financial relationship(s) to disclose.

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68 Yr old Massive Cuff Repair



bupivacaine PF (Anes) 0.25% 30 mL vial	Perineural
bupivacaine liposome PF (Anes) 1.3% (13.3 mg/mL) 20 mL vial	Perineural
lidocaine 2% PF 10 mL injection	IV Push
amrnofol (Anes) 10 mg/mL 20 mL vial	IV Push

Allergies: oxyCODONE



WHY #1: SAFETY

2 patients died after surgery at a Kansas hospital – their families want answers

Posted: Feb 14, 2020 8:37 AM MST
Updated: Feb 14, 2020 8:37 AM MST

written by Kansas News Service **CONNECT**



Travis Claussen was 40 years old when he died.
(CREDIT CLAUSSEN FAMILY)

Claussen was considered a poor candidate for back surgery because, at six-foot-one-inches tall and 240 pounds, he was considered obese. But one of the doctors at Blue Valley thought he was sufficiently young and healthy to undergo hip replacement surgery.

Medical records show that over the next 24 or so hours, he was given large quantities of narcotics, including fentanyl and oxycodone, and sedatives, including Valium and Ativan. At 3:50 a.m. on April 11, a nurse found him unresponsive. He was transported about 50 minutes later just down the road to Saint Luke's South Hospital but it was too late. Claussen was dead.

WHY #2: HYPERALGESIA

WS

Pain Medicine | February 2016

Does Fentanyl Lead to Opioid-induced Hyperalgesia in Healthy Volunteers?: A Double-blind, Randomized, Crossover Trial

Eckhard Mauermann, M.D.; Joerg Filitz, M.D.; Patrick Dolder, M.Sc.; Katharina M. Rentsch, Ph.D.; Oliver Bandschapp, M.D.; et al

Results: A higher dose of fentanyl led to significantly decreased pain scores as measured by the numeric rating scale (0.83 units lower [95% CI, 0.63 to 1.02]; $P < 0.001$) but increased areas of hyperalgesia (+30.5% [95% CI, 16.6 to 44.4%]; $P < 0.001$) from 4.5 to 6.5 h after fentanyl administration. Allodynia did not differ between groups (+4.0% [95% CI, -15.4 to 23.5%]; $P = 0.682$). The high dose also led to both increased cold pressor pain threshold (+43.0% [95% CI, 29.7 to 56.3%]; $P < 0.001$) and tolerance (+32.5% [95% CI, 21.7 to 43.4%]; $P < 0.001$) at 4.5 to 6.5h. In the high-dose group, 19 volunteers (90%) required reminders to breathe, 8 (38%) required supplemental oxygen, and 12 (57%) experienced nausea.

Conclusions: A higher dose of fentanyl increased hyperalgesia from 4.5 to 6.5 h in healthy volunteers

WHY #3: TREATING THE RECOVERED

WS



**National Institute
on Drug Abuse**
Advancing Addiction Science

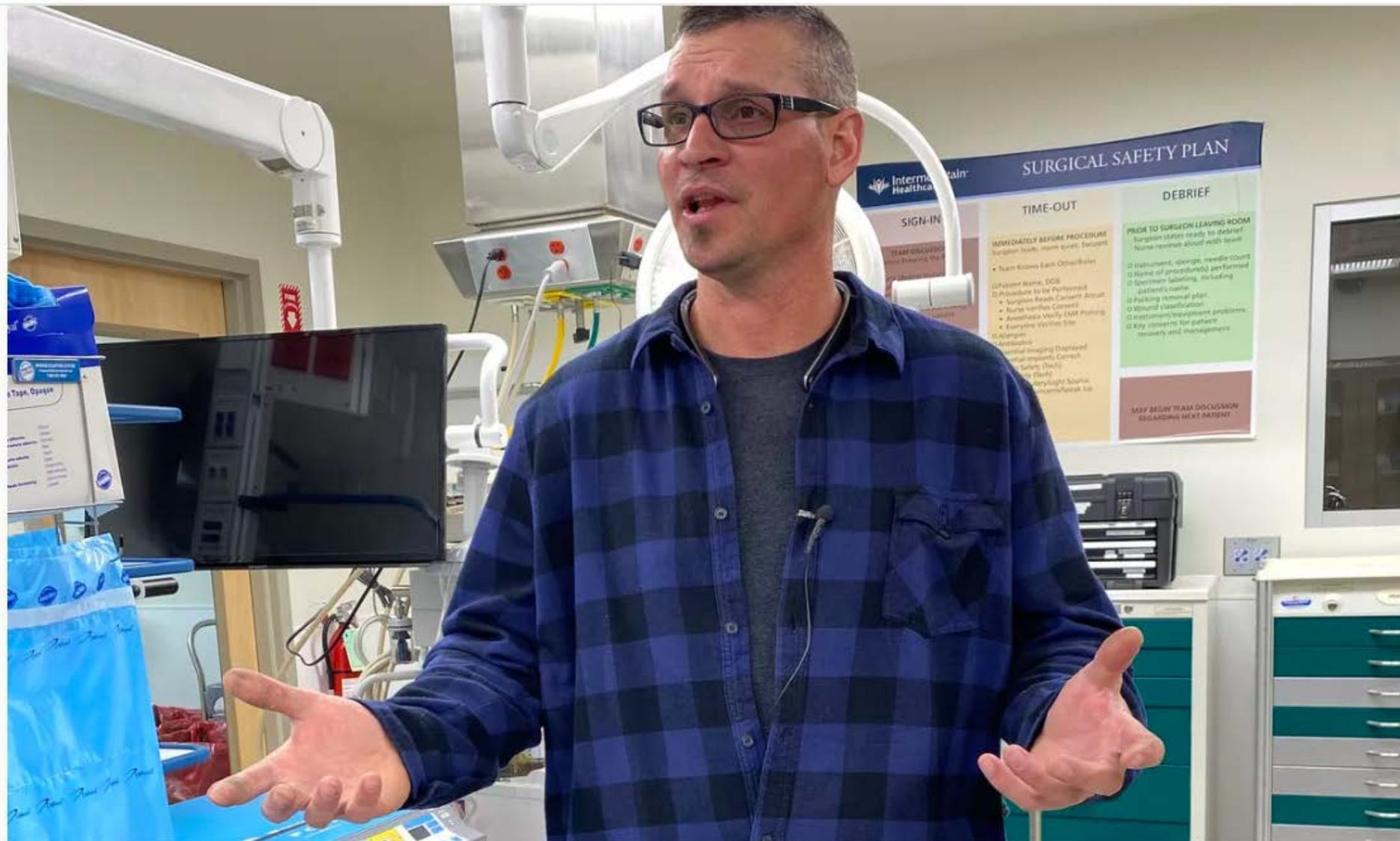
Opioid Use Disorder Affects Millions

- Over 2.5 million Americans suffer from opioid use disorder which contributed to over 28,000 overdose deaths in 2014. ^{1,2}
- Use of opioids, including heroin and prescription pain relievers, can lead to neonatal abstinence syndrome as well as the spread of infectious diseases like HIV and Hepatitis.

Effective Medications are Available

Medications, including buprenorphine (Suboxone[®], Subutex[®]), methadone, and extended release naltrexone (Vivitrol[®]), are effective for the treatment of opioid use disorders.





Jason Zeeman, of Payson, talks about Intermountain Healthcare's opioid-free surgery program at LDS Hospital in Salt Lake City on Wed. Feb. 26, 2020. As an addict, Zeeman said he benefited from not being given pain pills during and after hernia surgery in November. | Wendy Leonard, Deseret News

Utah Valley Experience

AGE: 45 years
 Gender: Male
 Pre-Op Diagnosis: K40.90 Unilateral inguinal hernia,
 Reason for Admit: robotic left inguinal hernia repair

Hx of Back Pain, Muscle Spasm, Recovered Opioid Addiction

Name	Total
midazolam PF (Anes) 1 mg/mL 2 mL injection IV Push	2 mg
lidocaine 2% PF 5 mL vial IV Push	130 mg
propofol (Anes) 10 mg/mL 20 mL vial IV Push	200 mg
rocuronium 10 mg/mL 10 mL vial IV Push	100 mg
ceFAZolin 1,000 mg vial IV Push	2000 mg
bupivacaine PF (Anes) 0.25% 30 mL vial Perineural	20 mL
bupivacaine liposome PF (Anes) 1.3% (13.3 mg/mL) 20 mL vial IV Drip	133 mg
dexmedetomidine (Anes) 100 mcg/mL 2 mL IV Drip	15.1667 mcg
ketamine 10 mg/mL 20 mL vial IV Push	20 mg
dexamethasone 4 mg/mL 5 mL vial IV Drip	6 mg
ketorolac (Anes) 30 mg/mL 1 mL injection IV Push	30 mg
ondansetron PF (Anes) 2 mg/mL 2 mL injection IV Push	4 mg
sugammadex (Anes) 100 mg/mL 2 mL vial IV Push	400 mg

Admit Pain: 3/10
 Discharge Pain 5/10

“To be honest, it wasn’t hard,
 it was just a little achy”

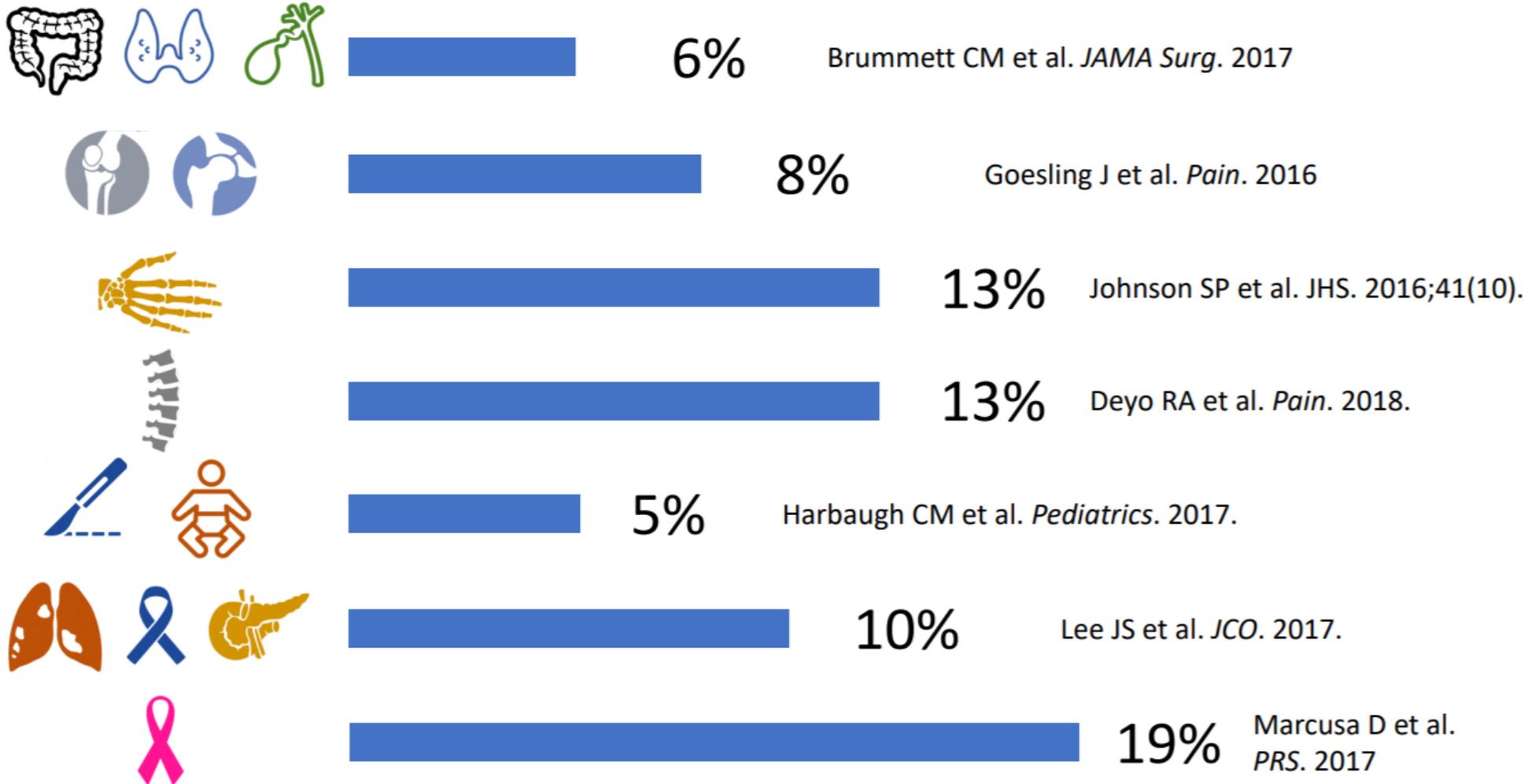
MME=0



WHY #4: PREVENTING ADDICTION

NR

New Persistent Opioid Use



WHY #5: SIDE EFFECTS

NR

Original Article

Cost of Opioid-Related Adverse Drug Events in Surgical Patients

Gary M. Oderda, PharmD, MPH, R. Scott Evans, PhD, James Lloyd, BS, Arthur Lipman, PharmD, Connie Chen, PharmD, Michael Ashburn, MD, MPH, John Burke, MD, and Matthew Samore, MD

University of Utah College of Pharmacy and School of Medicine (G.O., R.S.E., A.L., M.A., J.B., M.S.), and LDS Hospital (R.S.E., J.L., J.B.), Salt Lake City, Utah; Pharmacia Corp. (C.C.), Peapack, New Jersey; and Intermountain Health Care (R.S.E.), Salt Lake City, Utah, USA

Table 4
Linear Regression Subgroup Models for ADE Type

ADE Type ^a	Clinical Manifestation	Outcome	Adverse Drug Event Effect	95% Confidence Interval	Pvalue	% Increase ^b	Estimated Cost Increase (\$) ^c
Gastrointestinal (nausea/vomiting)		LOS (days)	0.47	0.14–0.80	<0.005	8.6	510
		log cost	0.096	0.042–0.144	<0.001	10.1	
Cutaneous (rash/hives/itching)		LOS (days)	0.26	–0.28–0.80	0.340	4.6	209
		log cost	0.041	0.021–0.061	<0.001	4.2	
CNS (confusion/lethargy)		LOS (days)	1.97	0.39–3.55	0.015	23.6	942
		log cost	0.106	0.053–0.158	<0.001	11.2	
Respiratory (resp depression)		LOS (days)	1.35	0.69–2.63	0.039	19.8	626
		log cost	0.096	0.049–0.143	<0.001	10.1	
Urinary (urinary retention)		LOS (days)	4.41	0.57–8.24	0.025	65.2	777
		log cost	0.135	0.021–0.249	0.020	14.5	

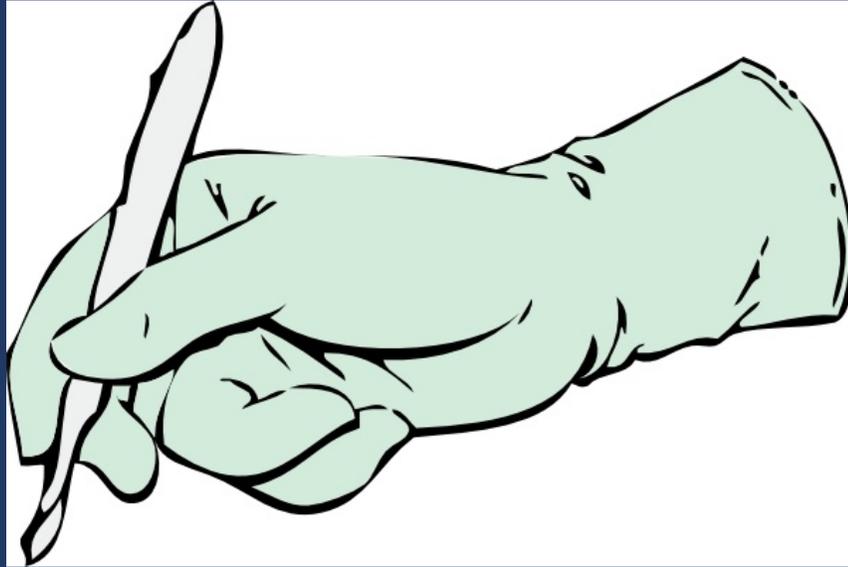
^aCategories of clinical manifestations are not exclusive, namely, a patient with more than one clinical manifestation (e.g., nausea and confusion) would appear in both categories.

^b% increase for costs were calculated by exponentiating the effect coefficient from the log transformed model. % increase for length of stay was determined by calculating the percent change from the mean in all controls matched to the ADE patient with the specific clinical effect, for example, CNS.

^cEstimated cost increase was calculated by multiplying the % increase by the median cost all controls matched to the ADE patient with the specific clinical effect, for example, CNS.



Does it Work?



Preop

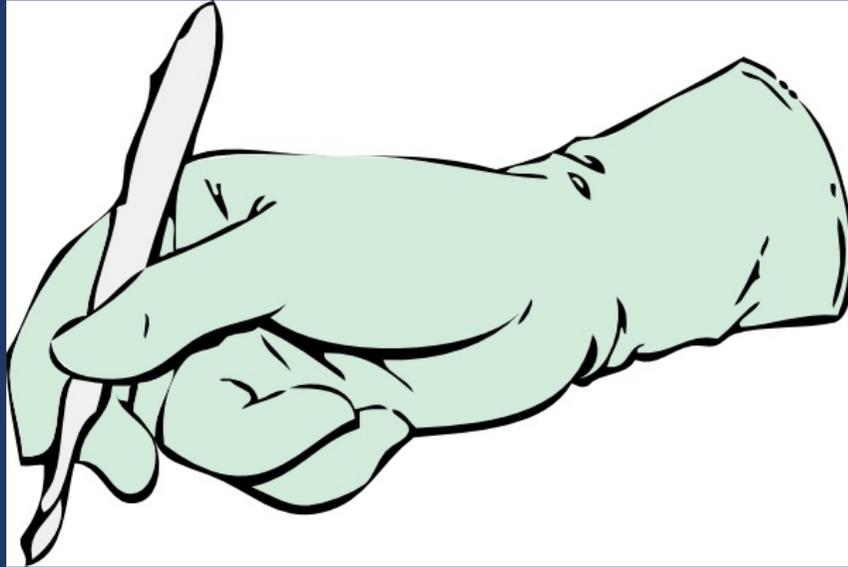


Intraop



Postop





Preop



Intraop



Postop



Tale of Two Laparoscopes ^{WS}

“Traditional”

PACU LOS: 41min
SDS LOS: 100 min

fentaNYL (fentaNYL) Titration Order: PRD 5 M... Dose Range: 25 - 50 mcg, IV Push, every 5 min, PRN pain, severe, Priority Ranking: give 1st, Injecta...	50 mcg @1019	Respiratory Rate: 16 br/min	Response @1024
HYDRomorphine (HYDRomorphine) Titration Order: PRD 10 ... Dose Range: 0.2 - 0.5 mg, IV Push, every 10 min, PRN pain, severe, Priority Ran...	0.5 mg @1027	Respiratory Rate: 16 br/min	Response @1042

oxyCODONE (oxyCODONE) Range dose MAX 10 mg, Oral, every 4 hr, PRN pain, moderate, Tab,...	PRN	
oxyCODONE (oxyCODONE) Range dose MIN 5 mg, Oral, every 4 hr, PRN pain, moderate, Tab, First Dose: 03/02/20 11:17:00 MST	5 mg @1100	Respiratory Rate: 16 br/min
	Response @1200	PRN

Opioid Sparing

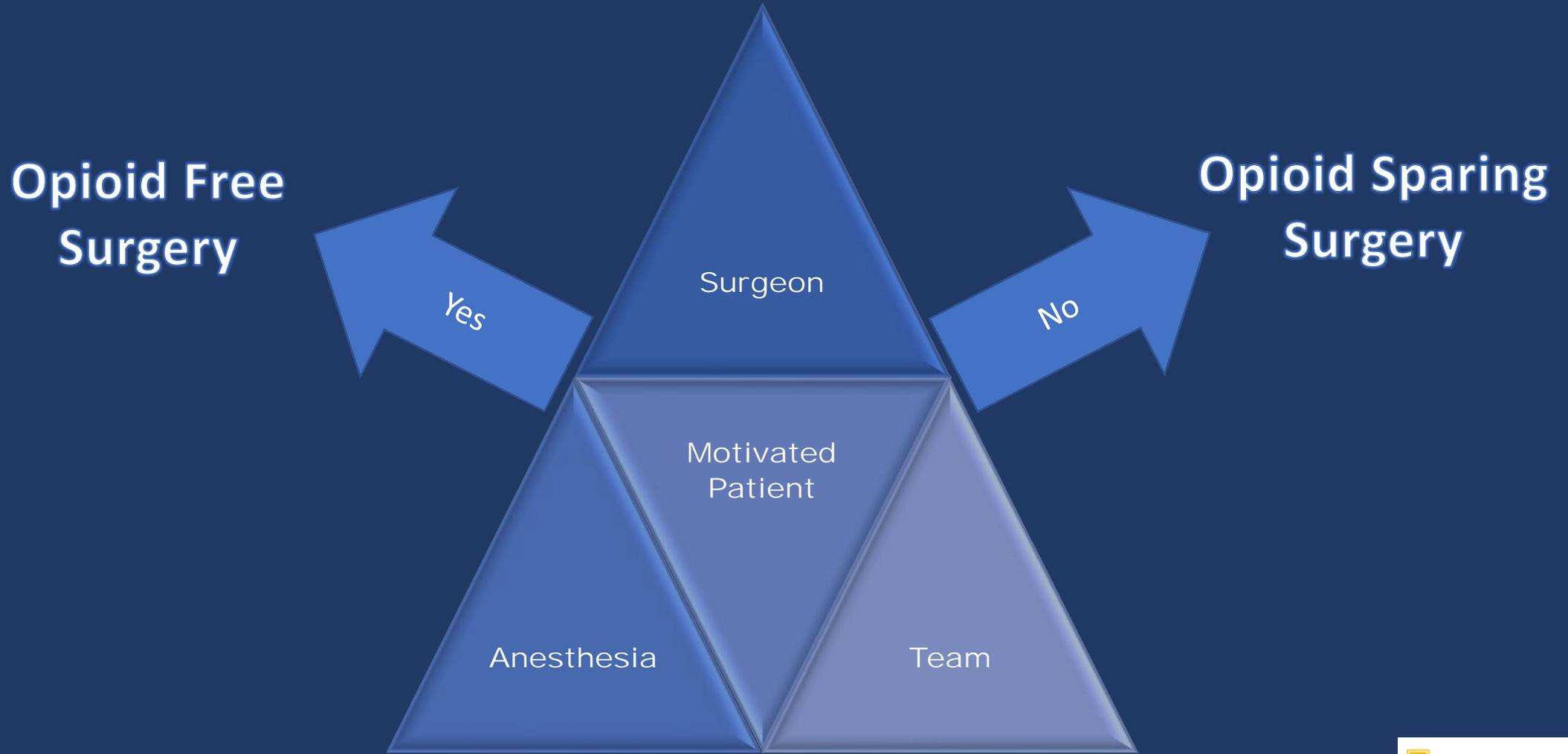
PACU LOS: 32min
SDS LOS: 70 min

meperidine (Demerol) Titration Order: PRD 5 M... Dose Range: 12.5 - 25 mg, IV Push, As Directed PRN, PRN other (see comment), Injectable, First Dose: 03/...	12.5 mg @0924	Respiratory Rate: 16 br/min	Response @0939
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10:20 MST	10:00 MST	09:35 MST	09:27 MST	09:24 MST	09:15 MST	08:55 MST	07:20 MST
Yes actu...	Yes actu...	Yes actu...	Yes actu...		Yes actu...	No actu...	Yes actu...
iPAT pai...	iPAT pai...	iPAT pai...	iPAT pai...		iPAT pai...		iPAT pai...
2	2	3	3		4		1
			Abdomen		Abdomen		Abdomen

PAIN ASSESSMENT
Pain Present
Preferred Pain Tool
iPAT Pain Score (0-10)

Yes actu...	Yes actu...		Yes actu...	Yes actu...		Yes actu...	Yes actu...
iPAT pai...	iPAT pai...		iPAT pai...	iPAT pai...		iPAT pai...	rFLACC
1	4		2	2		6	6



Opioid Free Surgery

WS

OFS:
No Narcotics with induction

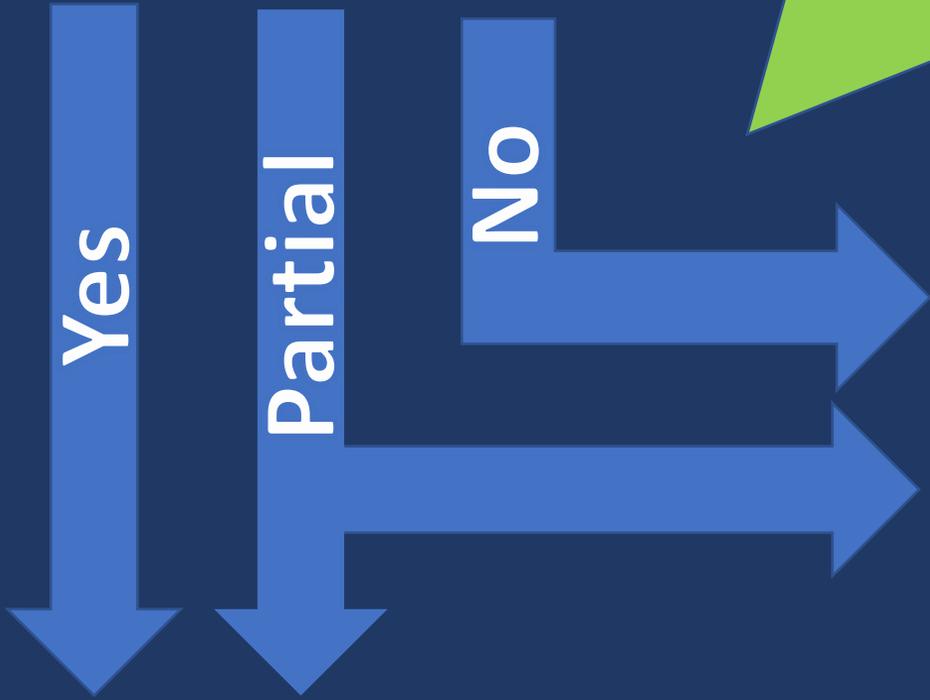
Regional Technique to Cover all Pain?

Anticipate Postop Pain?

Yes

No

- ### Opioid sparing Adjuncts
- Ketamine
 - Dexmedetomidine
 - Esmolol
 - Magnesium
 - Gabapentanoids
 - Dexamethasone
 - Ketorolac
 - Acetaminophen
 - NSAIDS

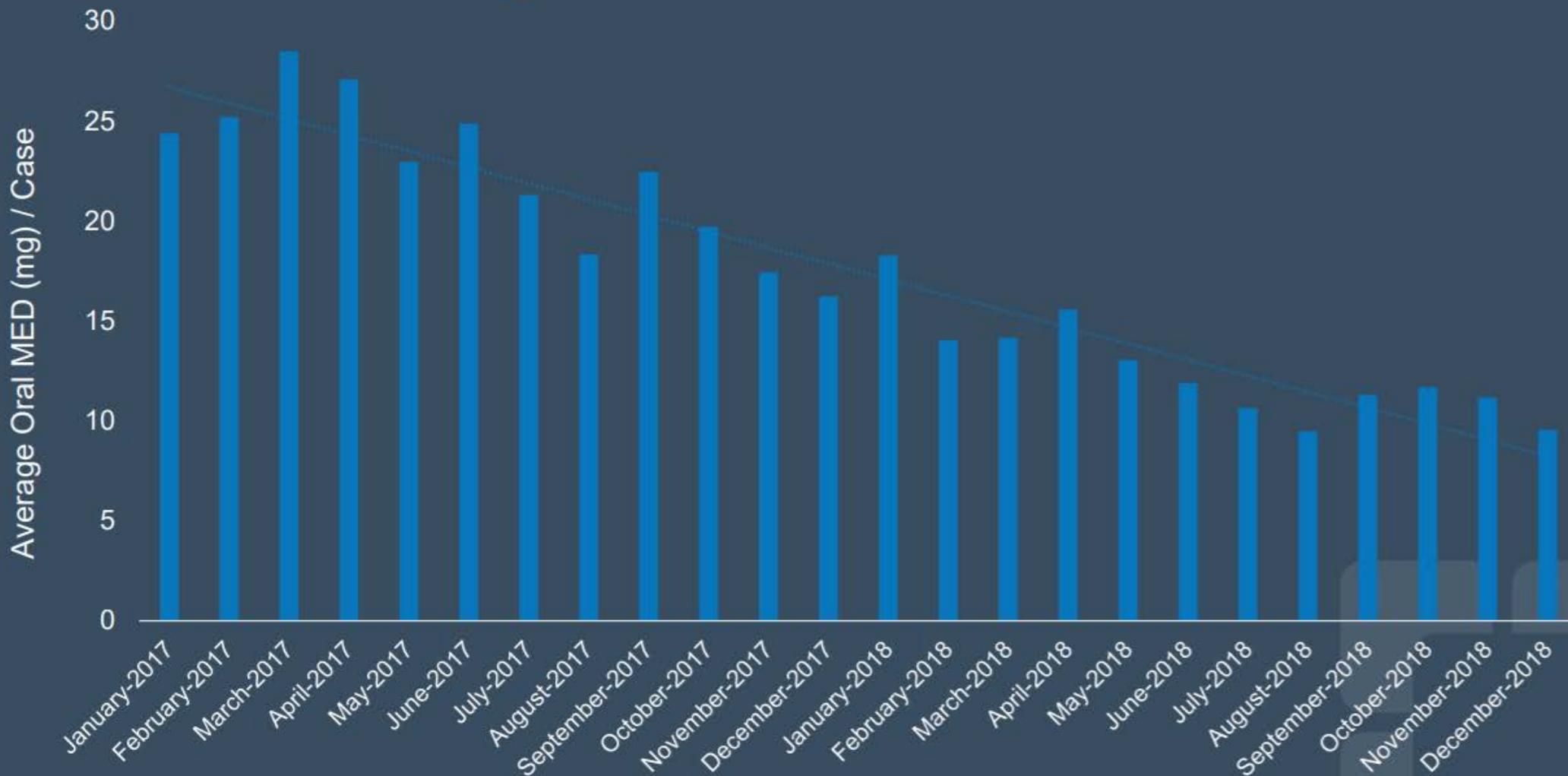


Regional Anesthesia

% Cases in PACU Opioid Free



Average Oral MED / Case in PACU



Opioid Sparing Toolkit

- Preop Meds to Consider
 - Acetaminophen
 - +/- Gabapentin/Pregabalin
 - Celebrex
- Induction Meds to Consider
 - Esmolol 20-40mg (0.3-0.5 mg/kg)
 - Ketamine 20-50mg (0.2-0.5 mg/kg)
 - Precedex 30 mcg (0.25- 1 mcg/kg)
 - Lidocaine 40mg (0.25-0.5 mg/kg)
- Intraop Meds to consider
 - Magnesium 2 gms IV
 - Dexamethasone 10mg (4mg in DM)
 - Esmolol 5-15 mcg/kg/min
 - Ketamine 0.15 mg/kg/hr (max 10mg/hr)
 - Precedex 0.2-0.5mcg/kg/hr
 - Lidocaine 1.25 mg/kg/hr (IBW)
 - Turn off 30-45 min before close to prevent delayed emergence
 - Ketorolac 10 -30mg (Peds: 0.5mg/kg)

Customize to Patient & Procedure



Publicity Education Infrastructure Data

Neer Award 2018: the effect of preoperative education on opioid consumption in patients undergoing arthroscopic rotator cuff repair: a prospective, randomized clinical trial



Usman Ali M. Syed, BS^a, Alexander W. Aleem, MD^b, Charles Wowkanech, BS^a, Danielle Weekes, MD^a, Mitchell Freedman, MD^a, Fotios Tjoumakaris, MD^a, Joseph A. Abboud, MD^a, Luke S. Austin, MD^{a,*}

^a*Department of Orthopedic Surgery, The Rothman Institute at Thomas Jefferson University Hospital, Philadelphia, PA, USA*

^b*Washington University Orthopedics, Washington University, St. Louis, MO, USA*

Background: Opioids are commonly administered for the treatment of acute and chronic pain symptoms. The current health care system is struggling to deal with increasing medication abuse and rising

Thomas Jefferson

- Arthroscopic rotator cuff repair
- Standardized pre/post pain protocol
 - acetaminophen 975mg
 - pregabalin 75mg
 - Interscalene block
 - Prescribed 50 tablets of Oxycodone/Acetaminophen 10mg/325mg, Indomethacin SR

Results

- Study group consumed 19%, 33% and 42% less narcotics (2, 6 weeks and 3 months)
- Being randomized to the education group associated with decrease in consumption of 30.8 tablets at 3 months
- Patients in study group were 2.19 times more likely to discontinue narcotic use between the 6 week and 3 month follow-up

Thomas Jefferson

- Control group:
 - No education
- Study group (Randomized, Patients blinded)
 - Formal education
 - 2 minute video
 - Handout detailing risks of narcotic overuse and abuse

Results

- Risk factors for increased consumption at 3 months
 - Preoperative narcotic use
 - Increased 3 month narcotic use by 50 tablets
 - Increased preop VAS score
 - Higher VAS score at 3 months

Results

- Effect of education was **greater** on patients taking narcotics preoperatively
- 6.8 times more likely than control to stop narcotics at 3 month follow-up visit



“We might prescribe fewer if we knew how many patients take.”

Opioids Survey Dashboard

Data Summary

(Date Last Refreshed: 2/10/2020)

Total # of Surveys Sent	281,278
Total # of Failed Emails	542
% Failed Emails	0.19%
Total # of Initial Survey Responses	54,755
% Initial Survey Response	19.50%
Total # of Bad Survey Responses	2,303
% Bad Initial Survey Response	4.25%
Total # Mismatched Survey Responses*	3,981
% of Mismatched Initial Survey Responses	7.34%

Launch of Opioid Rx App

SS/DH's Opioid Rx App assists providers in prescribing opioids based on patient survey data

Verizon 4:25 PM

Select

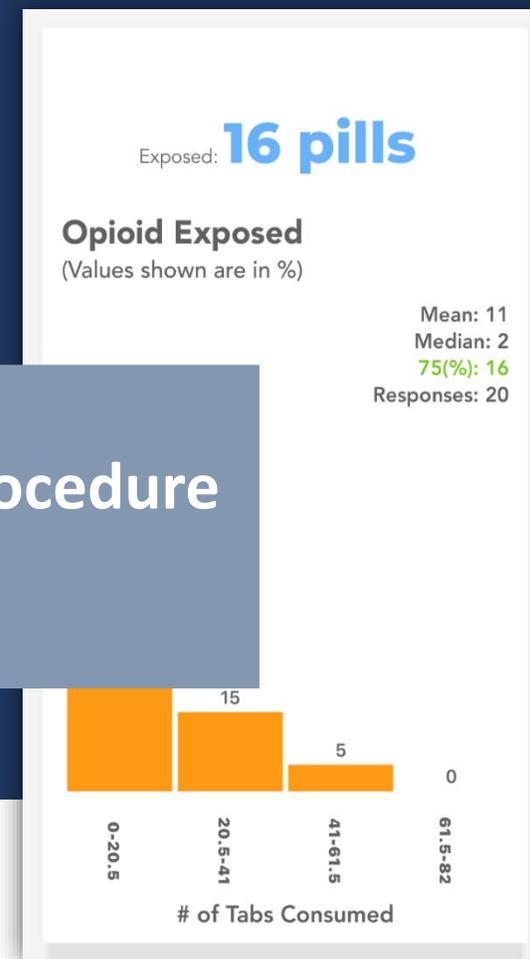
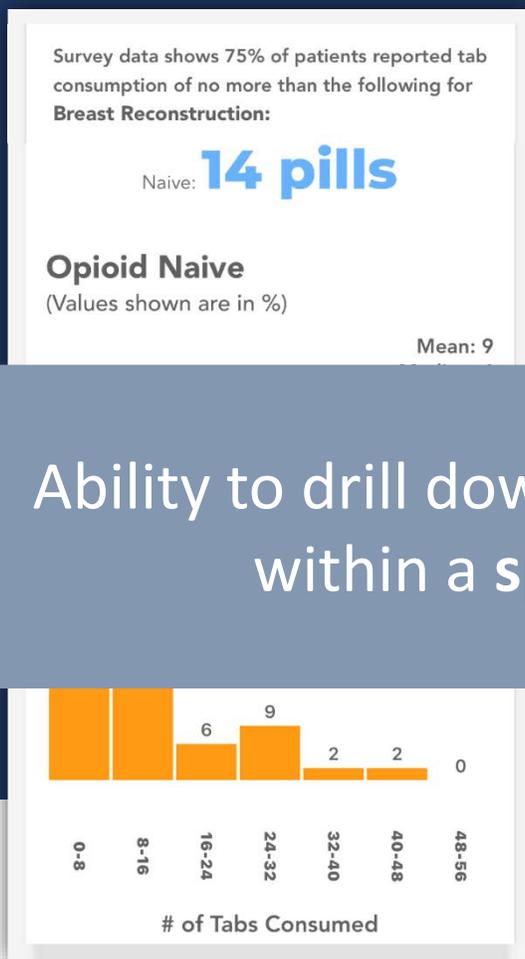
Intermountain®
Healthcare

Specialty
Plastics

Procedure
Breast Reconstruction

Enter

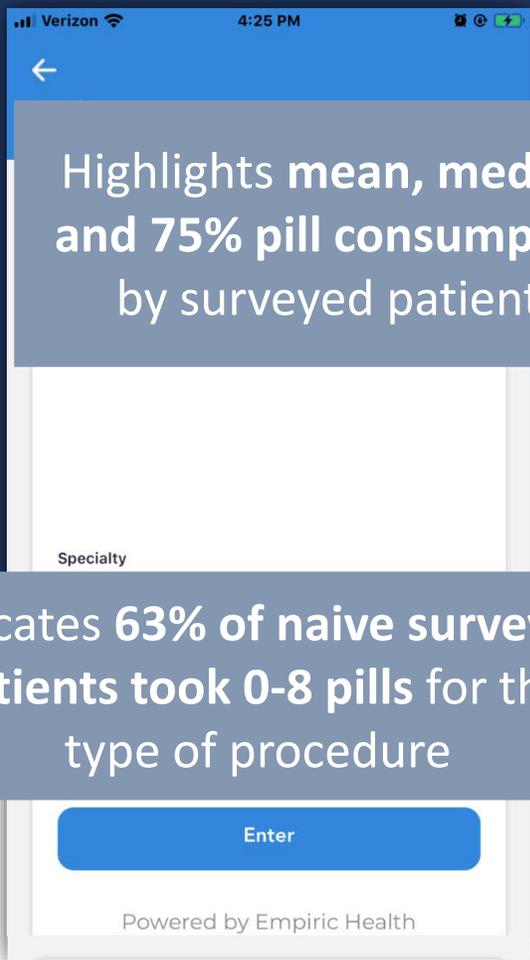
Powered by Empiric Health



Ability to drill down to procedure within a specialty

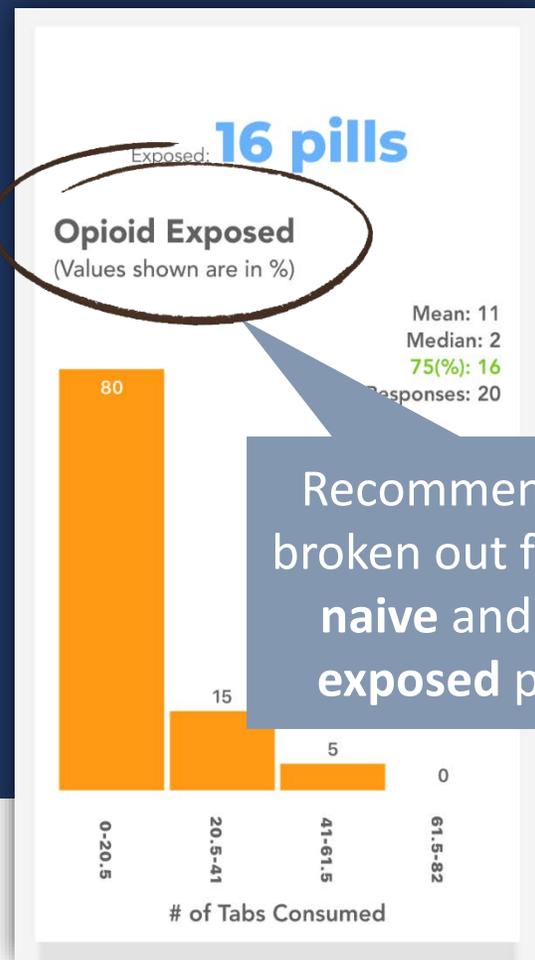
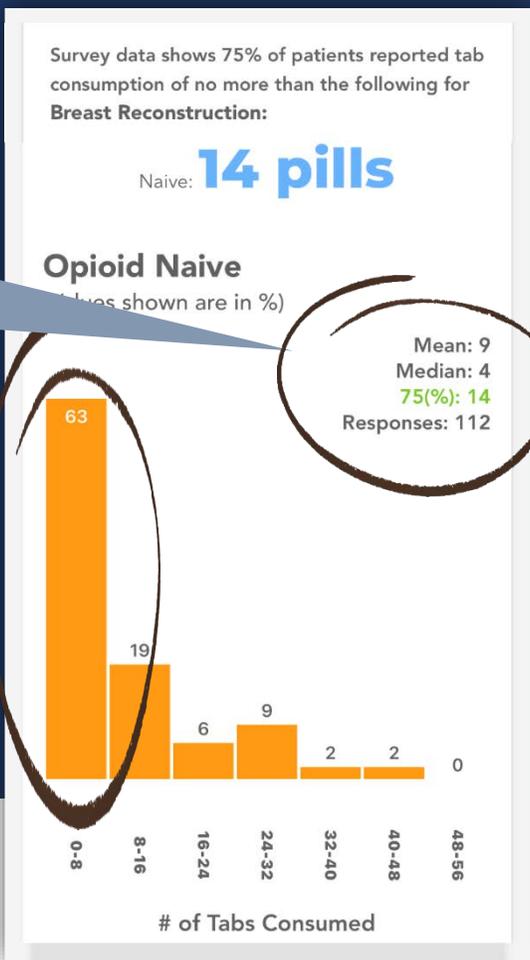
Launch of Opioid Rx App

SS/DH's Opioid Rx App assists providers in prescribing opioids based on patient survey data



Highlights mean, median, and 75% pill consumption by surveyed patients

Indicates 63% of naive surveyed patients took 0-8 pills for this type of procedure



Recommendations broken out for opioid naive and opioid exposed patients

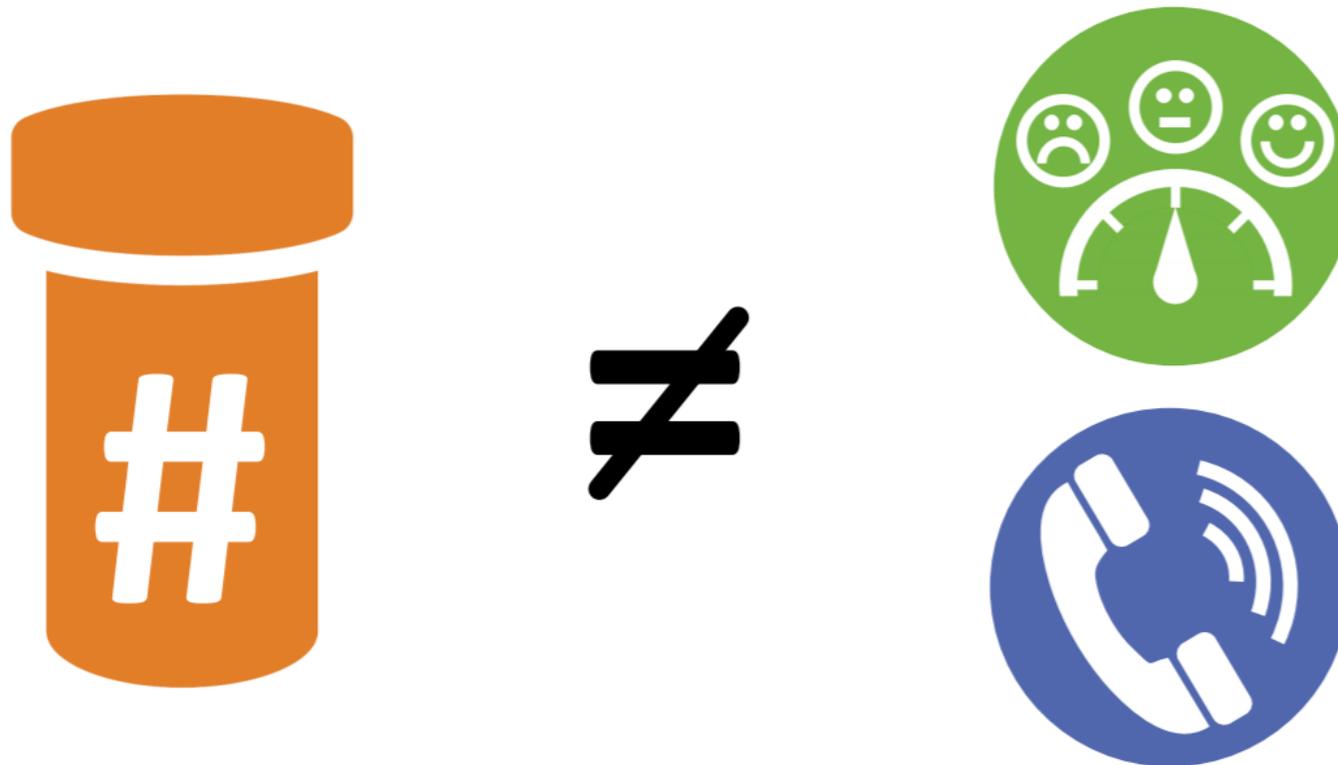
Validated Data from Patient Survey

Patient Response
to Statement
“My Pain was
Controlled”
Total responses to
Date 2.10.2020

Pain Response “My Pain was well controlled”	Total Number Naïve Population (responses to date)	Total Number Exposed Population (responses to date)	Percent of Total Responses (combined)
Strongly Agree	16,715	2,695	49%
Agree	11,885	2844	37%
Neutral	2577	690	8%
Disagree	1,071	384	4%
Strongly Disagree	461	206	2%

- 86% of patients agree that their pain was well controlled in both opioid naïve and opioid exposed populations!
- Only 6% Disagree that their pain was well controlled post-operatively

The amount of opioid prescribed after surgery was not associated with patient satisfaction or refill rate

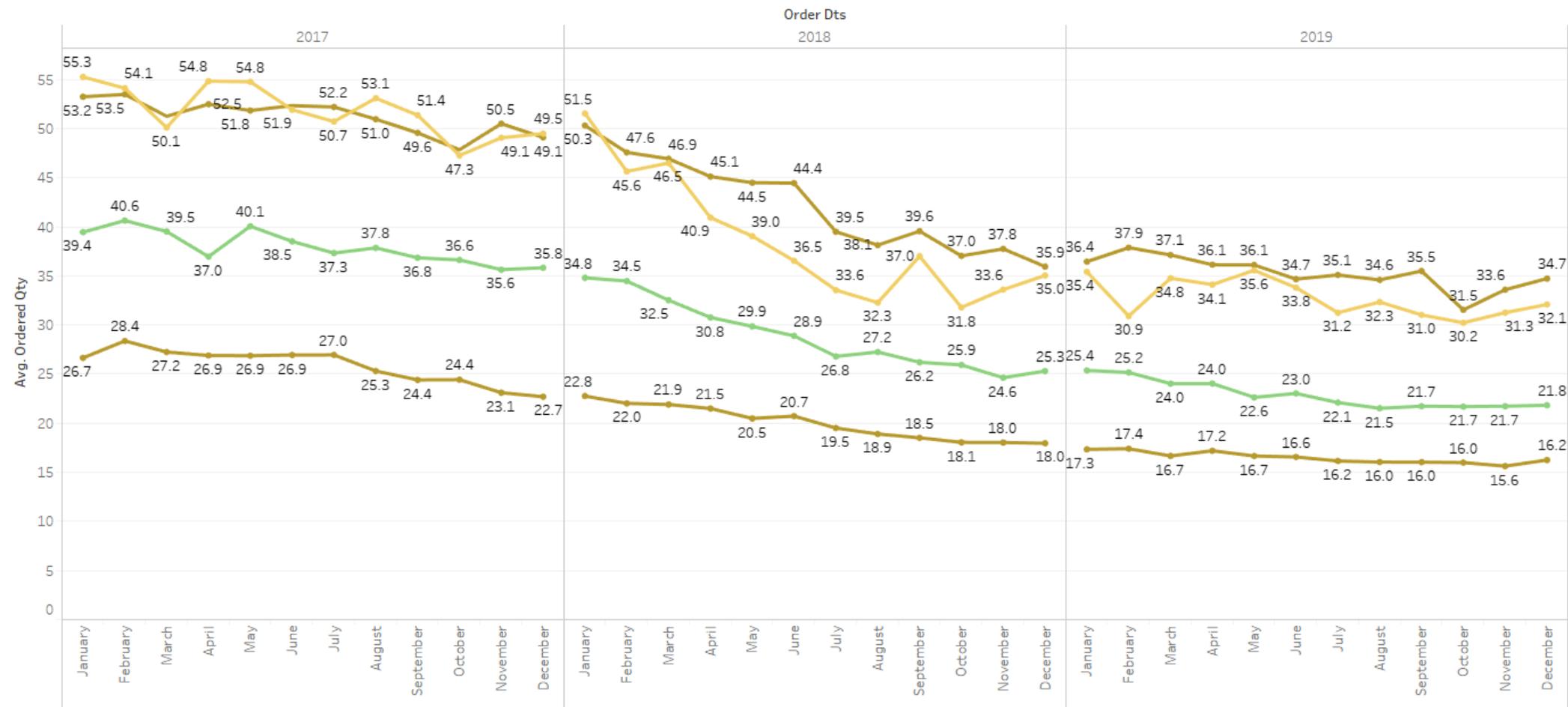


Bateman BT, et al. Obstet Gyn 2017; Howard R, et al. JAMA Surg 2018; Lee JS, et al. JAMA 2017; Sekhri S, et al. Ann Surg 2017



David Marchiori, Esther K. Papies, Olivier Klein, The portion size effect on food intake. An anchoring and adjustment process?, *Appetite* (2014), doi: 10.1016/j.appet.2014.06.018

Prescribing trends with respect to Opioid Strength



Drug Nm (group)

- HYDROcodone-acetaminophen 5mg-325mg tablet
- HYDROcodone-acetaminophen 10mg-325mg tablet
- oxyCODONE 5mg tablet
- oxyCODONE 10mg tablet

Data

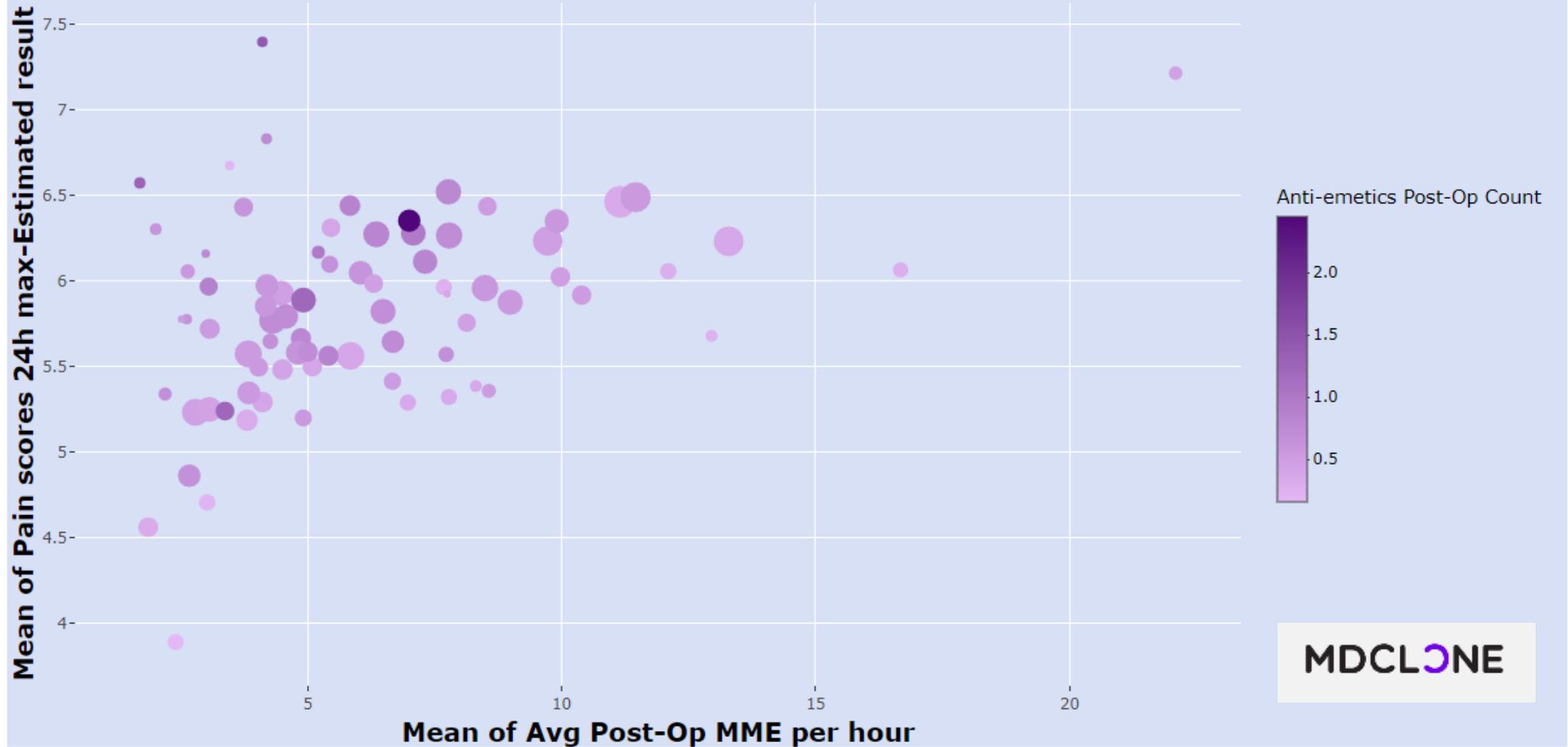
Who is doing it right?

What makes the difference?

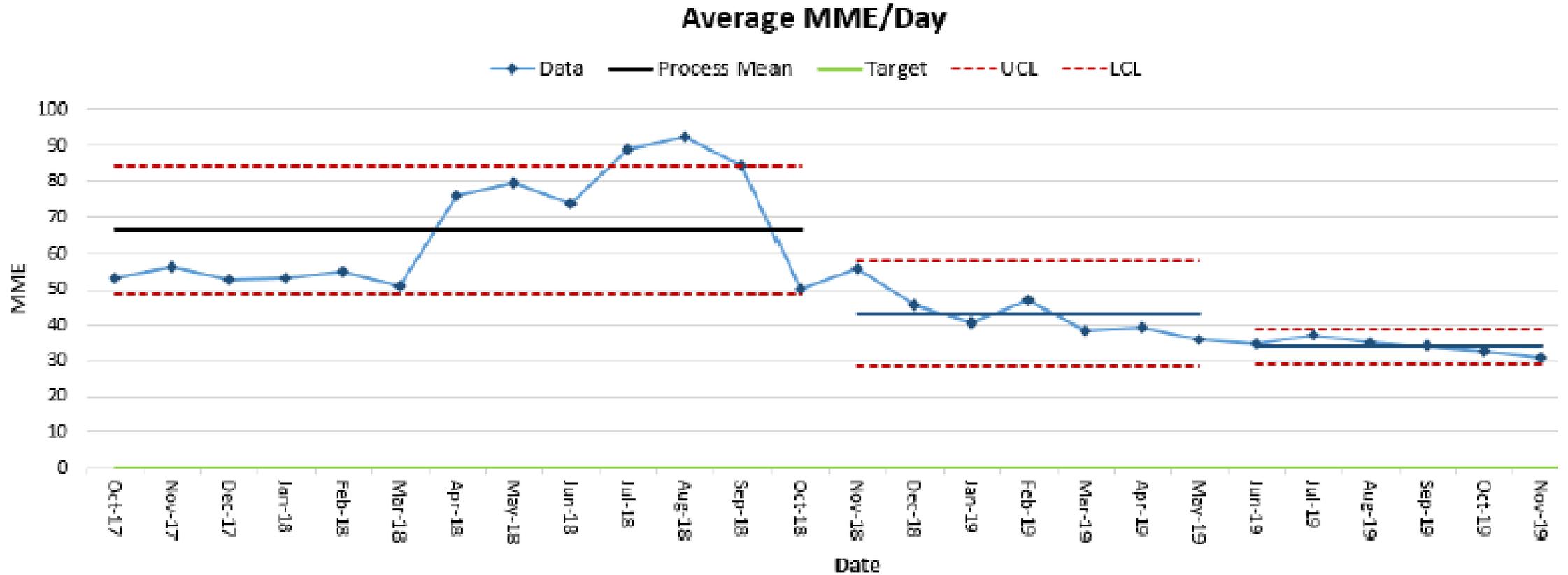
Can we support improvement?

Lap Chole Outcomes

WS



Average MME/Day



Recommendation

Add anterior nerve block for knee procedures to Exparel® restrictions.

Questions?





University of Idaho
WWAMI Medical Education



ONGOING RESOURCE LIST

RESOURCES FROM TODAY'S SESSION AND PAST SESSIONS CAN BE FOUND IN OUR ONGOING RESOURCE LIST.

<https://iecho.unm.edu/sites/uidaho/download.hns?i=51>