Pediatric Surgery Quality Collaborative

September 8, 2022

Children's Memorial Hermann Hospital

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PSQC Brief Update

Kevin Lally, MD, MS, FACS
PSQC Executive Director
Surgeon-in-Chief, Children's Memorial Hermann Hospital
Houston, TX

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Agenda

- **State of the Collaborative**
- **Current status with the ACS**
- **Project Reviews**
  - **Project 2 –**
    - Derek Wakeman/Tamar Levene
  - **Project 3 –** Shawn Rangel
  - **Projects 4 –**
    - Antibiotics and Complex Appendicitis – Eric Grethel/Monica Lopez
    - Opioid Stewardship – Steve Shew
    - Colorectal SSI – Justin Lee

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PSQC Overview

- 85 Members with signed DUA
- Majority of the CSV Level 1 hospitals
- National in scope by design
- Likely to add 10-15

PSQC Member Hospitals

Sept 2022

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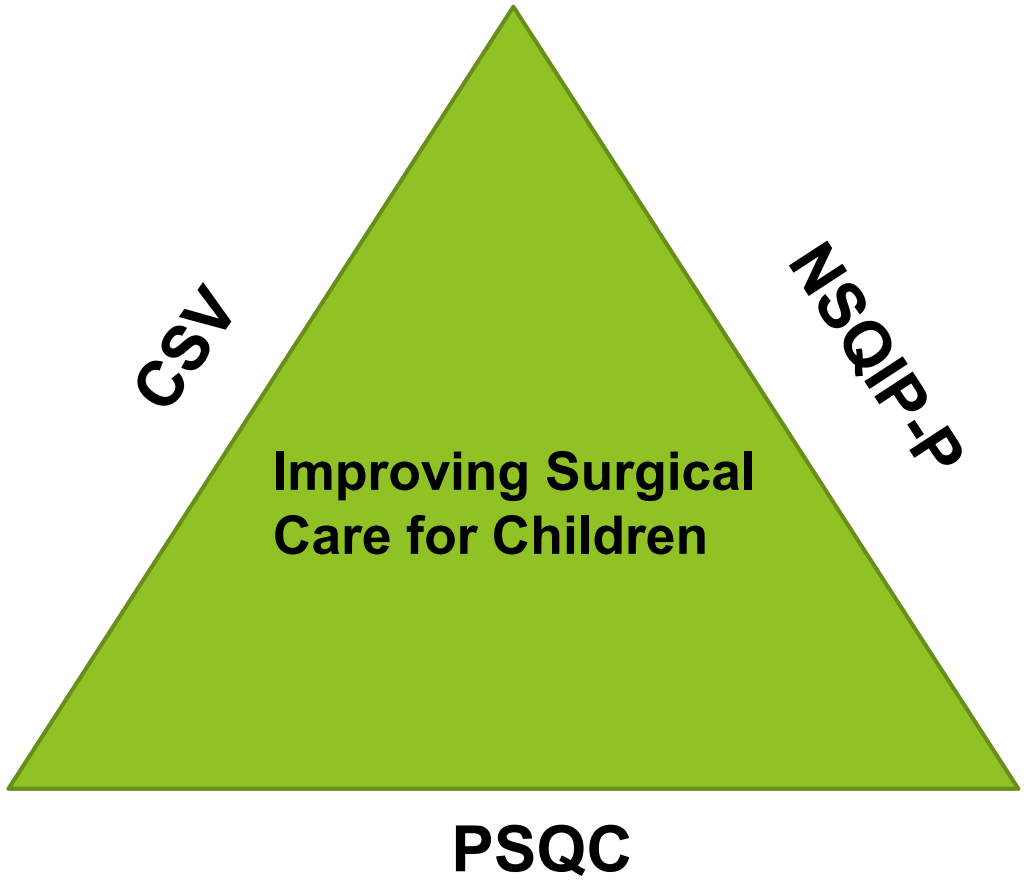
The Triad of Surgical Quality Improvement



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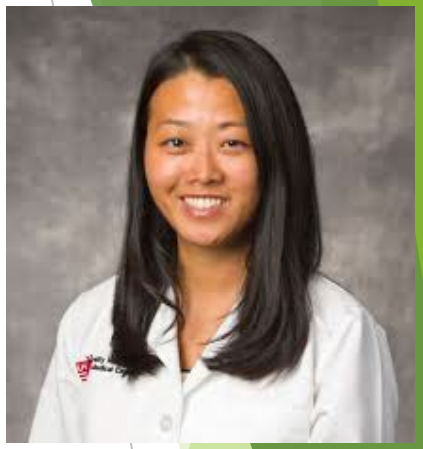
Project Development and Implementation Committee (PDIC)









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Reducing postoperative CT imaging utilization in pediatric complicated appendicitis

Tamar Levene, MD MS

Derek Wakeman, MD

September 8, 2022

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Workgroup Members

Mary Bolhuis, RN	SCR, Children's Wisconsin
John Chandler, MD	Surgeon, PrismaHealth
Cathy Ehster, RN	SCR, Children's Wisconsin
Cindy Gingalewski, MD	Surgeon, Randall Children's
Fabienne Gray, MD	Surgeon, New Orleans Children's
Peter Juviler, MD	PGY3, Golisano Children's
Tamar Levene, MD MS	Co-Lead, Surgeon, Joe DiMaggio Children's
Derek Wakeman, MD	Co-Lead, Surgeon, Golisano Children's

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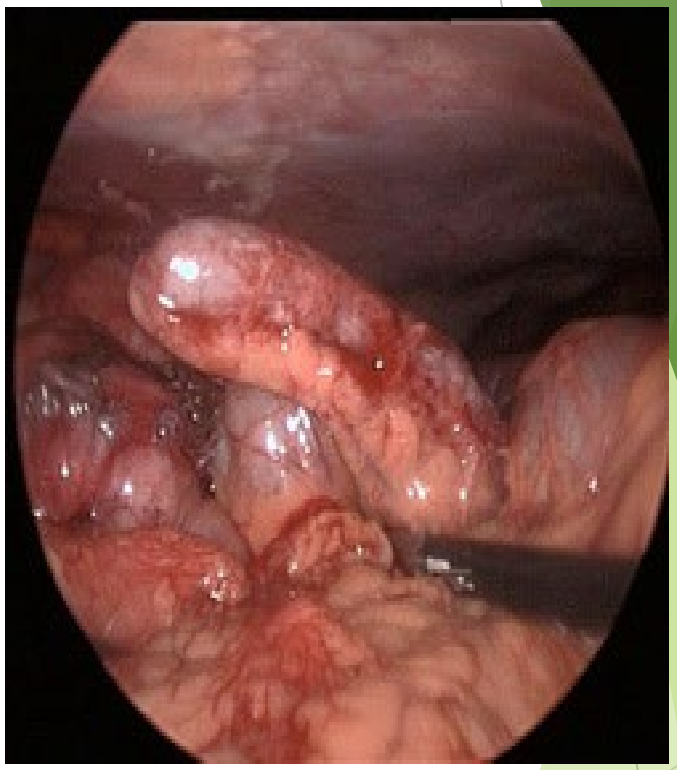
Rationale

- Appendicitis is a common surgical emergency
- Significant practice variability
- Computed tomography imaging frequently used
- Increased risk of radiation-associated malignancies
  - Hematologic malignancy risk highest in 0-15 yo



NEJM 2007;357(22):2277--8
Lancet 2012;380(9840):499–505
JAMA Surgery 2021;156(4):343--51

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Reduction of CT utilization for Pre-op Imaging of Pediatric Appendicitis

Implementation Guide

Aim Statement

By June 30, 2022, the aggregate CT utilization rate for the Collaborative will be reduced from 24.5% to 15%.

Balancing Measure

The negative appendectomy rate for the Collaborative will remain at or below 1.75%.

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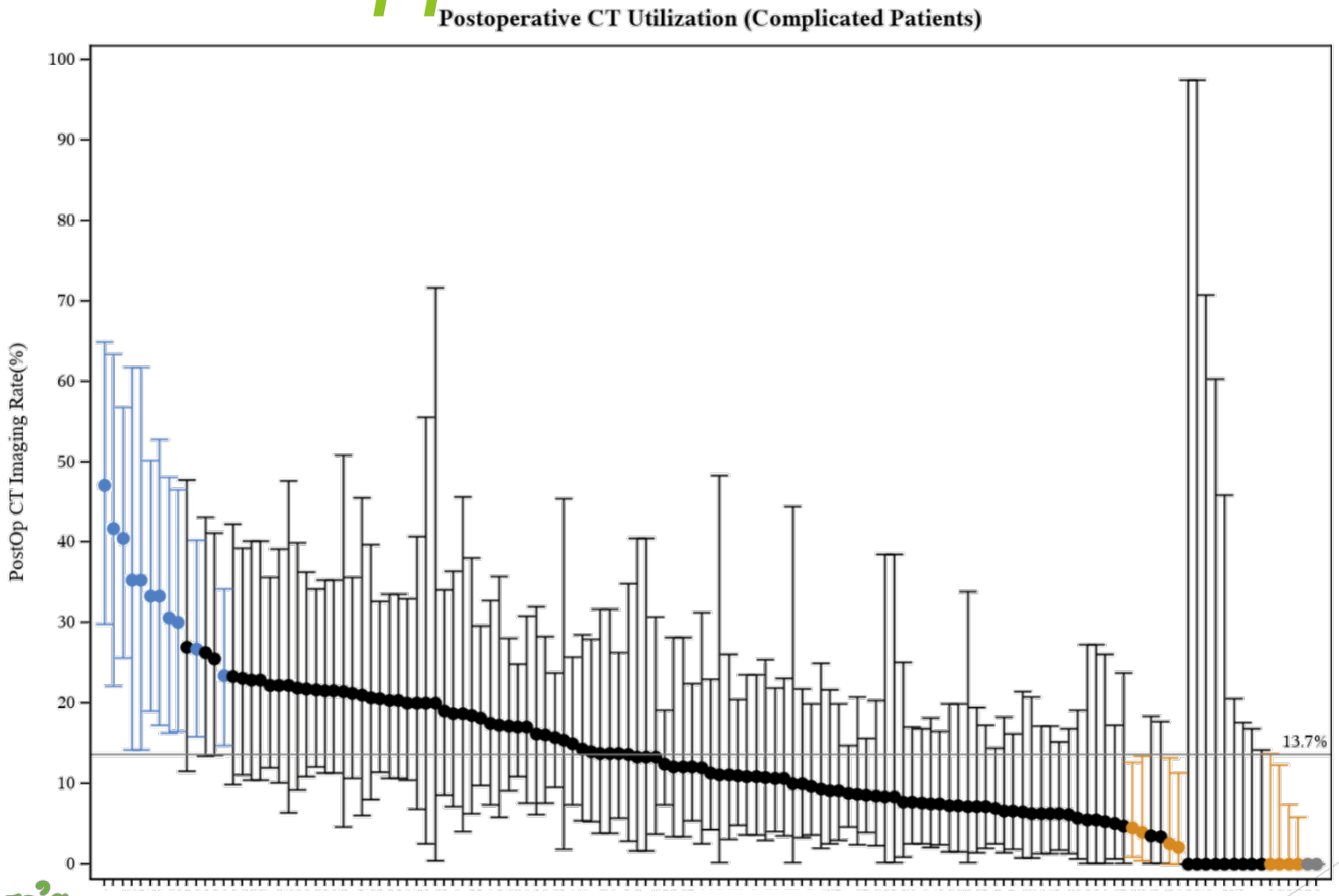
Variation in CT Utilization
Complicated Appendicitis



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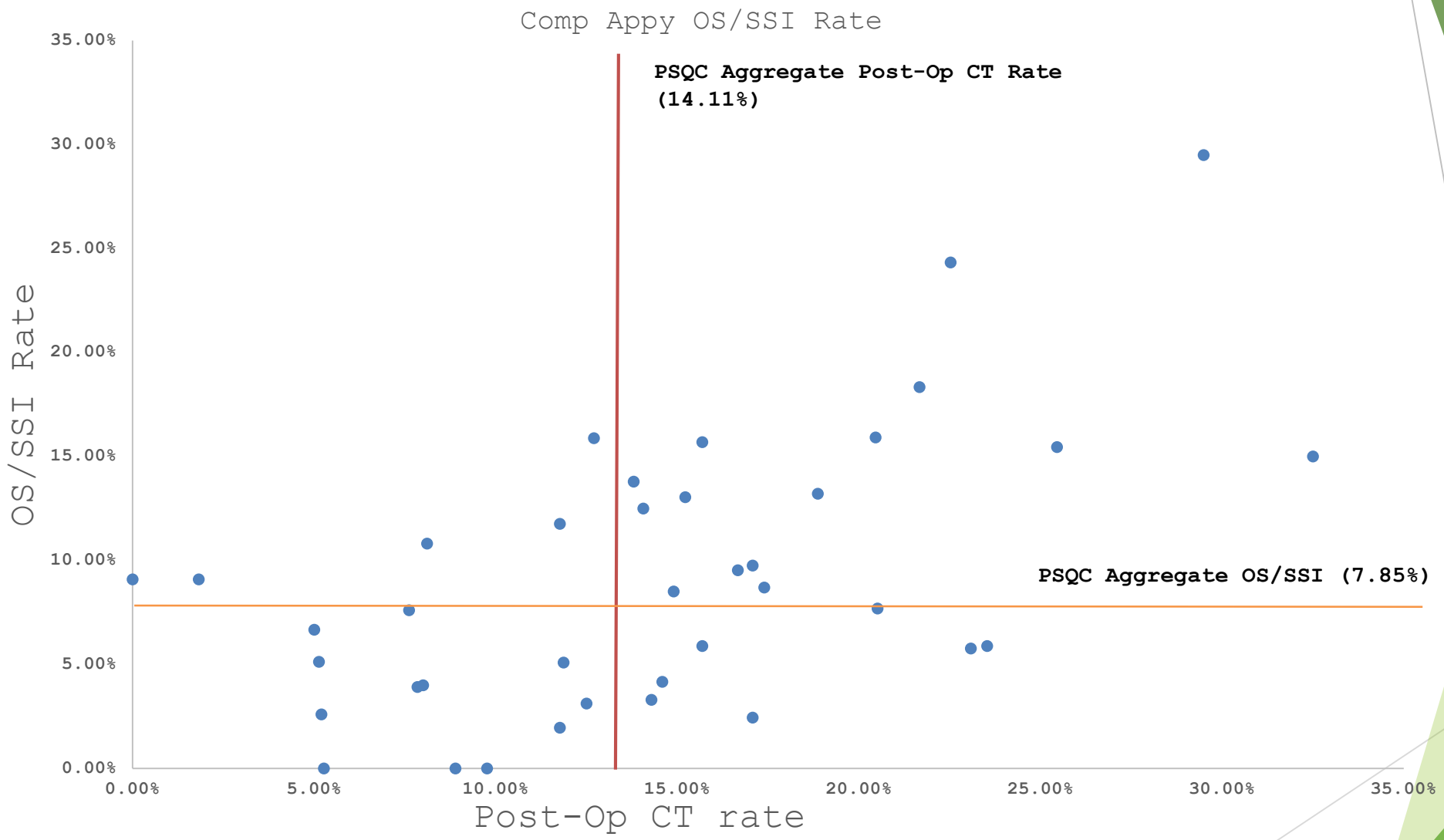
Postoperative Imaging Utilization

- Clinical Pathways
- Infection Rates
- Institutional US availability/quality
- Institutional MRI availability/quality
- Postop imaging selection criteria

OS/SSI Rate vs. Postop CT Rate



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Project 2 Methodology

- Qualitative methods
  - Semi-structured interviews
  - Low and high outlier performance vs. all centers
  - Shared learning
    - Best practices, culture change, sustainability of implementation strategies
- Postop imaging utilization scorecards
- Implementation of specific QI initiatives

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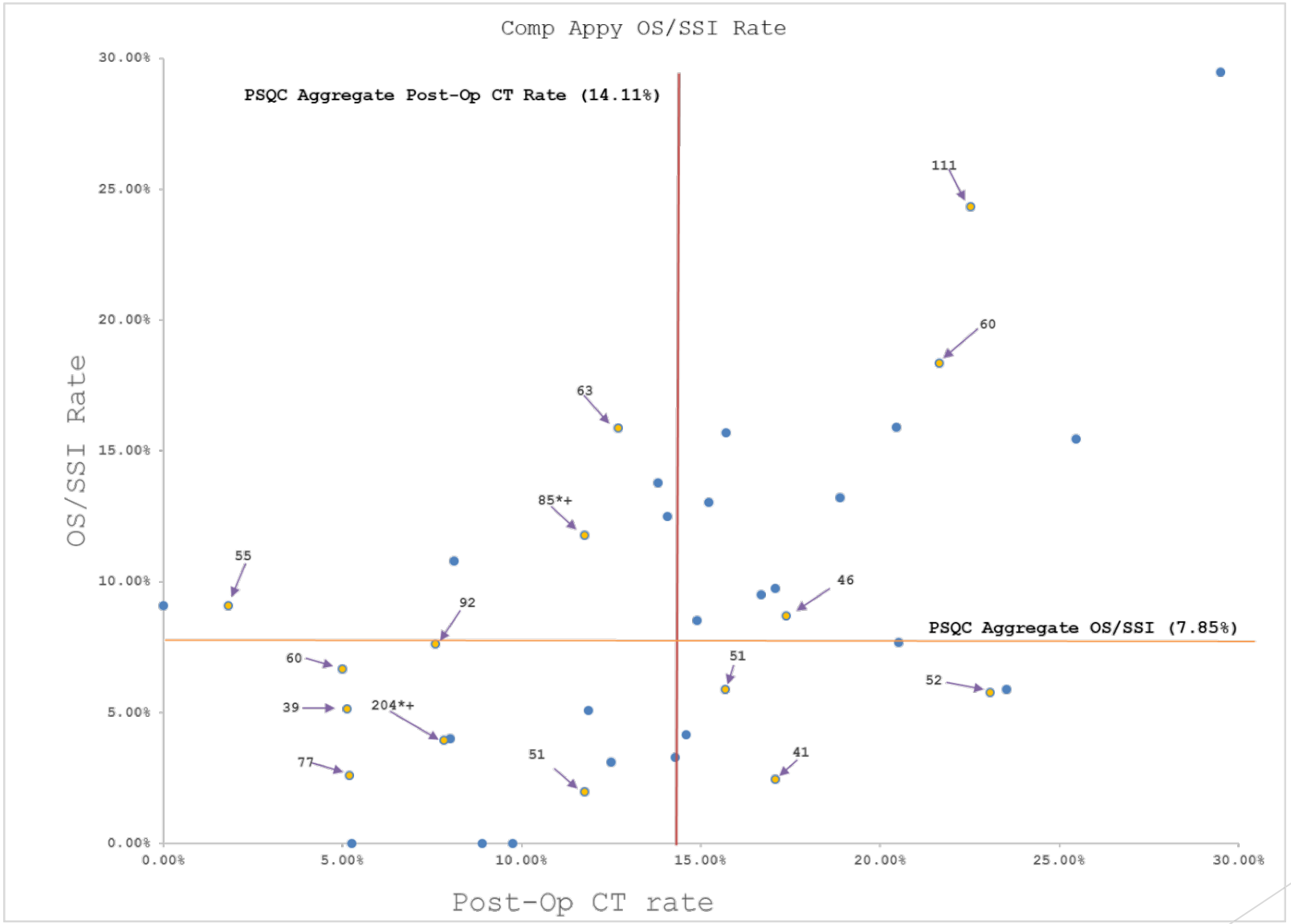

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Project Timeline

Tmeline for 2nd PSQC Project Targeted Appy Post-Op CT Utilization														
		CY2022												
Task	15-Jun	30-Jun	15-Jul	30-Jul	15-Aug	30-Aug	15-Sep	30-Sep	15-Oct	30-Oct	15-Nov	30-Nov	15-Dec	30-Dec
Draft Interview Guide	→													
Review interview guide/finalize		→												
Request permission to unmask sites for interviews				→	→									
Identify interviewees at each site			→	→	→									
Set-up interviews						→	→							
PSQC SAR released				✶										
Conduct interviews									→	→	→	→		
Analyze transcripts									→	→	→	→	→	→
Identify best practices										→	→	→	→	→

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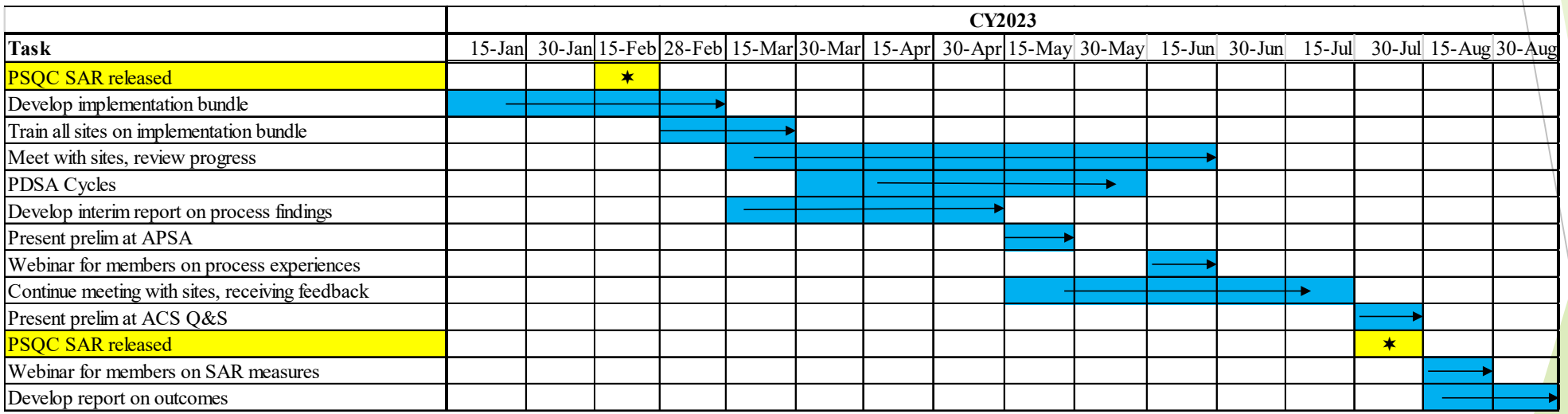
Project Timeline-2023



	CY2023															
Task	15-Jan	30-Jan	15-Feb	28-Feb	15-Mar	30-Mar	15-Apr	30-Apr	15-May	30-May	15-Jun	30-Jun	15-Jul	30-Jul	15-Aug	30-Aug
PSQC SAR released			✶													
Develop implementation bundle																
Train all sites on implementation bundle																
Meet with sites, review progress																
PDSA Cycles																
Develop interim report on process findings																
Present prelim at APSA																
Webinar for members on process experiences																
Continue meeting with sites, receiving feedback																
Present prelim at ACS Q&S																
PSQC SAR released														✶		
Webinar for members on SAR measures																
Develop report on outcomes																

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Next Steps

- Conduct interviews
- Qualitative analysis
- Identify best practices
- Develop implementation guide
- Share with collaborative

ACS-NSQIP PSQC Project #3:

Reducing Unnecessary Postoperative Antimicrobial Prophylaxis in Children Undergoing Elective GI Surgery

Shawn J. Rangel, MD, MSCE

Senior Surgical Advisor for Quality & Safety | Boston Children's Hospital
Director & Principal Investigator | NSQIP-Pediatric Antimicrobial Stewardship Pilot Project
shawn.rangel@childrens.harvard.edu
@ShawnRangelMD

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ACS-NSQIP PSQC Project #3:

Reducing Unnecessary Postoperative Antimicrobial Prophylaxis in Children Undergoing Elective GI Surgery

Overview:

- Background & Justification – *Why antibiotic stewardship?*
- NSQIP-P SAP Pilot Data – *Where should we focus our efforts?*
- PSQC Collaborative Structure – *How will we get better together?*
- Timeline and next steps – *When does this all get underway?*

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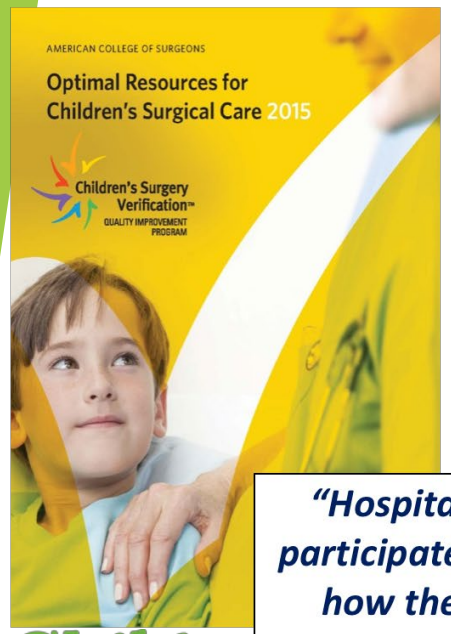
I Support

The American College of Surgeons (ACS) Children's Surgery Verification Program



Children's Surgery Verification
QUALITY IMPROVEMENT PROGRAM

A QUALITY PROGRAM of the AMERICAN COLLEGE OF SURGEONS

"Hospitals seeking level 1 and 2 status must participate in NSQIP-Pediatric and demonstrate how their NSQIP data was used for driving process improvement…"

- *Morbidity & mortality measures (2007)*
- *Procedure-targeted outcomes and resource utilization measures (2016)*
- *Time-to-OR process measures for emergent surgical conditions (2018)*
- ***Compliance measures for appropriate use of antimicrobial prophylaxis (2021)***

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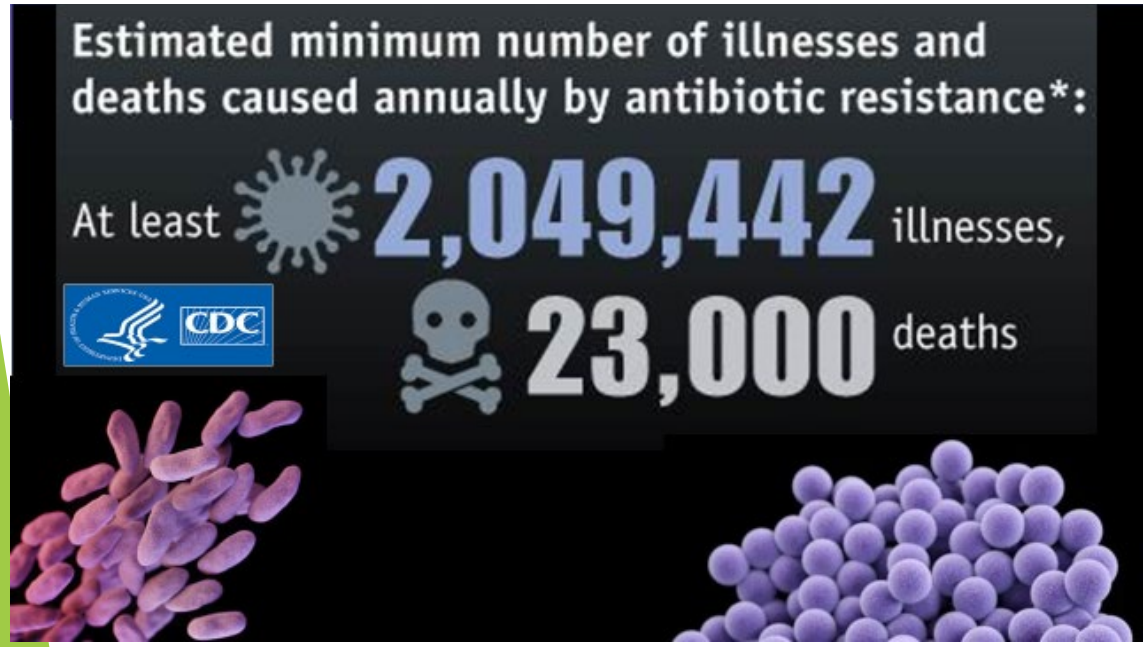
Estimated minimum number of illnesses and deaths caused annually by antibiotic resistance*:

At least **2,049,442** illnesses,

23,000 deaths

Goals & Vision of the NSQIP-Pediatric Surgical Antimicrobial Prophylaxis Pilot Project (Conceptualized March, 2018….)



- Provide hospitals with benchmarking data to prioritize efforts around stewardship *and* infection prevention
- Establish a prioritization framework for procedures where evidence-based guidelines are needed most
- Develop guidelines for SAP utilization based on the best available evidence in children
- **Provide a platform for the sharing of ideas and successful projects to facilitate and promote antimicrobial stewardship**

Prioritization Framework: (Mis)utilization drivers of antimicrobial resistance

American Society of Health-System Pharmacists®
TOGETHER WE MAKE A GREAT TEAM

SIS Surgical Infection Society
Dedicated to the Understanding, Prevention, & Management of Surgical Infections

IDSA Infectious Diseases Society of America

DEPARTMENT OF HEALTH & HUMAN SERVICES · USA
CDC

What areas of prophylaxis misutilization are considered the major drivers of antimicrobial resistance and adverse events?

#1: Prolonged duration (postop utilization)

#2: Use of overly broad-spectrum agents

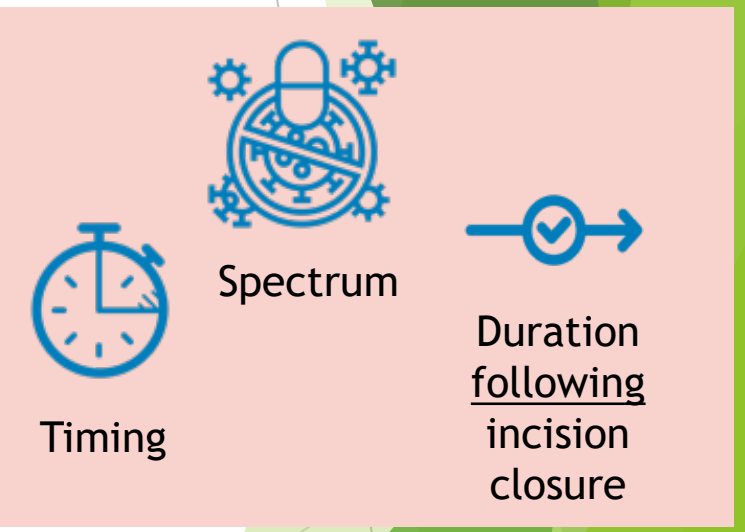
#3: Use of unindicated prophylaxis (single dose)

NSQIP-P SAP Pilot Data Overview

Prophylaxis utilization data collected at 92 hospitals by from 6/2018-6/2020 using standardized chart review process

- **Inclusion criteria:** 417 non-emergent procedures representing all 6 NSQIP-P surgical specialties (83,234 patients)
- **Exclusion criteria:** pre-existing infection, preoperative antibiotic treatment, impaired immune function, allergies to antibiotics
- **Data collected:** number and type of prophylactic agents, timing relative to incision, prophylaxis duration
- **Prophylaxis misutilization rates:** calculated for appropriate indication, spectrum, timing & duration based on contemporary consensus guidelines and adjusted for case-mix

Prophylaxis data



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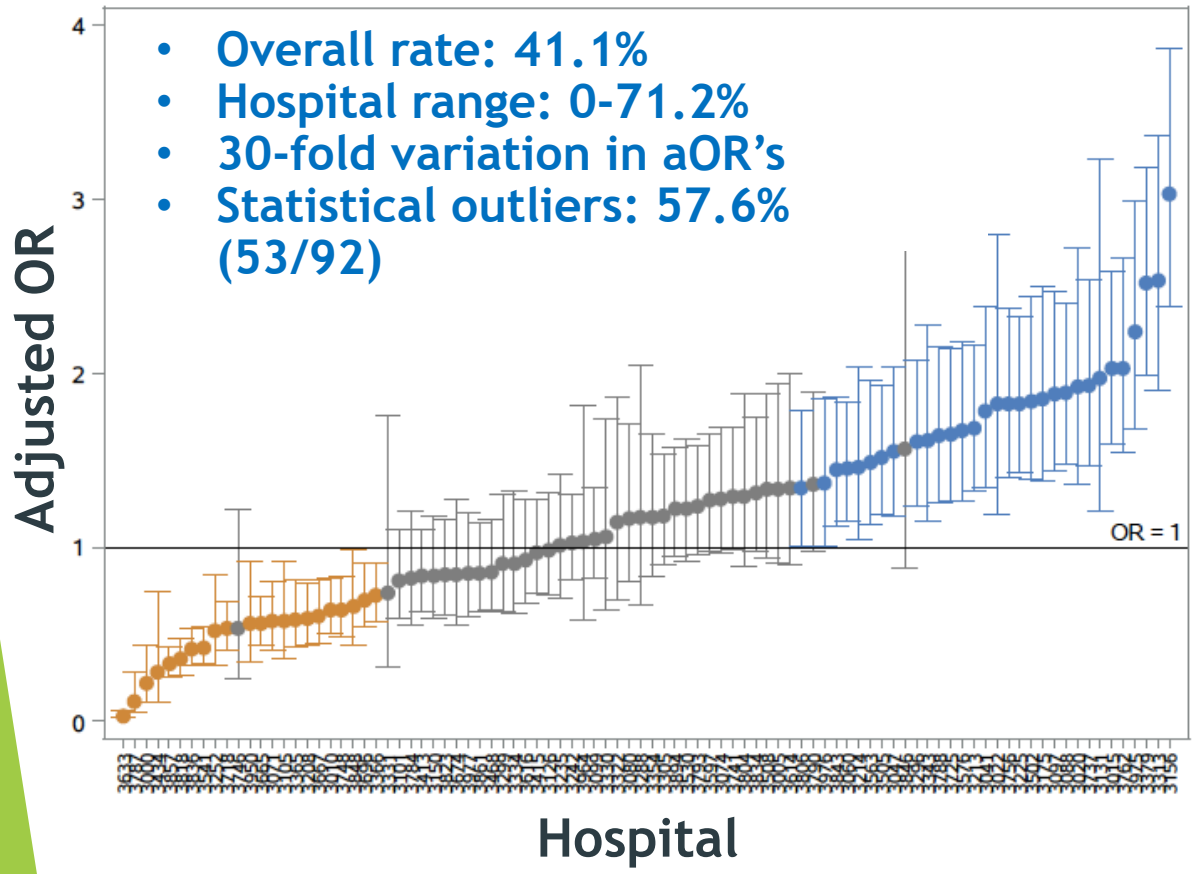
Variation in Postop Prophylaxis Utilization

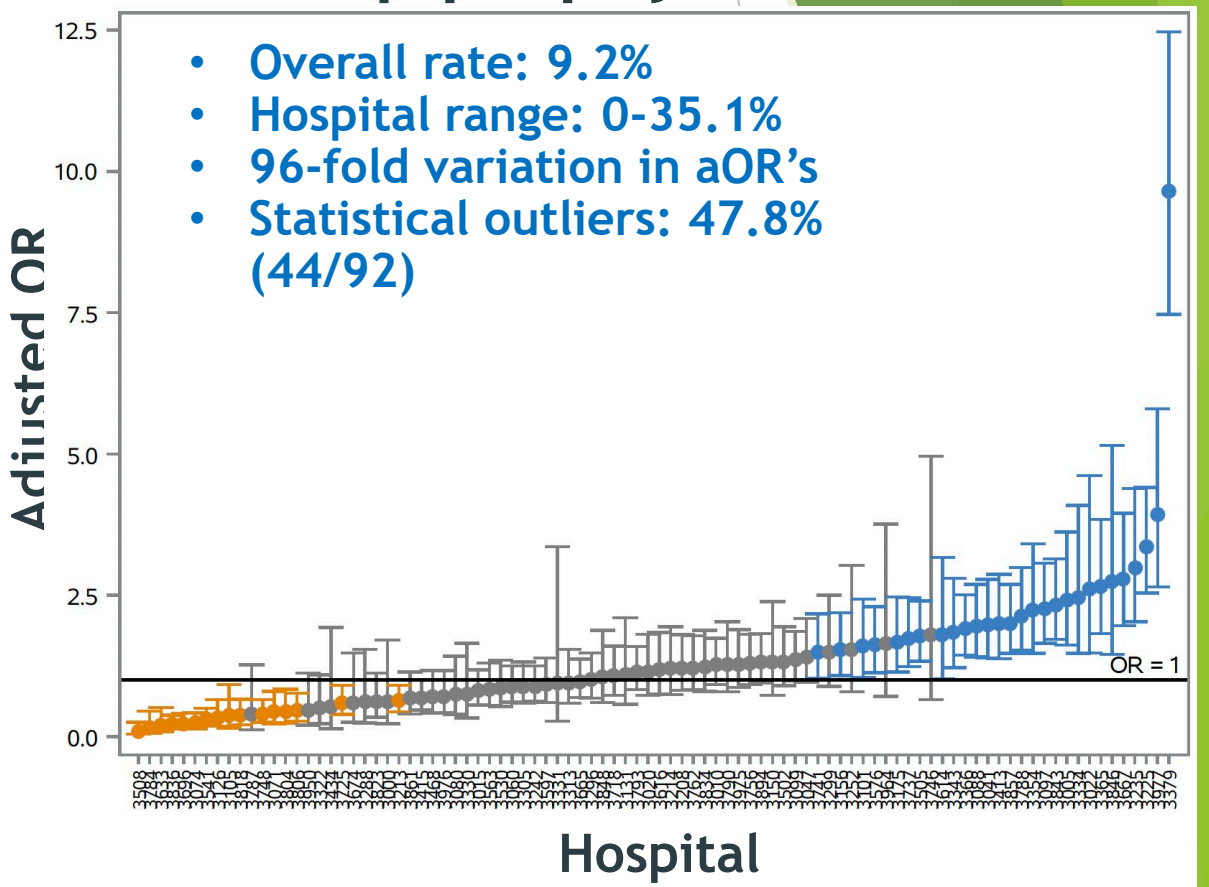
Any postop prophylaxis

- Overall rate: 41.1%
- Hospital range: 0-71.2%
- 30-fold variation in aOR's
- Statistical outliers: 57.6% (53/92)



Postop prophylaxis >24 hrs

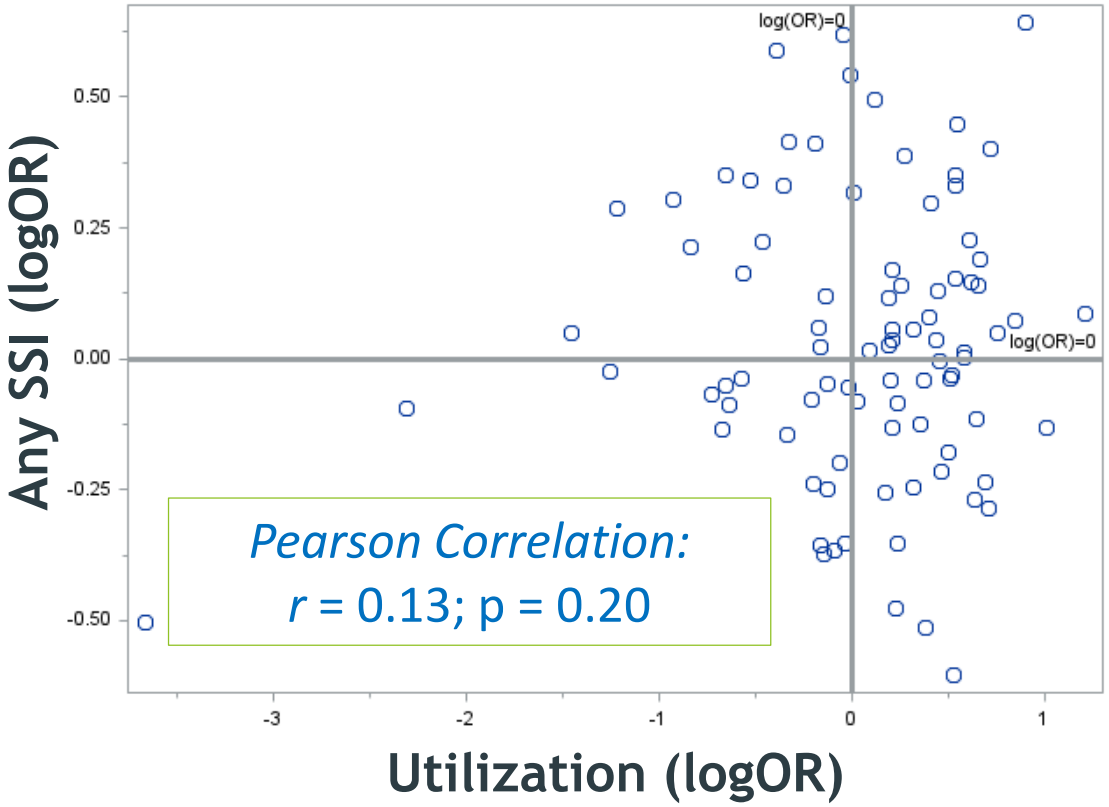
- Overall rate: 9.2%
- Hospital range: 0-35.1%
- 96-fold variation in aOR's
- Statistical outliers: 47.8% (44/92)



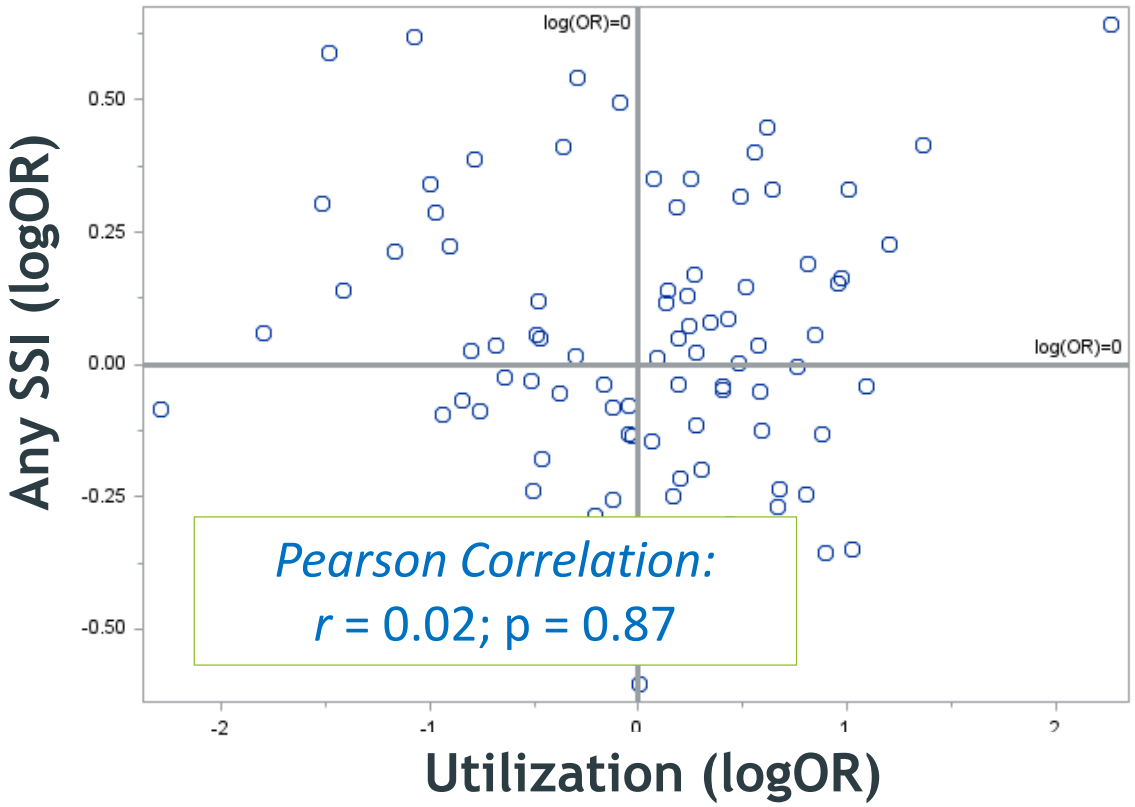
He et al., JAMA Surg, In press

Correlation between Postoperative Prophylaxis Utilization and SSI Rates

Any postop prophylaxis



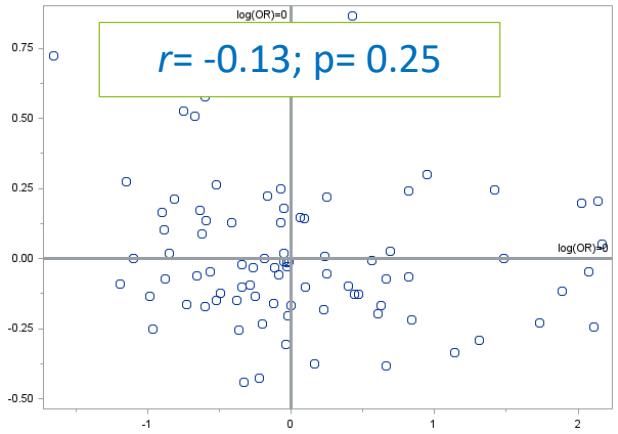
Postop prophylaxis >24 hrs



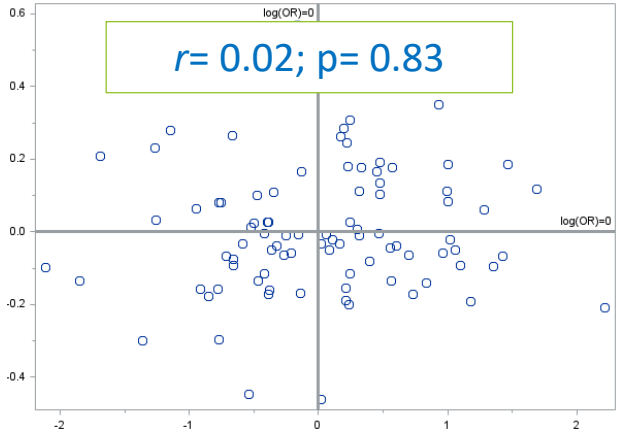
He et al., JAMA Surg, In press

Hospital-level Correlation between Postoperative Prophylaxis Utilization and SSI Rates

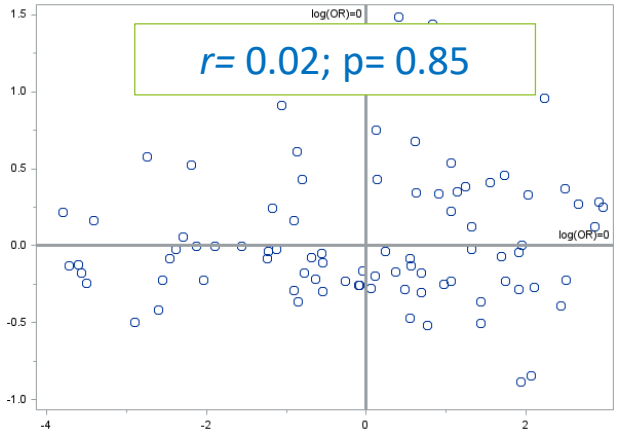
ORL



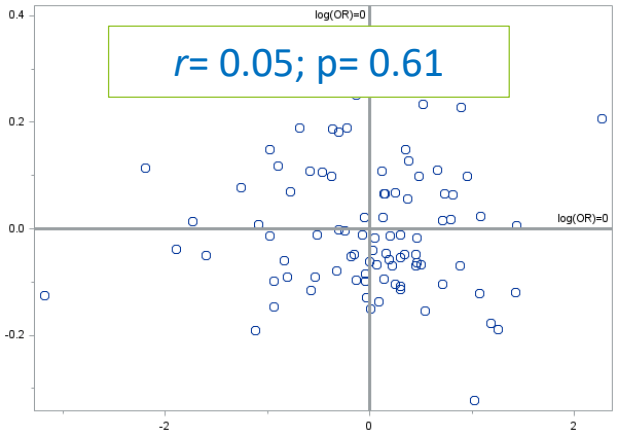
General Surgery



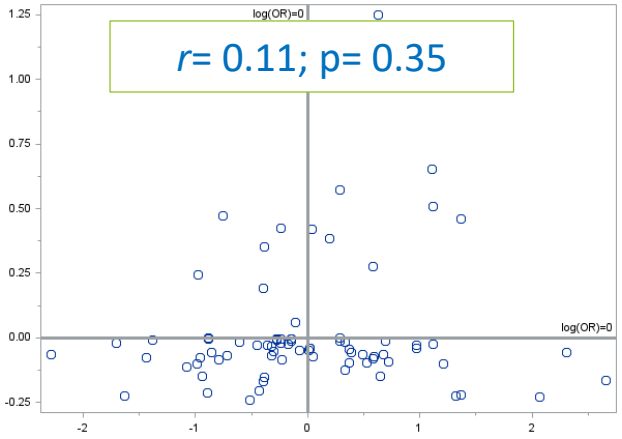
Neurosurgery



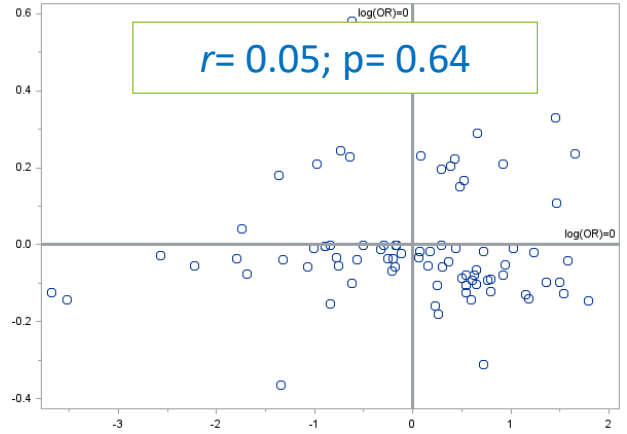
Orthopedic Surgery



Plastic Surgery



Urology



Postoperative Prophylaxis Utilization Associated with GI Procedures in General Surgery

			Any postoperative use		Postoperative use >24 hr	
		N	%	N	%	N
Gastrointestinal procedures						
	COLORECTAL-PULLTHROUGH (HIRSCHSPRUNGS DISEASE)	448	69.64	312	33.04	148
	COLORECTAL-ANORECTAL MALFORMATION	808	64.48	521	36.26	293
	COLORECTAL-PULLTHROUGH WITH POUCH	304	61.84	188	26.64	81
	ESOPHAGUS NON-REFLUX	387	39.02	151	13.95	54
	SMALL BOWEL	1318	36.80	485	15.71	207
	COLORECTAL-COLOSTOMY	913	36.69	335	12.27	112
	COLORECTAL-OTHER	1121	31.85	357	11.69	131
	GASTRIC-OTHER	276	24.64	68	8.33	23
	GASTROESOPHAGEAL REFLUX	1698	15.84	269	4.30	73
	GASTROSTOMY	7679	9.87	758	0.25	19
	GASTROSTOMY CLOSURE	2589	4.40	114	0.89	23
	CHOLECYSTECTOMY	4767	4.34	207	0.80	38
	PYLOROMYOTOMY	5249	2.51	132	0.48	25

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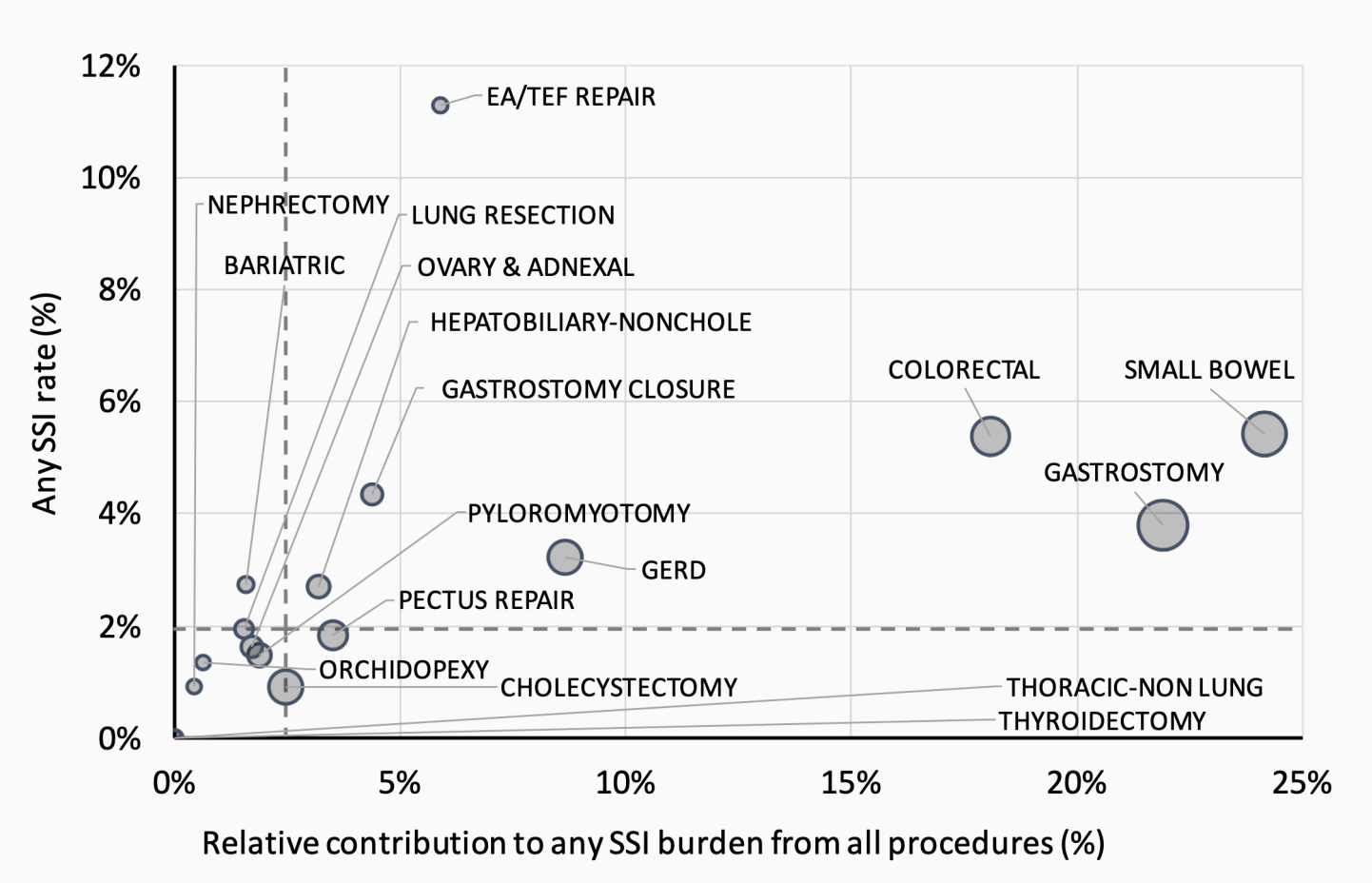
SSI Rates Associated with General Pediatric Surgical Procedures



He et al., Ann Surg, In press

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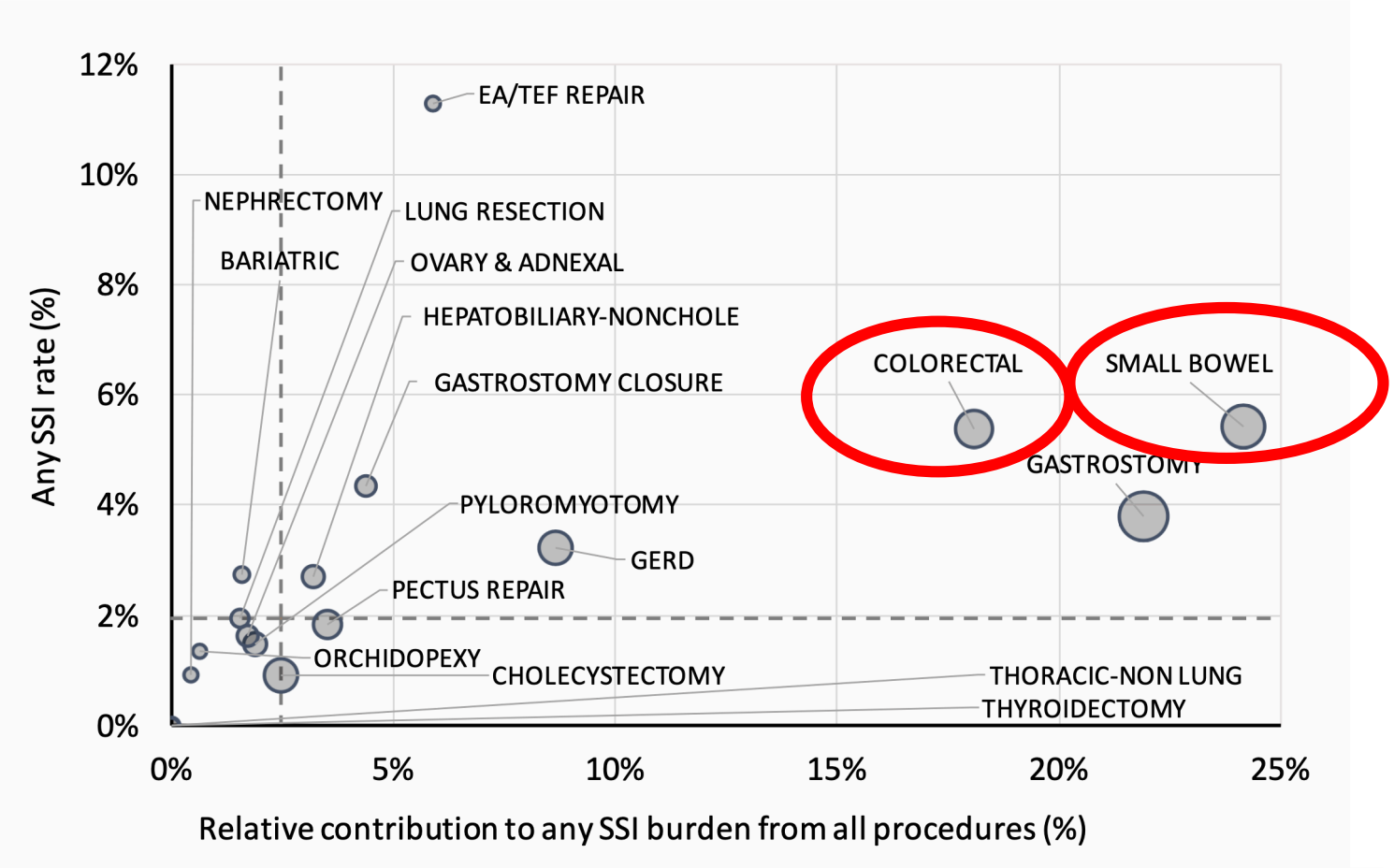
SSI Rates Associated with General Pediatric Surgical Procedures



He et al., Ann Surg, In press

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Association between Postoperative Prophylaxis Utilization and SSI Rates (Very preliminary analysis of pilot data)

	Postoperative Antibiotics (+)		Postoperative Antibiotics (-)					
	SSI %	(N SSI/Total)	SSI %	(SSI N/Total)	aOR*	95%CI LOW	95%CI HIGH	p-value
Procedure group / wound class								
Clean contaminated - GI foregut	4.60	84/1828	4.04	396/9806	0.951	0.728	1.243	0.7134
Clean contaminated - GI colorectal	5.02	86/1713	4.25	80/1881	1.186	0.851	1.651	0.3138

*Adjustment made using covariates associated with SSI risk by NSQIP-P historical modeling data

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Am Surg. 2013 Dec;79(12):1269-72.

Surgeons do not listen: evaluation of compliance with antimicrobial stewardship program recommendations.

Duane TM[1], Zuo JX, Wolfe LG, Bearman G, Edmond MB, Lee K, Cooksey L, Stevens MP.

Why are us surgeons so poorly compliant?

- Believe their practice reflects the “norm” among peers
- Variable knowledge of existing/published guidelines
- Underestimation of potential harm; over-estimation of benefit
- Variable confidence in existing guidelines derived from adult data

PSQC SAP Collaborative Framework

- Establish SAP stewardship improvement teams
  - *Include surgery, anesthesia, OR nursing, antimicrobial stewardship program, OR pharmacy*
- Identify opportunities for improved stewardship from your site report
  - *Which GI procedures (and attendings!) offer the lowest hanging fruit?*
- Identification of high performers from PSQC collaborative report
  - *Qualitative assessment – what makes them better and what can we learn from them?*
- Development/sharing of strategies for culture & practice change
  - *Dissemination of evidence-based guidelines for postoperative utilization*
  - *Development of practice change Toolkits (American Pediatric Surgical Association)*
  - *Leverage "lessons learned" from SHARPS/NSQIP-P postop SAP de-implementaton trial (R01)*

SAP Pilot Survey: *"Which of the following stewardship principles for SAP are targeted by the efforts at your hospital?"*		
	Responses	
Improving timely administration (e.g. within 1 hour of incision)	60.00%	57
Avoiding the use of unnecessarily broad spectrum agents	56.84%	54
Avoiding use in cases where it is not indicated	54.74%	52
Avoiding prolonged utilization following incision closure	48.42%	46
I am not sure.	25.26%	24
N/A, we have no current strategies.	4.21%	4

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SAP Pilot Survey: *"Are any of the following used at your hospital to monitor or promote stewardship around SAP?"*

	Responses	
Standardized guidelines for SAP based on procedure.	53.76%	50
Standardized preoperative orders/ordersets for SAP.	49.46%	46
Standardized postoperative orders/ordersets for SAP.	43.01%	40
SAP discussion during perioperative surgical checklist/briefing	40.86%	38
SAP utilization audits fed back to surgeons/surgical departments.	33.33%	31
SAP guideline audits fed back to surgeons/surgical departments.	32.26%	30
SAP-focused newsletters, emails, or other information	25.81%	24
Targeted education (verbal or written) for rotating trainees	25.81%	24

Timeline and next steps (*very* tentative…)

- New NSQIP-P SAP site reports to be released this Fall
- NSQIP-Pediatric Webinar to review comparative data (Winter 2023)
- Publication of pilot data to support evidence-based guidelines (Spring)
- Launch of the PSQC SAP Project TBD (Summer 2023?)
  - First collaborative PSQC report release (Summer 2023?)
  - Qualitative interviews of high-performers (Summer-Fall 2023)
  - Development of implementation strategies & toolbox “kits” (Winter 2023)
  - Sharing of best practices through webinars (Winter 2023/Spring 2024)

THANK YOU!!

QUESTIONS??

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Stanford Children's Health | Lucile Packard Children's Hospital Stanford

PSQC Opioid NSQIP Project

Stephen B. Shew, MD

Sept 8, 2022

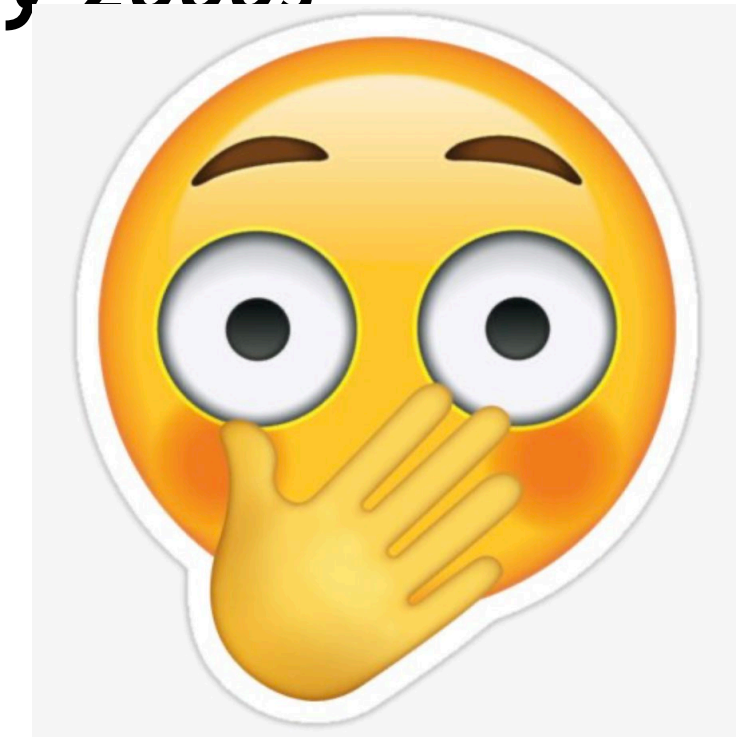
Stanford | MEDICINE

Disclosures

- No financial disclosures

Disclosures

- ***Significant contributor to opioid prescriptions in Calif since early 2000s***



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Background

- Opioid Rx has been existing standard for postop analgesia
- American Pain Society 1996: *"Pain as 5th Vital sign"*
- Biased provider perceptions and variability in prescribing
- Poor provider to patient/parent opioid education
- Under-recognized misuse of opioid prescriptions
- Current opioid epidemic estimated costs by CDC:
  - >600,000 deaths
  - $92 billion dollars

Opioid Prescription Misuse

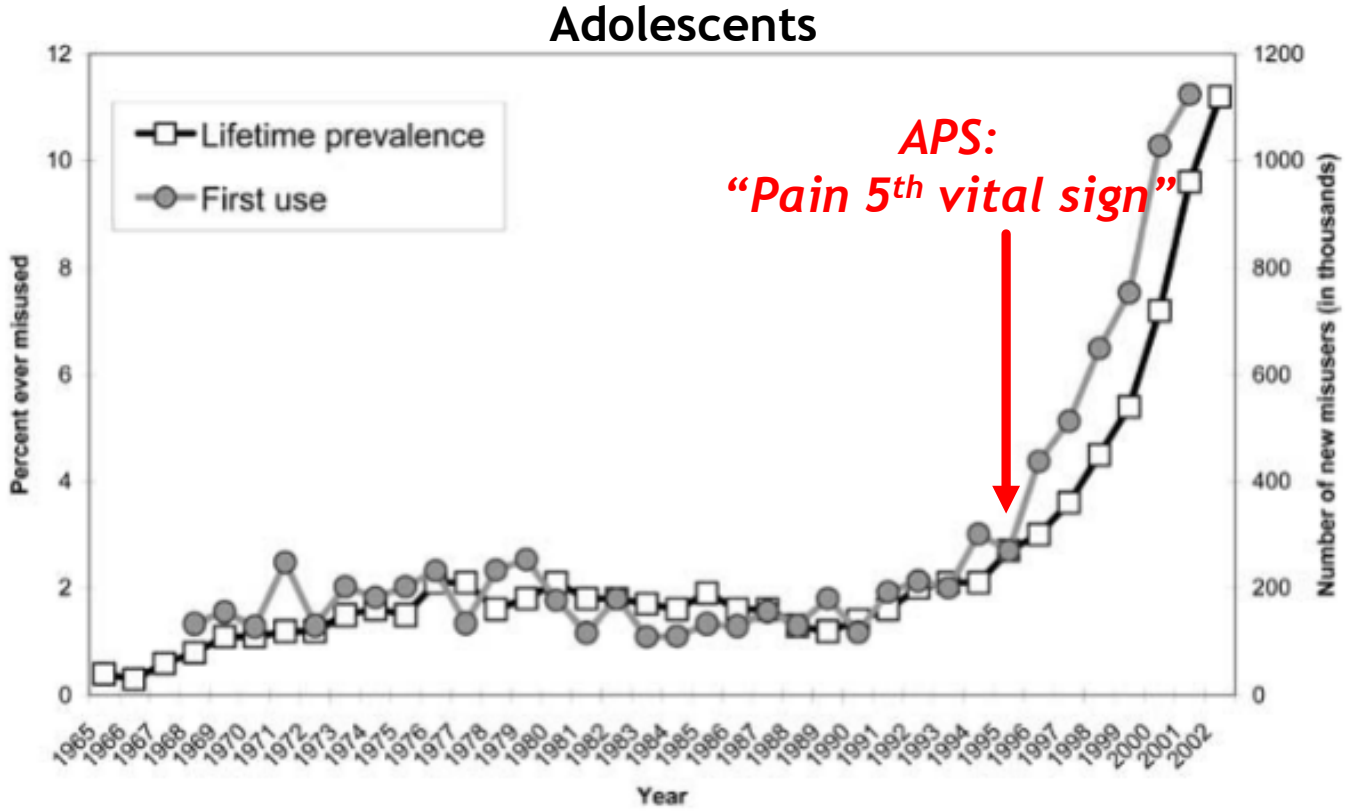
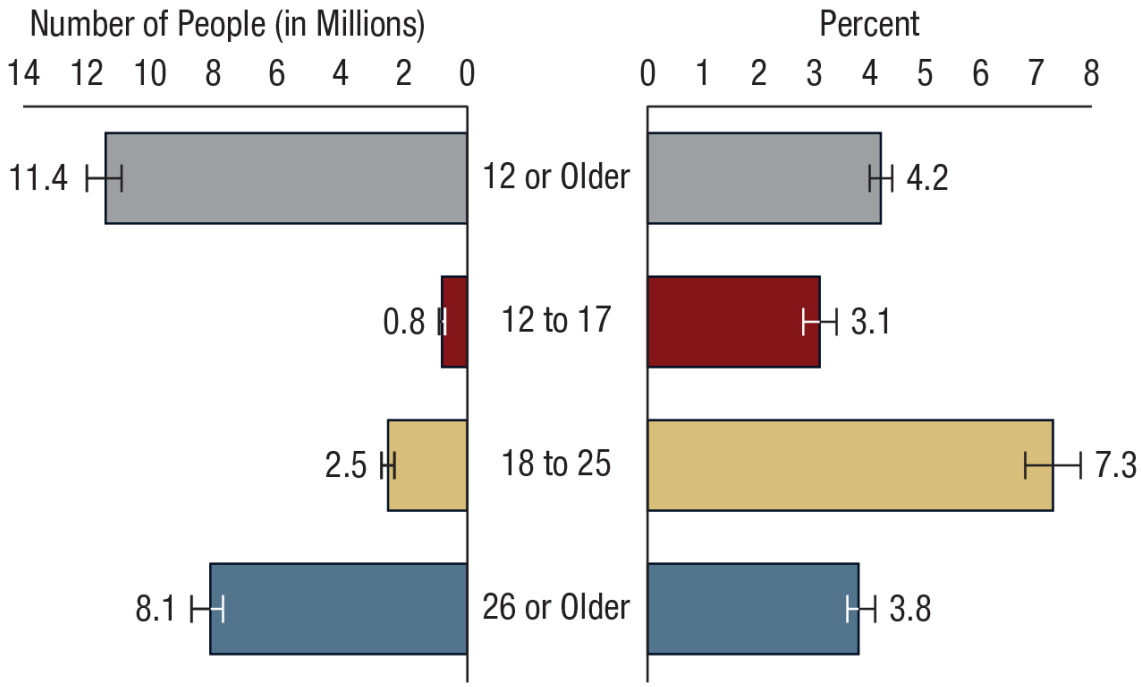
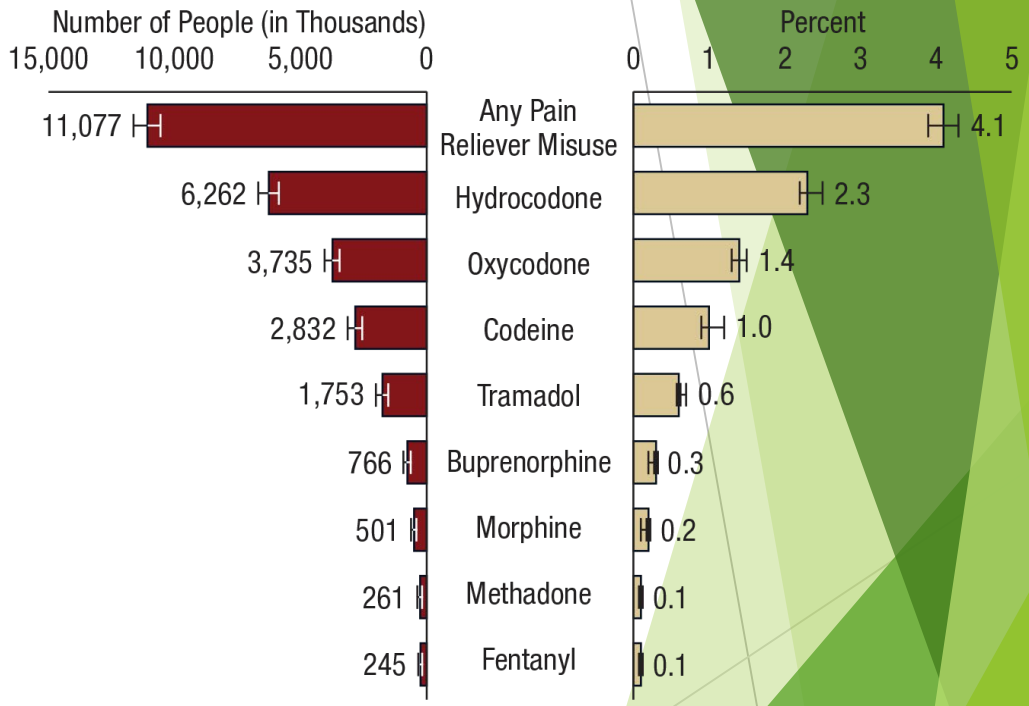


Fig. 1. Historical trends in lifetime prevalence (left scale) and incidence (right scale) of prescription opioid misuse among youth. 1965–2002.

Sung HE et al. J Adolesc Health 20

Opioid Prescription Misuse





from SAMHSU - Substance Abuse and Mental Health Services Admin, based on 2017 NSDUH survey

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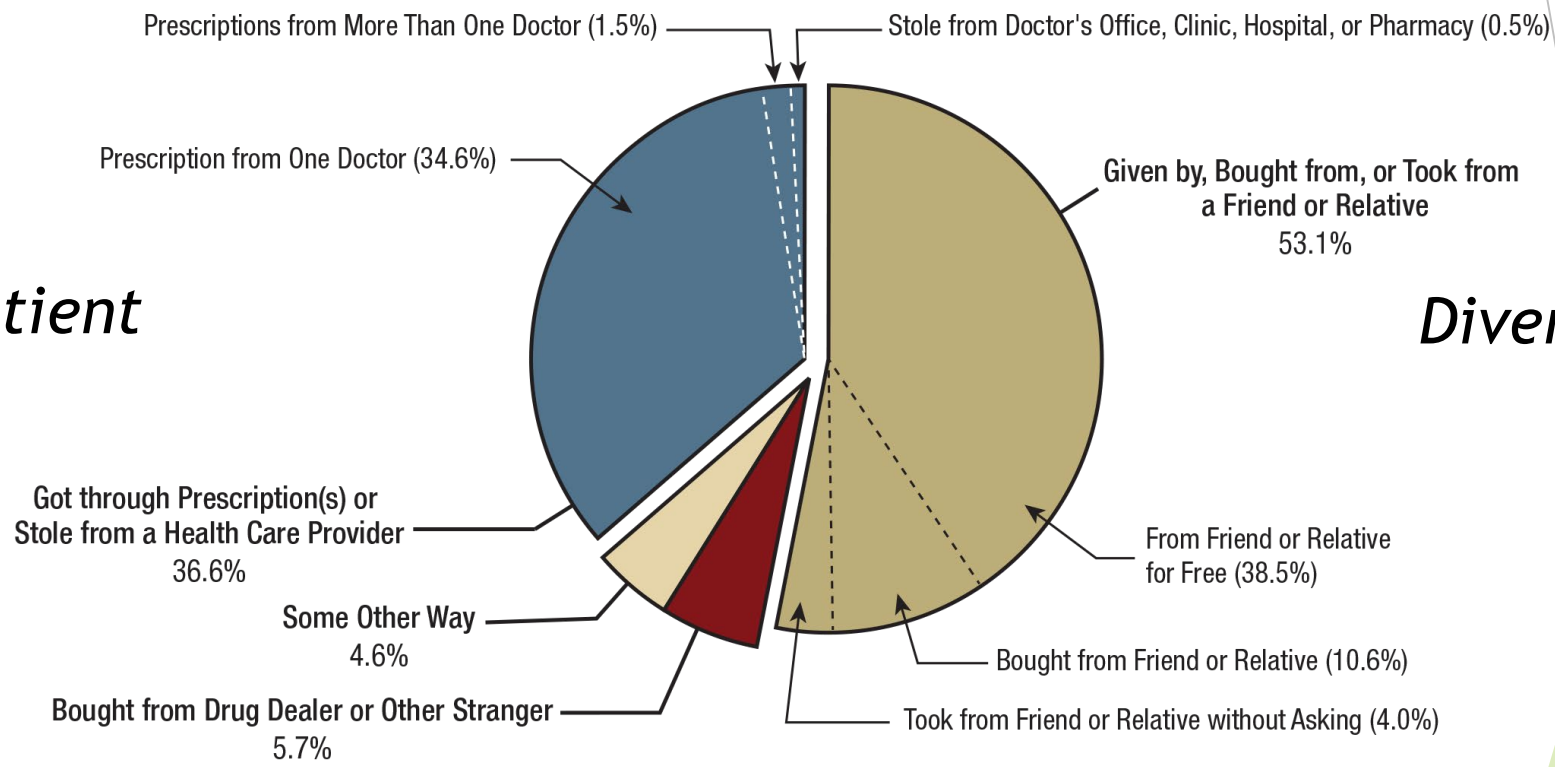
Opioid Prescription Misuse



Direct Patient Misuse

Diversion Misuse

from SAMHSU - Substance Abuse and Mental Health Services Admin, based on 2017 NSDUH survey

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Opioid Rx - Variation for Appy

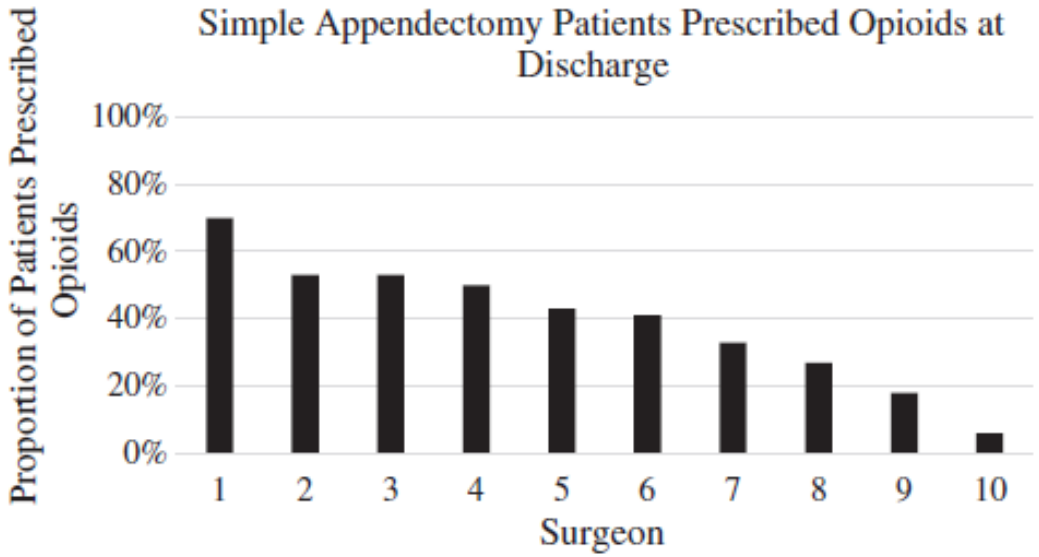

Fig. 2. Proportion of patients receiving opioid prescriptions at discharge after appendectomy for simple appendicitis by surgeon.

Table 3
Postdischarge outcomes in simple appendicitis patients who did not receive opioids compared to those who did receive opioids. ED = emergency department.

	No Opioids Received	Received Opioids	p-value
n (%)	139 (37.5)	232 (62.5)	
ED visit	6 (4.3)	31 (13.4)	0.005
ED chief complaint abdominal pain	3 (50)	22 (70.0)	<0.001
Readmission	3 (2.2)	12 (5.2)	0.15
Constipation	0 (0)	9 (3.9)	0.02
Constipation requiring readmission	0 (0)	4 (2.1)	0.11

Tsao et al. JPS 2018

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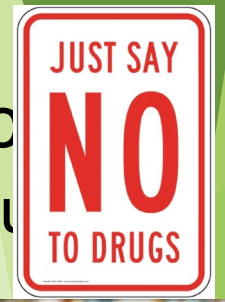
Common Opioid Stewardship Goals

- Decrease or eliminate postop opioid prescriptions
  - Limit opioid prescription dose number and refill
  - Minimize prescription variation by use of guidelines
  - Avoid inappropriate prescribing (eg., codeine, Tramadol)
- Maximize local / regional anesthesia modalities
  - Pre-incision blockade
- Maximize appropriate NSAID use
  - Preemptive analgesia admin
  - Postop routine RTC NSAID use
  - Multi-modality non-opioid meds w- alternate dose timing

Opioid Rx QI - Ped Surgery

- Stanford Ped Surgery Opioid Prescription QI in 2018
  - Universal surgeon consensus in division (rare)
  - Inspired by principles from the *'mother of opioid stewardship'*
  - **Goal:** Eliminate ***all*** opioid postop discharge prescriptio
    - *Exceptions*: Nuss procedure, Bariatric procedures, some trau
      - Multi-modality meds and anesthesia
      - Limit dose prescriptions
  - Maximize local / regional anesthesia modalities
  - Standard alternating Tylenol / Ibuprofen



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Multi-Institutional Quality Improvement Project to Minimize Opioid Prescribing in Children after Appendectomy Using NSQIP-Pediatric

Lorraine I Kelley-Quon, MD, MSHS, FACS, FAAP, Shadassa Ourshalimian, MPH, Justin Lee, MD, FACS, Katie W Russell, MD, FACS, Karen Kling, MD, FACS, Stephen B Shew, MD, FACS, Claudia Mueller, PhD, MD, FACS, Aaron R Jensen, MD, MED, MS, FACS, Lan Vu, MD, FACS, Benjamin Padilla, MD, FACS, Daniel Ostlie, MD, FACS, Caitlin Smith, MD, FACS, Thomas Inge, MD, FACS, Jonathan Roach, MD, FACS, Romeo Ignacio, MD, FACS, Katrine Lofberg, MD, FACS, Stephanie Radu, MCR, Autumn Rohan, BS, Kasper S Wang, MD, FACS

J Am Coll Surg 2022 Mar 1;234(3):290-298.
PMID: 35213491

JACS

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The WPSRC is a multi-institutional surgical collaborative committed to advancing the care of infants and children through contemporary evidence-based research.

Oregon Health & Science University

UCSF Benioff Children's Hospitals Oakland | San Francisco

Children's Hospital Colorado

Children's Hospital Los Angeles We Treat Kids Better

Rady Children's Hospital San Diego

Intermountain Primary Children's Hospital

Seattle Children's Hospital • Research • Foundation

Lucile Packard Children's Hospital Stanford

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children'shealth Children's Medical Center Dallas

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QI Goal:

Decrease opioid Rx at time of discharge for children undergoing laparoscopic appendectomy across WPSRC consortium sites

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Baseline Opioid Stewardship – WPSRC sites

- 5 of 10 centers had existing protocols for eliminating opioid Rx after laparoscopic appendectomy
- Significant variation at remaining sites

- WPSRC member consensus:
  - pediatric surgeons ***should*** be eliminating opioid Rx after lap appy
  - multi-site buy-in would be attainable

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ACS NSQIP PEDIATRIC

Leveraging NSQIP-Peds for Multi-Institutional QI

- NSQIP platform customizable field inputs
- Opioid Rx variables at discharge (EMR) and SCR 30d follow-up
  - *Opioid type, dose, alternative source opioid Rx, persistent use at 30d*
  - *ER visit, Readmission (all-cause and cause)*
  - Likert 5-point satisfaction scale on 30d F-U (balancing measure)
- ***Strong* SCR engagement**, minimal work added
- ***Engagement elicited and project endorsed by parent representative***
  - Uniform discharge instructions – alternating Tylenol & Ibuprofen

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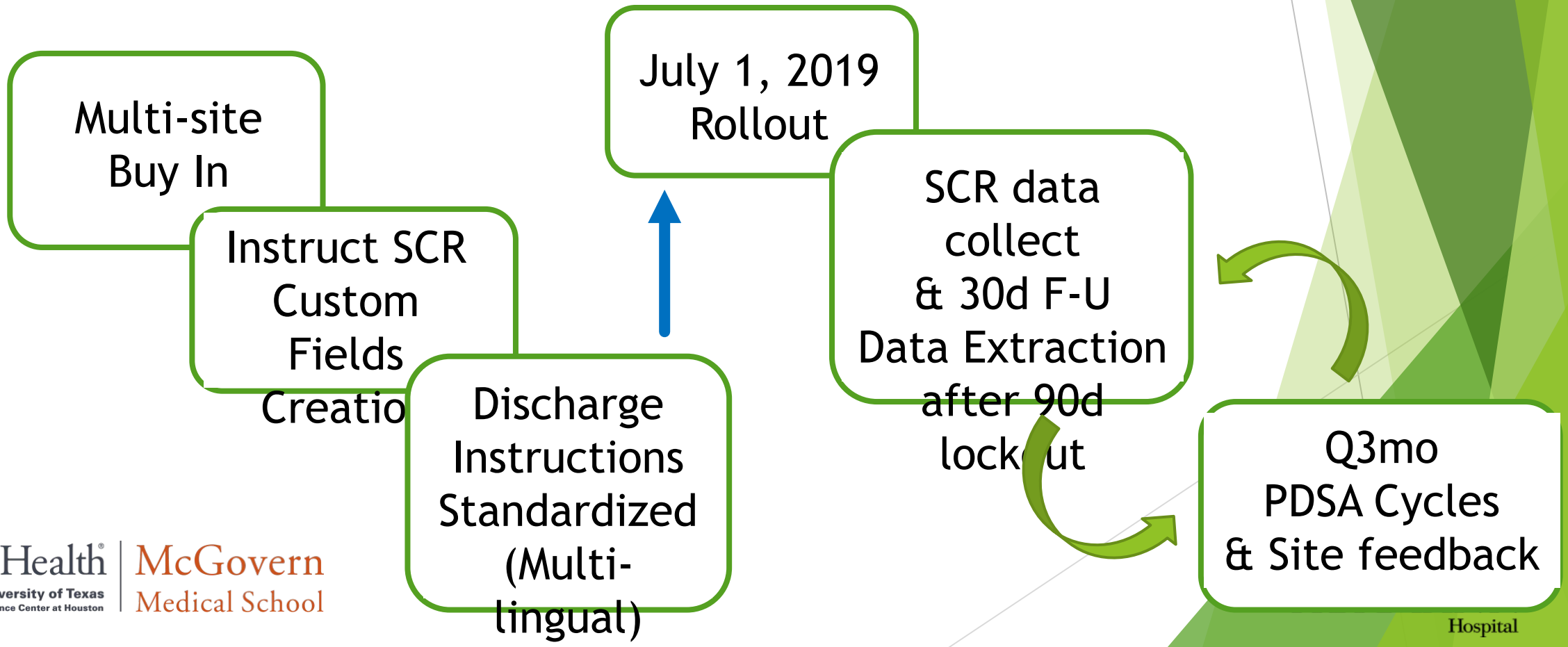
QI Implementation Plan



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Demographics of NSQIP pts

Table 1. Cohort Demographics

Variable	Total, N = 1,524	Preintervention, n = 730	Postintervention, n = 794	p Value
Male sex, n (%)	891 (58.5)	435 (59.6)	456 (57.4)	0.393
Race, n (%)				0.694
American Indian or Alaska Native	16 (1.1)	9 (1.2)	7 (0.9)	
Asian	57 (3.7)	25 (3.4)	32 (4.0)	
Black or African American	27 (1.8)	11 (1.5)	16 (2.0)	
Multiracial	2 (0.1)	1 (0.1)	1 (0.1)	
Native Hawaiian or Pacific Islander	6 (0.4)	4 (0.6)	2 (0.3)	
Unknown	439 (28.8)	219 (30.0)	220 (27.7)	
White	977 (64.1)	461 (63.2)	516 (65.0)	
Hispanic ethnicity, n (%)				0.113
Yes	670 (44.0)	340 (46.6)	330 (41.6)	
No	789 (51.8)	363 (49.7)	426 (53.7)	
Unknown	65 (4.3)	27 (3.7)	38 (4.8)	
Insurance, n (%)				
Private	720 (47.2)	333 (45.6)	387 (48.7)	0.222
Public	764 (50.1)	366 (50.1)	398 (50.1)	0.997
Self-pay	14 (0.9)	8 (1.1)	6 (0.8)	0.487
Other	106 (7.0)	64 (8.8)	42 (5.3)	0.008
Complicated appendicitis, n (%)	463 (30.4)	230 (31.5)	233 (29.4)	0.359
Age at surgery, y, mean ± SD	10.6 (3.7)	10.4 (3.8)	10.7 (3.6)	0.044

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Opioid Rx Run Chart by site

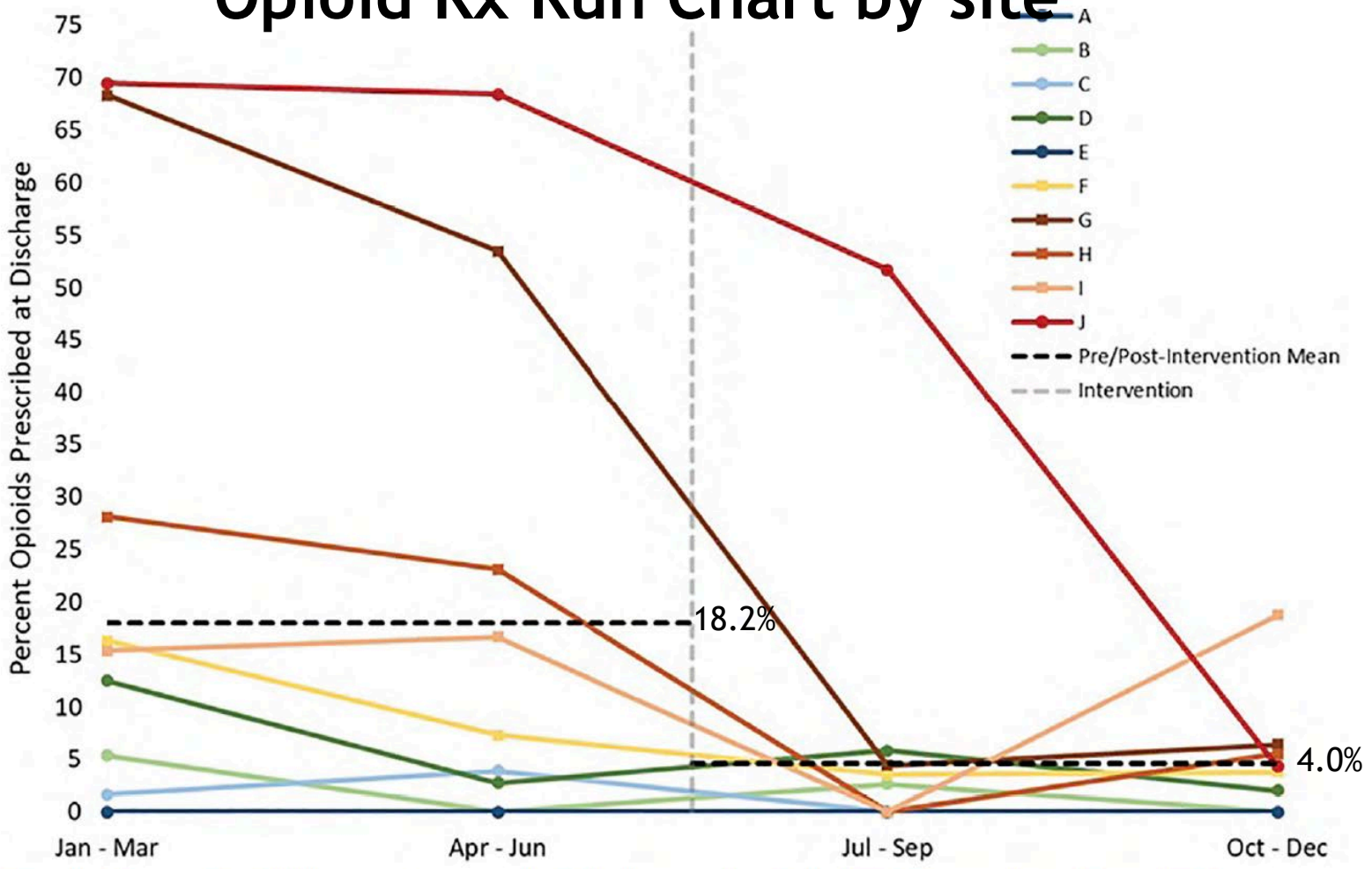

Figure 2. Run chart: percent of children receiving opioids at discharge by hospital (A–J) before and after the quality improvement intervention. No-Protocol Hospitals are highlighted in red/orange/yellow, Protocol Hospitals are highlighted in blue/green.

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Outcomes based on type of appendicitis

Table 2. Overall Rate of Opioid Prescribing at Discharge and Balancing Measures

	Overall					
	Complicated appendicitis n = 463 (30.4%)			Uncomplicated appendicitis n = 1061 (69.6%)		
Variable	Preintervention, n = 230 (%)	Postintervention, n = 233 (%)	p Value	Preintervention, n = 500 (%)	Postintervention, n = 561 (%)	p Value
Discharged with opioid prescription, n (%)	19 (8.3)	5 (2.2)	0.003	114 (22.8)	27 (4.8)	<0.001
30-day ER visit, n (%)	23 (10.1)	35 (15.8)	0.0694	41 (8.4)	37 (7.3)	0.5181
Parent satisfaction score, mean ± SD	-	4.7±0.7	–	–	4.8±0.6	–

ER, emergency room.

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Outcomes based on *pre-existing* hospital opioid-free Rx protocol

Table 3. Rate of Opioid Prescribing at Discharge and Balancing Measures for Complicated Appendicitis

	Complicated appendicitis N = 463 (30.4%)					
	Protocol hospital			No-protocol hospital		
Variable	Preintervention, n = 122	Postintervention, n = 145	p Value	Preintervention, n = 108	Postintervention, n = 88	p Value
Discharged with opioid prescription, n (%)	1 (0.8)	1 (0.7)	1.000	18 (16.7)	4 (4.6)	0.011
30-day ER visit, n (%)	12 (9.8)	26 (19.3)	0.034	11 (10.4)	9 (10.5)	0.984
Parent satisfaction score, mean ± SD	–	4.8±0.6	–	–	4.6 ±0.9	–

ER, emergency room.

Table 4. Rate of Opioid Prescribing at Discharge and Balancing Measures for Uncomplicated Appendicitis

	Uncomplicated appendicitis N = 1061 (69.6%)					
	Protocol hospitals			No-protocol hospitals		
Variable	Preintervention, n = 286	Postintervention, n = 330	p Value	Pre-intervention, n = 214	Post-intervention, n = 231	p Value
Discharged with opioid prescription, n (%)	10 (3.5)	3 (0.9)	0.045	104 (48.6)	24 (10.4)	<0.001
30-day ER visit, n (%)	25 (8.7)	18 (6.4)	0.294	16 (7.8)	19 (8.3)	0.851
Mean parent satisfaction score, mean ± SD	–	4.8±0.5	–	–	4.7 ±0.7	–

ER, emergency room.

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PSQC Opioid QI Proposal

Can we extrapolate opioid stewardship QI to PSQC sites ???

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PSQC Opioid QI Proposal

QI Goals:

- Assess current variation in opioid Rx patterns across all NSQIP pts from PSQC sites and specialties
- Establish guidelines and resources for opioid stewardship to distribute to PSQC sites
- ***Decrease opioid Rx by 50% of baseline across PSQC sites in 1yr***
- Eliminate inappropriate opioid type prescribing
- Maintain equivalent counter-balance measures
  - 30-d ER revisit, patient/parent satisfaction score

PSQC Opioid QI Proposal

Implementation Plan:

- Utilize NSQIP platform and SCR / Surg champion engagement
- **New standard, required variables to be created in NSQIP platform:**
  - **Opioid prescription (Y/N) - [REQUIRED]**
  - **Opioid type (drop down selection) - [REQUIRED]**
  - **Doses prescribed - [OPTIONAL]**
- NSQIP platform to assess PSQC site practice patterns in opioid Rx
- Custom variables to further characterize opioid Rx
- Quarterly to semi-annual reports of site comparison to PSQC

PSQC Opioid QI Proposal

Implementation Goals:

- ***Phase 1a-*** Survey current basic opioid prescribing practices of different specialties from each site and establish regular self-reporting of sites to PSQC
- ***Phase 1b-*** Implement a site-specific opioid prescribing quarterly report generated from the PSQC as blinded site comparison
- ***Phase 1c-*** Offer basic educational tools, known opioid sparing guidelines and potential QI coaching from select low opioid prescribing sites of different surgical specialties
- ***Phase 2a-*** Create a custom, multiple variable opioid dataset within NSQIP-pediatric to analyze across specific sites by procedure to generate risk adjusted effects toward highly effective opioid-sparing outcomes
- ***Phase 2b-*** Determine factors associated with most successful opioid sparing efforts and establish most effective best practice opioid stewardship guidelines to be disseminated to PSQC sites
- ***Phase 2c-*** Track improvement efforts across PSQC sites over time toward effective minimizing opioid prescribing nationally
- ***Phase 2d-*** Facilitate creating standardized, site specific opioid stewardship SAR for to be incorporated into NSQIP-Pediatric SARs

PSQC Opioid QI Proposal

Immediate Next Steps:

- Formation of PSQC Opioid Stewardship working group
- Selection of pertinent process and outcome variables and counter-balance measures
- Potential barriers to address / solve:
  - NSQIP creation of new standard variables → at least 18-24 months before in standard NSQIP SAR
  - Site engagement / bandwidth for custom variables and data management
  - DUAs

PSQC Opioid QI Proposal

Questions ?
Interested in being involved ??!!

Stephen Shew
sbshew@stanford.edu

Terry Fisher
terry.fisher@uth.tmc.edu

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ACS NSQIP PEDIATRIC

Antibiotic Duration in Complex Appendicitis

Erich Grethel, Monica Lopez

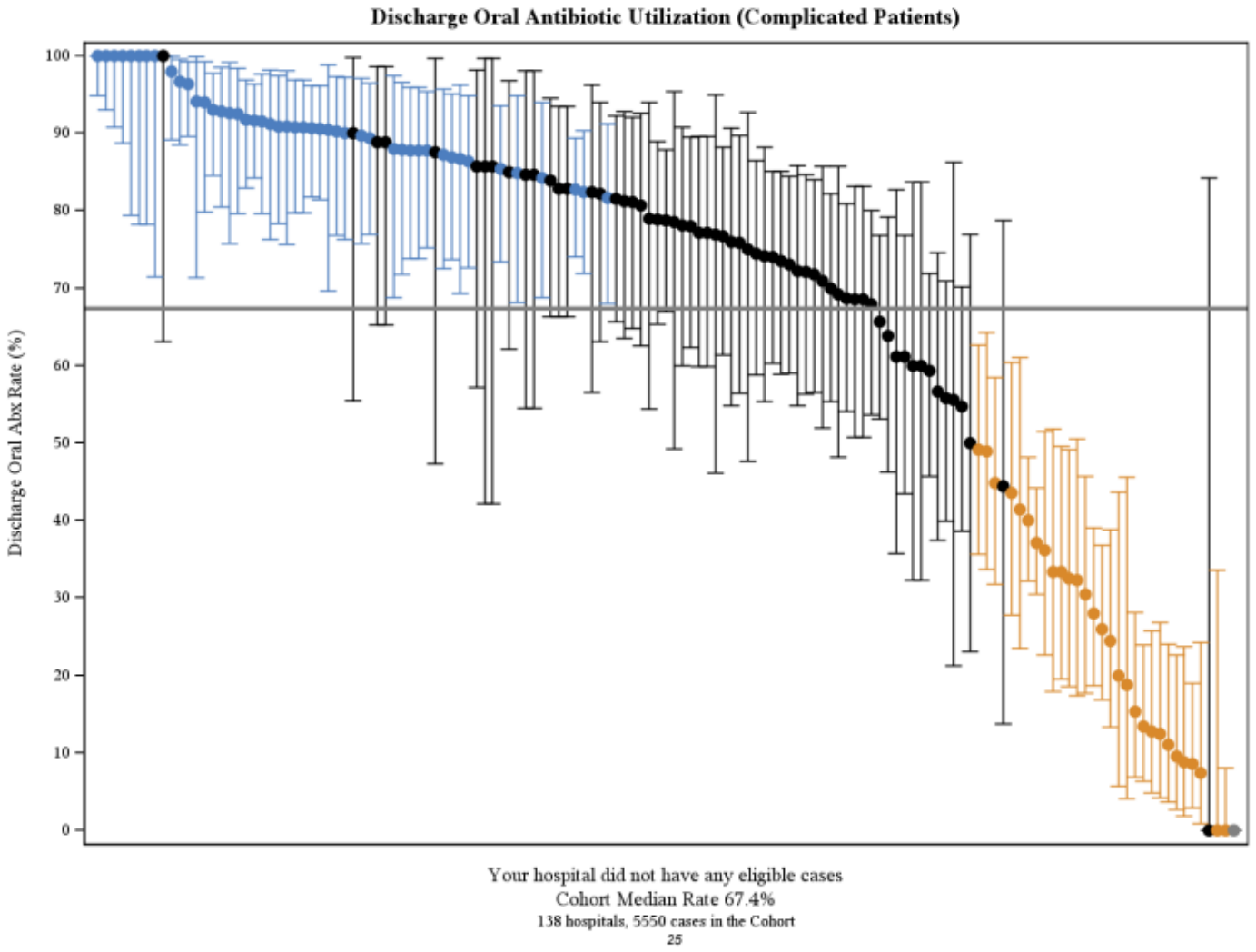
Monroe Carell Jr. Children's Hospital at Vanderbilt

dell children's Ascension

Background

- NSQIP-P cohort there is wide variability in antibiotic prescription practice
    - Most recent NSQIP-P SAR reveals usage of oral antibiotics on discharge ranging from 0% to 100%, with a median of about 65%
- Lack of universally accepted treatment with regard to antibiotic therapy after appendectomy for complex appendicitis in pediatric patients
- Antibiotic stewardship protects patients from harms caused by unnecessary antibiotic use and combats antibiotic resistance

Discharge Oral Antibiotic Usage in Complicated Patients



STOP-IT Trial

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Trial of Short-Course Antimicrobial Therapy for Intraabdominal Infection

R.G. Sawyer, J.A. Claridge, A.B. Nathens, O.D. Rotstein, T.M. Duane, H.L. Evans, C.H. Cook, P.J. O'Neill, J.E. Mazuski, R. Askari, M.A. Wilson, L.M. Napolitano, N. Namias, P.R. Miller, E.P. Dellinger, C.M. Watson, R. Coimbra, D.L. Dent, S.F. Lowry,* C.S. Cocanour, M.A. West, K.L. Banton, W.G. Cheadle, P.A. Lipsett, C.A. Guidry, and K. Popovsky, for the STOP-IT Trial Investigators†

- 518 Adult patients
- Set duration of 4+/-1 days of antibiotic administration after source control of intra-abdominal infections
- Similar outcomes to those treated with longer duration antibiotics (2 days after resolution of fever, leukocytosis, ileus/ max 10 days)
- Median duration of antibiotic therapy was 4.0 days in the experimental group, as compared with 8.0 days in the control group

Pediatric Literature

Journal of Pediatric Surgery 55 (2020) 1026–1031

Contents lists available at ScienceDirect

Journal of Pediatric Surgery

journal homepage: www.elsevier.com/locate/jpedsurg

Effectiveness of a clinical pathway for pediatric complex appendicitis based on antibiotic stewardship principles☆,☆☆

Megan E. Cunningham [a], Huirong Zhu [a], Connor T. Hoch [b], Annalyn S. DeMello [a], Nakada D. Gusman [a], Sara C. Fallon [a], Monica E. Lopez [a,*]

[a] Texas Children's Hospital, Division of Pediatric Surgery, 6701 Fannin Street, Houston, TX 77030
[b] Baylor College of Medicine, 1 Baylor Plaza, Houston, TX 77030, USA

Journal of Pediatric Surgery (2010) 45, 1198–1202

Journal of Pediatric Surgery

www.elsevier.com/locate/jpedsurg

A complete course of intravenous antibiotics vs a combination of intravenous and oral antibiotics for perforated appendicitis in children: a prospective, randomized trial

Jason D. Fraser, Pablo Aguayo, Charles M. Leys, Scott J. Keckler, Jason G. Newland, Susan W. Sharp, John P. Murphy, Charles L. Snyder, Ronald J. Sharp, Walter S. Andrews, George W. Holcomb III, Daniel J. Ostlie, Shawn D. St. Peter*

Department of Surgery, The Children's Mercy Hospital, Kansas City, MO 64108, USA

Journal of Pediatric Surgery 54 (2019) 272–275

Contents lists available at ScienceDirect

Journal of Pediatric Surgery

journal homepage: www.elsevier.com/locate/jpedsurg

Colorectal

Prospective evaluation of a clinical response directed pathway for complicated appendicitis

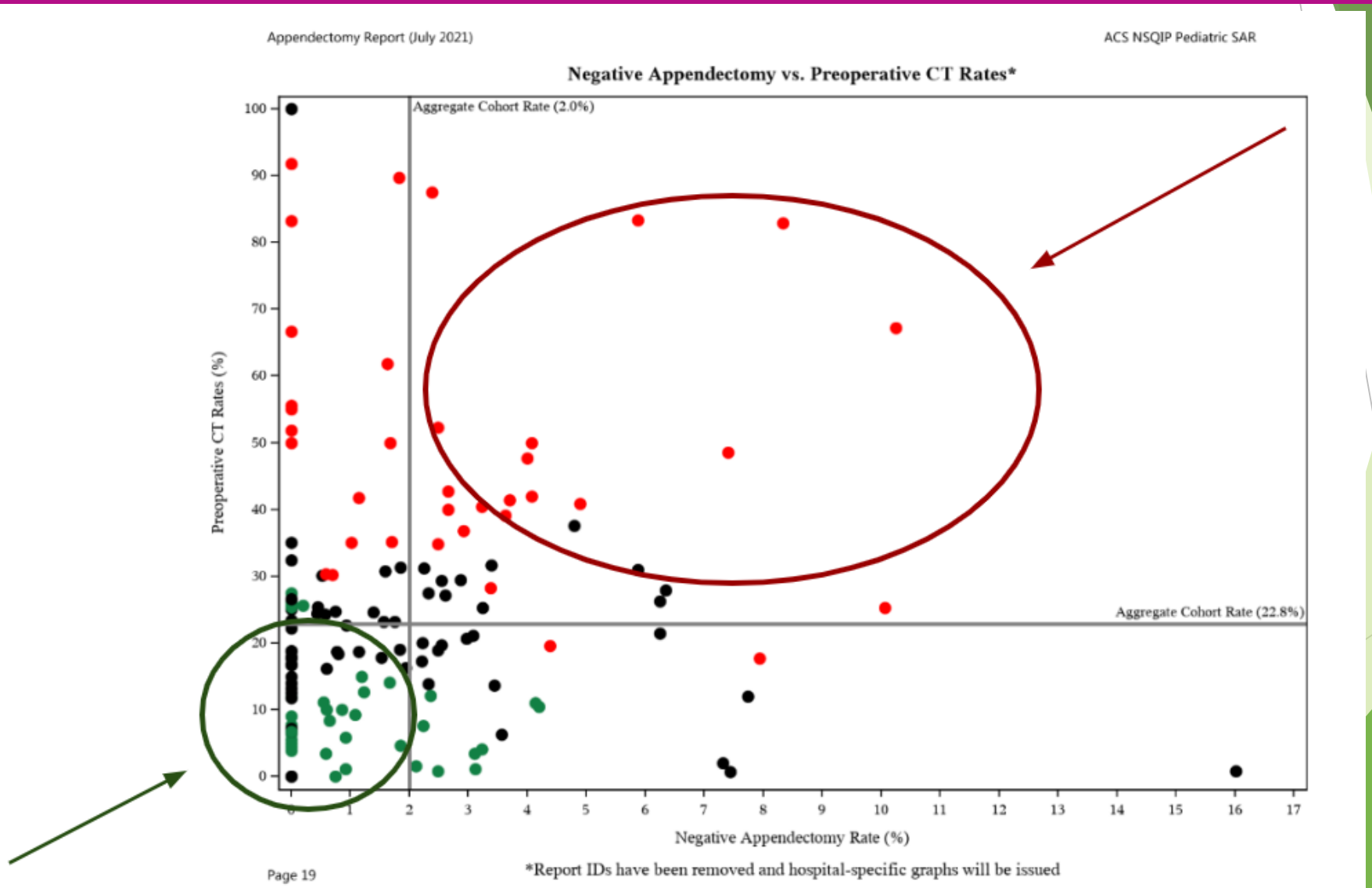
Nick Lansdale [a], Samantha Fryer [b], Mairead Stockdale [b], James Bancroft [b], Jennifer Orr [b], Harriet Corbett [b], Simon Kenny [b,*]

[a] Department of Paediatric Surgery, Royal Manchester Children's Hospital, UK
[b] Department of Paediatric Surgery, Alder Hey Children's Hospital, Liverpool, UK

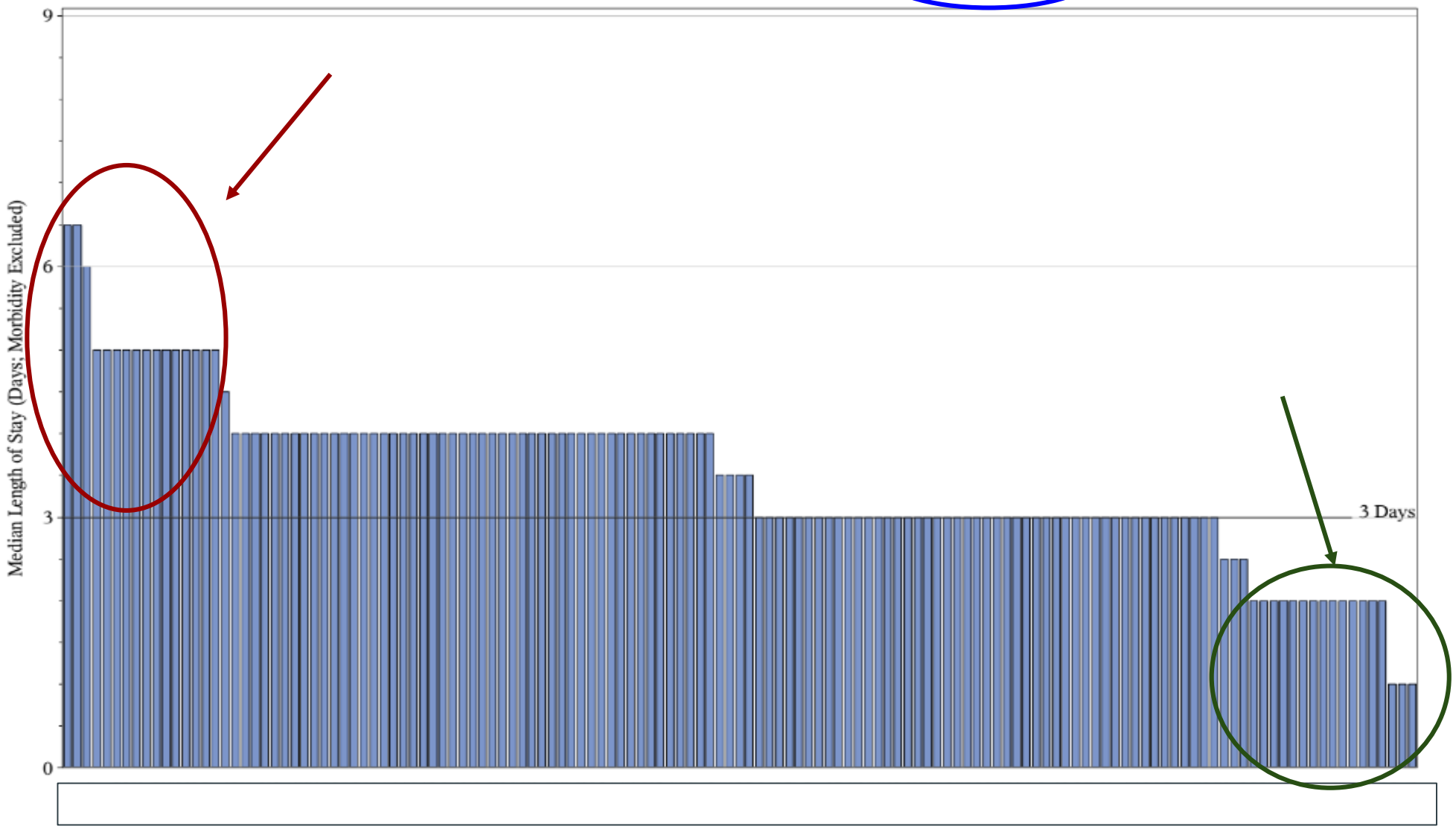
Aim of Project

- *Evaluate the Collaborative cohort antibiotic usage (oral and IV) after appendectomy for complex appendicitis*
- *Baseline data*
  - *discharge antibiotic information plotted against length of stay in morbidity excluded patients (primary outcome)*
  - *discharge antibiotic information plotted against surgical site infections (secondary outcome)*
  - *discharge antibiotic information plotted against return to ED/re-hospitalization (alternative secondary outcome/balance metric).*
- *Understand outliers of centers that discharge these patients without antibiotics, have shorter hospital stay, and less postoperative occurrences*
- *Use qualitative methods to ascertain postop protocols from low and high outliers*

Scatter Plot Example



Median Length of Stay (Days; Morbidity Excluded) for Complicated Cases



Aggregate Median Length of Stay (Days; Morbidity Excluded) = 3 Days (Q1 = 2 Days, Q3 = 5 Days)

Variables

- Evaluate in complex appendectomy patients as well as the morbidity excluded set
  - Length of stay
  - Antibiotics at discharge
  - Surgical site infections
  - Return to ED/OR
  - Readmission
  - Duration of postoperative antibiotics (days from source control)*
  - Method of antibiotics (IV vs oral - with time stamp for each)*
  - Type of oral antibiotic at discharge*
- Additional confounding factors include severity of complex appendicitis and method of source control

**additional data to be collected*

Suppositions and Implications

- *Hypothesis: no significant difference in postoperative occurrence rate in centers that discharge complex appendectomy patients with or without antibiotics*

- *Implication that antibiotic stewardship principles would dictate more judicious use of postoperative antibiotics after source control in this population*

Project Design

- Phase 1: Assemble workgroup
- Phase 2: Design project parameters
- Phase 3: Collect data
  - NSQIP/PSQC reports
  - Survey/compile strategies of high/low outliers
  - Determine factors associated with appropriate antibiotic usage
- Phase 4: Assess and Dissemination
  - Basic educational tools
  - Algorithm/teaching from select low antibiotic usage sites

Questions & Open Discussion

Colon Bundle Protocol for Pediatric Surgical Patients

Justin Lee, MD

Phoenix Children's Hospital

Children's Memorial Hermann Hospital

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Background

- Pediatric colorectal procedures: high rate of SSI[1]
- 7.2% all SSI burden: 2.5% NSQIP-P caseload
  - Partial colectomy (29%)
  - Total colectomy (11%)
  - Colostomy closure (11%)
- Standardized perioperative care in colorectal surgery
  - Reduction in SSI in adults[2-5]
  - Increasing evidence in pediatric population[6-10]

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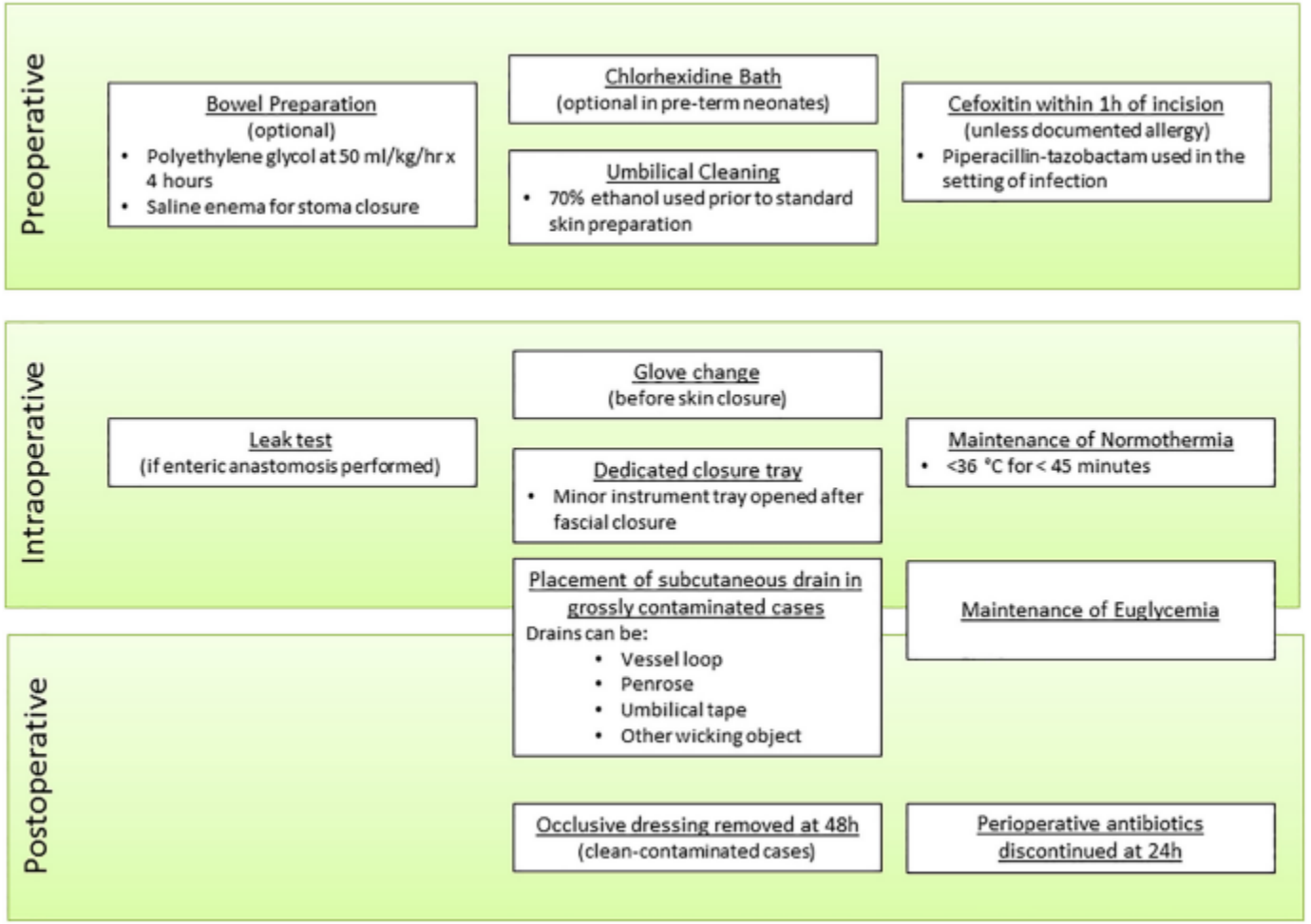
Background

- Single center experience[7]
  - Retrospective study (n=145)
  - Superficial SSI (21% vs 8%)
  - Readmission (16% vs 4%)
-
  -
  -



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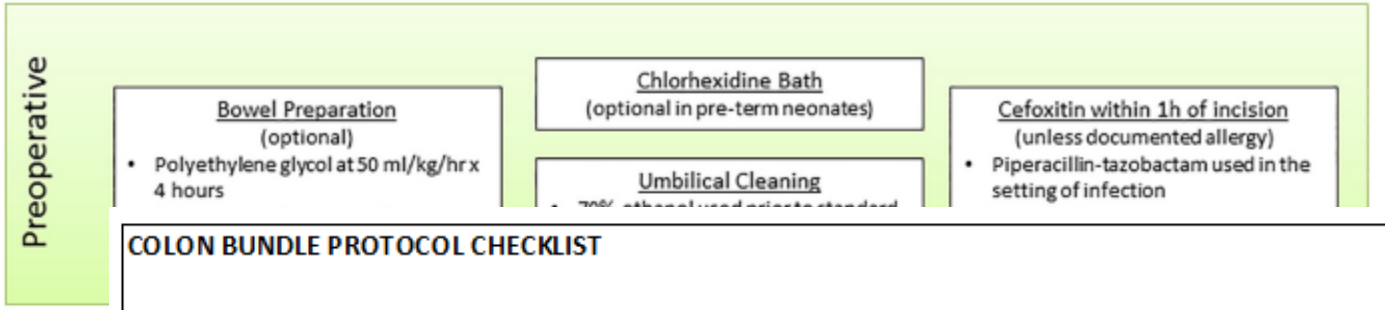
Background

- Single center experience[7]
  - Retrospective study (n=145)
  - Superficial SSI (21% vs 8%)
  - Readmission (16% vs 4%)
- Multicenter experience[11]
  - Prospective study (n=336)
  - Superficial SSI (9.7% vs 4.0%)



Intraoperative

Postoperative

COLON BUNDLE PROTOCOL CHECKLIST

PROCEDURES TO INCLUDE: All colorectal procedures WITH anastomosis and abdominal closure

Preoperative

- ☐ (Optional) Bowel preparation
- ☐ (Optional) Chlorhexidine (SAGE) bath/wipes
- ☐ Umbilical cleansing (alcohol cleaning of umbilicus prior to skin prep)
- ☐ Preoperative antibiotic given within 1 hour of incision
  Includes gram negative and anaerobic coverage

Intraoperative (Document in operative report)

- ☐ Anastomotic leak test
- ☐ Dedicated closure tray (instrument change and new drapes prior to skin closure)
- ☐ Glove change prior to skin closure
- ☐ (Optional) Placement of subcutaneous drain in grossly contaminated cases
  Drain can be: vessel loop, penrose, umbilical tape, or other wicking object
- ☐ Maintenace of normothermia (< 36℃ or > 38 ℃ for less than 30 minutes)

Postoperative

- ☐ Perioperative antibiotics discontinued at 24 hours
- ☐ If present, occlusive dressing removed at 48 hours to examine wound

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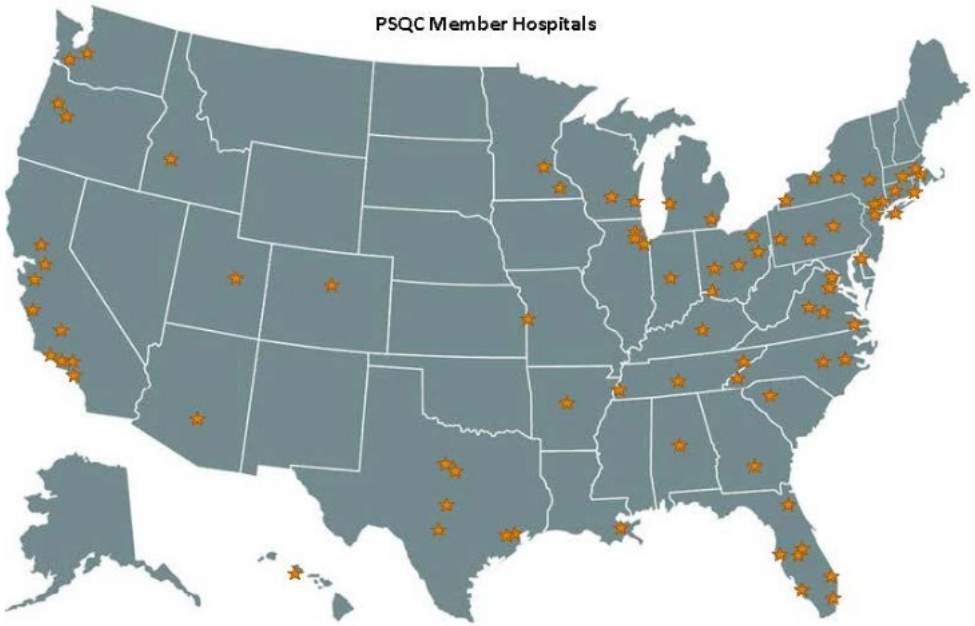
Study Design

- Prospective study
- Working Group: pilot hospitals



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Western Pediatric Surgery RESEARCH CONSORTIUM

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Study Design

- Prospective study
- Working Group: pilot hospitals
- Colon Bundle Design

WPSRC Multicenter Prospective Study

COLON BUNDLE PROTOCOL CHECKLIST

PROCEDURES TO INCLUDE: All colorectal procedures WITH anastomosis and abdominal closure

Preoperative

- ☐ (Optional) Bowel preparation
- ☐ (Optional) Chlorhexidine (SAGE) bath/wipes
- ☐ Umbilical cleansing (alcohol cleaning of umbilicus prior to skin prep)
- ☐ Preoperative antibiotic given within 1 hour of incision
  Includes gram negative and anaerobic coverage

Intraoperative (Document in operative report)

- ☐ Anastomotic leak test
- ☐ Dedicated closure tray (instrument change and new drapes prior to skin closure)
- ☐ Glove change prior to skin closure
- ☐ (Optional) Placement of subcutaneous drain in grossly contaminated cases
  Drain can be: vessel loop, penrose, umbilical tape, or other wicking object
- ☐ Maintenace of normothermia (< 36℃ or > 38 ℃ for less than 30 minutes)

Postoperative

- ☐ Perioperative antibiotics discontinued at 24 hours
- ☐ If present, occlusive dressing removed at 48 hours to examine wound

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Study Design

- Prospective study
- Working Group: pilot hospitals
- Colon Bundle Design
- CPT procedure codes

Current procedure terminology (CPT) codes used to identify the study cohort on the basis of colorectal procedures and procedure groups.

Procedures and procedure groups	Current procedure terminology codes
Colostomy	44188; 44320; 44322; 44605
Colostomy closure	44620; 44625; 44626; 44227
Colostomy revision	44340; 44345; 44346
Partial colectomy	44160; 44140; 44205; 44204; 44145; 44207; 44147; 44208; 45123
Partial colectomy + colostomy	44141; 44143; 44206; 44208; 45110
Partial colectomy + diverting ostomy	44144
Proctocolectomy +/− ostomy	45113; 45397; 45119; 45110; 45112; 45120
Pullthrough (PT) +/− ostomy	45120; 45121; 45397; 45112; 45119; 44157; 45123; 45395; 45111; 45113
Repair of high imperforate anus	46730; 46735; 46740; 46742
Repair of low imperforate anus	46716
Total abdominal colectomy (TAC) + PT	44211; 44158; 44157
TAC + PT + diverting ostomy	44211; 44158; 44211; 44212
TAC +/− ostomy	44210; 44150; 44151; 44155; 44156; 44210; 44212

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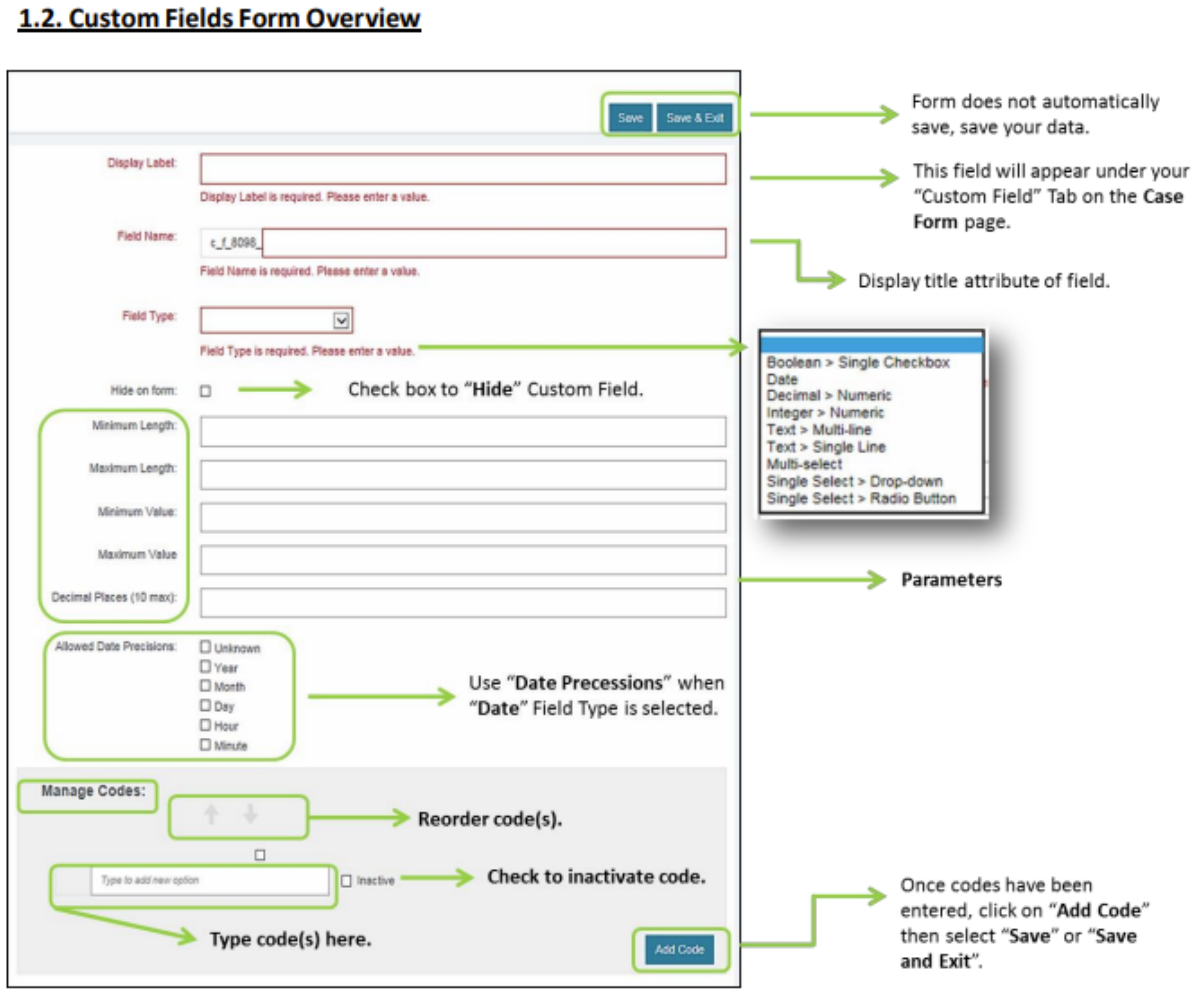
Study Design

- Prospective study
- Working Group: pilot hospitals
- Colon Bundle Design
- CPT procedure codes
- NSQIP SCR: custom variables



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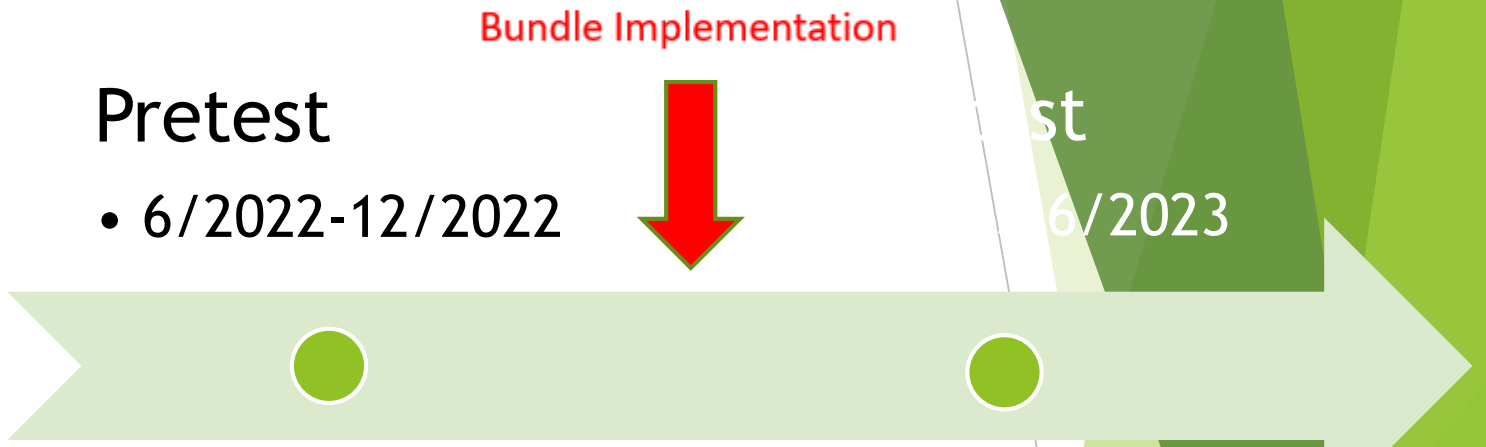
Study Timeline

- Pretest Baseline Rates
- Outcome measures



Primary Outcome:

- Superficial SSI

Secondary Outcomes:

- Bundle compliance
- Length of stay
- Readmission
- Return to OR

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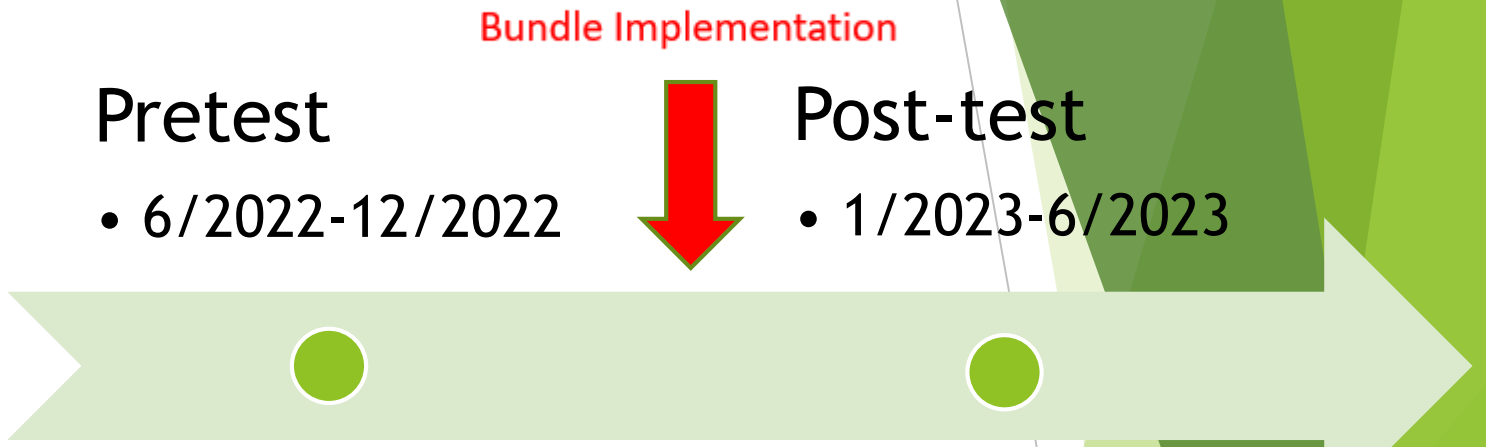
Study Timeline

- Pretest Baseline Rates
- Outcome measures
- Site specific reports
- PDSA cycles
  - 2-mo intervals



Primary Outcome:
- Superficial SSI

Secondary Outcomes:
- Bundle compliance
- Length of stay
- Readmission
- Return to OR

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Colon Bundle Pilot Study

- Feasibility
  - Doable: consensus bundle checklist
  - Compliance: education and awareness
- Infrastructure and support
  - NSQIP online portal customizable variables
  - SCR data collection: dot phrases
- Clinical effectiveness
  - Decrease SSIs

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Thank you

Justin Lee

jlee8@phoenixchildrens.com

Elizabeth Fialkowski

fialkows@oahus.edu

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Questions

Terry Cell: 832-441-6314

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