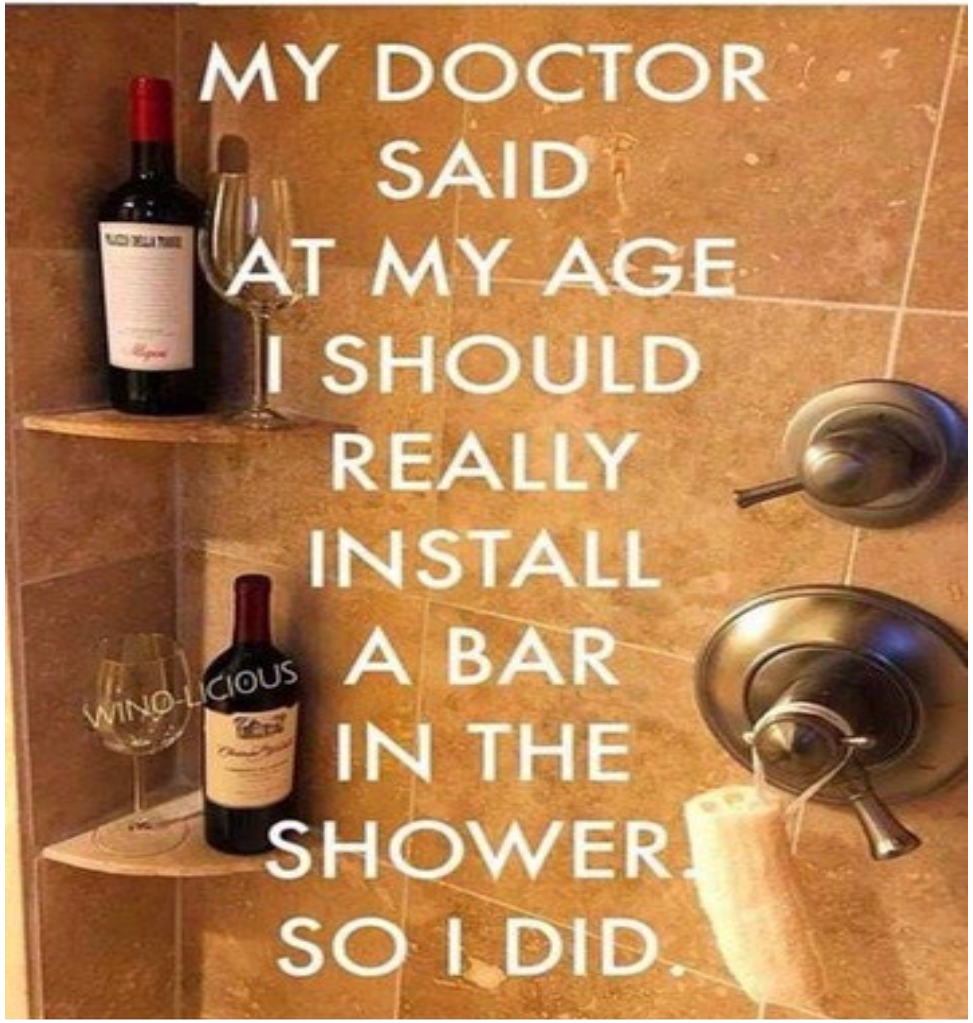
Pediatric Surgery Quality Collaborative

Our First In Person Meeting!

May 11, 2022

UTHealth Houston | McGovern Medical School

Children's Memorial Hermann Hospital


MY DOCTOR SAID AT MY AGE I SHOULD REALLY INSTALL A BAR IN THE SHOWER. SO I DID.
WINO-LICIOUS

Agenda

- State of the Collaborative
- Retreat summary/progress since
- Current status with the ACS
- Project Review
  - Project 1 – Andrew Hu
  - Project 2 – Derek Wakeman/Monica Lopez
  - Project 3 – Shawn Rangel
  - Project 4 – TBD
- Implementation Science
- July Meeting (with SCRs)

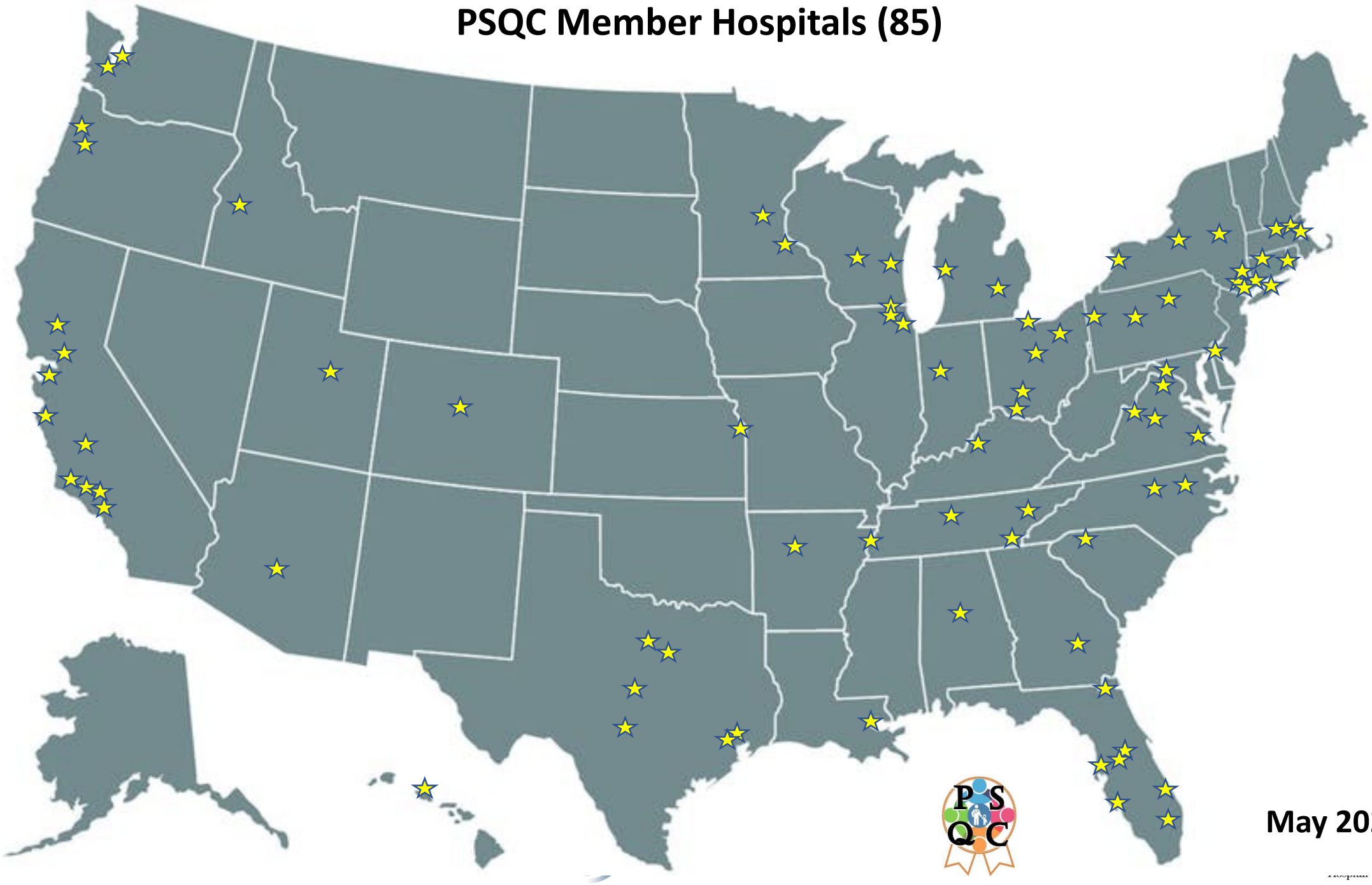
PSQC Overview

The PSQC is a partnership of Children's hospitals and the American College of Surgeons who share the mission of delivering high quality, cost effective, patient-centered surgical care.

PSQC Overview

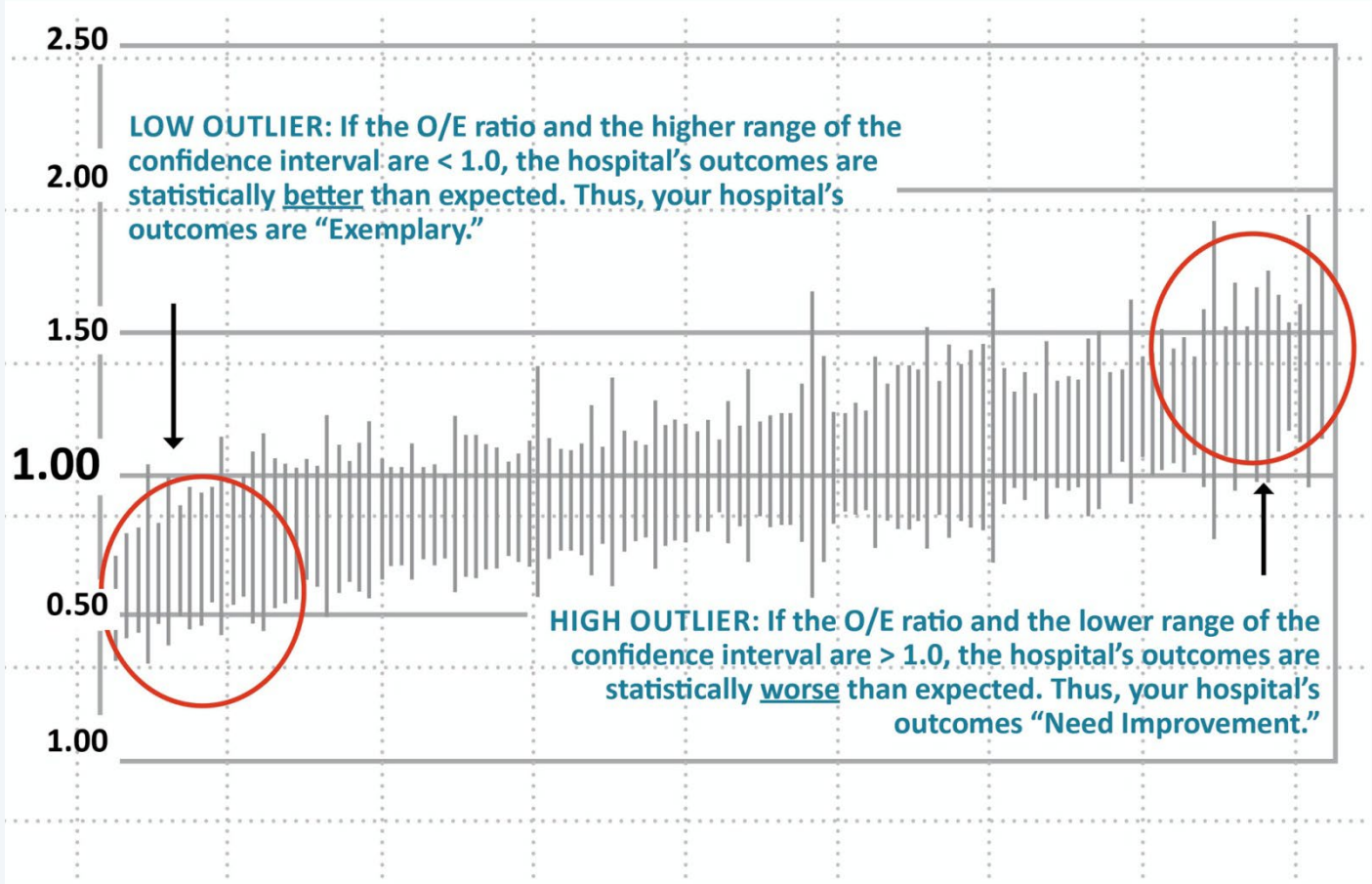
- Collaborative of NSQIP-P hospitals
- 85 Members with signed DUA
- All but one of the CSV Level 1 hospitals
- National in scope by design

PSQC Member Hospitals (85)



May 2022

Improving Outcomes Requires Measurement



82%
of hospitals decreased complications*

66%
of hospitals decreased mortality*

250-500
fewer complications per hospital per year*

Potential Cost Savings if U.S. Hospitals Adopt ACS NSQIP

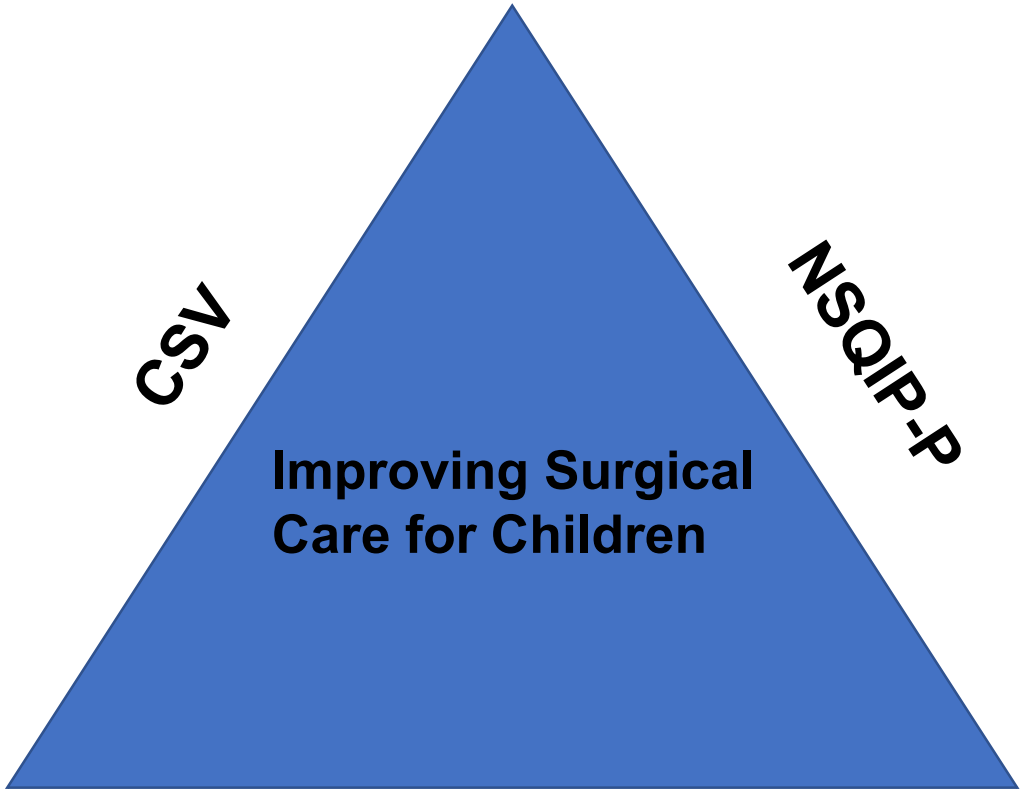
Reducing preventable complications improves care and reduces costs:

- Reduction in complications: **250-500***
- Average cost per complication: **$11,626**
- Average savings per hospital: **$2,906,500 - $5,813,000**
- Potential yearly savings across 4,500 hospitals: **$13 - $26 billion**
- Estimated total savings over a decade**: **$130 - $260 billion**

*Per hospital/per year; Hall BL, et al. "Does Surgical Quality Improve in the American College of Surgeons National Surgical Quality Improvement Program?" Ann Surg. 2009; 250:363-376

**Length of time used for health reform calculations

The Triad of Surgical Quality Improvement



PSQC Overview
What we are not

- Not a disease specific registry (Anorectal, CDHSG, …)
- Not federally funded (COG, NRN)
- Not a regional research collaborative
- Our primary goal is quality improvement

Planning Retreat – September 2021

First In Person Meeting

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Children's Memorial Hermann Hospital

Planning Retreat – September 2021

First In Person Meeting

Nobody got Covid (from that meeting)

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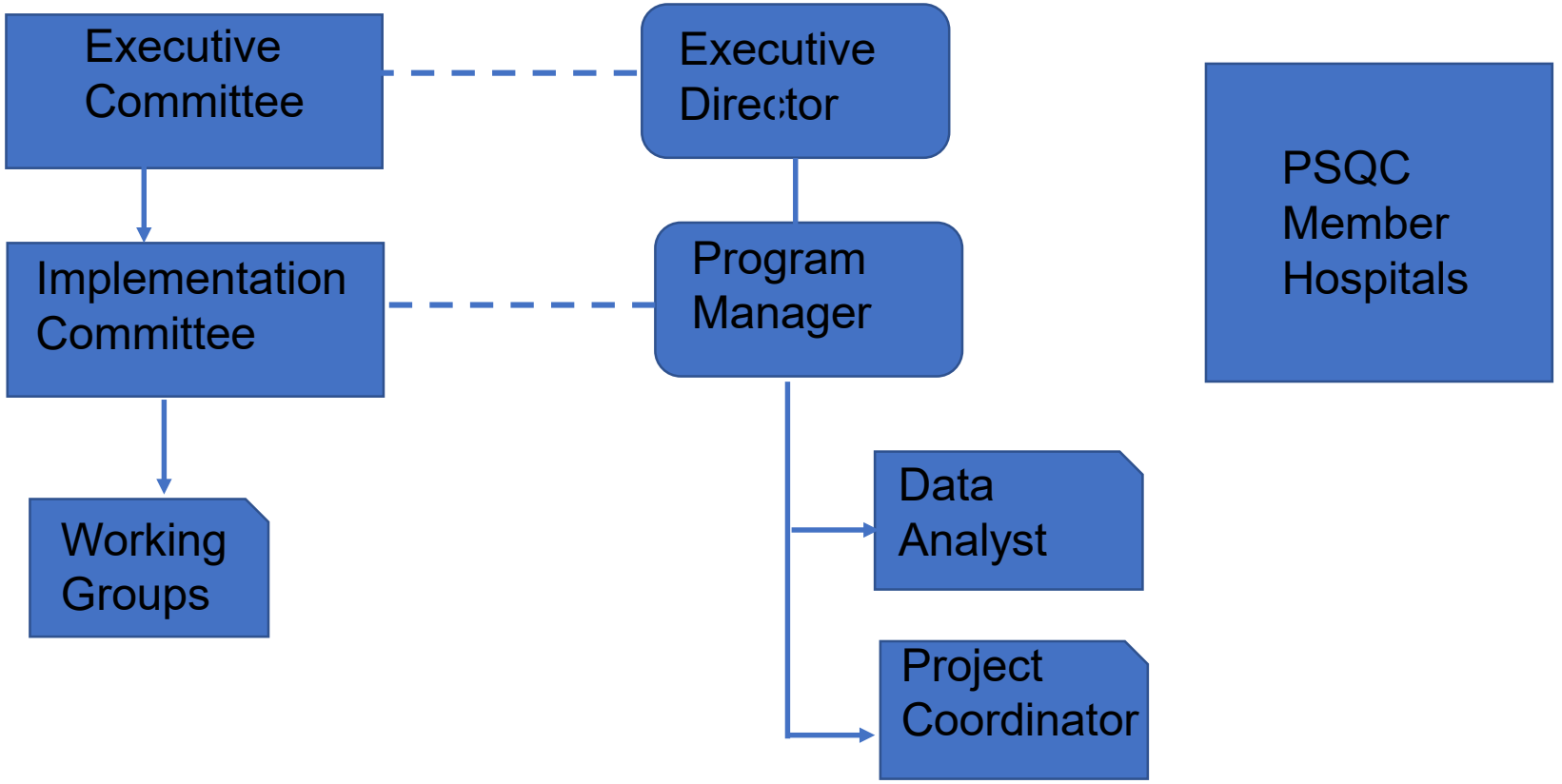
Planning Retreat – September 2021

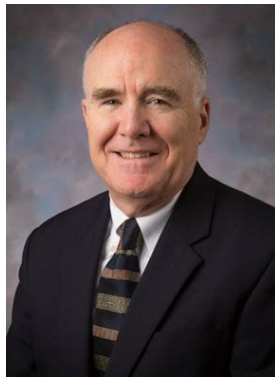
- **Structure**

PSQC Structure



Executive Committee

Specific Alignment with Organizations













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Planning Retreat – September 2021

- Structure
- **Size/Scope**

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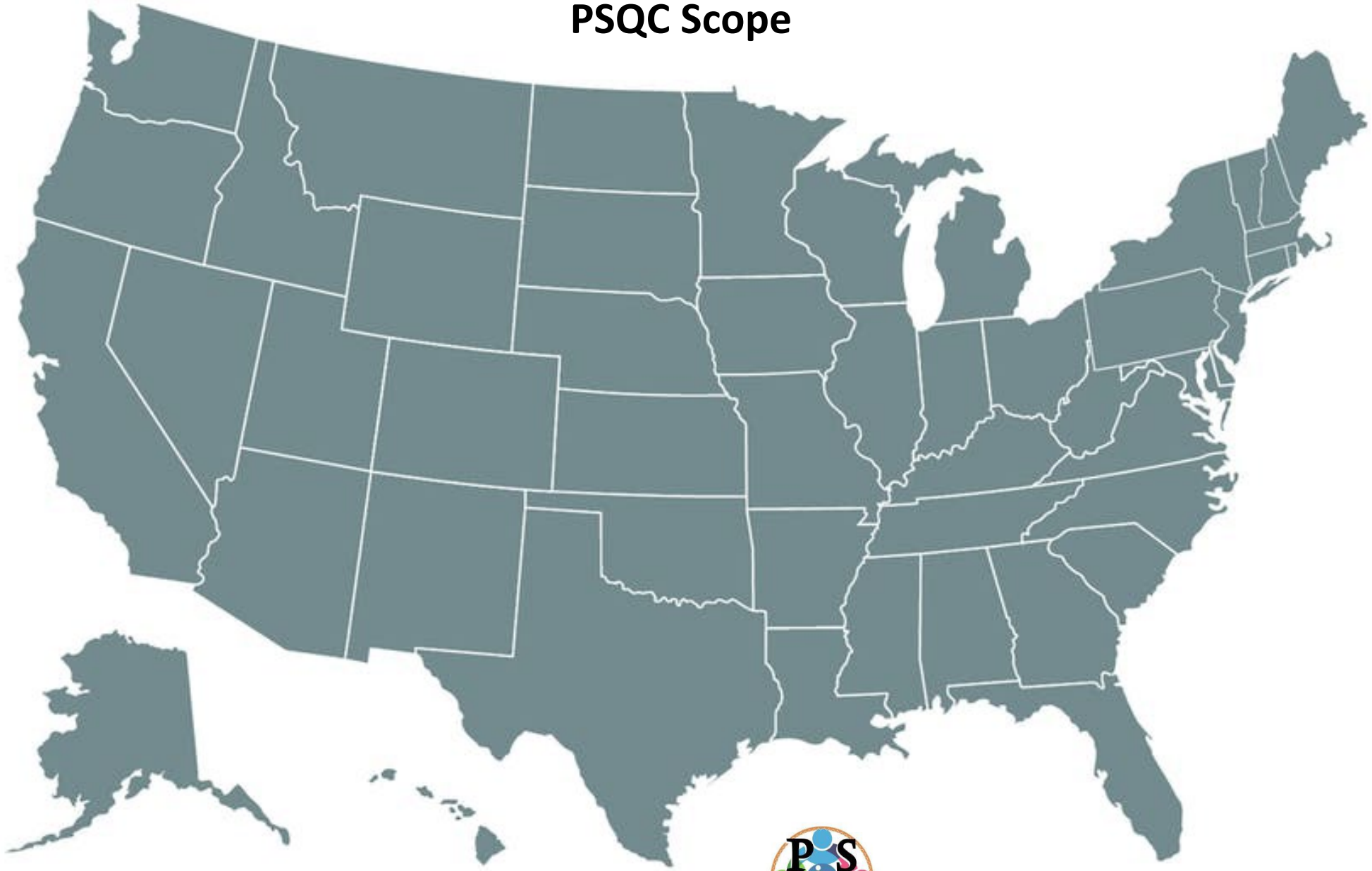
PSQC Scope



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Planning Retreat – September 2021

- Structure
- Size/Scope
- **Next Projects (2 + 3)**

Planning Retreat – September 2021

- Structure
- Size/Scope
- Next Projects
- **Future projects**

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PSQC

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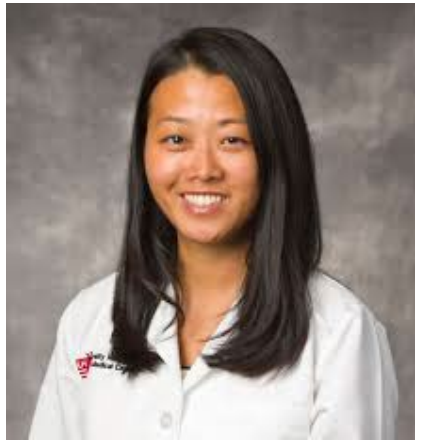
Project Development and Implementation Committee (PDIC)

Dr. Mehul Raval, MD, MS, FAAP, FACS
Anne and Robert H. Lurie Children's Hospital

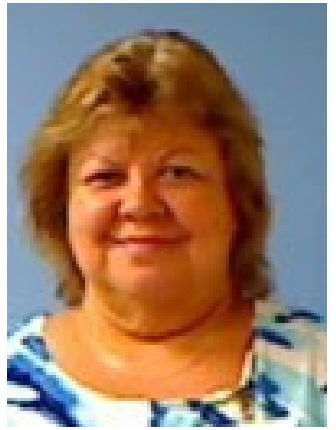
PDIC









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Working Groups (Can expand)

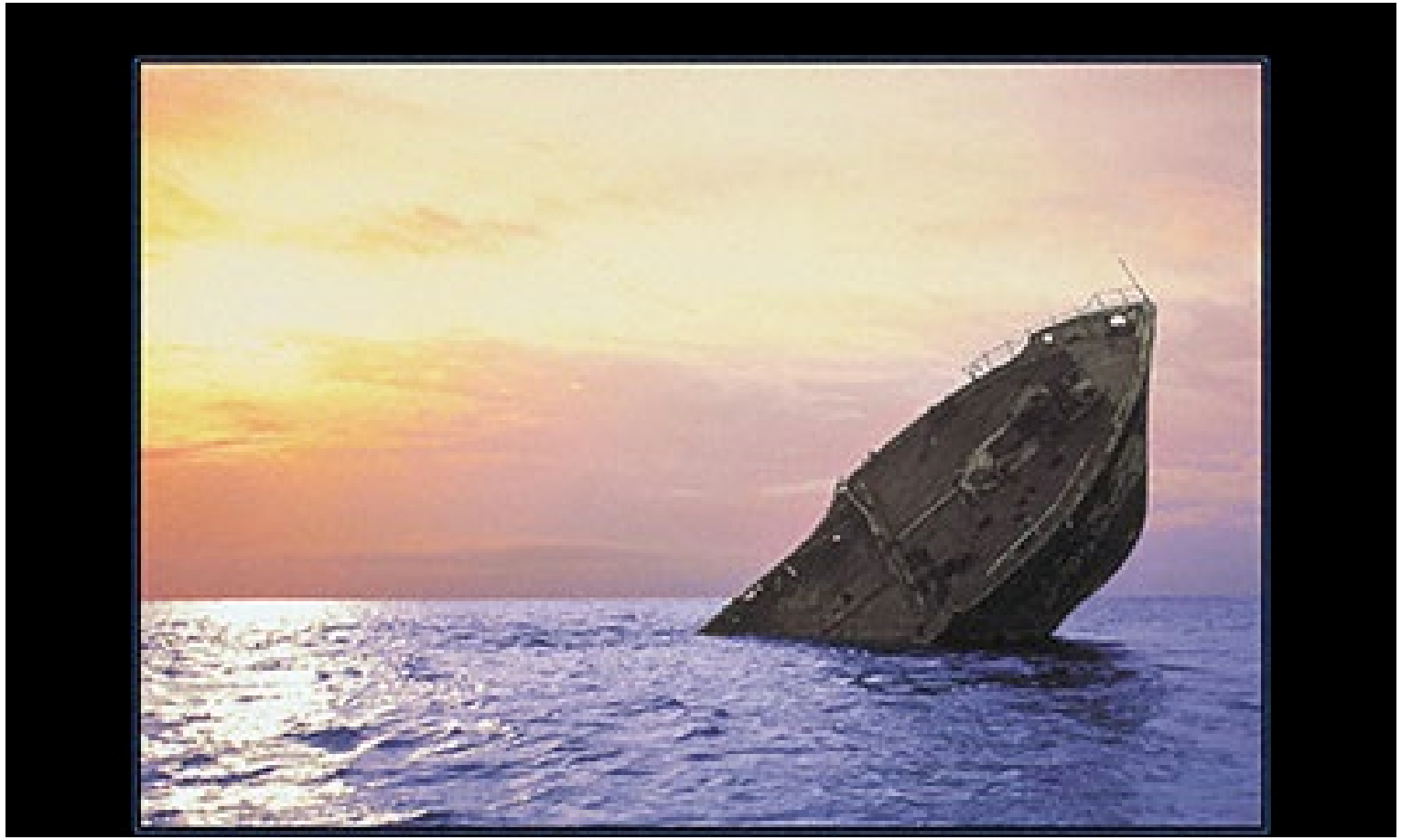
- Project # 1 – Mehul Raval
- Project # 2 – Derek Wakeman/Monica Lopez
- Project # 3 – Shawn Rangel
- Project(s) # 4 - TBD

Planning Retreat – September 2021

- Structure
- Size/Scope
- Next Projects
- Future projects
- **Monthly SCR forum/Webinar**

Planning Retreat – September 2021

- Structure
- Size/Scope
- Next Projects
- Future projects
- Monthly SCR forum/Webinar
- **Matchmaker**



Mistakes

It could be that the purpose of your life is
Only to serve as a warning to others

Call for all Problems

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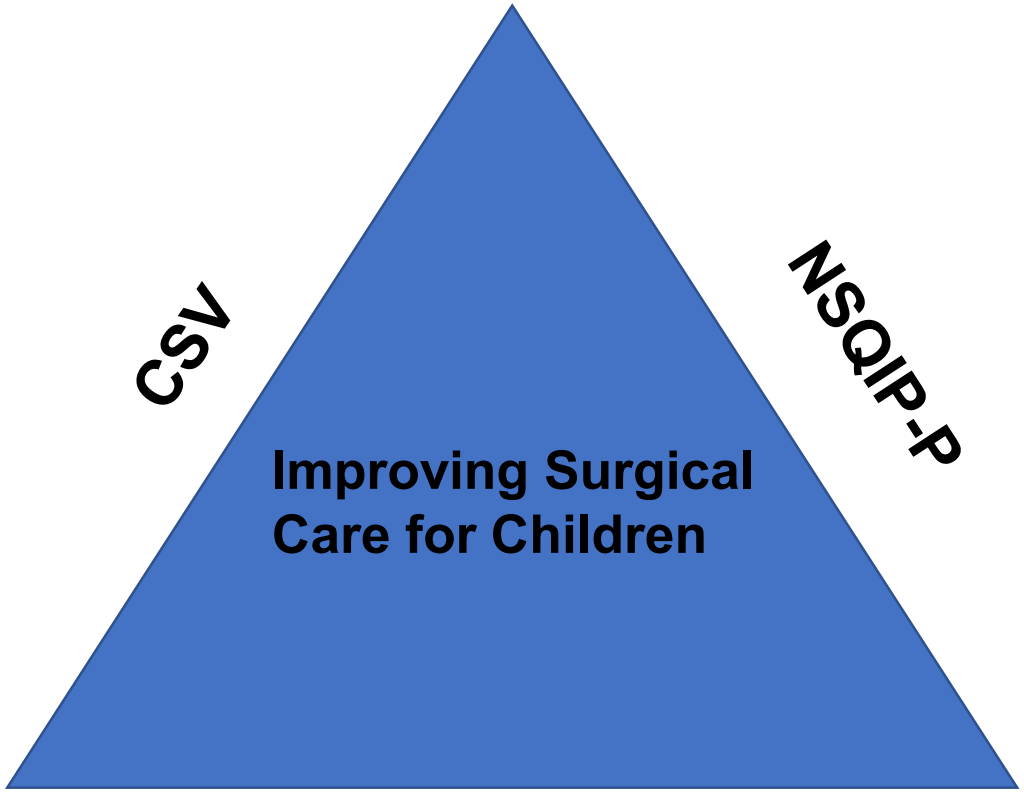
Agenda

- State of the Collaborative
- Retreat summary/progress since
- **Current status with the ACS**

The Triad of Surgical Quality Improvement



Agenda

- State of the Collaborative
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- Current status with the ACS
- **Project Review**
  - **Project 1 – Andrew Hu**

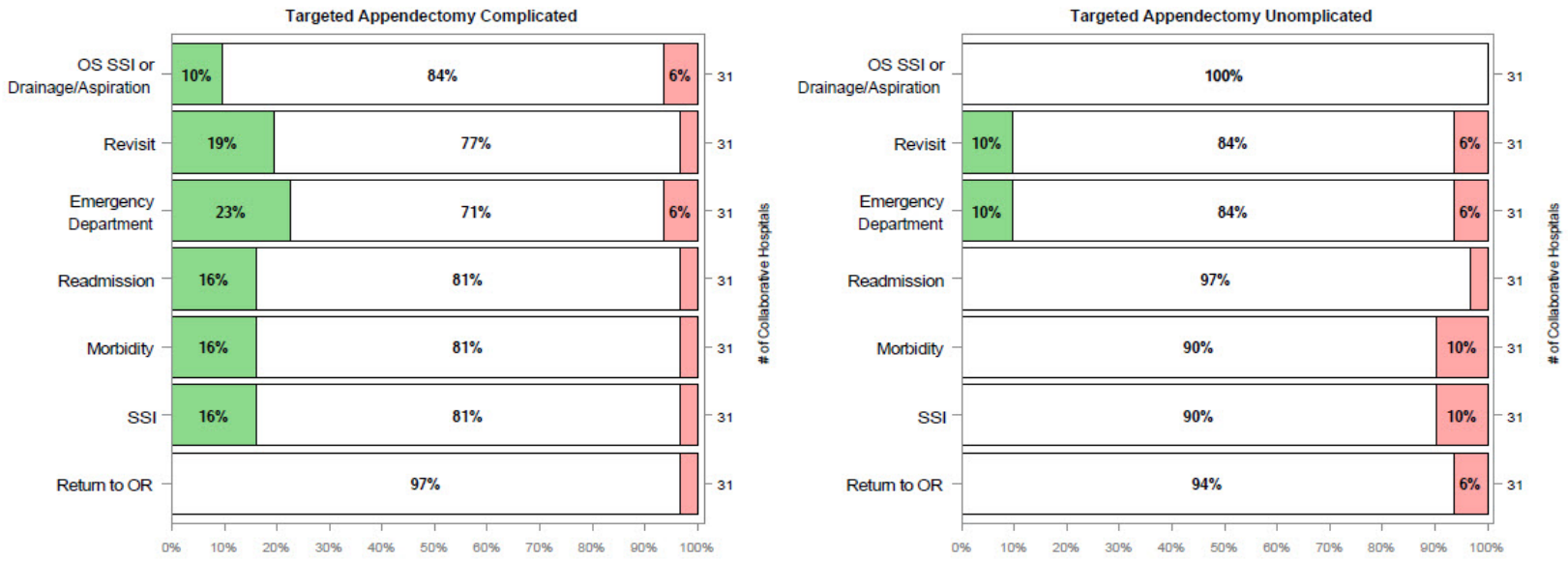
PSQC Overview

ACS NSQIP Pediatric

PSQC Collaborative January 2020 SAR Performance Dashboard

Surgery Dates July 1, 2018 to June 30, 2019

These graphs depict the percentage of collaborative hospitals assigned to the performance assessment categories based on the current SAR.



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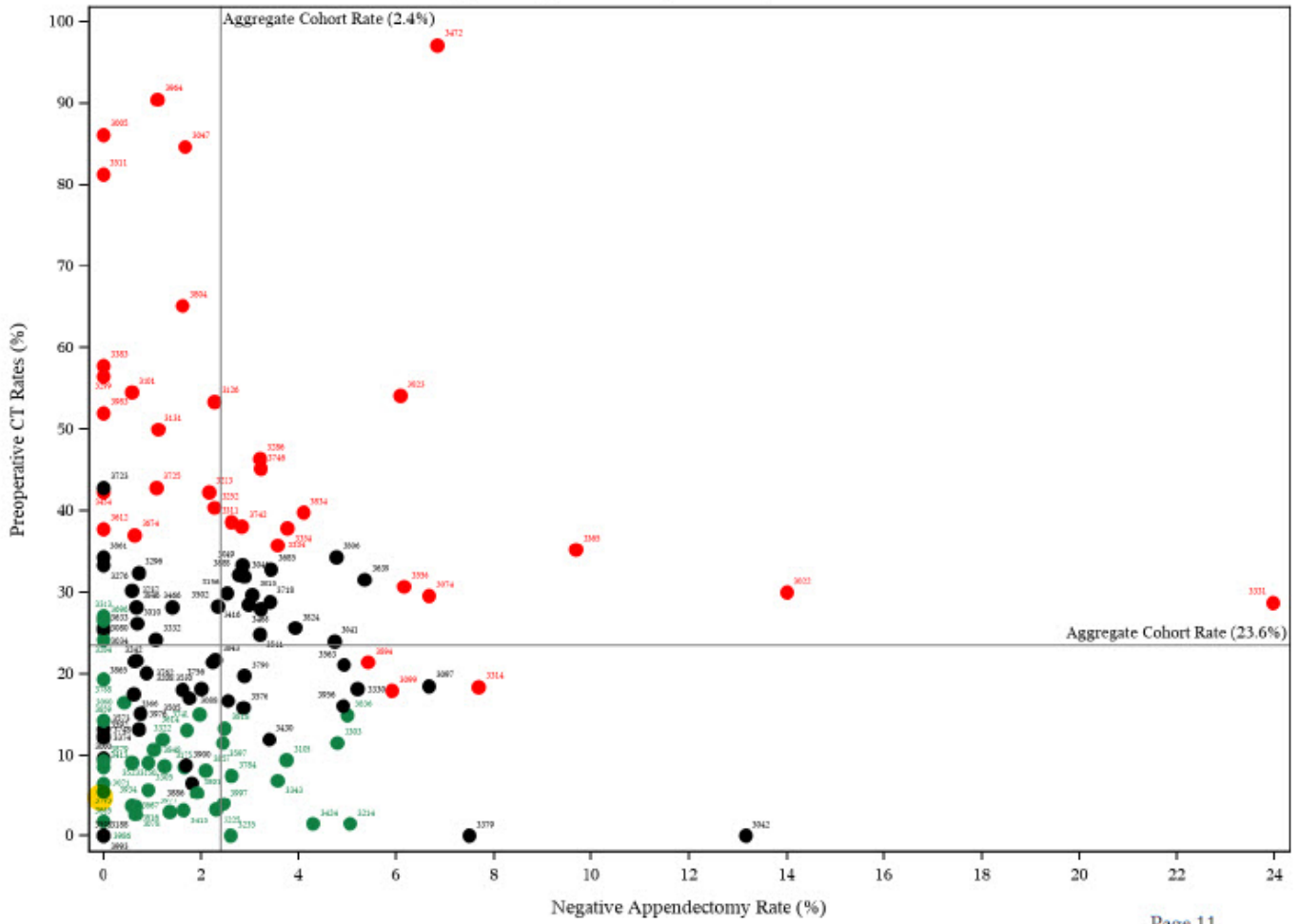
Negative Appendectomy vs. Preoperative CT Rates

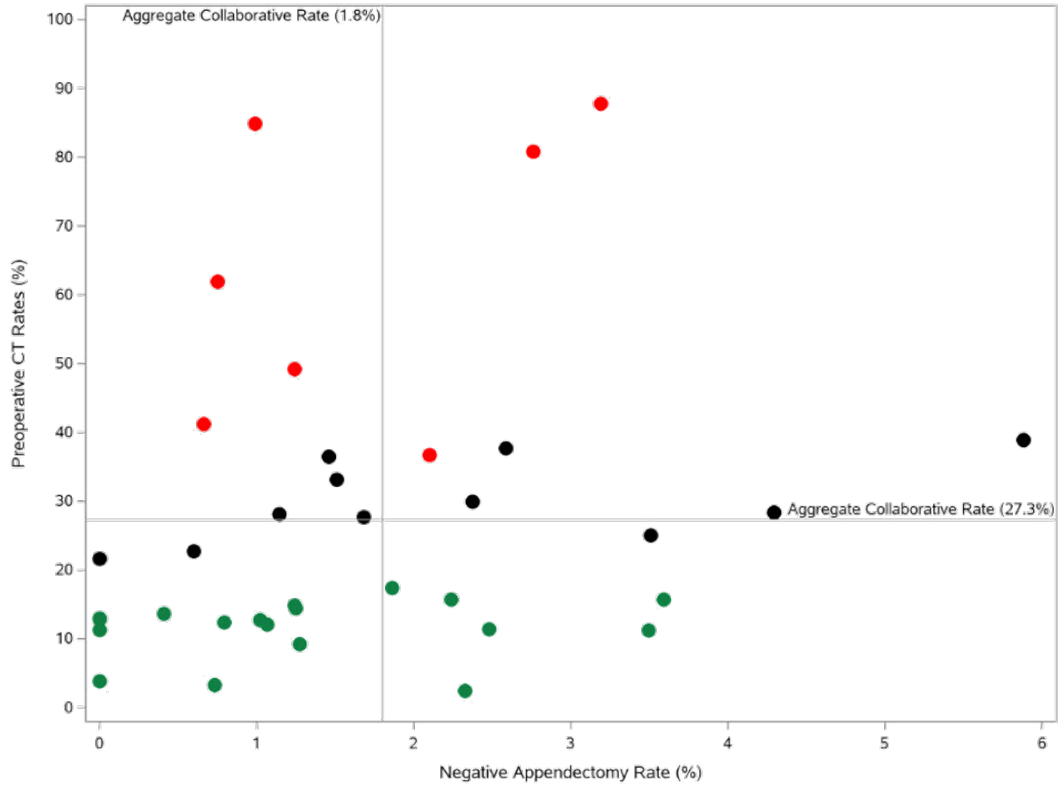


ACS NSQIP Pediatric

PSQC Negative Appendectomy vs. Preoperative CT Rates

July 2020 SAR
Surgery Dates January 1, 2019 to December 31, 2019

The following graph displays the raw rates of negative appendectomies against preoperative CTs for acute appendectomy cases within collaborative hospitals.



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Northwestern Medicine
Feinberg School of Medicine

Ann & Robert H. Lurie
Children's Hospital of Chicago

Computed Tomography Scan Reduction In The Workup of Pediatric Appendicitis

Andrew Hu, MBChB, MS; Azraa S. Chaudhury, BA; Terry Fisher, MPH, PMP; Elisa Garcia, BSN, RN, CCRP; Loren Berman, MD; Kuojen Tsao, MD; Stephen B. Shew, MD; Shawn Rangel, MD, MSCE; Kevin P. Lally, MD, MS; Mehul V. Raval, MD, MS

DISCLOSURES|

- NUCATS Pilot Grant: UL1TR001422

INTRODUCTION| Well established association between early age radiation exposure and later cancer development

Original Investigation

FREE

January 20, 2021

Risk of Hematologic Malignant Neoplasms From Abdominopelvic Computed Tomographic Radiation in Patients Who Underwent Appendectomy

Kyung Hee Lee, MD, PhD[1,2]; Seungjae Lee, MS[3]; Ji Hoon Park, MD, PhD[1,2,3]; et al

» Author Affiliations | Article Information

JAMA Surg. 2021;156(4):343-351. doi:10.1001/jamasurg.2020.6357

AMERICAN COLLEGE OF SURGEONS

Inspiring Quality:
Highest Standards, Better Outcomes

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INTRODUCTION| Three Aims

Aim #1

To measure preoperative CT scan use among PSQC members

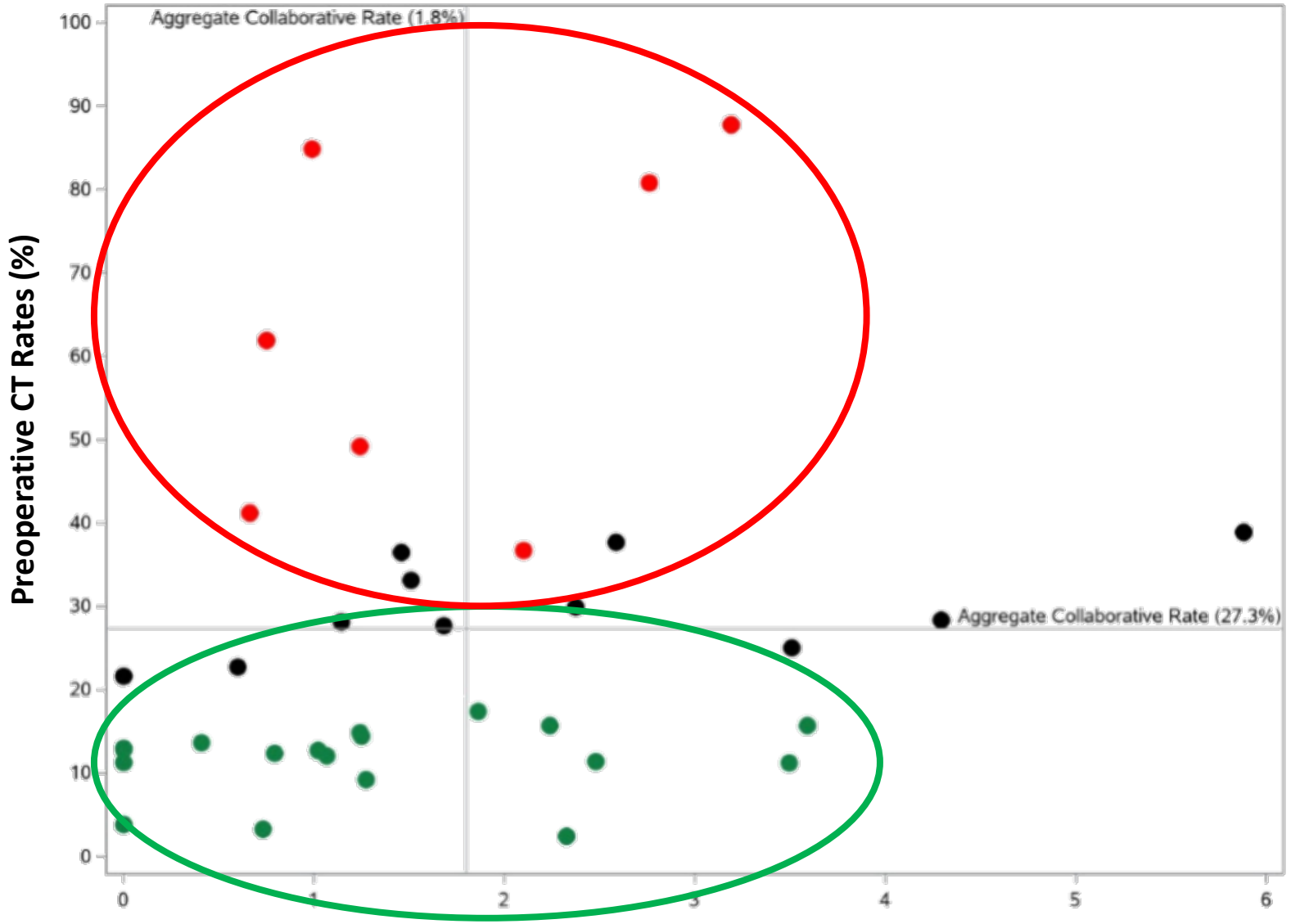
Aim #2

To identify barriers and facilitators to CT reduction

Aim #3

To facilitate institutional quality improvement efforts to reduce CT

MEASURING CT SCAN USE| NSQIP-Pediatrics 2019 SAR



IDENTIFYING BARRIERS & FACILITATORS| Theoretical Domains Framework (TDF)

Source:Atkins, L., Francis, J., Islam, R. *et al.* A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implementation Sci* **12,** 77 (2017). https://doi.org/10.1186/s13012-017-0605-9

- Focus groups including surgeons, radiologists, EM, SCRs
- Semi-structured interview guide developed based on TDF
- Focus groups probed to identify barriers and facilitators for CT reduction

IDENTIFYING BARRIERS & FACILITATORS| Thematic Saturation Achieved After 13 Focus Groups

7 High performing hospitals

6 Low performing hospitals

13 Pediatric Surgeons

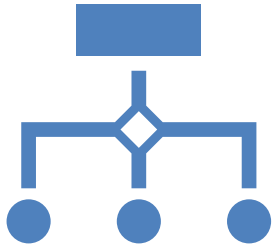
5 Pediatric Emergency Medicine Physicians

5 Radiologists

5 Surgical Clinical Reviewers

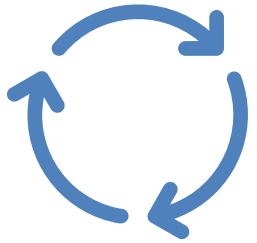
IDENTIFYING BARRIERS & FACILITATORS| 4 Key Themes

Imaging resources



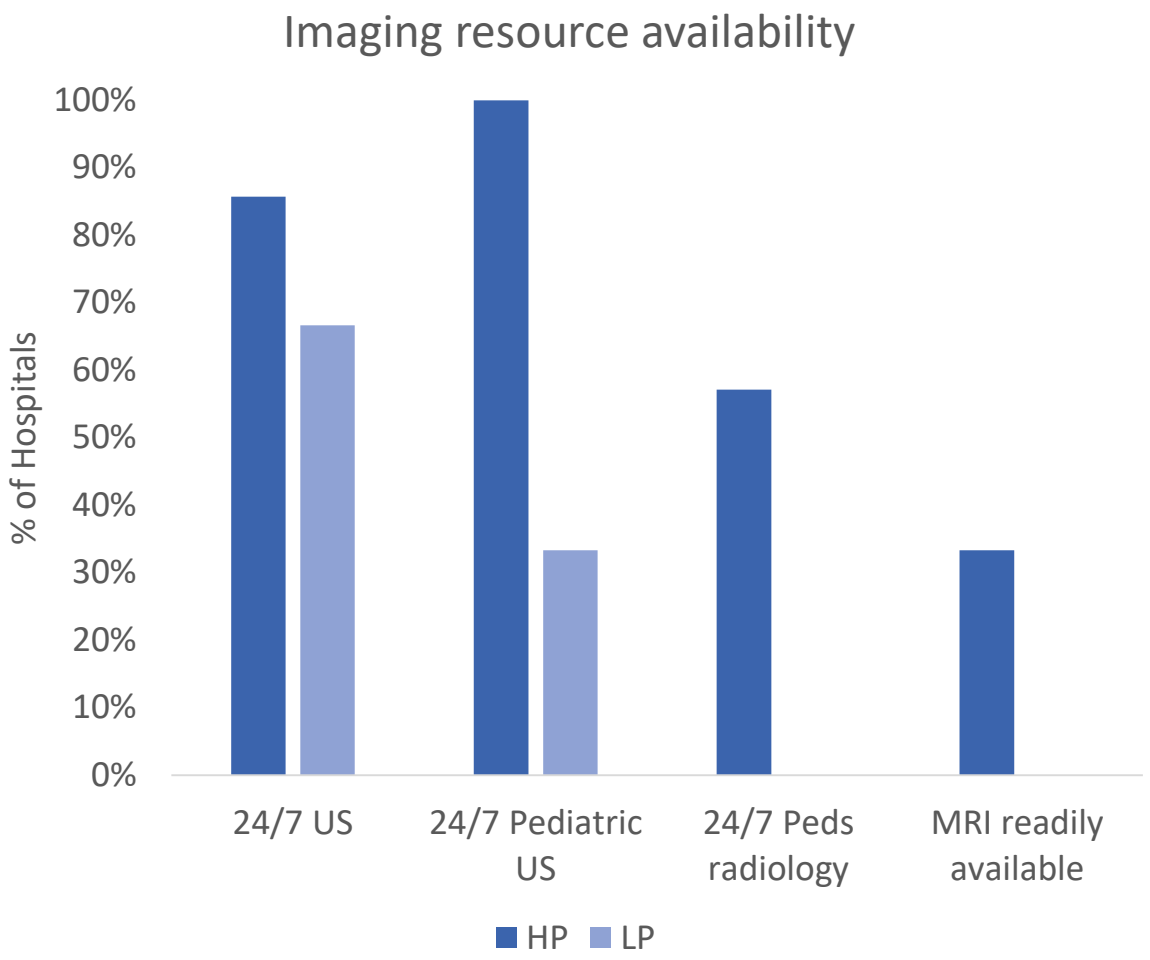
Protocol implementation & adherence

Presence of a champion



QI resources & experience

IMAGING | Majority of HPs have 24/7 high quality pediatric ultrasound



High performers

> We have 24/7 US in house ... that kind of changed our workflow considerably…we have the consistency and availability to perform an US

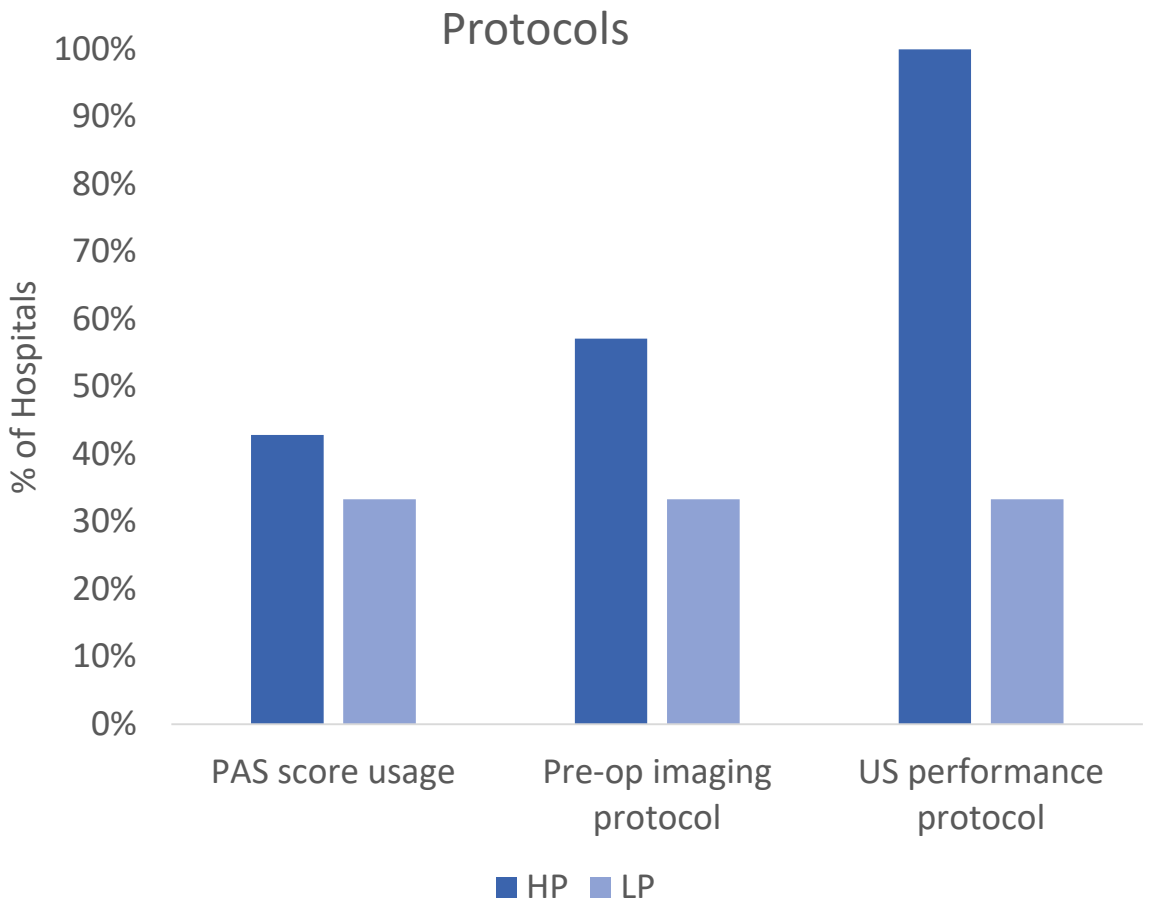
> ...our US techs are very good...it's only pediatric radiologists who are interpreting our US

Low performers

> Not having 24/7 ultrasound is another problem and…we get a lot of non diagnostic ultrasounds

> 2 of 7 [sonography techs] would actually be able to go ahead and reliably find an appendix on the exam

PROTOCOLS | Majority of HPs have adhered to pre-op imaging protocols and US performance protocols



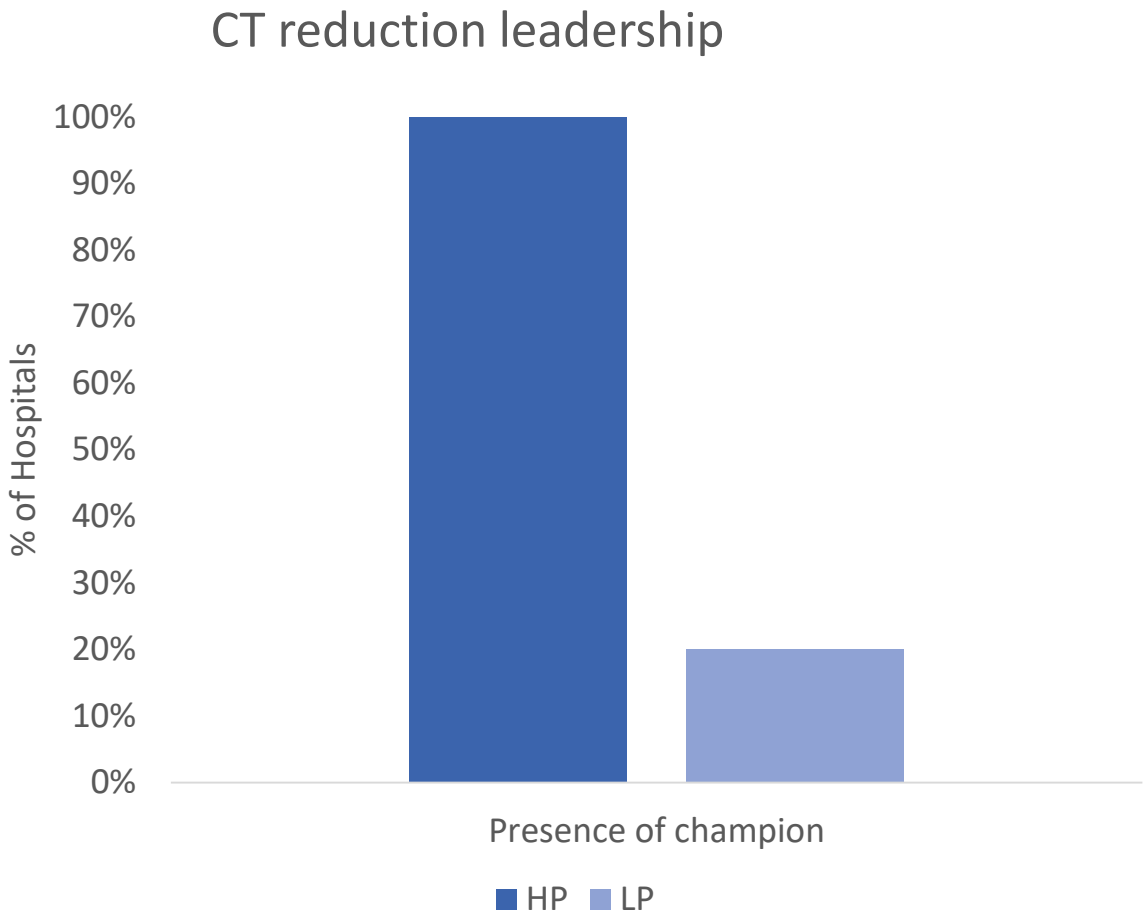
High performers

- “We adopted a guideline for evaluation that included the pediatric appendicitis score to guide whether imaging was necessary
- “We met with all the [US] techs…we agreed on a standardized template

Low performers

- “Even though we have the algorithm, they may think that they know what to do better
- “With turnover in our ER staff, they pretty much have ignored [the protocol] and go straight to imaging

CHAMPION| All HPs had one champion supporting CT reduction



100% of identified champions included radiology

High performers

> "It was him who got it going .... we used to do an appendix ultrasound on every abdomen ultrasound [because] the technologist needed the practice

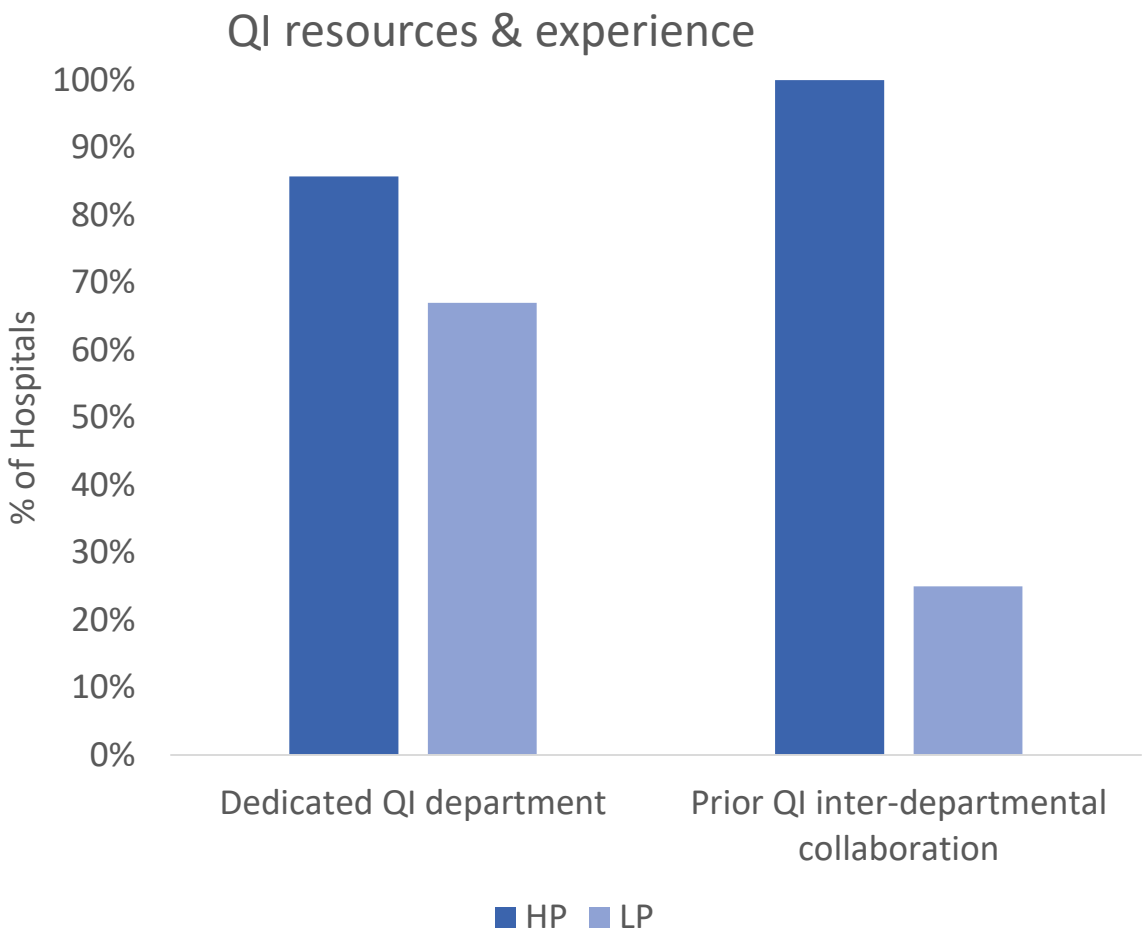
> "I think we had champions…they had the support of their entire sections to make decisions for the group

Low performers

> "He literally gave up on the project because it was just going nowhere

> "I think some of it has to do with current leadership... I'm not sure my beating my head against the wall is worth it for me right now.

QI | Majority of HPs have QI infrastructure in place for interdisciplinary collaboration



High performers

> We review them that our NSQIP meetings with regularity. We review aggregate data that's meaningful

> We have a whole QI department actually...in our clinical quality department, we have nurses pretty much exclusively that helped support

Low performers

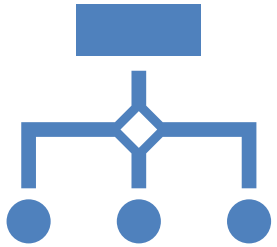
> The quality department is myself and my director who's actually leaving

> We don't have any dedicated administrative and academic time for quality improvement

IDENTIFYING BARRIERS & FACILITATORS| 4 Key Themes

Imaging resources

Consistent availability of high quality pediatric focused resources

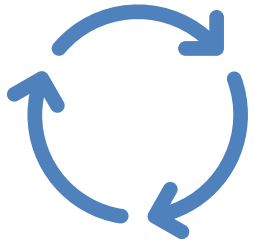


Protocol implementation & adherence

Presence of and adherence to protocols guiding imaging decision making & execution

Presence of a champion

Presence of a radiation reduction champion



QI resources & experience

Availability of QI infrastructure and interdisciplinary collaboration

FACILITATING QI | Aim statements

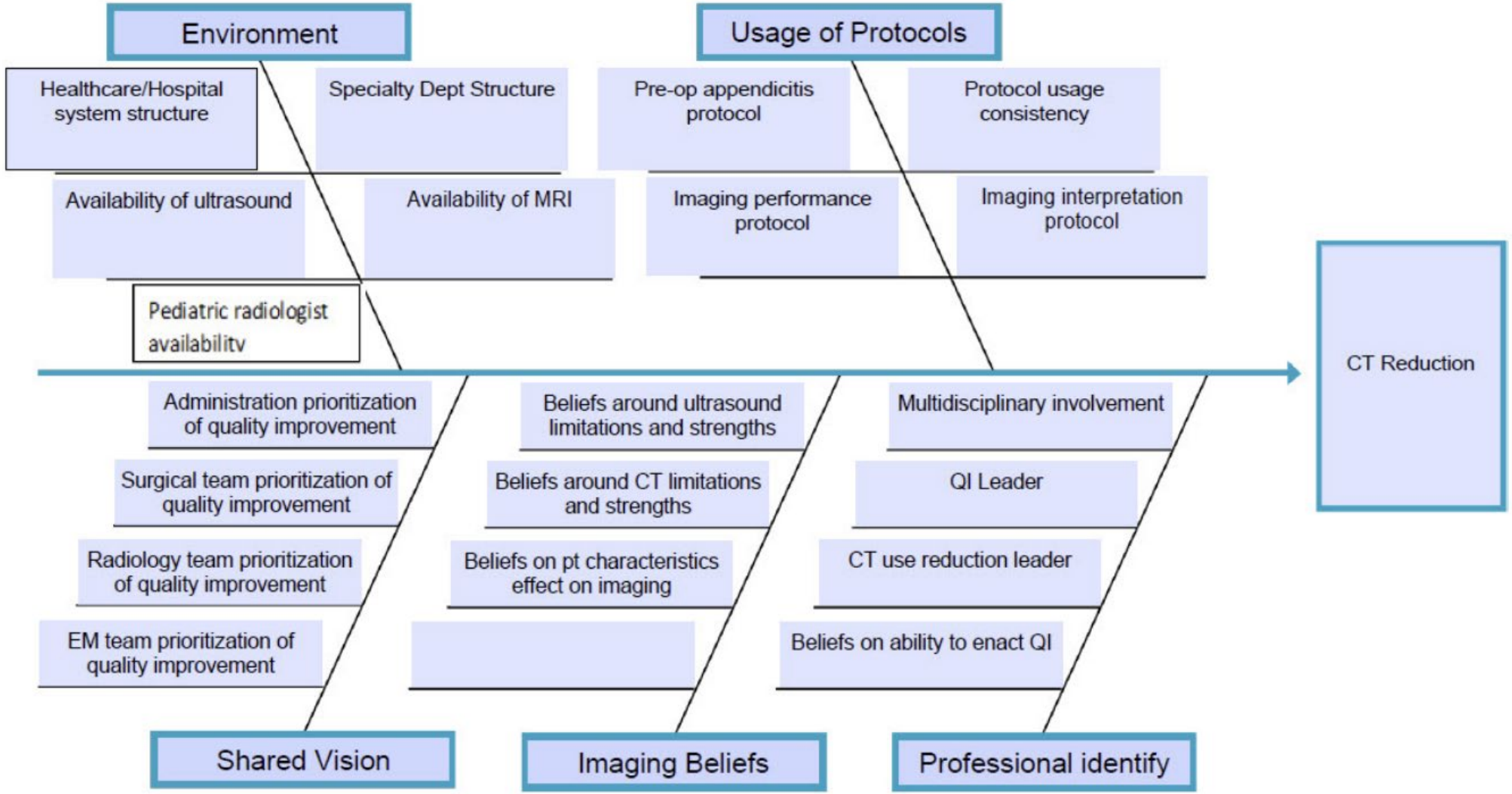
Aim

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

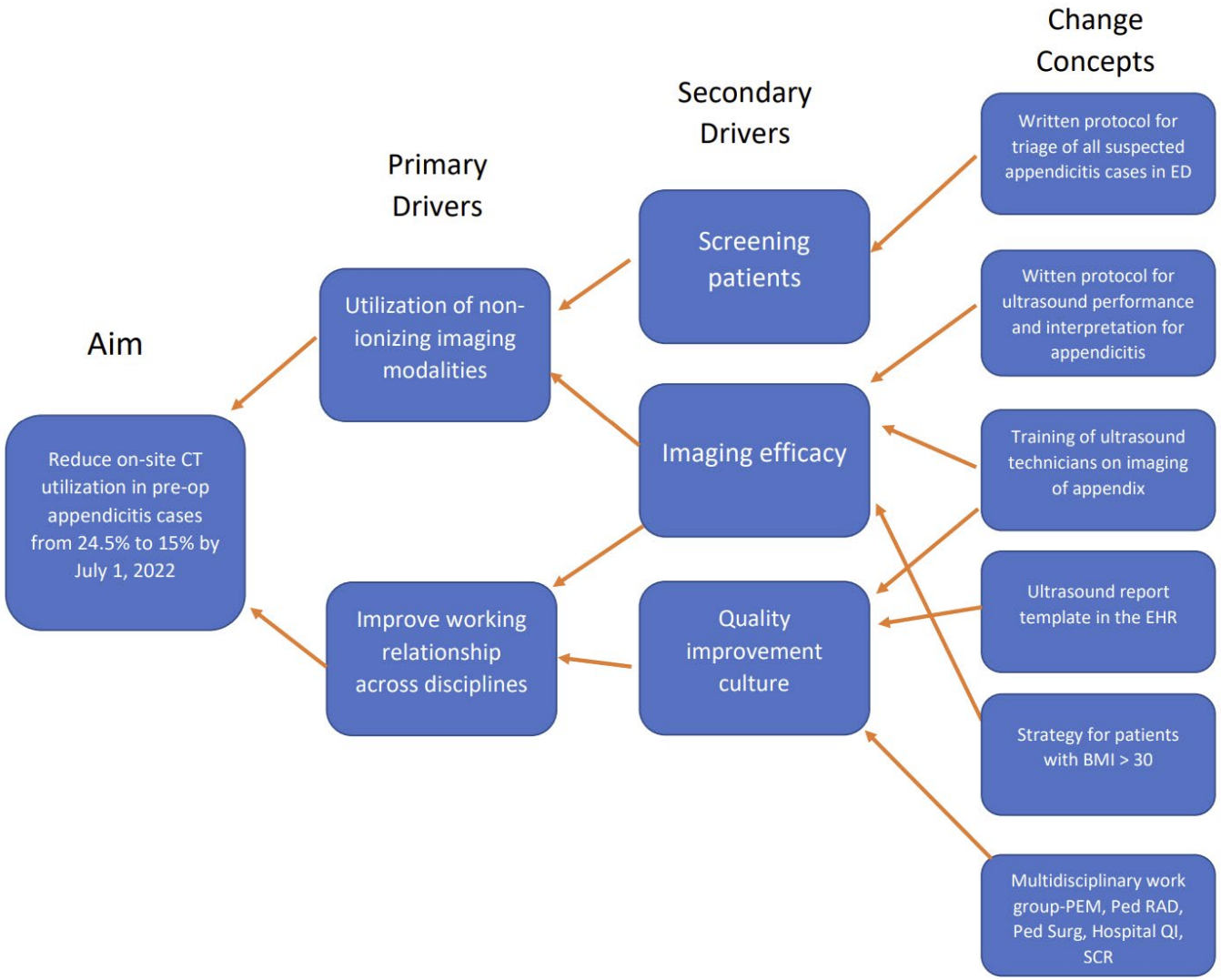
Balancing Measure

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

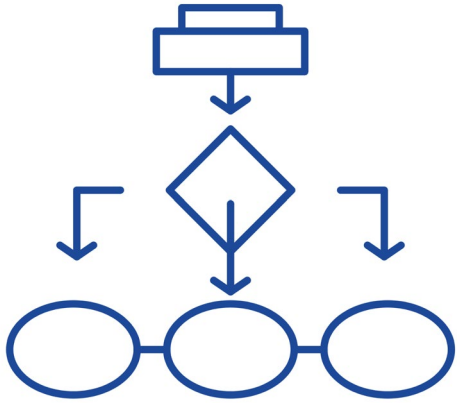
FACILITATING QI| Implementation Guide



FACILITATING QI| Implementation Guide

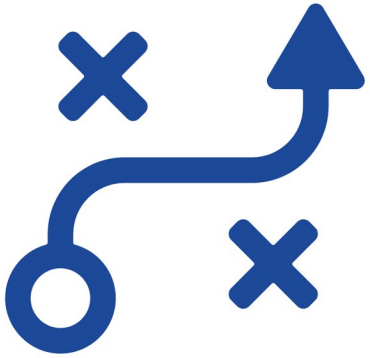


FACILITATING QI| Implementation Guide



Triage Protocols

Quality Measures

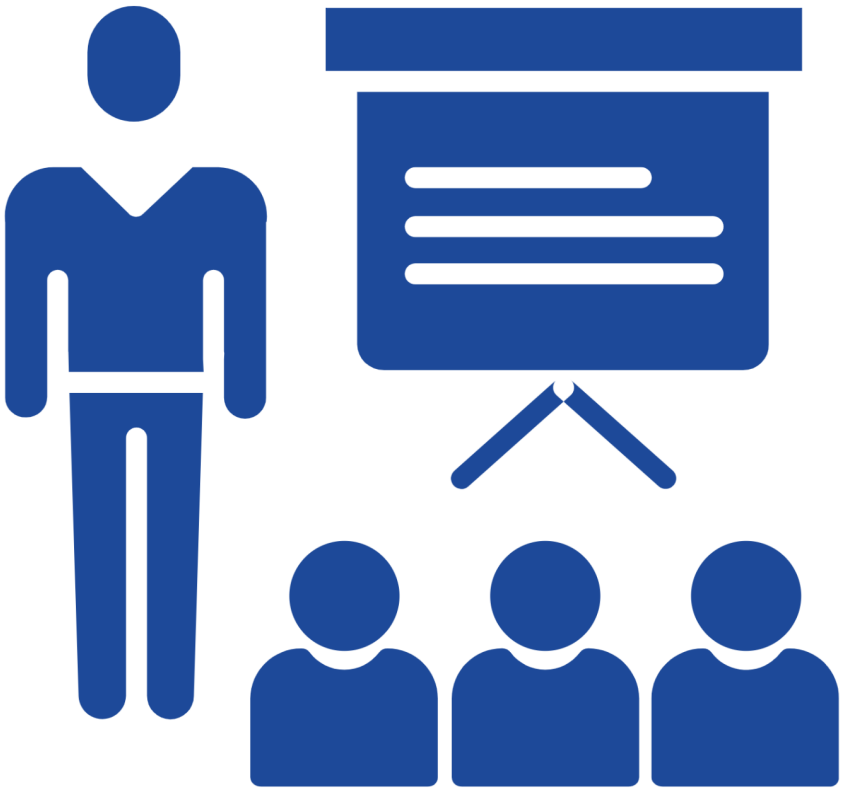


Intervention Strategies

Imaging Protocols

FACILITATING QI| Peer Coaching

INTERVENTION STRATEGIES| Seminars



- Session 1: Implementation Guide
- Session 2: Ultrasound
- Session 3: MRI
- Session 4: Case Studies

LIMITATIONS|

- Qualitative study with 13 children's hospitals
- Participating institutions did not include any non-dedicated children's hospitals
- Focus groups did not contain any representatives from hospital administration or imagining technicians
- Focus group participants were made aware of purpose of study, potentially biasing responses

CONCLUSIONS

- CT scans continue to be used in the diagnosis of pediatric appendicitis
- Multiple factors play important roles in CT scan reduction
- Collaborative approach
- Institutions have begun to use our resources
- Continued Monitoring & Sustainability
- Incremental Improvement

Acknowledgements

Ann & Robert H. Lurie Children's Hospital of Chicago

Azraa Chaudhury

Dr. Mehul V. Raval

UTHealth The University of Texas Health Science Center at Houston | McGovern Medical School

Ms. Terry Fisher

Dr. Kevin Lally

Dr. Kuojen Tsao

Nemours Alfred I. duPont Hospital for Children

Dr. Loren Berman

Boston Children's Hospital
Until every child is well

Dr. Shawn Rangel

Lucile Packard Children's Hospital Stanford

Dr. Stephen B. Shew

Questions?

Implementation Guide

Reducing postoperative CT imaging utilization in pediatric appendicitis

Monica E Lopez, MD MS

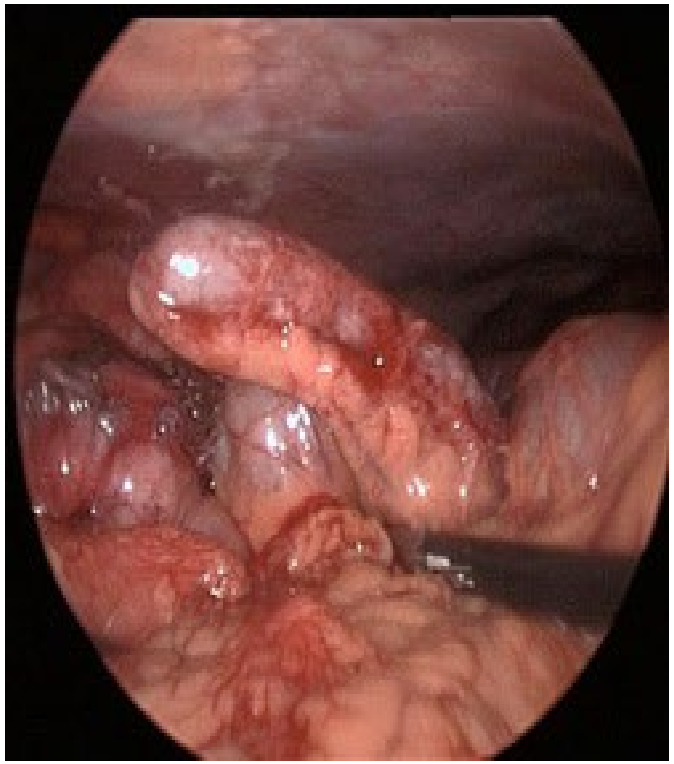
Derek Wakeman, MD

ACS NSQIP PEDIATRIC

"Quality Improvement through Quality Data"

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

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

Implementation Guide

Aim Statement

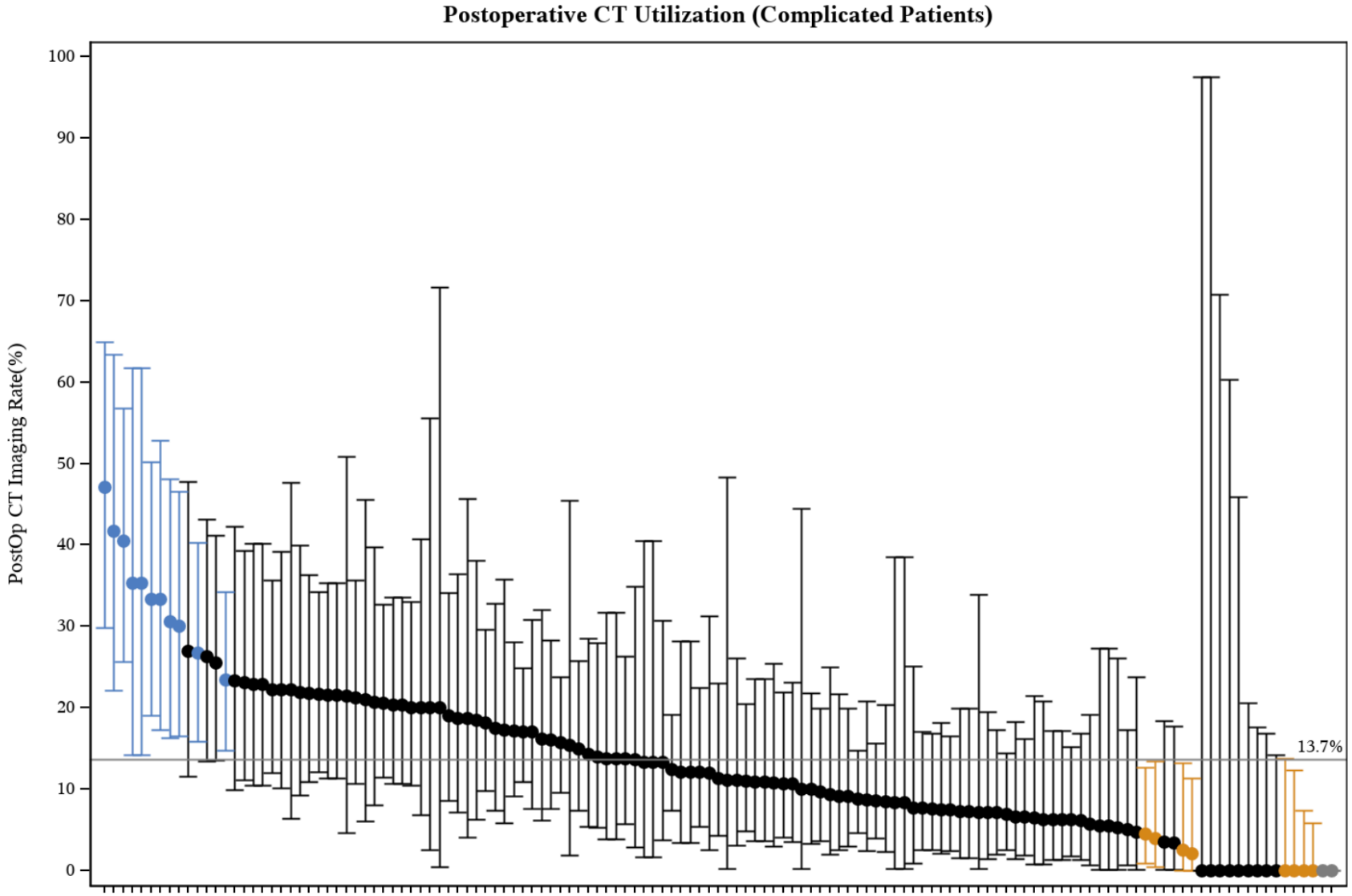
By June 30, 2022, the aggregate CT utilization rate for the Collaborative will be reduced from 24.5% to 15%.

Balancing Measure

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

Variation in CT Utilization

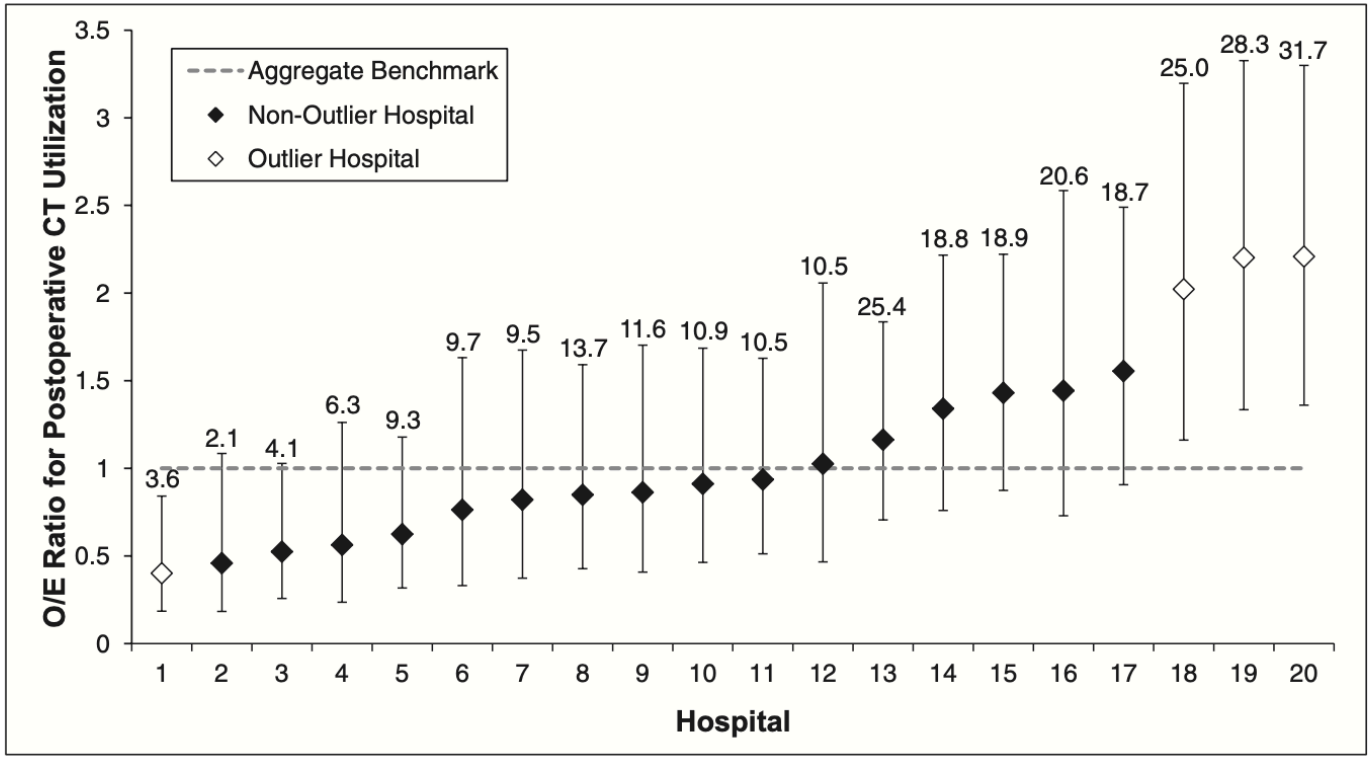
Complicated Appendicitis



Utilization and Performance Benchmarking for Postoperative Imaging in Children With Complicated Appendicitis

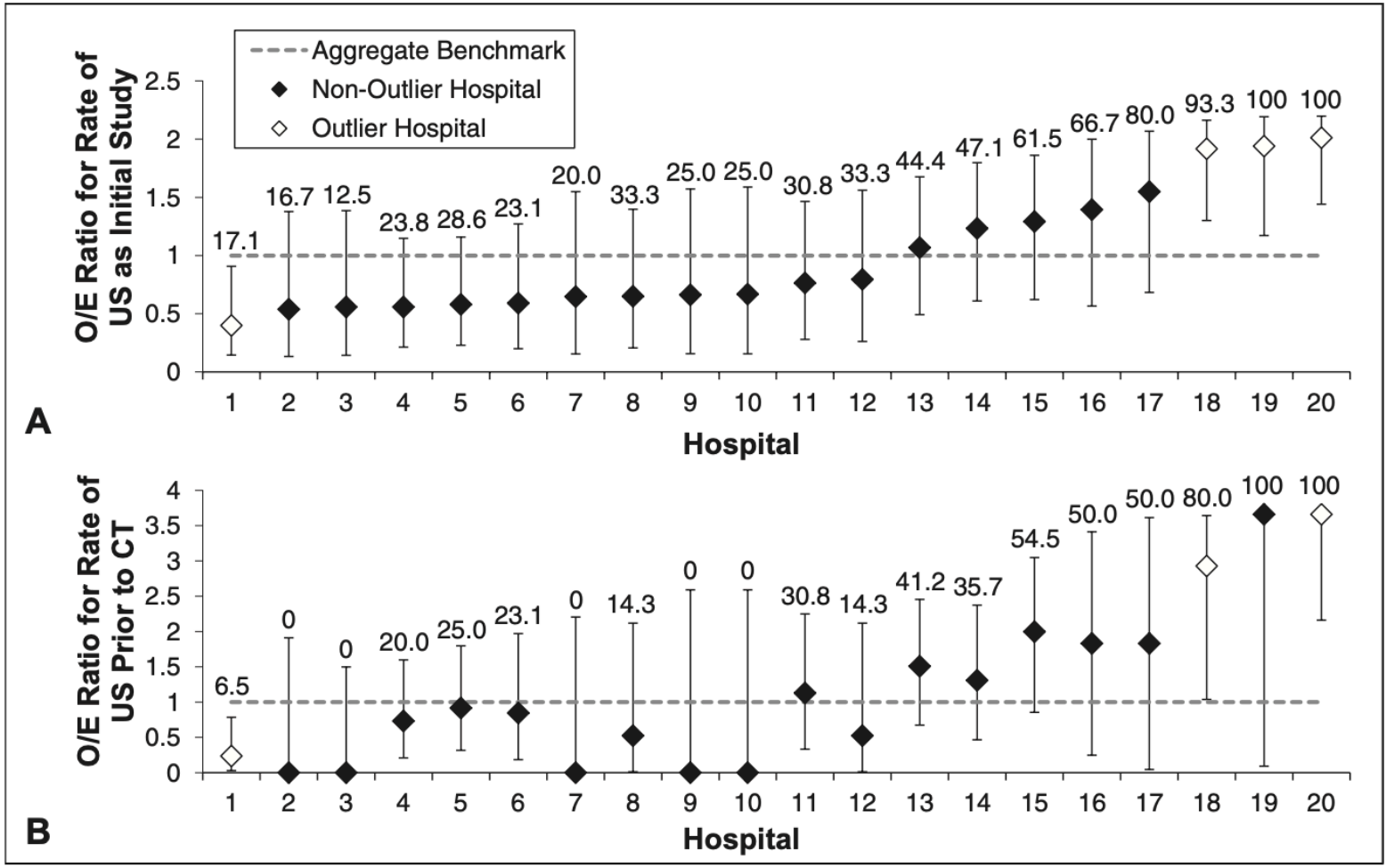
Results From a Multicenter Collaborative Cohort Study

Mark A. Kashtan, MD, MPH, Dionne A. Graham, PhD,† and Shawn J. Rangel, MD, MSCE*✉*



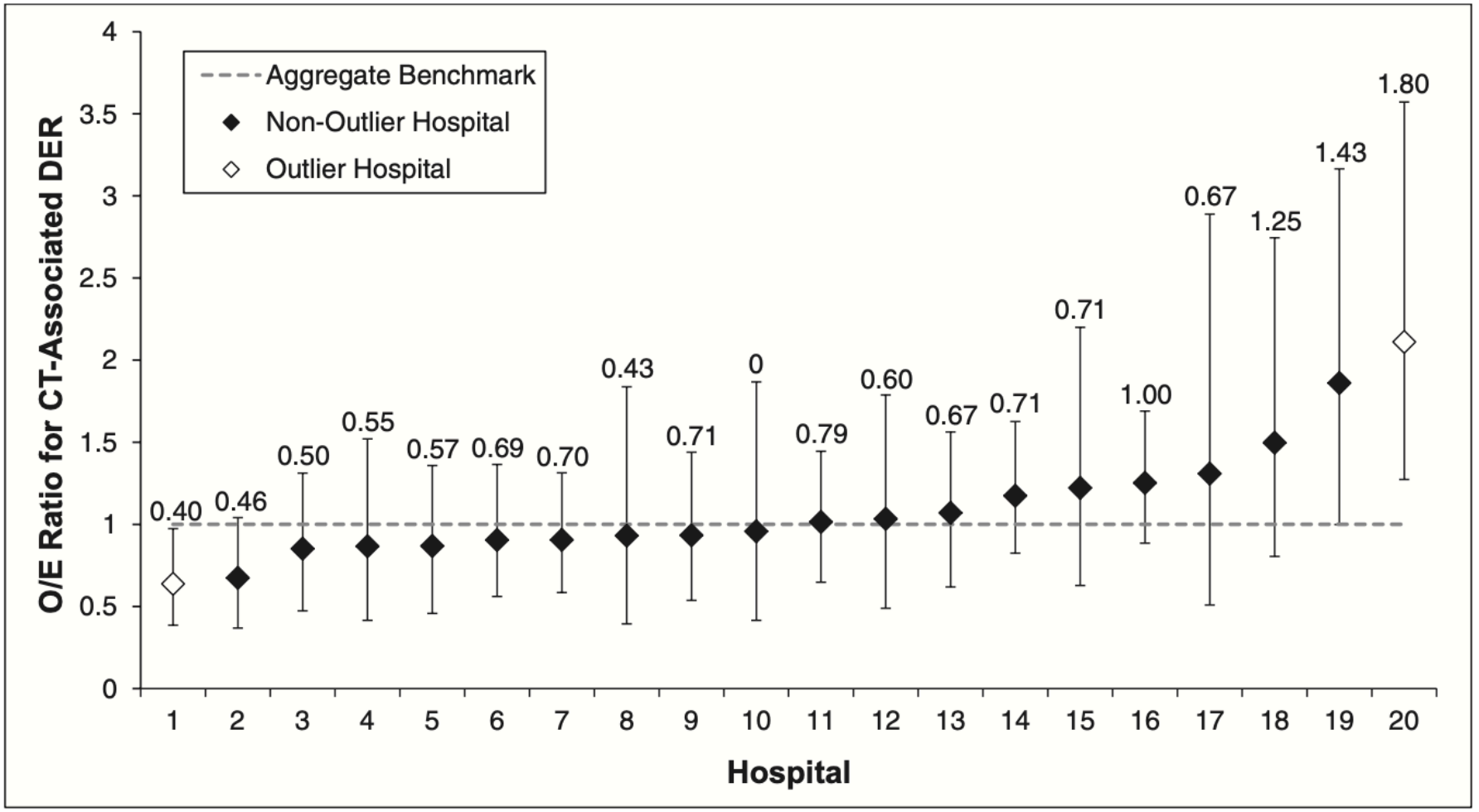
Ann Surg 2022;275:816–823

Variation in US Process Measures



Ann Surg 2022;275:816–823

Variation in CT-associated DER

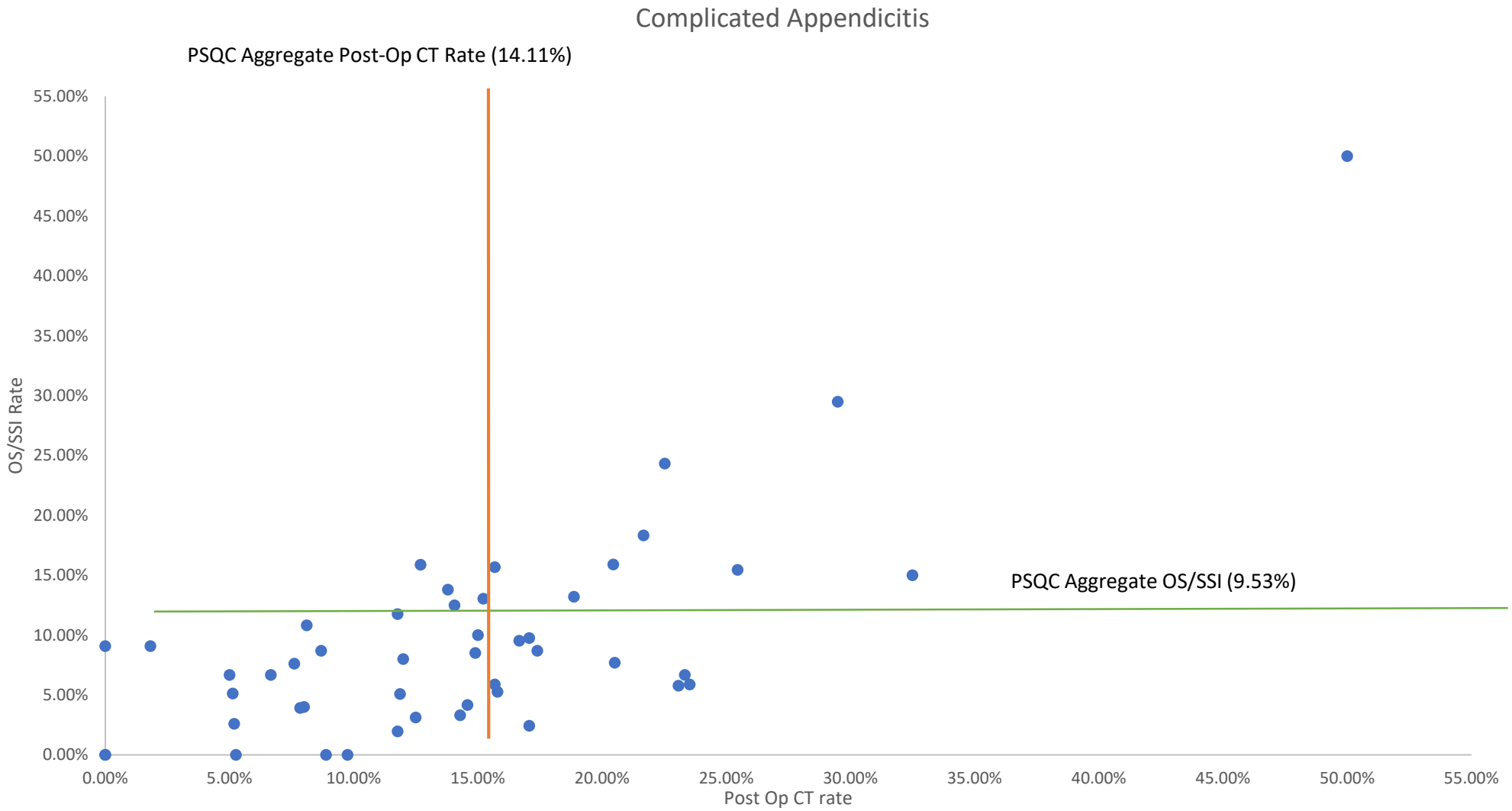


Ann Surg 2022;275:816–823

Postoperative Imaging Utilization

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

OS/SSI Rate vs. Postop CT Rate



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
- Other?

Next Steps

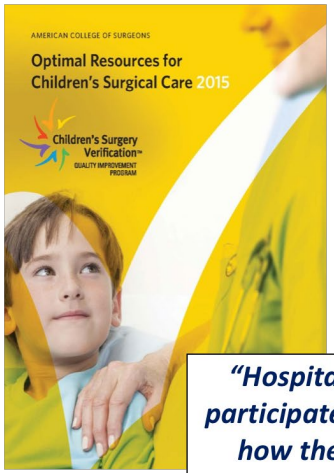
- Recruiting Working Group members
- Await review of Collaborative data
- PSQC Project 2 Working Group
  - Meeting 5/26 @9 am CST

PSQC Collaborative (proposed) Project #3: Improving stewardship for surgical antimicrobial prophylaxis

- Overview of the NSQIP-P antimicrobial stewardship pilot
- SAP utilization trends across NSQIP-P hospitals
- Overview of the NSQIP-P prophylaxis utilization site report
- Considerations around prioritization of collaborative efforts
- Thoughts on timeline and next steps....

Goals of the NSQIP-Pediatric Antimicrobial Stewardship Pilot Project

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…"

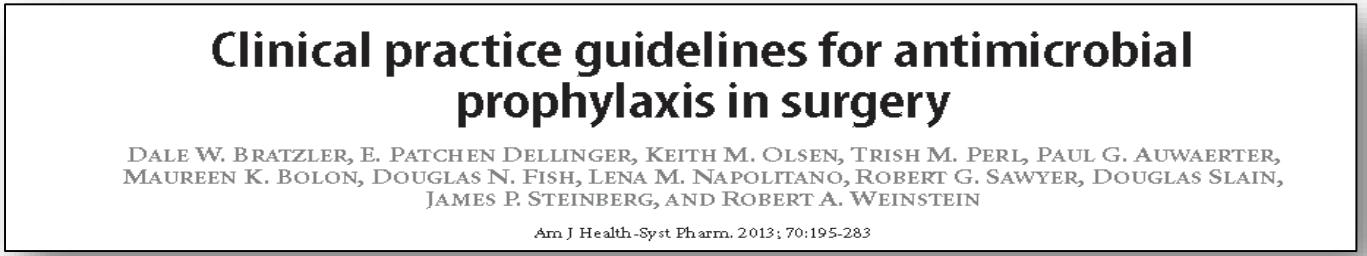
Evolution of NSQIP-Pediatric to collect an increasing array of comparative performance data to support CSV requirements…

- *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 (2019)***

Goals of the NSQIP-Pediatric Antimicrobial Stewardship Pilot Project

- To characterize and benchmark variation in the use of SAP across NSQIP Pediatric hospitals
- To provide hospitals with relevant balancing measure data (eg, SSI rates) to help prioritize efforts around antimicrobial stewardship *and* infection prevention
- **To facilitate sharing of best practices from exemplar hospitals with favorable SAP utilization and SSI profiles**

Surgical Antimicrobial Prophylaxis Report: Framework for Measure Development



- Endorsed by American Society of Hospital Pharmacists (ASHP), Infectious Disease Society of America (IDSA), Surgical Infection Society (SIS)
- Framework used to define “rules” for appropriate utilization; further modified by NSQIP-P Specialty Advisory Councils

Surgical Antimicrobial Prophylaxis Report: Utilization, Compliance & Balancing Measures

SAP measures (adjusted for procedure-mix among hospitals)

Compliance measures based on consensus guidelines:

- % of cases **received after incision** (“timing non-compliance”)
- % of cases **inappropriately broad spectrum of coverage** (“spectrum non-compliance”)

Utilization measures based on relative utilization with peers:

- % of cases **any SAP utilized (clean cases without use of implants/drains)**
- % of cases **SAP extended into the postoperative period**
- % of cases **SAP utilized postoperatively > 24 hours**

Balancing measures (adjusted for procedure mix & comorbidities)

- SSI rate (Any, incisional & organ space)
- UTI rate (for Urology procedures)

NSQIP-Pediatric SAP Pilot Data: Procedure Buckets for case-mix adjustment

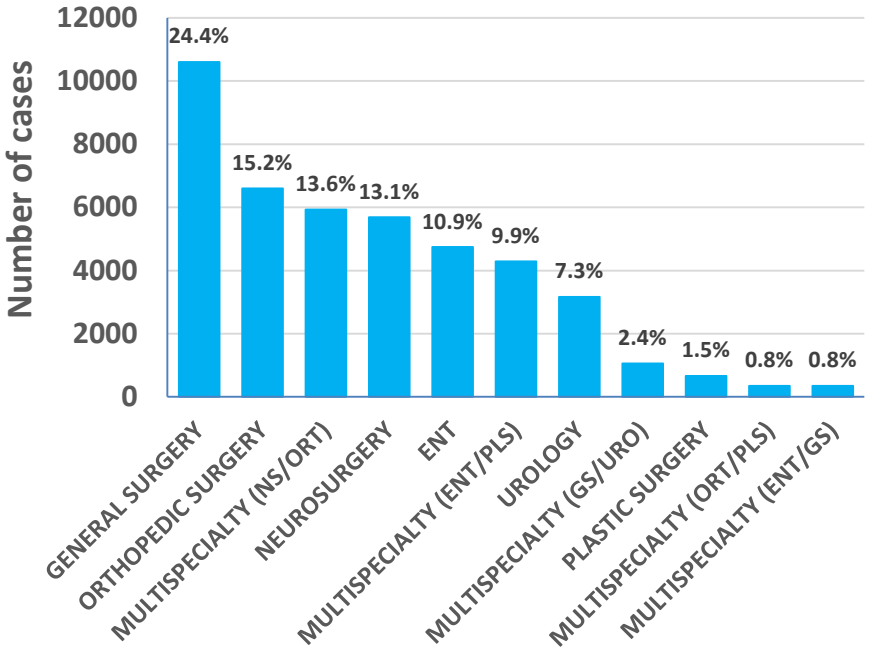
Procedure Bucket	Specialty	Cases (n)
GASTROSTOMY	GENERAL SURGERY	2482
PYLOROMYOTOMY	GENERAL SURGERY	1830
CHOLECYSTECTOMY	GENERAL SURGERY	1398
PECTUS	GENERAL SURGERY	781
GASTROSTOMY CLOSURE	GENERAL SURGERY	716
GASTROESOPHAGEAL REFLUX	GENERAL SURGERY	541
THORACIC-LUNG RESECTION	GENERAL SURGERY	468
SMALL BOWEL	GENERAL SURGERY	403
COLORECTAL-OTHER	GENERAL SURGERY	392
COLORECTAL-COLOSTOMY	GENERAL SURGERY	289
OVARY-ADNEXA	GENERAL SURGERY	256
COLORECTAL-ANORECTAL MALFORMATION	GENERAL SURGERY	254
COLORECTAL-PULLTHROUGH	GENERAL SURGERY	137
THORACIC-OTHER	GENERAL SURGERY	137
ESOPHAGUS NON-REFLUX	GENERAL SURGERY	132
COLORECTAL-PULLTHROUGH WITH POUCH	GENERAL SURGERY	100

Procedure Bucket	Specialty	Cases (n)
ENDOSCOPIC AIRWAY	ENT	1336
TYMPANOPLASTY	ENT	1112
COCHLEAR IMPLANT	ENT	1058
MASTOID	ENT	771
TRACHEOSTOMY	ENT	212
ENT-SALIVARY	ENT	152
OPEN AIRWAY RECONSTRUCTION	ENT	100

Procedure Bucket	Specialty	Cases (n)
URINARY REFLUX	UROLOGY	1153
URETERAL RECONSTRUCTION	UROLOGY	1059
UROLOGY-OTHER	UROLOGY	754
URINARY DIVERSION	UROLOGY	169

NSQIP-Pediatric Antimicrobial Stewardship Pilot: Summary Overview of Pilot Data Analysis

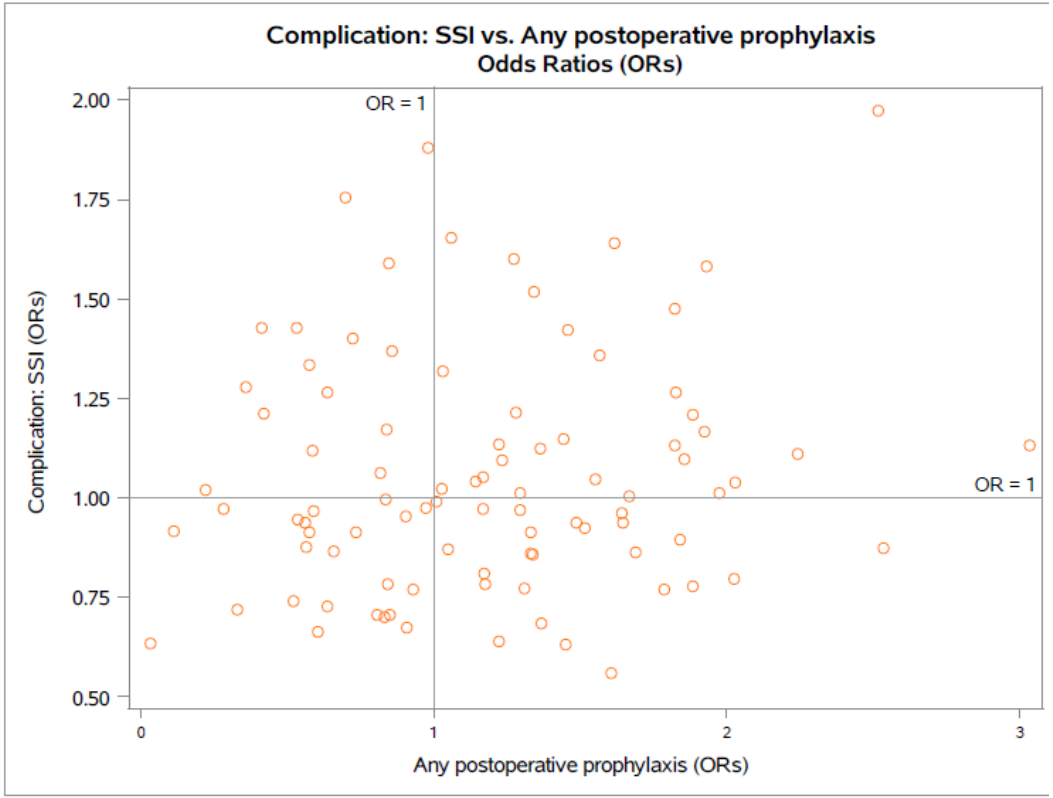
- Audit period: 6/2/2019 – 6/30/2020
- 42,590 cases from 92 hospitals
- 413 procedures (CPTs) representing 6 NSQIP-Pediatric specialties
- Measures evaluated at the hospital, specialty & procedural level
- **Measures adjusted for differences in procedure-mix and comorbidities (presented as adjusted OR's)**



Hospital Variation in utilization, duration and compliance with appropriate spectrum

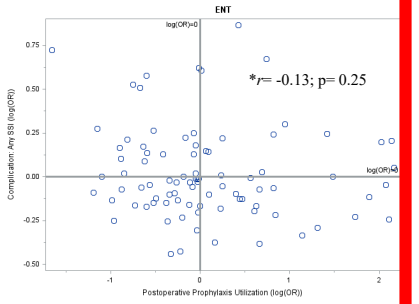
SAP_Bucket	Utilization Rate (by Hospital)		Spectrum Compliance (By Hospital)		Mean Post-Operative Duration (Hours) (By Hospital)	
	Min (%)	Max (%)	Min (%)	Max (%)	Min (Hrs)	Max (Hrs)
CHOLECYSTECTOMY	0.00%	100.00%	0.00%	100.00%	4.00	71.00
CLEFT PALATE	28.57%	100.00%	81.82%	100.00%	6.00	58.50
COCHLEAR IMPLANT	33.33%	100.00%	75.00%	100.00%	2.50	49.50
COLORECTAL-PULLTHROUGH WITH POUCH	50.00%	100.00%	0.00%	100.00%	15.50	88.00
GASTROSTOMY	6.45%	100.00%	5.88%	100.00%	8.50	68.00
NEUROSURGERY	53.85%	100.00%	9.76%	100.00%	1.00	49.78
ORTHO	48.48%	100.00%	86.67%	100.00%	6.51	39.66
PECTUS	33.33%	100.00%	0.00%	100.00%	6.00	76.00
PYLOROMYOTOMY	0.00%	100.00%	0.00%	100.00%	6.50	70.00
SMALL BOWEL	50.00%	100.00%	0.00%	100.00%	10.00	73.00
SPINE	21.05%	100.00%	6.67%	100.00%	1.00	61.71
TESTICULAR	0.00%	100.00%	80.00%	100.00%	12.00	46.00
URETERAL RECONSTRUCTION	75.00%	100.00%	22.22%	100.00%	11.50	58.40
URINARY DIVERSION	60.00%	100.00%	0.00%	100.00%	5.00	41.00
URINARY REFLUX	50.00%	100.00%	0.00%	100.00%	13.25	53.90
UROLOGY-OTHER	33.33%	100.00%	0.00%	100.00%	1.00	88.00

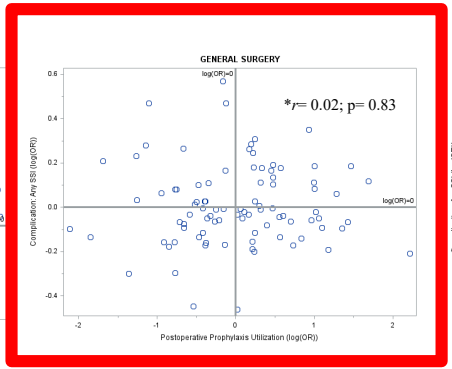
Procedure-adjusted utilization of postoperative prophylaxis vs. SSI risk

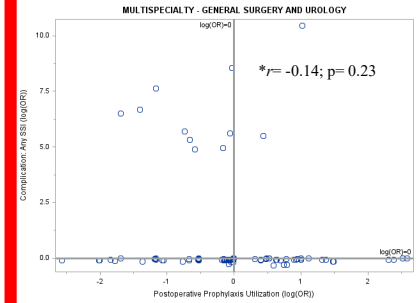


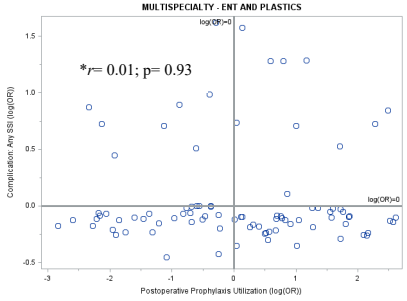
Peds Models	Low Outliers (n)	High Outliers (n)
All Surgeries		
Non-Compliance: Timing Guidelines	4	13
Non-Compliance: Spectrum Guidelines	25	31
Overall Antibiotic Utilization	24	22
Postoperative Duration > 0 Hours	22	31
Postoperative Duration > 24 Hours	16	28
Complication: All SSI	1	4
Complication: Incisional SSI	1	6
Complication: Organ space SSI	0	1

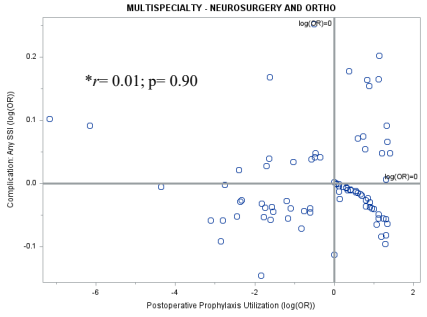
Hospital-level correlation of log-transformed* odds ratios between any surgical site infection (incisional or organ space) and use of any postoperative surgical antimicrobial prophylaxis at 93 hospitals, stratified by surgical specialty

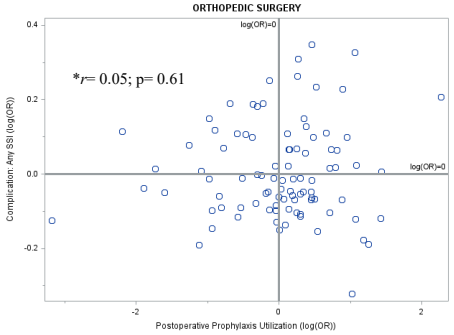


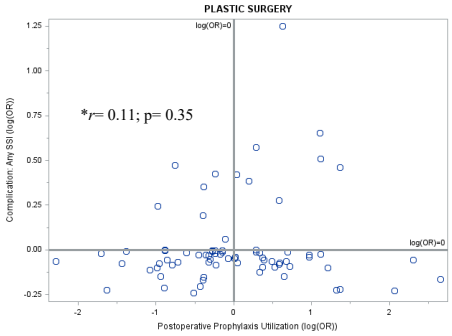


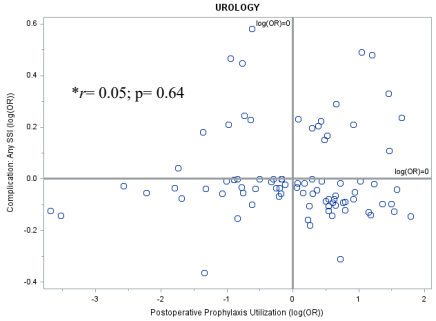




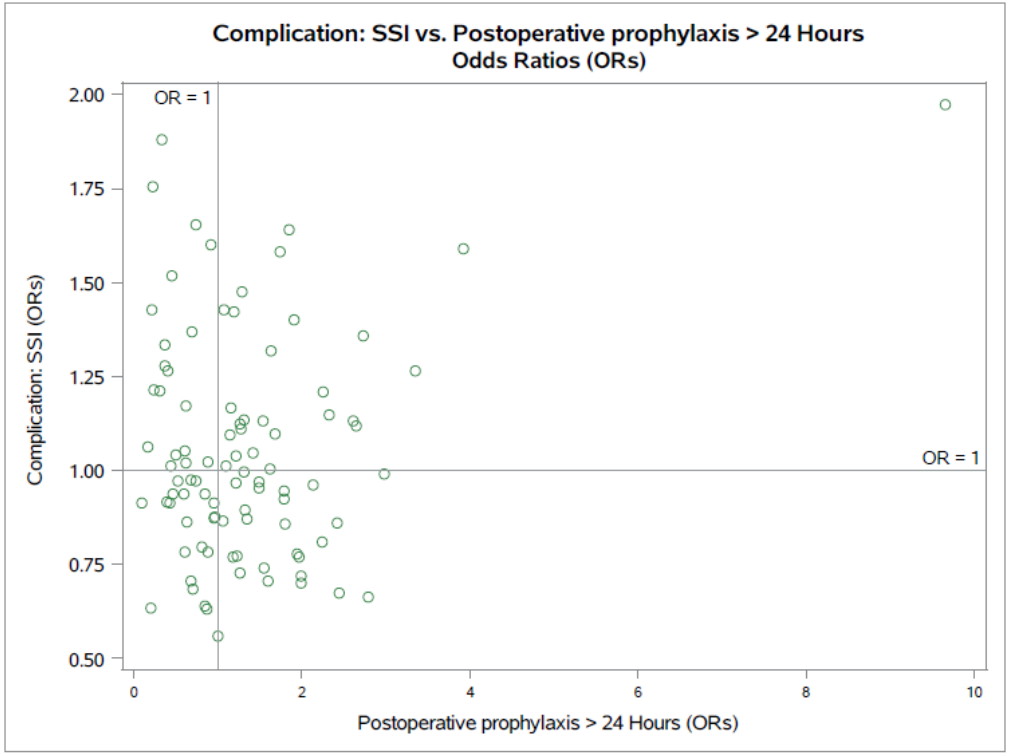






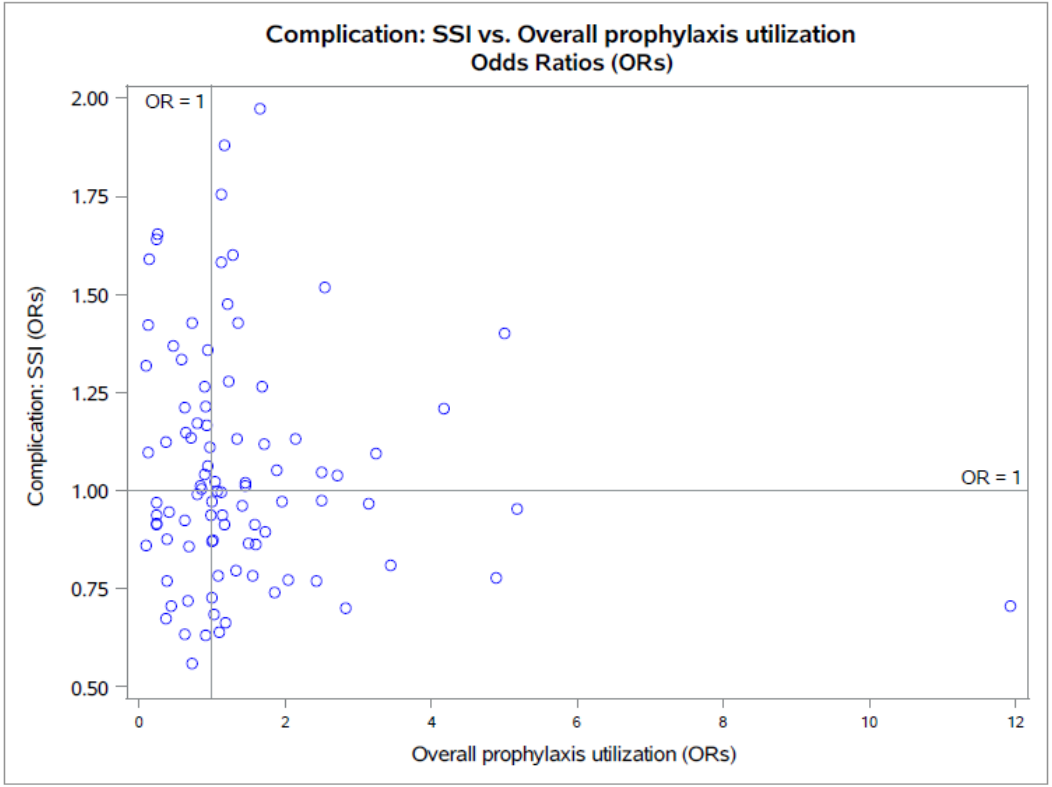


Procedure-adjusted utilization of postoperative prophylaxis > 24 hrs vs. SSI risk



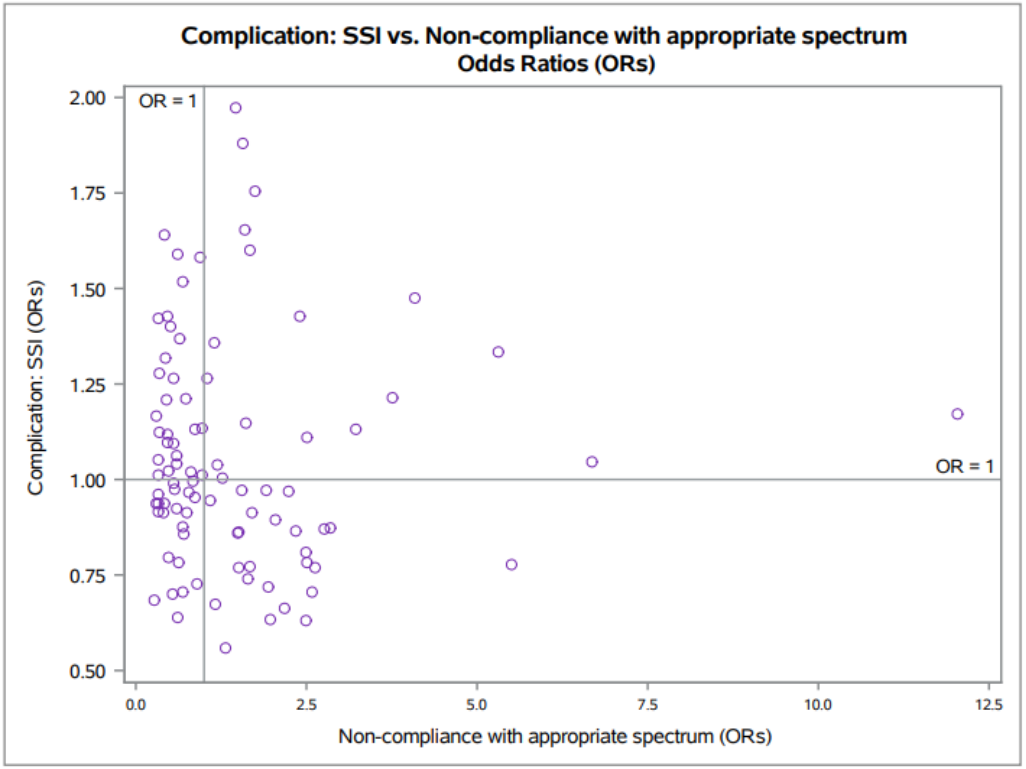
Peds Models	Low Outliers (n)	High Outliers (n)
All Surgeries		
Non-Compliance: Timing Guidelines	4	13
Non-Compliance: Spectrum Guidelines	25	31
Overall Antibiotic Utilization	24	22
Postoperative Duration > 0 Hours	22	31
Postoperative Duration > 24 Hours	16	28
Complication: All SSI	1	4
Complication: Incisional SSI	1	6
Complication: Organ space SSI	0	1

Procedure-adjusted any prophylaxis utilization for clean cases without implants vs. SSI risk



Peds Models	Low Outliers (n)	High Outliers (n)
All Surgeries		
Non-Compliance: Timing Guidelines	4	13
Non-Compliance: Spectrum Guidelines	25	31
Overall Antibiotic Utilization	24	22
Postoperative Duration > 0 Hours	22	31
Postoperative Duration > 24 Hours	16	28
Complication: All SSI	1	4
Complication: Incisional SSI	1	6
Complication: Organ space SSI	0	1

Procedure-adjusted use of inappropriately broad spectrum prophylaxis vs. adjusted SSI risk



Peds Models	Low Outliers (n)	High Outliers (n)
All Surgeries		
Non-Compliance: Timing Guidelines	4	13
Non-Compliance: Spectrum Guidelines	25	31
Overall Antibiotic Utilization	24	22
Postoperative Duration > 0 Hours	22	31
Postoperative Duration > 24 Hours	16	28
Complication: All SSI	1	4
Complication: Incisional SSI	1	6
Complication: Organ space SSI	0	1

Distribution of prophylaxis utilization and SSI outlier status by surgical specialty

*Adjusted for procedure-mix and comorbidity profiles

Peds Models	Sites Included	Total Cases (n)	Observed Events (n)	Observed Event Rate (%)	Low Outliers* (n)	High Outliers* (n)
GENERAL SURGERY						
Non-Compliance: Timing Guidelines	90	6935	299	4.31%	0	7
Non-Compliance: Spectrum Guidelines	90	8738	1459	16.70%	13	16
Antibiotic Utilization for clean cases w/o implants	90	10380	8831	85.08%	25	18
Postoperative Duration > 0 Hours	90	8817	1905	21.61%	12	20
Postoperative Duration > 24 Hours	90	8817	693	7.86%	11	16
Complication: All SSI	90	10398	312	3.00%	0	1
Complication: Incisional SSI	90	10398	257	2.47%	0	2
Complication: Organ space SSI	90	10398	56	0.54%	0	0

Hospital-level comparative report for prophylaxis utilization and SSI rates (2021)

Specialty: All Surgeries

Model:	*Total Cases (n): Your Hospital*	*Event Rate (%): Your Hospital*	*Event Rate (%): All Hospitals*	*OR**	*95% CI*	*Outlier Status*
Non-compliance with appropriate timing	335	3.88	4.89	0.94	0.56 - 1.58	As Expected
Non-compliance with appropriate spectrum	582	5.33	9.40	0.55	0.36 - 0.84	Low
Overall prophylaxis utilization	596	97.99	86.86	3.24	1.75 - 6.01	High
Any postoperative prophylaxis	584	52.74	41.15	1.23	0.96 - 1.58	As Expected
Postoperative prophylaxis > 24 Hours	584	10.62	9.24	1.15	0.83 - 1.59	As Expected
Complication: All SSI	601	2.00	1.82	1.10	0.68 - 1.77	As Expected
Complication: Incisional SSI	601	1.83	1.39	1.24	0.73 - 2.11	As Expected
Complication: Organ space SSI	601	0.17	0.43	0.82	0.36 - 1.86	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: ENT

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	20	10.00	7.51	1.54	0.43 - 5.46	As Expected
Overall prophylaxis utilization	33	90.91	58.83	3.99	0.99 - 16.06	As Expected
Any postoperative prophylaxis	30	40.00	9.78	7.47	3.18 - 17.56	High
Postoperative prophylaxis > 24 Hours	30	3.33	2.28	1.57	0.25 - 9.86	As Expected
Complication: All SSI	33	6.06	2.25	1.32	0.45 - 3.88	As Expected
Complication: Incisional SSI	33	3.03	0.98	2.15	0.30 - 15.64	As Expected
Complication: Organ space SSI	33	3.03	1.27	1.14	0.36 - 3.65	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: GENERAL SURGERY

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	67	2.99	4.31	0.91	0.38 - 2.17	As Expected
Non-compliance with appropriate spectrum	96	10.42	16.70	0.54	0.28 - 1.05	As Expected
Overall prophylaxis utilization	100	96.00	85.08	1.93	0.74 - 5.05	As Expected
Any postoperative prophylaxis	96	28.13	21.61	1.39	0.81 - 2.38	As Expected
Postoperative prophylaxis > 24 Hours	96	8.33	7.86	1.11	0.53 - 2.32	As Expected
Complication: All SSI	100	5.00	3.00	1.12	0.63 - 2.01	As Expected
Complication: Incisional SSI	100	5.00	2.47	1.31	0.66 - 2.60	As Expected
Complication: Organ space SSI	100	0.00	0.54	0.82	0.29 - 2.30	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
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*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: MULTISPECIALTY - ENT AND PLASTICS (Cleft lip & palate cases)

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	26	11.54	8.74	1.61	0.52 - 4.95	As Expected
Overall prophylaxis utilization	43	97.67	85.30	2.73	0.76 - 9.79	As Expected
Any postoperative prophylaxis	42	40.48	33.36	1.81	0.88 - 3.70	As Expected
Postoperative prophylaxis > 24 Hours	42	14.29	5.16	3.85	1.43 - 10.33	High

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: NEUROSURGERY

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	23	4.35	2.08	1.39	0.33 - 5.82	As Expected
Overall prophylaxis utilization	46	100.00	98.68	1.46	0.11 - 18.96	As Expected
Any postoperative prophylaxis	46	21.74	69.85	0.12	0.05 - 0.27	Low
Postoperative prophylaxis > 24 Hours	46	8.70	10.14	1.07	0.42 - 2.72	As Expected
Complication: All SSI	48	2.08	2.11	1.08	0.30 - 3.92	As Expected
Complication: Incisional SSI	48	2.08	1.34	1.18	0.31 - 4.46	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: ORTHOPEDIC SURGERY

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	86	1.16	4.43	0.62	0.22 - 1.77	As Expected
Non-compliance with appropriate spectrum	159	0.00	1.28	0.50	0.08 - 3.00	As Expected
Overall prophylaxis utilization	159	100.00	94.22	3.23	0.31 - 33.38	As Expected
Any postoperative prophylaxis	159	57.86	40.14	1.50	1.02 - 2.21	High
Postoperative prophylaxis > 24 Hours	159	10.69	4.49	3.21	1.76 - 5.84	High
Complication: All SSI	159	1.26	1.13	1.02	0.56 - 1.86	As Expected
Complication: Incisional SSI	159	1.26	1.06	1.03	0.56 - 1.92	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: UROLOGY

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	66	3.03	7.71	0.69	0.20 - 2.35	As Expected
Non-compliance with appropriate spectrum	82	14.63	12.70	1.51	0.78 - 2.91	As Expected
Overall prophylaxis utilization	84	100.00	97.24	1.90	0.39 - 9.22	As Expected
Any postoperative prophylaxis	84	79.76	56.18	2.16	1.14 - 4.10	High
Postoperative prophylaxis > 24 Hours	84	4.76	11.03	0.45	0.19 - 1.08	As Expected
Complication: UTI	84	0.00	3.47	0.80	0.38 - 1.64	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: ENT

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	20	10.00	7.51	1.54	0.43 - 5.46	As Expected
Overall prophylaxis utilization	33	90.91	58.83	3.99	0.99 - 16.06	As Expected
Any postoperative prophylaxis	30	40.00	9.78	7.47	3.18 - 17.56	High
Postoperative prophylaxis > 24 Hours	30	3.33	2.28	1.57	0.25 - 9.86	As Expected
Complication: All SSI	33	6.06	2.25	1.32	0.45 - 3.88	As Expected
Complication: Incisional SSI	33	3.03	0.98	2.15	0.30 - 15.64	As Expected
Complication: Organ space SSI	33	3.03	1.27	1.14	0.36 - 3.65	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
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Specialty: GENERAL SURGERY

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	67	2.99	4.31	0.91	0.38 - 2.17	As Expected
Non-compliance with appropriate spectrum	96	10.42	16.70	0.54	0.28 - 1.05	As Expected
Overall prophylaxis utilization	100	96.00	85.08	1.93	0.74 - 5.05	As Expected
Any postoperative prophylaxis	96	28.13	21.61	1.39	0.81 - 2.38	As Expected
Postoperative prophylaxis > 24 Hours	96	8.33	7.86	1.11	0.53 - 2.32	As Expected
Complication: All SSI	100	5.00	3.00	1.12	0.63 - 2.01	As Expected
Complication: Incisional SSI	100	5.00	2.47	1.31	0.66 - 2.60	As Expected
Complication: Organ space SSI	100	0.00	0.54	0.82	0.29 - 2.30	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: MULTISPECIALTY - ENT AND PLASTICS

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	26	11.54	8.74	1.61	0.52 - 4.95	As Expected
Overall prophylaxis utilization	43	97.67	85.30	2.73	0.76 - 9.79	As Expected
Any postoperative prophylaxis	42	40.48	33.36	1.81	0.88 - 3.70	As Expected
Postoperative prophylaxis > 24 Hours	42	14.29	5.16	3.85	1.43 - 10.33	High

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: NEUROSURGERY

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	23	4.35	2.08	1.39	0.33 - 5.82	As Expected
Overall prophylaxis utilization	46	100.00	98.68	1.46	0.11 - 18.96	As Expected
Any postoperative prophylaxis	46	21.74	69.85	0.12	0.05 - 0.27	Low
Postoperative prophylaxis > 24 Hours	46	8.70	10.14	1.07	0.42 - 2.72	As Expected
Complication: All SSI	48	2.08	2.11	1.08	0.30 - 3.92	As Expected
Complication: Incisional SSI	48	2.08	1.34	1.18	0.31 - 4.46	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: ORTHOPEDIC SURGERY

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	86	1.16	4.43	0.62	0.22 - 1.77	As Expected
Non-compliance with appropriate spectrum	159	0.00	1.28	0.50	0.08 - 3.00	As Expected
Overall prophylaxis utilization	159	100.00	94.22	3.23	0.31 - 33.38	As Expected
Any postoperative prophylaxis	159	57.86	40.14	1.50	1.02 - 2.21	High
Postoperative prophylaxis > 24 Hours	159	10.69	4.49	3.21	1.76 - 5.84	High
Complication: All SSI	159	1.26	1.13	1.02	0.56 - 1.86	As Expected
Complication: Incisional SSI	159	1.26	1.06	1.03	0.56 - 1.92	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Specialty: UROLOGY

Model:	Total Cases (n): Your Hospital	Event Rate (%): Your Hospital	Event Rate (%): All Hospitals	OR*	95% CI	Outlier Status
Non-compliance with appropriate timing	66	3.03	7.71	0.69	0.20 - 2.35	As Expected
Non-compliance with appropriate spectrum	82	14.63	12.70	1.51	0.78 - 2.91	As Expected
Overall prophylaxis utilization	84	100.00	97.24	1.90	0.39 - 9.22	As Expected
Any postoperative prophylaxis	84	79.76	56.18	2.16	1.14 - 4.10	High
Postoperative prophylaxis > 24 Hours	84	4.76	11.03	0.45	0.19 - 1.08	As Expected
Complication: UTI	84	0.00	3.47	0.80	0.38 - 1.64	As Expected

*Odds Ratios (ORs) for all antibiotic utilization measures, with the exception of timing, are adjusted for differences in procedure-mix between hospitals.
*The measure for timing was not adjusted for case-mix as considerations around appropriate timing are the same for all procedures.
*ORs for SSI events are adjusted for procedure and patient-related factors using the same approach as reported in the SAR.

Using the case details SAP report to “drill down” on areas of practice variation

Surgical Specialty	CPT	CPT Description	% Receiving No Antibiotics After Incision Closure - Your Hospital	% Receiving No Antibiotics After Incision Closure - All Hospitals	% Receiving Antibiotics Up to 24 Hours After Incision Closure - Your Hospital	% Receiving Antibiotics Up to 24 Hours After Incision Closure - All Hospitals	% Receiving Antibiotics Between 24 and 48 Hours After Incision Closure - Your Hospital	% Receiving Antibiotics Between 24 and 48 Hours After Incision Closure - All Hospitals	% Receiving Antibiotics Greater than 48 Hours After Incision Closure - Your Hospital	% Receiving Antibiotics Greater than 48 Hours After Incision Closure - All Hospitals
ORTHOPEDIC SURGERY	27422	RECONSTRUCTION OF DISLOCATING PATELLA; WITH EXTENSOR REALIGNMENT AND/OR MUSCLE ADVANCEMENT OR RELEASE (EG, CAMPBELL, GOLDWAITE TYPE PROCEDURE)	60.0%	69.6%	33.3%	26.6%	6.7%	3.4%	0.0%	0.4%
ORTHOPEDIC SURGERY	27485	ARREST, HEMIEPIPHYSEAL, DISTAL FEMUR OR PROXIMAL TIBIA OR FIBULA (EG, GENU VARUS OR VALGUS)	87.5%	87.5%	6.3%	12.3%	6.3%	0.2%	0.0%	0.0%
ORTHOPEDIC SURGERY	27146	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE;	0.0%	15.5%	78.6%	67.6%	21.4%	11.6%	0.0%	5.3%
ORTHOPEDIC SURGERY	27165	OSTEOTOMY, INTERTROCHANTERIC OR SUBTROCHANTERIC INCLUDING INTERNAL OR EXTERNAL FIXATION AND/OR CAST	7.1%	14.1%	78.6%	74.7%	14.3%	8.7%	0.0%	2.5%
ORTHOPEDIC SURGERY	27475	ARREST, EPIPHYSEAL, ANY METHOD (EG, EPIPHYSIODESIS); DISTAL FEMUR	50.0%	88.2%	50.0%	11.4%	0.0%	0.4%	0.0%	0.0%
ORTHOPEDIC SURGERY	28116	OSTECTOMY, EXCISION OF TARSAL COALITION	77.8%	88.3%	11.1%	10.1%	11.1%	1.1%	0.0%	0.5%
ORTHOPEDIC SURGERY	27156	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE; WITH FEMORAL OSTEOTOMY AND WITH OPEN REDUCTION OF HIP	0.0%	18.8%	71.4%	61.9%	14.3%	11.4%	14.3%	7.9%
ORTHOPEDIC SURGERY	27450	OSTECTOMY, FEMUR, SHAFT OR SUPRACONDYLAR; WITH FIXATION	0.0%	16.9%	100.0%	76.6%	0.0%	4.5%	0.0%	1.9%
ORTHOPEDIC SURGERY	27258	OPEN TREATMENT OF SPONTANEOUS HIP DISLOCATION (DEVELOPMENTAL, INCLUDING CONGENITAL OR PATHOLOGICAL), REPLACEMENT OF FEMORAL HEAD IN ACETABULUM (INCLUDING TENOTOMY, ETC)	0.0%	34.0%	100.0%	58.9%	0.0%	6.4%	0.0%	0.7%
ORTHOPEDIC SURGERY	27395	LENGTHENING OF HAMSTRING TENDON; MULTIPLE TENDONS, BILATERAL	50.0%	56.0%	50.0%	41.6%	0.0%	1.8%	0.0%	0.6%
ORTHOPEDIC SURGERY	27709	OSTEOTOMY; TIBIA AND FIBULA	0.0%	24.7%	75.0%	68.1%	25.0%	7.1%	0.0%	0.0%
ORTHOPEDIC SURGERY	27147	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE; WITH OPEN REDUCTION OF HIP	0.0%	15.6%	50.0%	70.1%	50.0%	6.5%	0.0%	7.8%
ORTHOPEDIC SURGERY	27151	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE; WITH FEMORAL OSTEOTOMY	0.0%	8.6%	50.0%	75.7%	50.0%	9.7%	0.0%	5.9%

Using the case details SAP report to “drill down” on areas of practice variation

Surgical Specialty	CPT	CPT Description	% Receiving No Antibiotics After Incision Closure - Your Hospital	% Receiving No Antibiotics After Incision Closure - All Hospitals	% Receiving Antibiotics Up to 24 Hours After Incision Closure - Your Hospital	% Receiving Antibiotics Up to 24 Hours After Incision Closure - All Hospitals	% Receiving Antibiotics Between 24 and 48 Hours After Incision Closure - Your Hospital	% Receiving Antibiotics Between 24 and 48 Hours After Incision Closure - All Hospitals	% Receiving Antibiotics Greater than 48 Hours After Incision Closure - Your Hospital	% Receiving Antibiotics Greater than 48 Hours After Incision Closure - All Hospitals
ORTHOPEDIC SURGERY	27422	RECONSTRUCTION OF DISLOCATING PATELLA; WITH EXTENSOR REALIGNMENT AND/OR MUSCLE ADVANCEMENT OR RELEASE (EG, CAMPBELL, GOLDWAITE TYPE PROCEDURE)	60.0%	69.6%	33.3%	26.6%	6.7%	3.4%	0.0%	0.4%
ORTHOPEDIC SURGERY	27485	ARREST, HEMIEPIPHYSEAL, DISTAL FEMUR OR PROXIMAL TIBIA OR FIBULA (EG, GENU VARUS OR VALGUS)	87.5%	87.5%	6.3%	12.3%	6.3%	0.2%	0.0%	0.0%
ORTHOPEDIC SURGERY	27146	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE;	0.0%	15.5%	78.6%	67.6%	21.4%	11.6%	0.0%	5.3%
ORTHOPEDIC SURGERY	27165	OSTEOTOMY, INTERTROCHANTERIC OR SUBTROCHANTERIC INCLUDING INTERNAL OR EXTERNAL FIXATION AND/OR CAST	7.1%	14.1%	78.6%	74.7%	14.3%	8.7%	0.0%	2.5%
ORTHOPEDIC SURGERY	27475	ARREST, EPIPHYSEAL, ANY METHOD (EG, EPIPHYSIODESIS); DISTAL FEMUR	50.0%	88.2%	50.0%	11.4%	0.0%	0.4%	0.0%	0.0%
ORTHOPEDIC SURGERY	28116	OSTECTOMY, EXCISION OF TARSAL COALITION	77.8%	88.3%	11.1%	10.1%	11.1%	1.1%	0.0%	0.5%
ORTHOPEDIC SURGERY	27156	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE; WITH FEMORAL OSTEOTOMY AND WITH OPEN REDUCTION OF HIP	0.0%	18.8%	71.4%	61.9%	14.3%	11.4%	14.3%	7.9%
ORTHOPEDIC SURGERY	27450	OSTEOTOMY, FEMUR, SHAFT OR SUPRACONDYLAR; WITH FIXATION	0.0%	16.9%	100.0%	76.6%	0.0%	4.5%	0.0%	1.9%
ORTHOPEDIC SURGERY	27258	OPEN TREATMENT OF SPONTANEOUS HIP DISLOCATION (DEVELOPMENTAL, INCLUDING CONGENITAL OR PATHOLOGICAL), REPLACEMENT OF FEMORAL HEAD IN ACETABULUM (INCLUDING TENOTOMY, ETC);	0.0%	34.0%	100.0%	58.9%	0.0%	6.4%	0.0%	0.7%
ORTHOPEDIC SURGERY	27395	LENGTHENING OF HAMSTRING TENDON; MULTIPLE TENDONS, BILATERAL	50.0%	56.0%	50.0%	41.6%	0.0%	1.8%	0.0%	0.6%
ORTHOPEDIC SURGERY	27709	OSTEOTOMY; TIBIA AND FIBULA	0.0%	24.7%	75.0%	68.1%	25.0%	7.1%	0.0%	0.0%
ORTHOPEDIC SURGERY	27147	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE; WITH OPEN REDUCTION OF HIP	0.0%	15.6%	50.0%	70.1%	50.0%	6.5%	0.0%	7.8%
ORTHOPEDIC SURGERY	27151	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE; WITH FEMORAL OSTEOTOMY	0.0%	8.6%	50.0%	75.7%	50.0%	9.7%	0.0%	5.9%

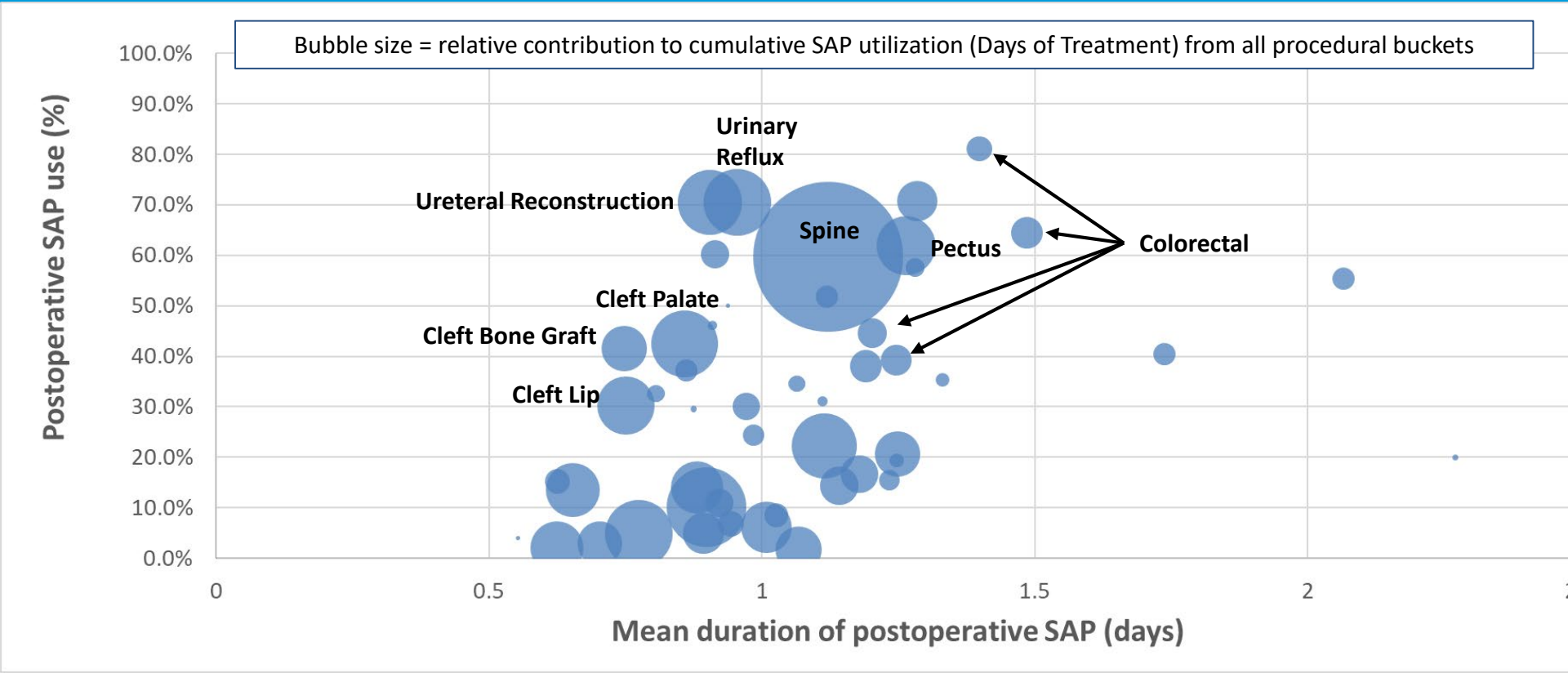
Using the case details SAP report to “drill down” on areas of practice variation

Surgical Specialty	SAP Bucket	CPT	CPT Description	Number of Total Cases - Your Hospital	Number of Total Cases - All Hospitals	% of Any SSIs - Your Hospital	% of Any SSIs - All Hospitals
ORTHOPEDIC SURGERY	ORTHO	27422	RECONSTRUCTION OF DISLOCATING PATELLA; WITH EXTENSOR REALIGNMENT AND/OR MUSCLE ADVANCEMENT OR RELEASE (EG, CAMPBELL, GOLDWAITE TYPE PROCEDURE)	45	268	2.2%	1.5%
ORTHOPEDIC SURGERY	ORTHO	27485	ARREST, HEMIEPIPHYSEAL, DISTAL FEMUR OR PROXIMAL TIBIA OR FIBULA (EG, GENU VARUS OR VALGUS)	16	877	0.0%	1.5%
ORTHOPEDIC SURGERY	ORTHO	27146	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE;	14	213	7.1%	1.4%
ORTHOPEDIC SURGERY	ORTHO	27165	OSTEOTOMY, INTERTROCHANTERIC OR SUBTROCHANTERIC INCLUDING INTERNAL OR EXTERNAL FIXATION AND/OR CAST	14	446	0.0%	2.0%
ORTHOPEDIC SURGERY	ORTHO	27475	ARREST, EPIPHYSEAL, ANY METHOD (EG, EPIPHYSIODESIS); DISTAL FEMUR	12	266	0.0%	0.8%
ORTHOPEDIC SURGERY	ORTHO	28116	OSTECTOMY, EXCISION OF TARSAL COALITION	9	192	0.0%	1.0%
ORTHOPEDIC SURGERY	ORTHO	27156	OSTEOTOMY, ILIAC, ACETABULAR OR INNOMINATE BONE; WITH FEMORAL OSTEOTOMY AND WITH OPEN REDUCTION OF HIP	7	208	0.0%	0.5%

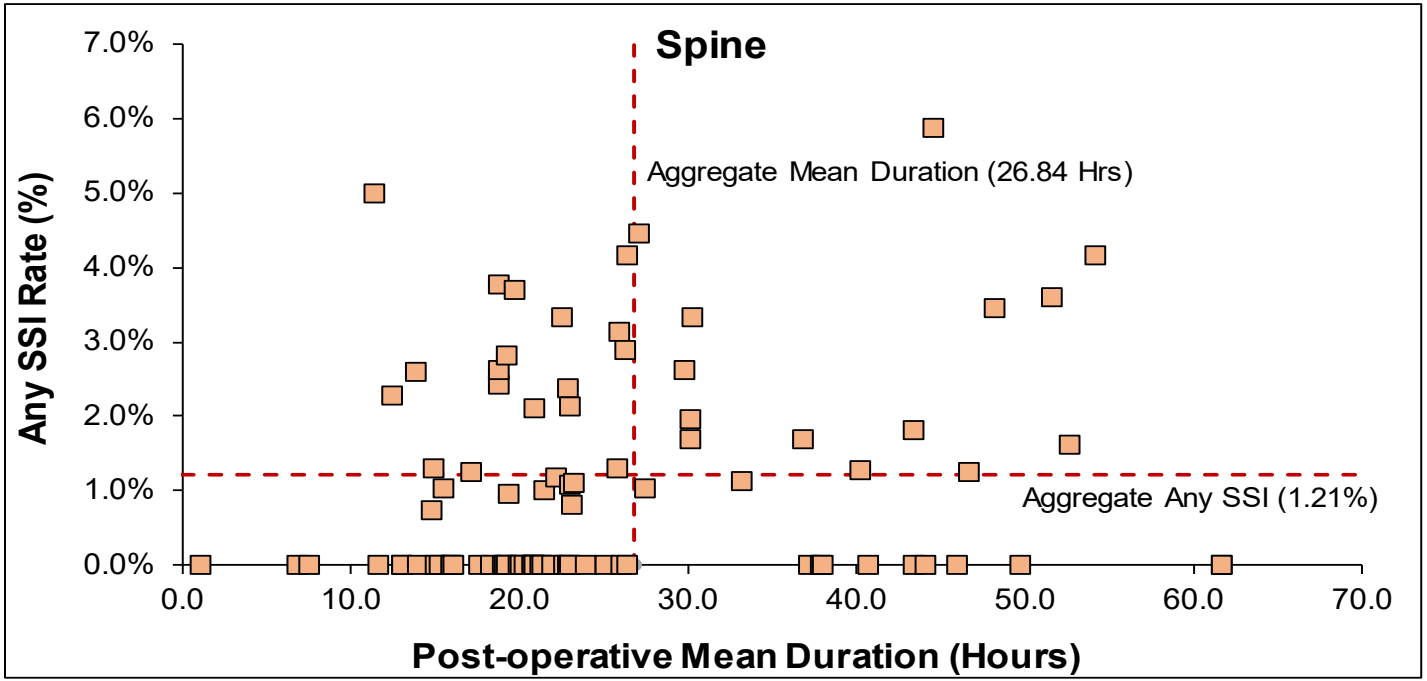
Considerations around prioritization: Where are the opportunities and what is important?

- Which areas of prophylaxis stewardship should we tackle?
  - Not giving SAP past incision closure (or more than 24 hours)?
  - Not giving overly broad-spectrum agents?
  - Not giving when not indicated (eg, clean case without implant)?
- Broad or narrow set of procedure groups?
- Multispecialty vs. General Surgery?

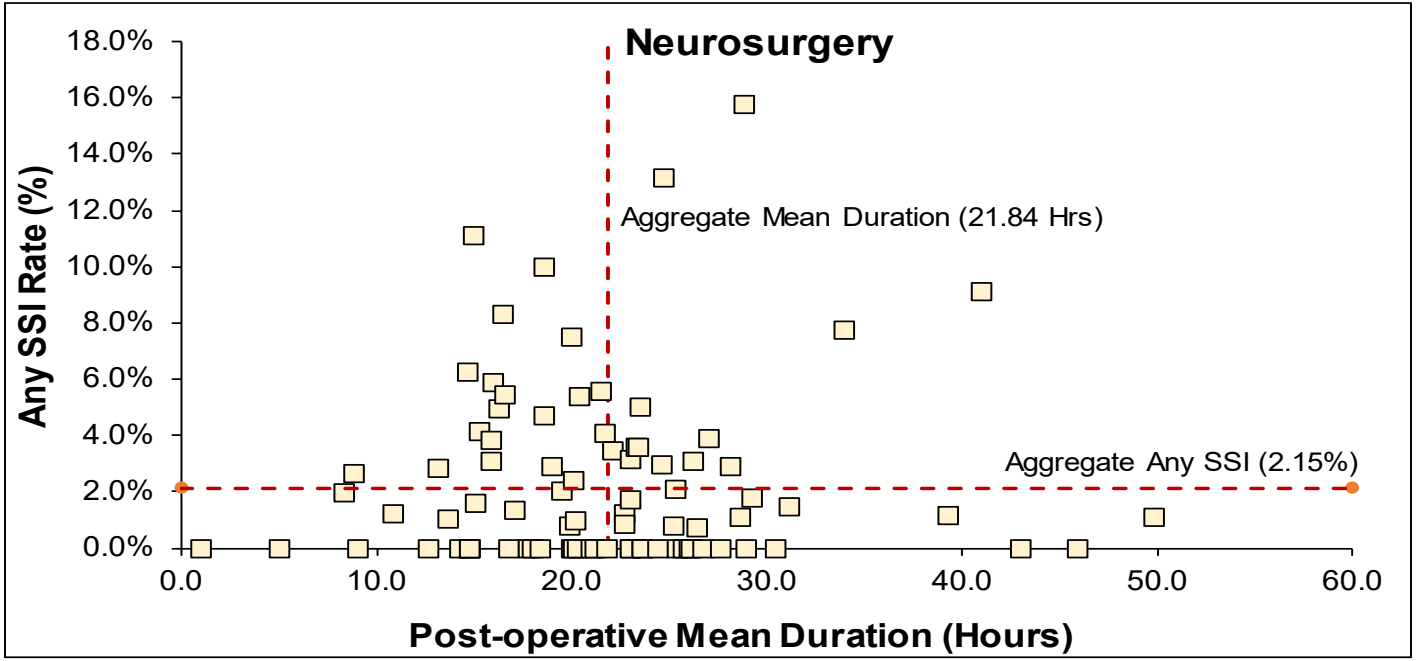
Procedure-Associated SAP utilization & mean postoperative treatment duration



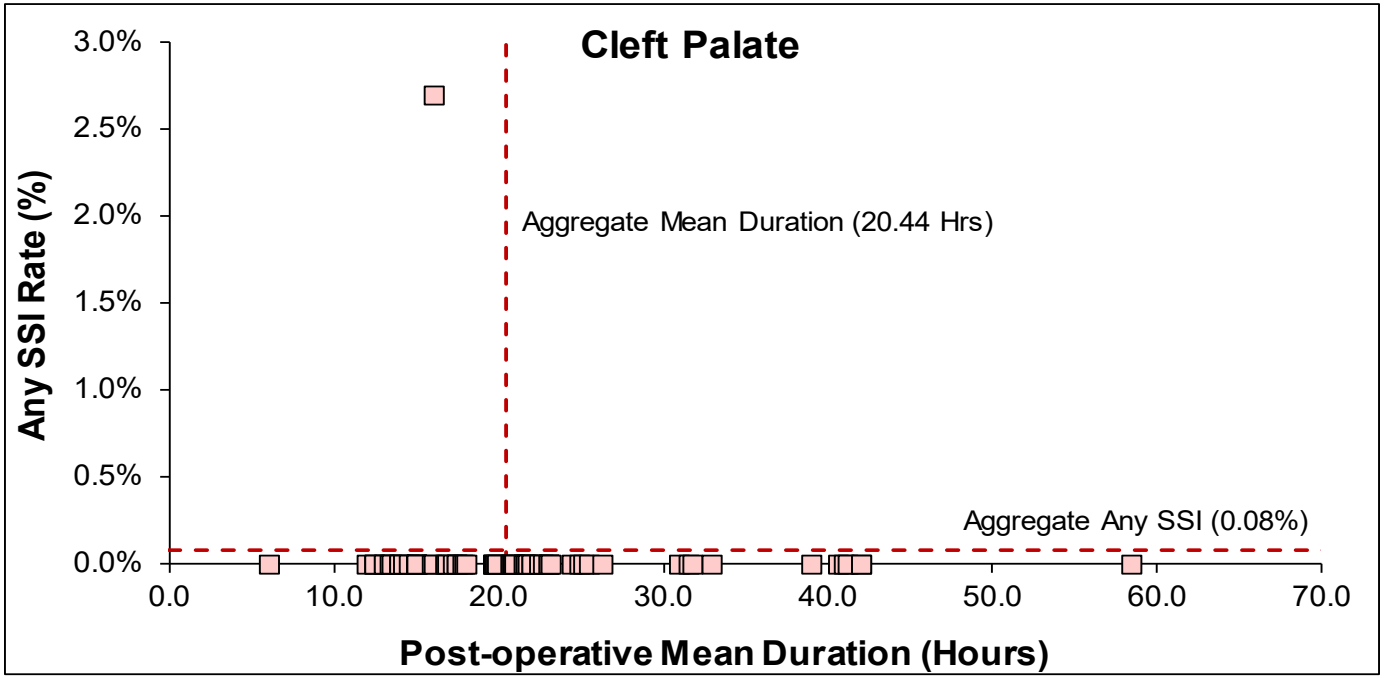
Variation in Hospital-level Mean Postop Duration and SSI Rates for Spine Procedures



Variation in Hospital-level Mean Postop Duration and SSI Rates for Neurosurgery



Variation in Hospital-level Mean Postop Duration and SSI Rates for Cleft Palate Repair



Some thoughts on timeline and next steps for collaborative planning/roll-out…

- Agree on low hanging fruit….**what do we tackle?**
- Establish PSQC interest early
  - Establish stewardship teams at participating PSQC sites
  - Education and engagement around review/sharing of new data & site-specific reports (1/2021-12/2021; 152 sites); session planned at Q/S conference
- Develop dedicated PSQC SAP utilization report (? Early/mid 2023)
- Identify high performers (SAP stewards with low SSI rates)
- Deeper dive (lessons learned from PSQC projects 1&2)(mid/late 2023)
  - Qualitative interviews; identification of best practices
- Development of toolbox resources; implementation strategies (late 2023)

Timeline

- First set of “official” SAP reports to be released this Summer
  - SAP/SSI data from 1/2021-12/2021; 152 sites
  - Session planned at Q/S conference to review data & new site reports
- Timeline for PSQC reports realistically early/mid 2023
- Develop dedicated PSQC SAP utilization report
- Identify high performers (SAP stewards with low SSI rates)
- Deeper dive (lessons learned from PSQC projects 1&2)
  - Qualitative interviews
  - Identification of best practices
  - Development of toolbox resources
  - Implementation strategy

Introduction to Dissemination & Implementation Science

Lillian S. Kao, MD, MS| May 11, 2022

UTHealth Houston
McGovern Medical School

Disclosures

- No relevant financial disclosures.

LHS

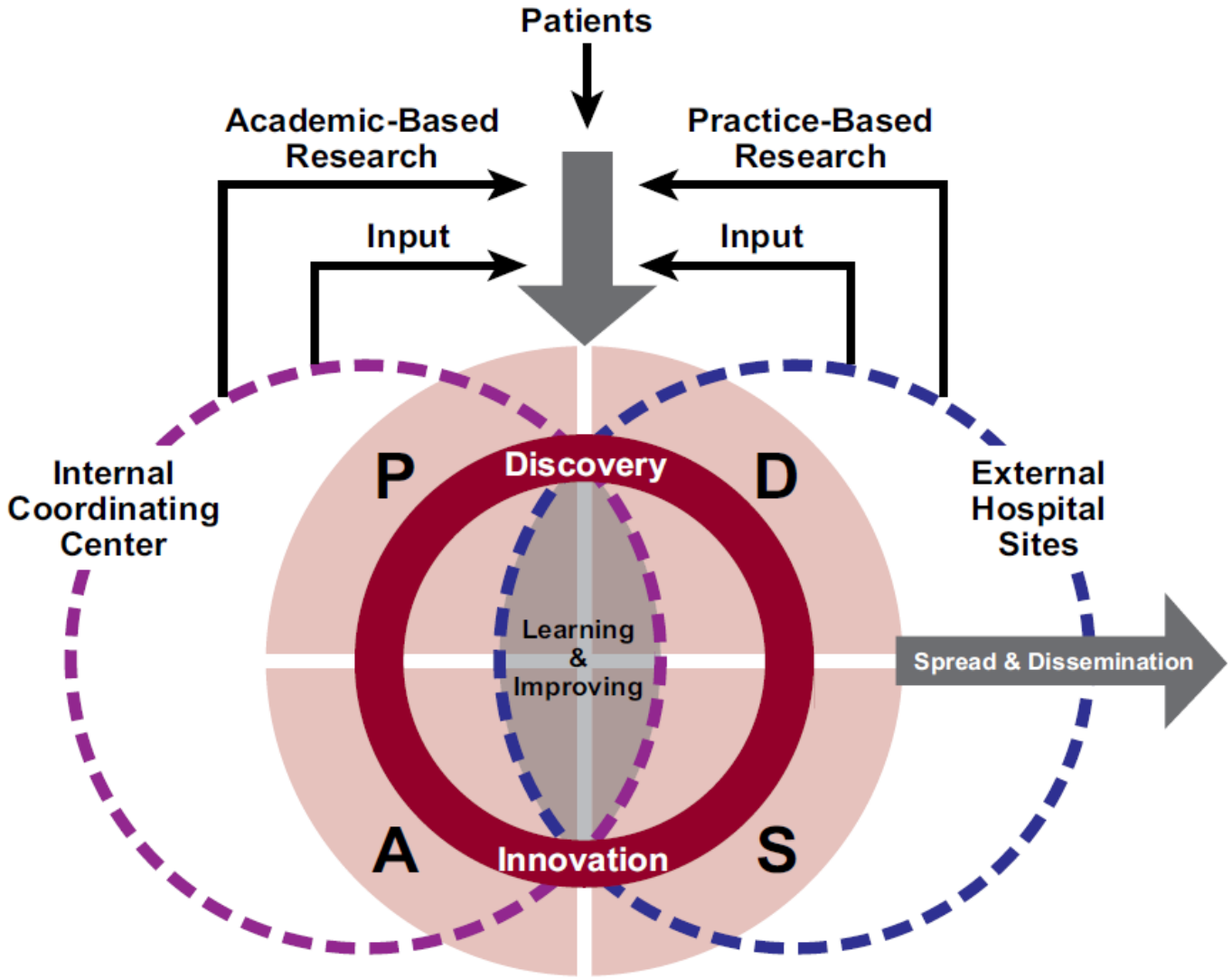
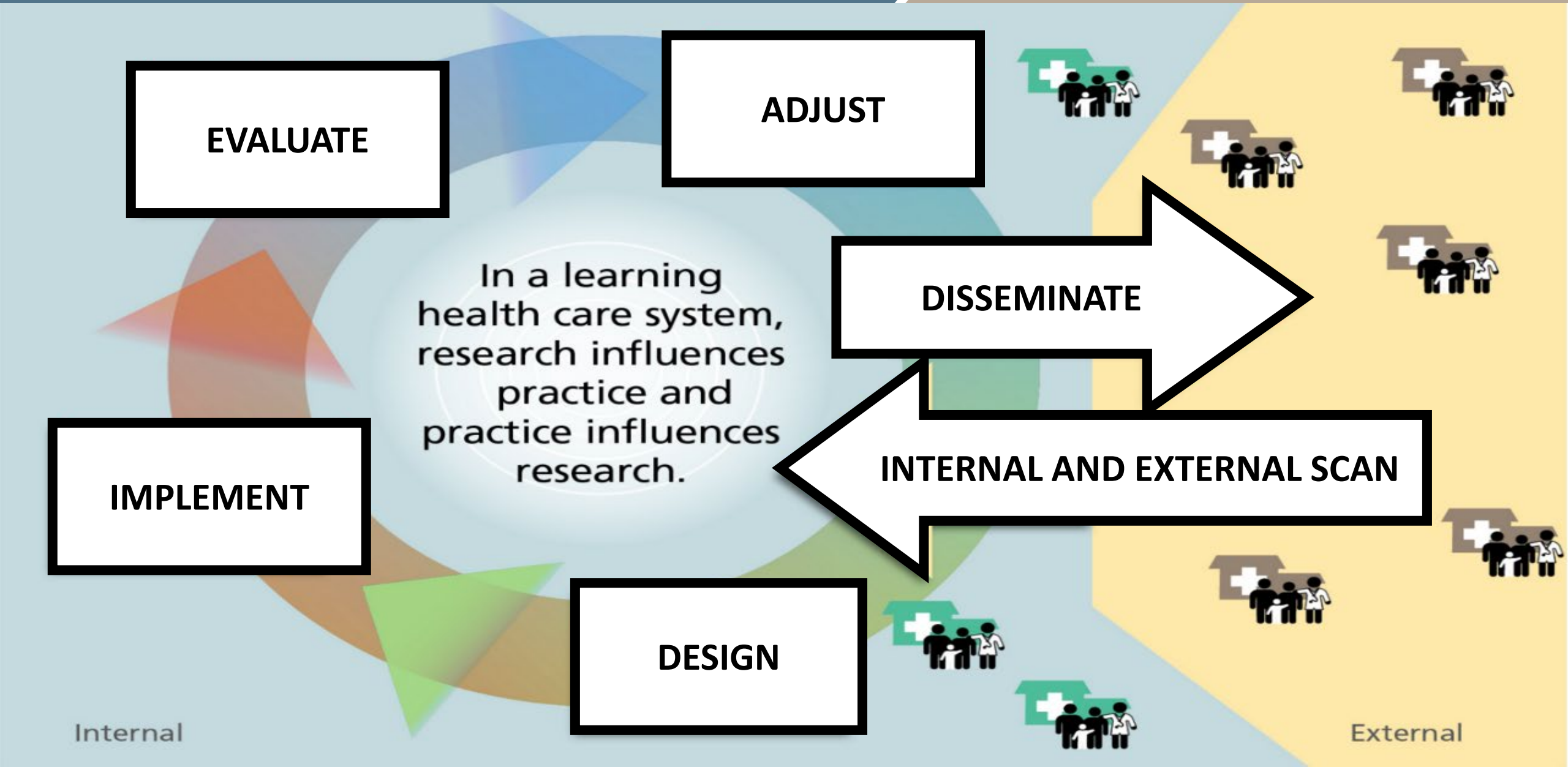
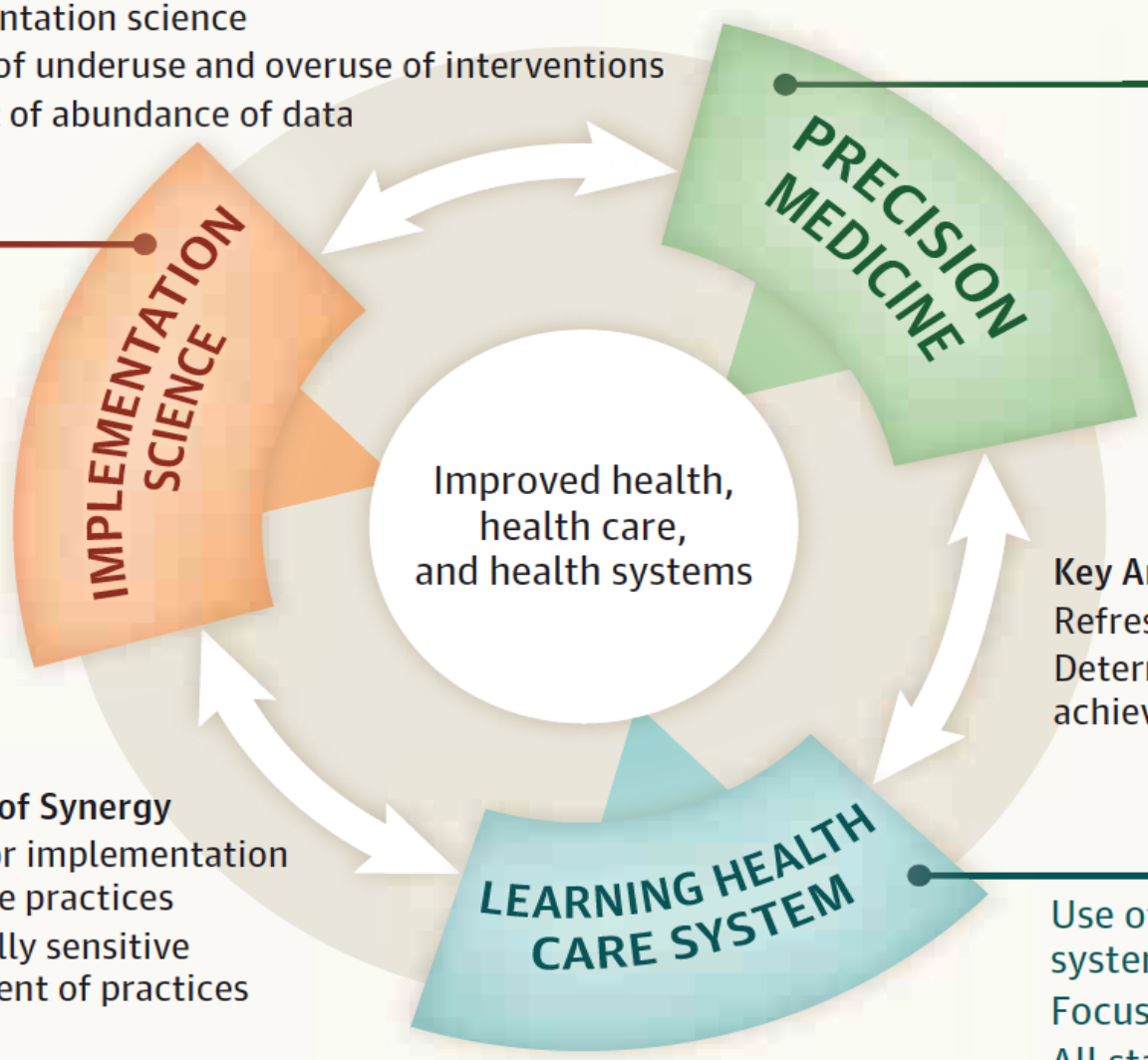


FIGURE 2: MSQC Learning Health System Model

LHS


EVALUATE
ADJUST
DISSEMINATE
INTERNAL AND EXTERNAL SCAN
IMPLEMENT
DESIGN
In a learning health care system, research influences practice and practice influences research.
Internal
External

LHS



Key Areas of Synergy

Evolution of evidence base for precision medicine and implementation science

Recognition of underuse and overuse of interventions

Management of abundance of data

Optimal use of genomics and behavioral data to drive clinical and patient decision making

Ongoing development of genomics evidence base

Personalized and population impact

Optimal integration of effective diagnosis, prevention, and treatment

Understanding of multilevel context

Theories and strategies to drive health care improvement

Key Areas of Synergy

Refresh cycle of evidence base

Determination of degree of achievable personalization of care

Key Areas of Synergy

Support for implementation of effective practices

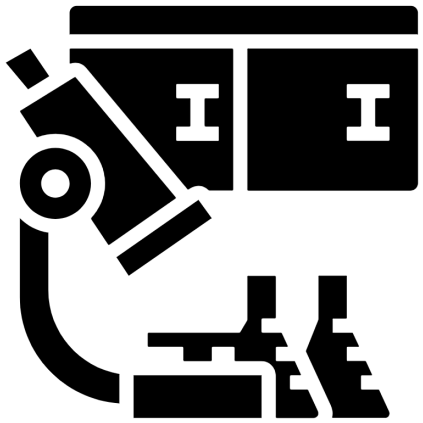
Contextually sensitive improvement of practices

Use of ongoing data to drive health system improvement

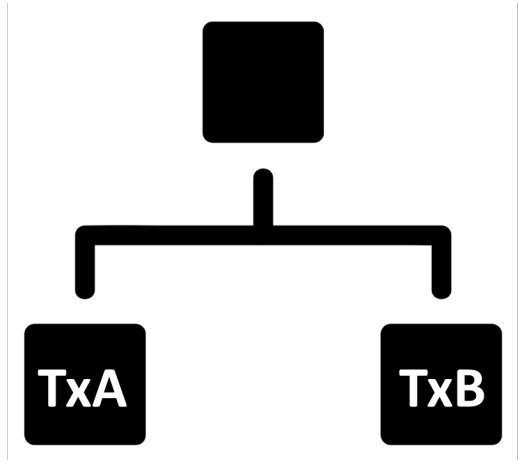
Focus on iterative and ongoing learning

All stakeholders participate

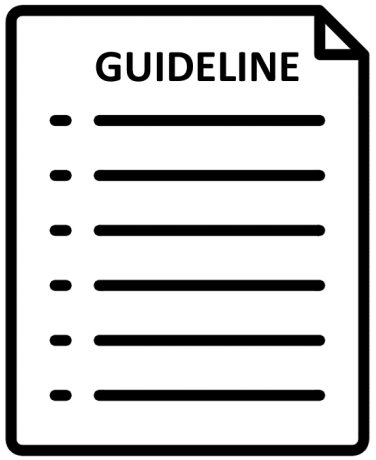
Research to Practice



Pre-Intervention



Efficacy & Effectiveness Trials



Dissemination & Implementation

17 years (14% of research)

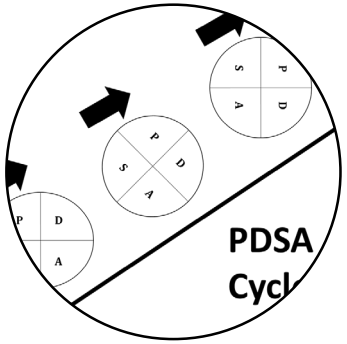
Dissemination

Targeted distribution of information and intervention materials to a specific public health or clinical practice audience

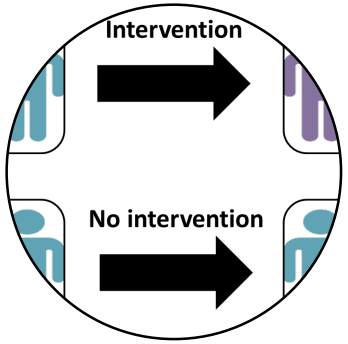
Implementation

The use of strategies to adopt and integrate evidence-based health interventions and change practice patterns within specific settings

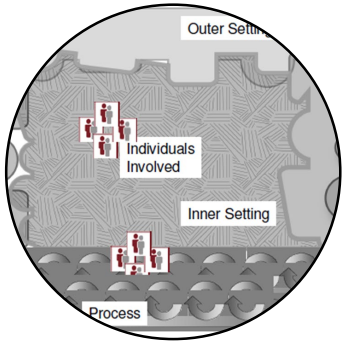
QI or Implementation?



Quality Improvement Operations



Quality Improvement Science



Implementation Science

Lane-Fall MB and Fleisher LA. Anesthesiology Clin, 2018.

QI or Implementation?

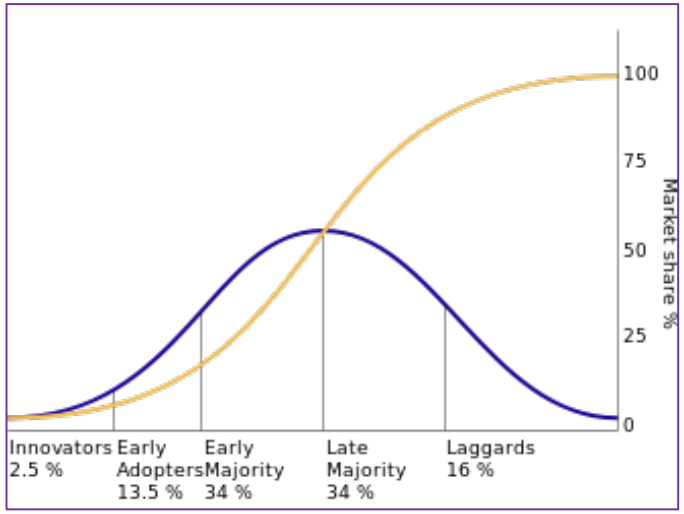
QI Operations **QI Science** **Implementation Science**

- Short-term focus (initial)
- Local practice applicability
- Theoretical models *not* very important
- Effectiveness outcomes

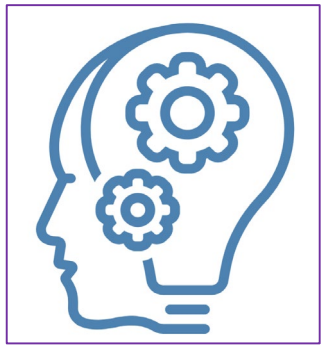
- Medium to long-term focus (initial)
- Applicability to multiple practices
- Theoretical models extremely important
- Implementation outcomes

Lane-Fall MB and Fleisher LA. Anesthesiology Clin, 2018.

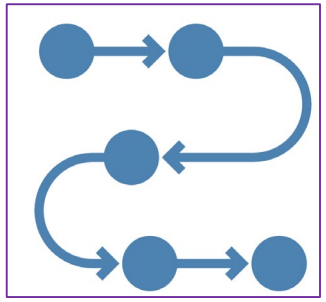
D&I Science



Models, Frameworks, & Theories



Understand and/or explain influencing factors

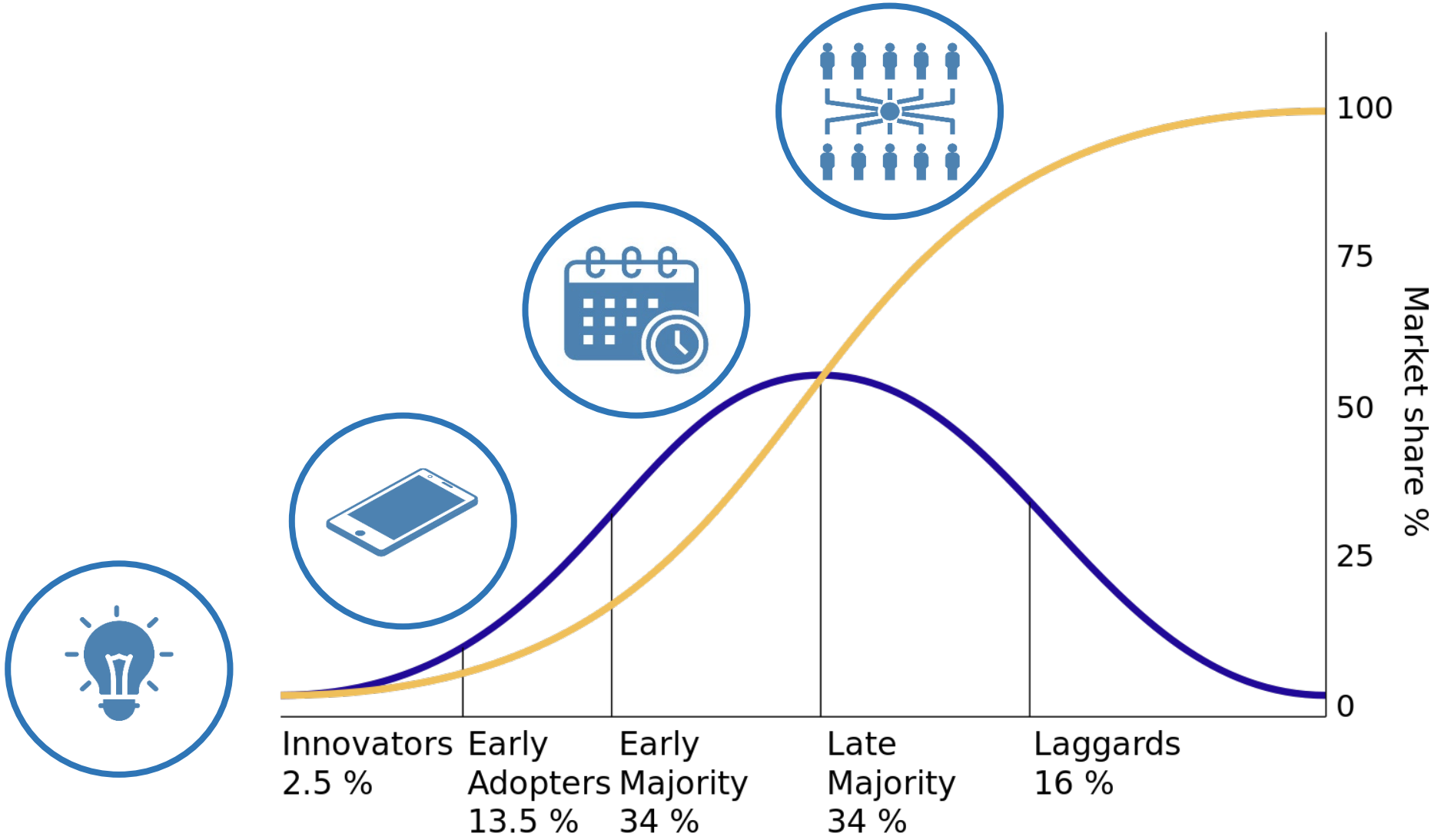


Describe and/or guide processes

Evaluate processes

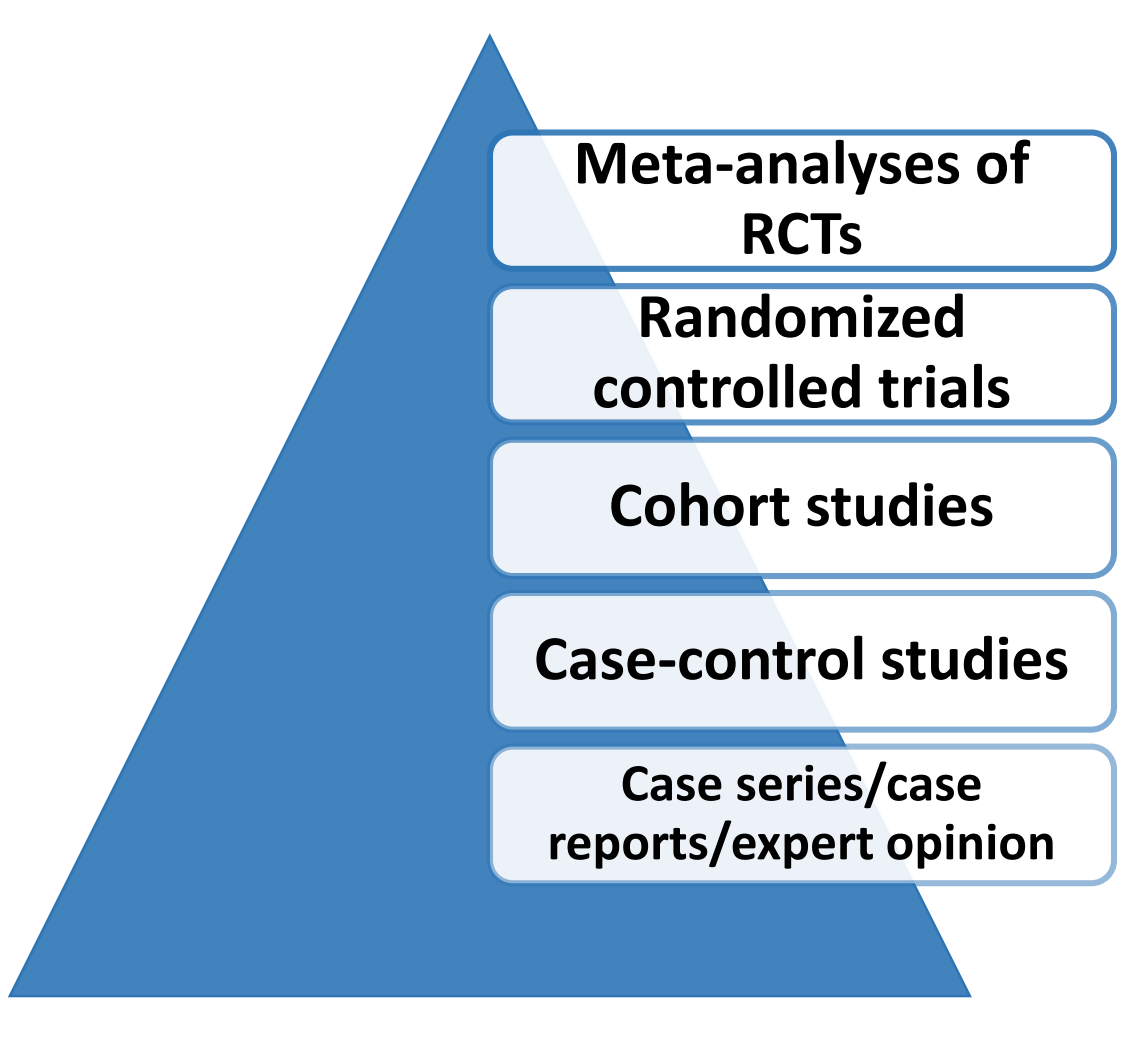
Nilsen P. Implement Sci, 2015.

Diffusion of Innovations



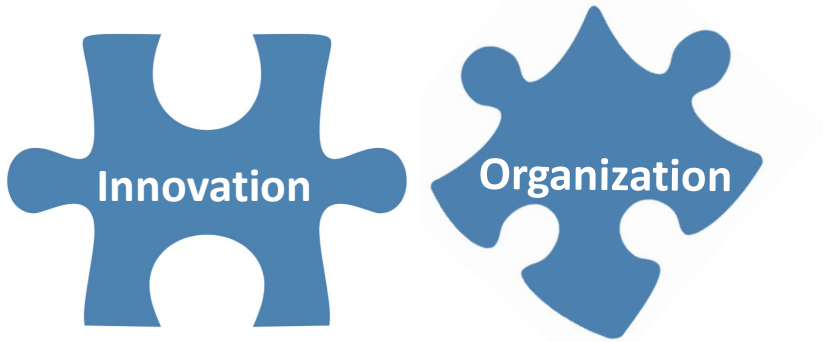
PARIHS

Promoting
Action on
Research
Implementation in
Health
Services

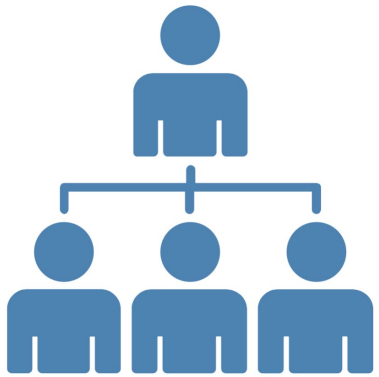


Kitson et al. Implementation Science, 2008.

PARIHS

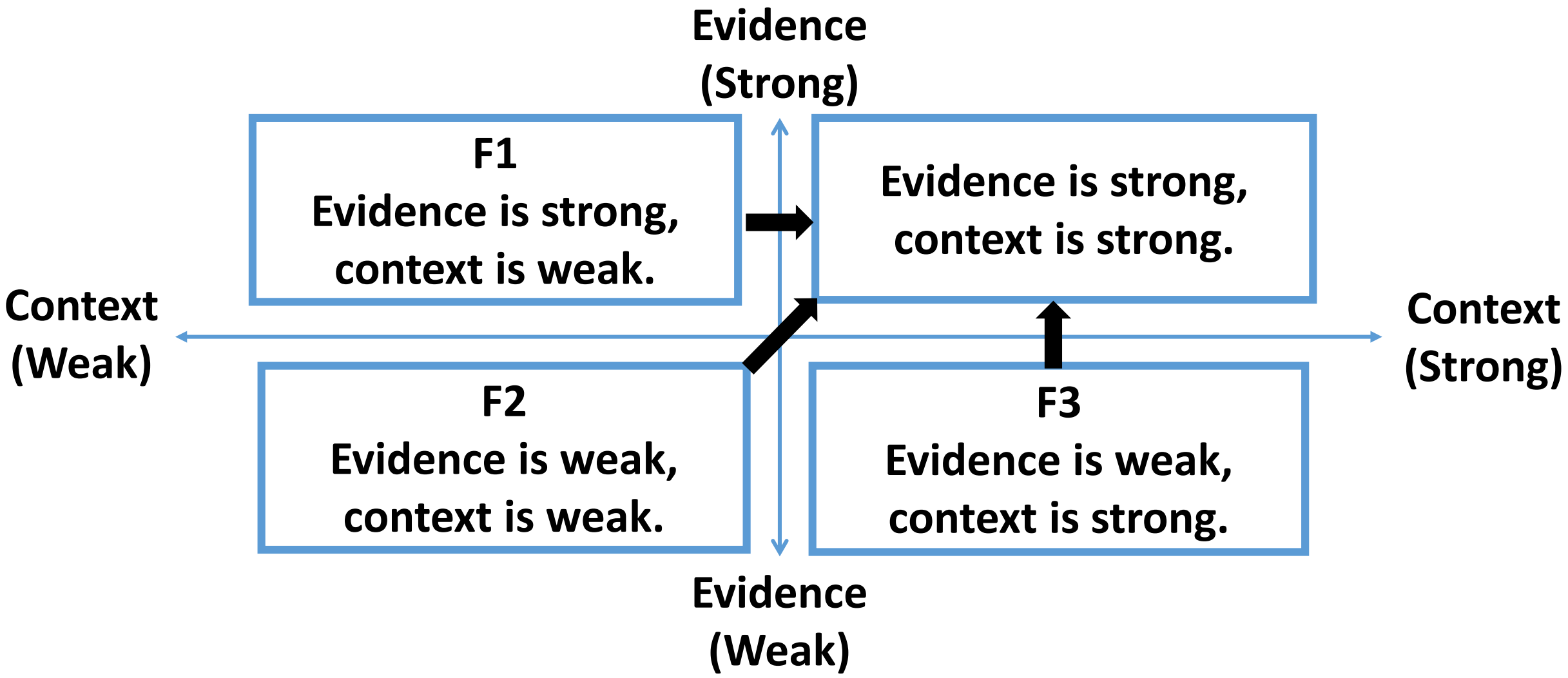


Context (Weak) ⟷ **Context (Strong)**



Kitson et al. Implementation Science, 2008.

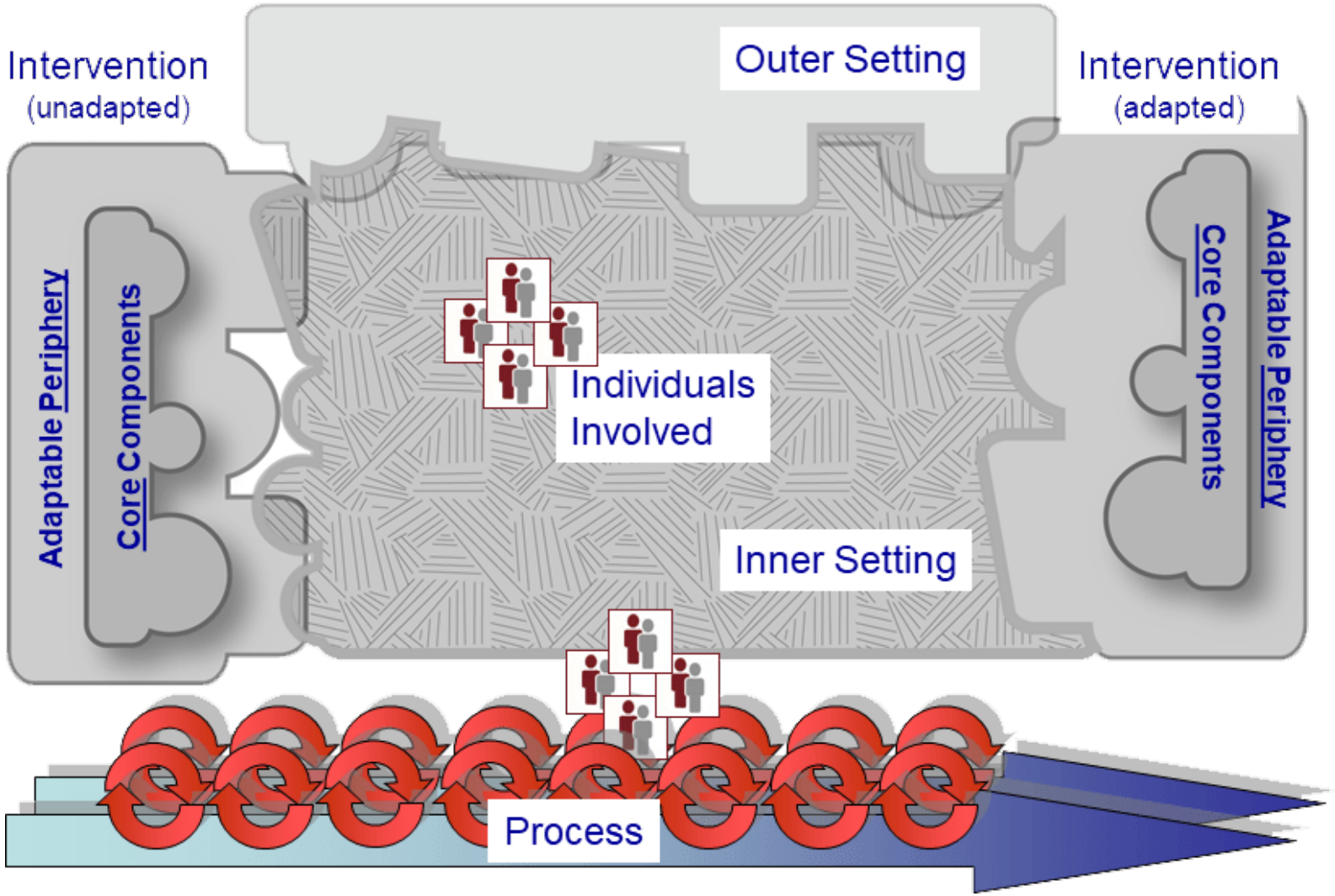
PARIHS



Kitson et al. Implementation Science, 2008.

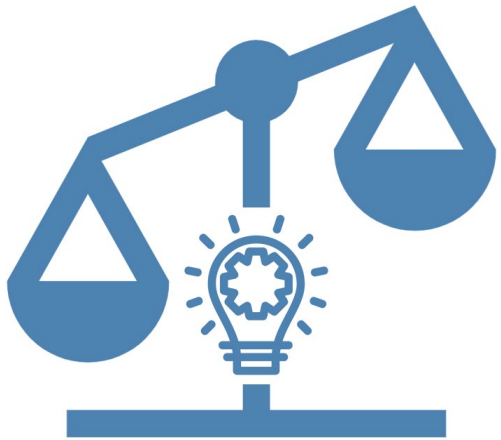
CFIR

- **C**onsolidated
- **F**ramework for
- **I**mplementation in
- **R**esearch



https://cfirguide.org/

CFIR

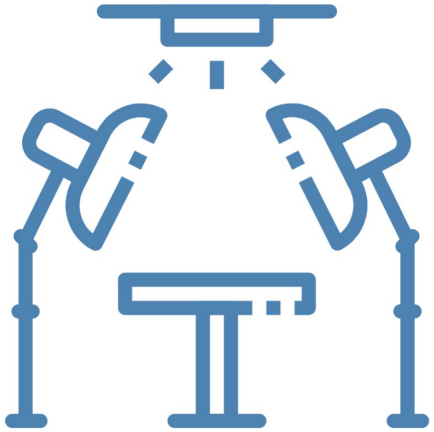


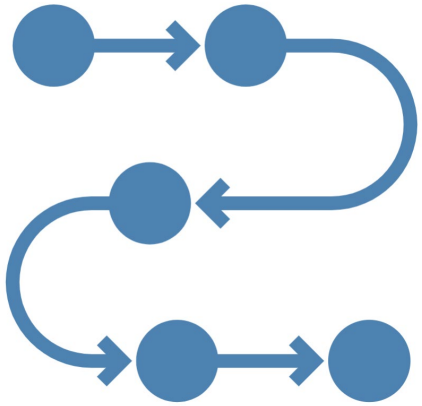
Intervention characteristics

Characteristics of individuals

Outer setting

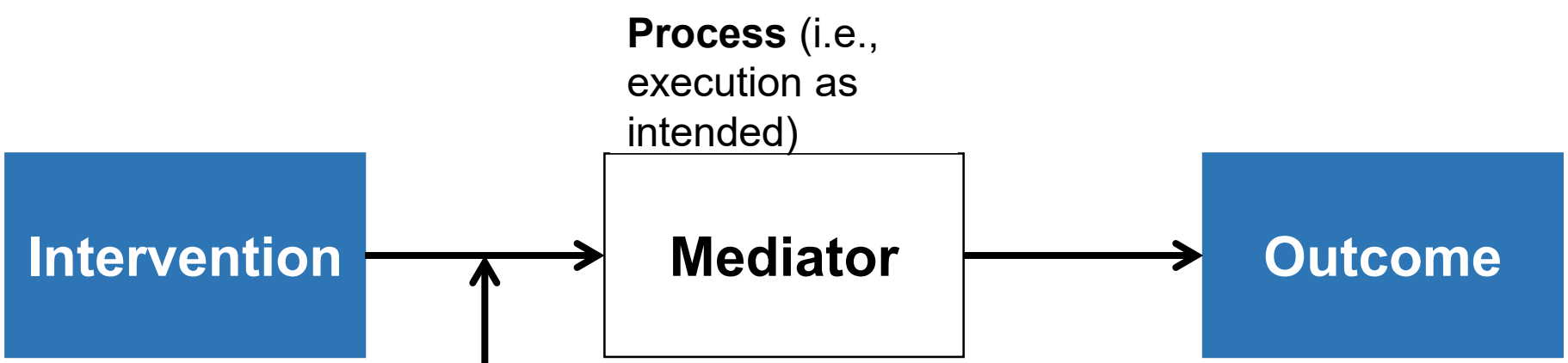
Inner setting





Process

Constructs



Intervention Characteristics (i.e., complexity)
Inner Setting (i.e., culture, leadership engagement, available resources)
Characteristics of Individuals (i.e., self-efficacy)

Green and Glasgow. Eval Health Prof, 2006.
http://cfirguide.org/constructs.html

CFIR

Domains:
Innovation characteristics
Outer setting
Inner setting
Characteristics of individuals
Process

Characteristics of individuals:
Knowledge and beliefs
Self-efficacy
Stage of change
Identification with organization
Other

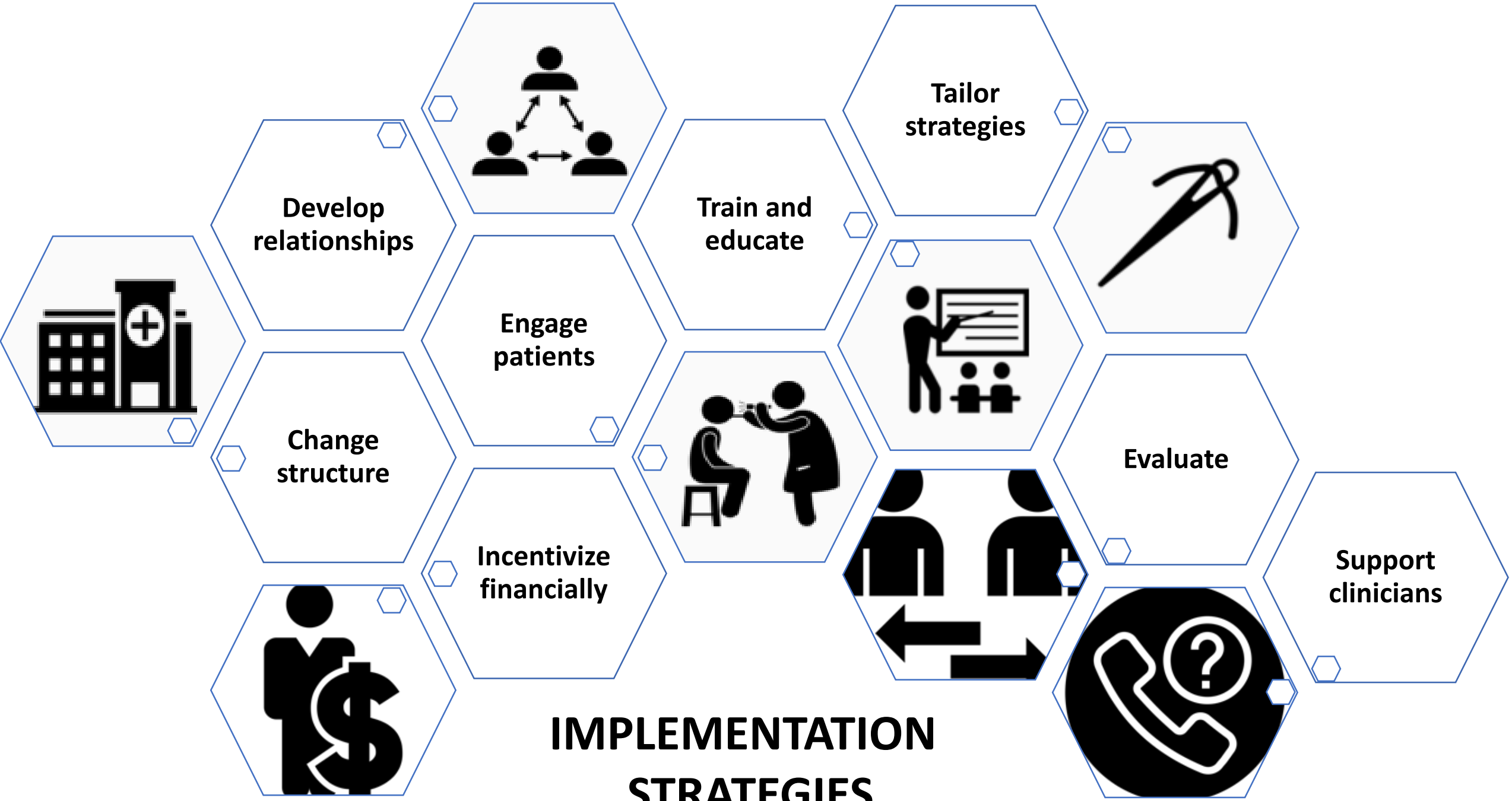
Self-efficacy techniques:
Conduct ongoing training
Provide ongoing consultation
Make training dynamic
Model and simulate change

Implementation Strategy:
Conduct ongoing training
Model and simulate change

CFIR

Domain	Barrier/ Facilitator (Construct)	Strategy
Characteristics of individuals	Knowledge and beliefs about the intervention (B)	Develop educational materials Identify and prepare champions
	Self-efficacy (B)	Model and simulate change Conduct ongoing training
Intervention characteristics	Evidence strength and quality (F)	Conduct educational meetings Conduct local consensus discussions
	Trialability (F)	Stage implementation scale-up
Inner setting	Leadership engagement (B)	Involve executive boards Obtain formal commitments

https://cfirguide.org/choosing-strategies/

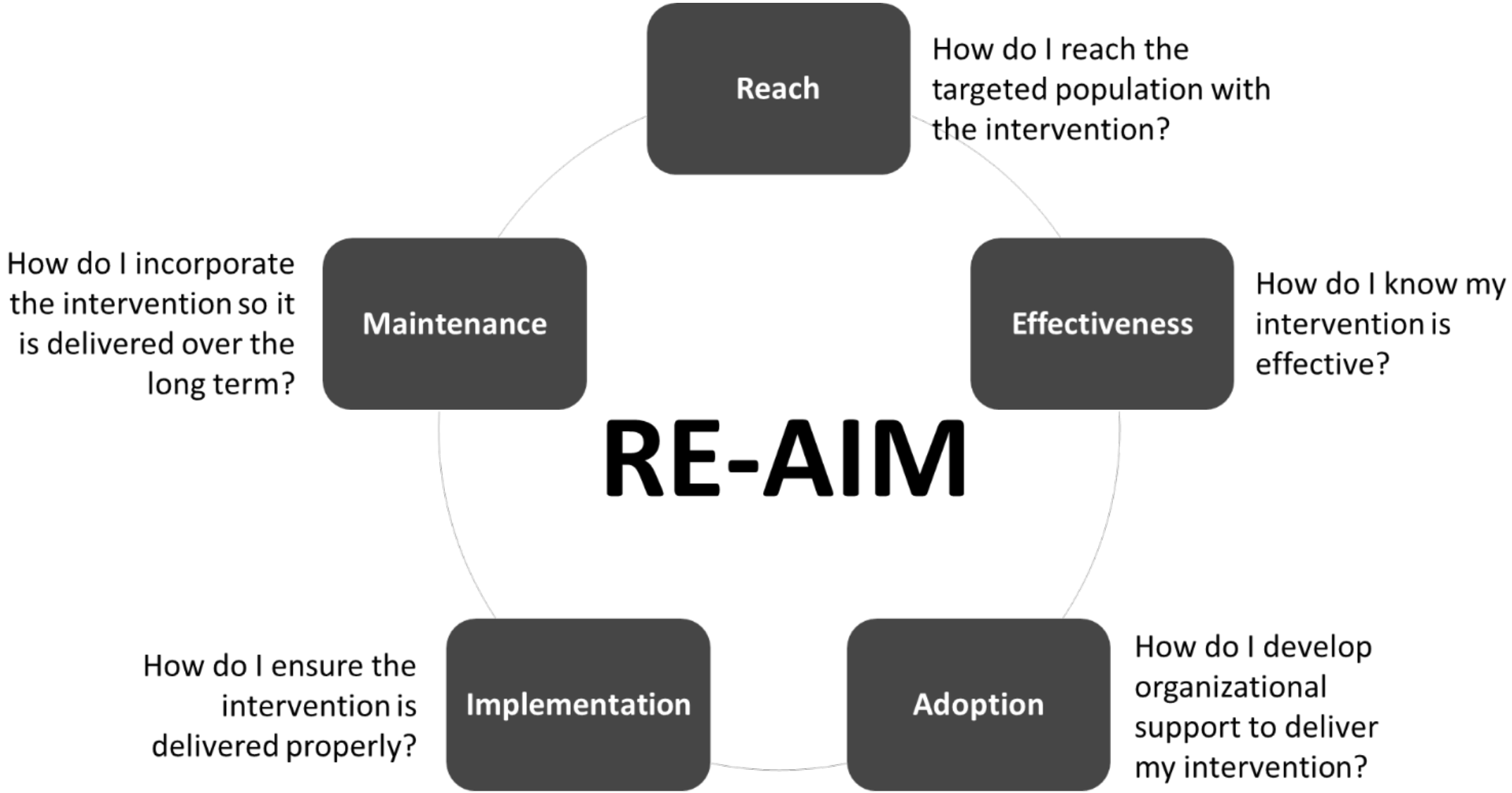


Waltz et al. Implementation Science, 2015.

Implementation Strategy	Importance	Feasibility	Example
Use evaluative and iterative strategies	★★★★	★★★★	Audit and provide feedback
Provide interactive assistance	★★★½	★★★	Provide clinical supervision
Adapt and tailor to context	★★★½	★★★½	Tailor strategies
Develop stakeholder interrelationships	★★★½	★★★½	Identify and prepare champions
Train and educate stakeholders	★★★½	★★★★	Develop educational materials
Support clinicians	★★★	★★★	Remind clinicians
Engage consumers	★★★	★★★	Involve patients and family members
Utilize financial strategies	★★★	★★	Develop disincentives
Change infrastructure	★★½	★★	Create/change credentialing standards

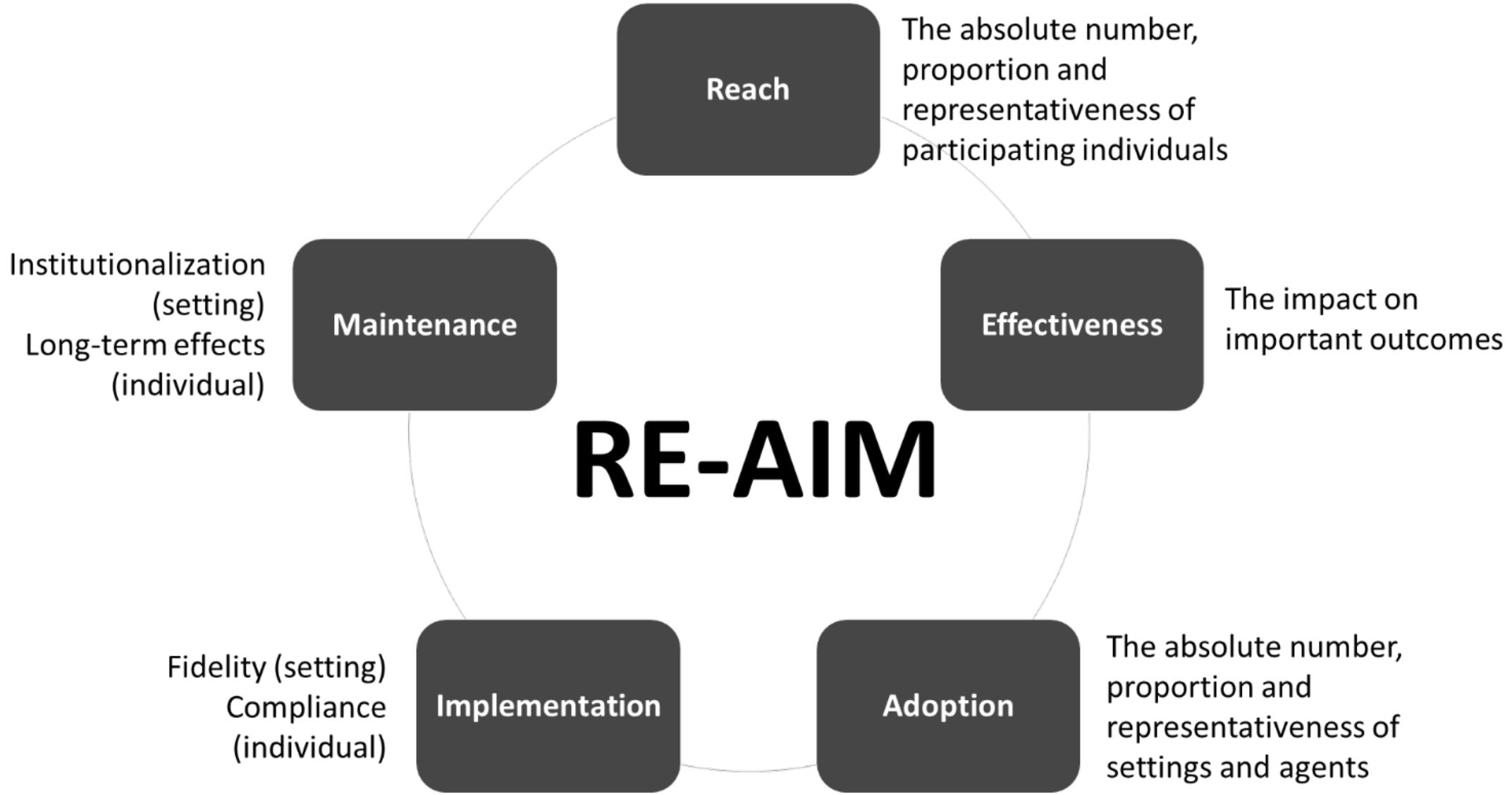
Waltz et al. Implementation Science, 2015.

RE-AIM



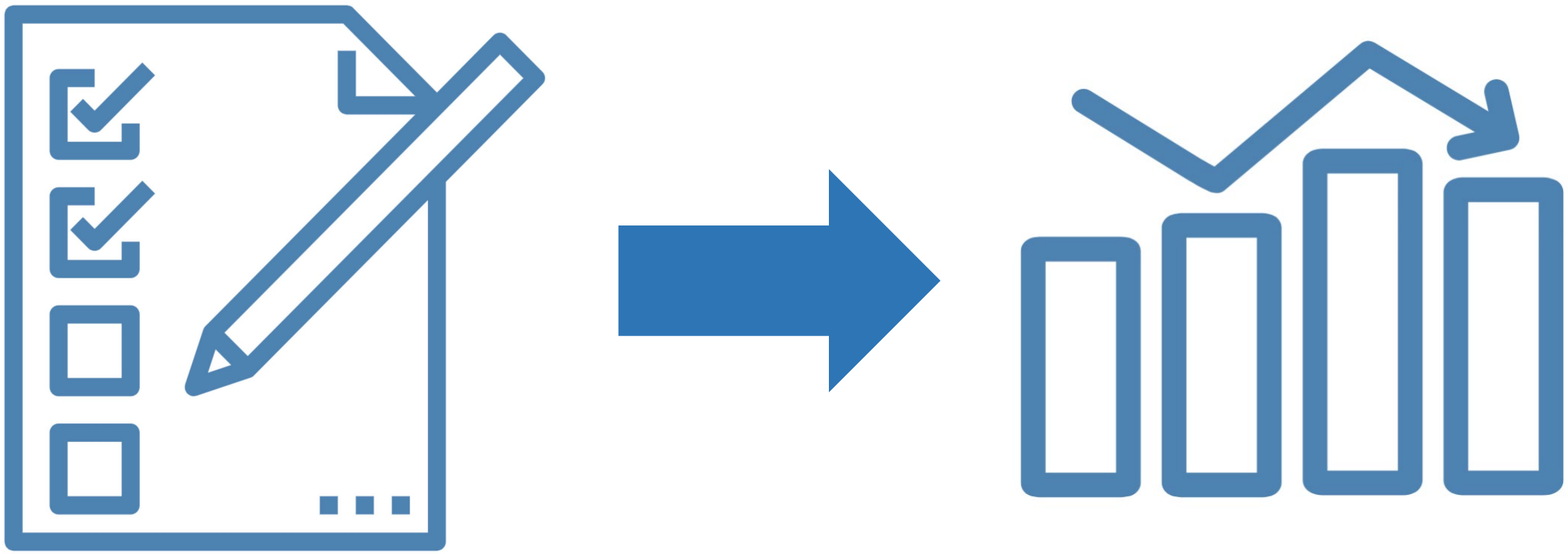
https://www.re-aim.org/about/what-is-re-aim/

RE-AIM

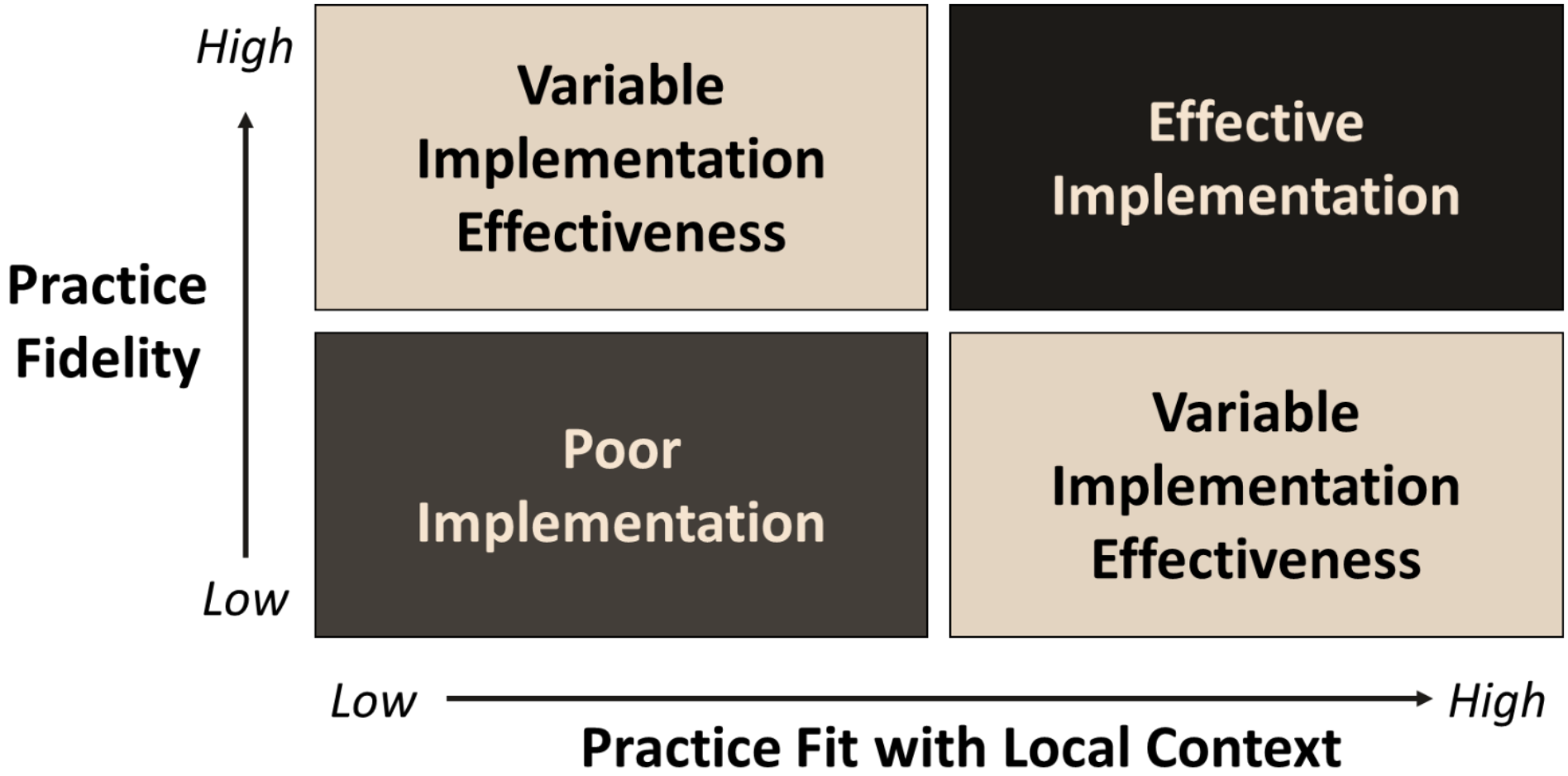


https://www.re-aim.org/about/what-is-re-aim/

Challenges

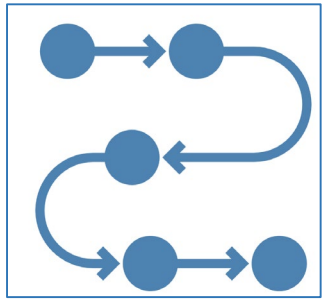


Context



https://www.queri.research.va.gov/tools/QUERI-Implementation-Roadmap-Guide.pdf

Summary



- Models, frameworks, and theories can be used to identify barriers and facilitators to dissemination and implementation.
- Context and fit of an intervention to a context impact implementation success.
- Strategies for dissemination and implementation should leverage facilitators and address barriers within that context.
- Implementation outcomes should be measured in addition to effectiveness.

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Applying Implementation Science to Pediatric Surgical Quality Improvement: Enhanced Recovery After Surgery

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Vice Chair of Quality and Safety

Ann & Robert H. Lurie Children's Hospital of Chicago™

NORTHWESTERN UNIVERSITY FEINBERG SCHOOL OF MEDICINE

Disclosures/Acknowledgements

- **Disclosures:**
  - Abbot Nutrition - Consultant
  - Finley Law - Consultant

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  - NIH – This research is supported by the Eunice Kennedy Shriver National Institute Of Child Health & Human Development of the National Institutes of Health under **Award Number R01HD099344**. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health

pedsrc

CROHN'S & COLITIS FOUNDATION

NIH *Eunice Kennedy Shriver* National Institute of Child Health and Human Development

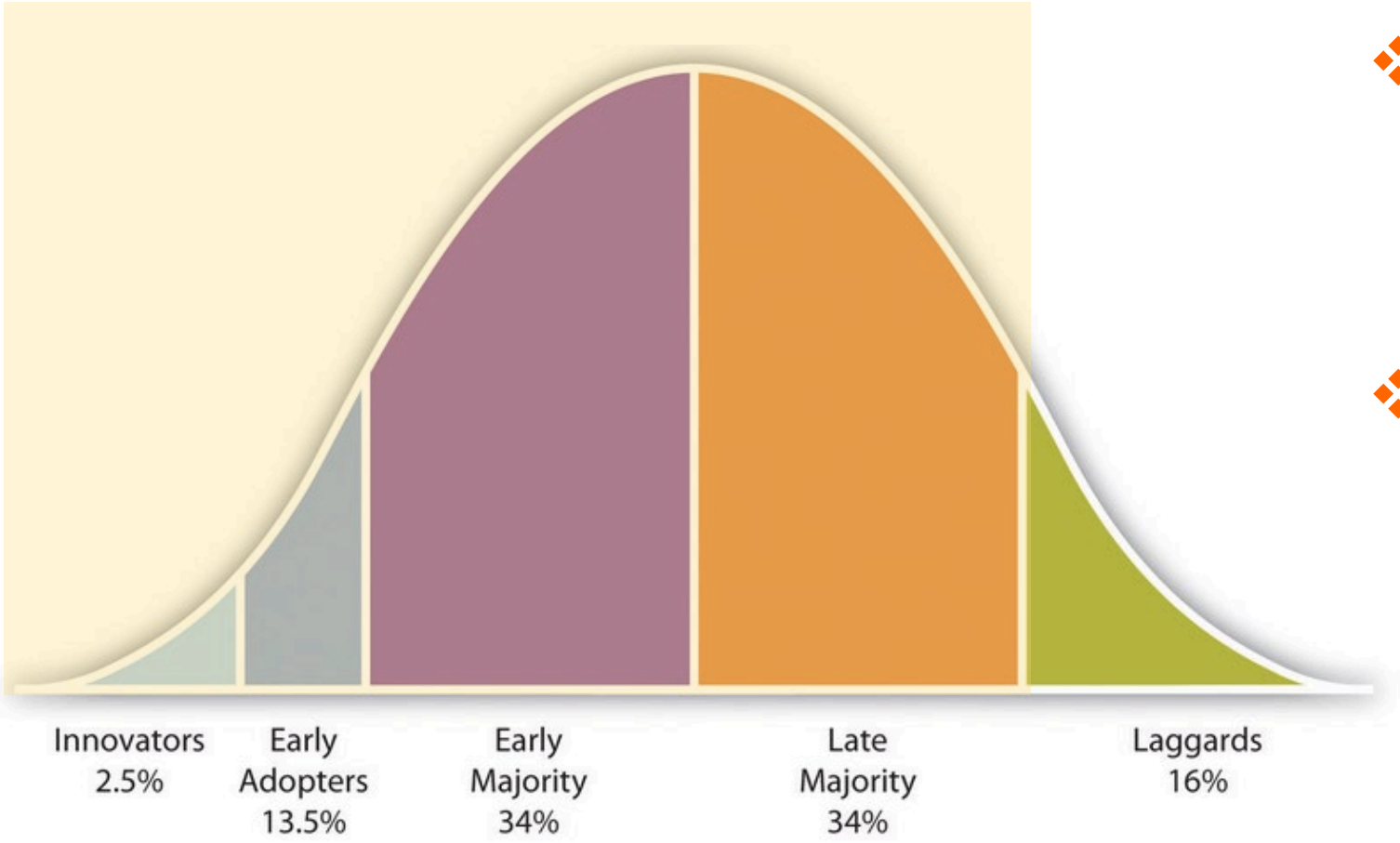
ENRICH-US

Agenda

- Need for studies that focus on both outcomes & implementation
- Evolution of the ENRICH-US Trial
- Practical application of some of the concepts

ENRICH–US

Why is the ENRICH-US study needed?



- Strong evidence that interventions take 20 years to get from bench to bedside
- Many effective surgical interventions from clinical trials and health services research ultimately fail to be translated into clinical practice

ENRICH–US

Why is the ENRICH-US study needed?

- In the US, less than half of children currently receive recommended evidence-based pediatric care
  - Mangione-Smith, et al (NEJM 2007)
- "If we want more evidence-based practice, we need more practice-based evidence."
  - LW Green (Am J Pub Health 2006)

ENRICH–US

My experience

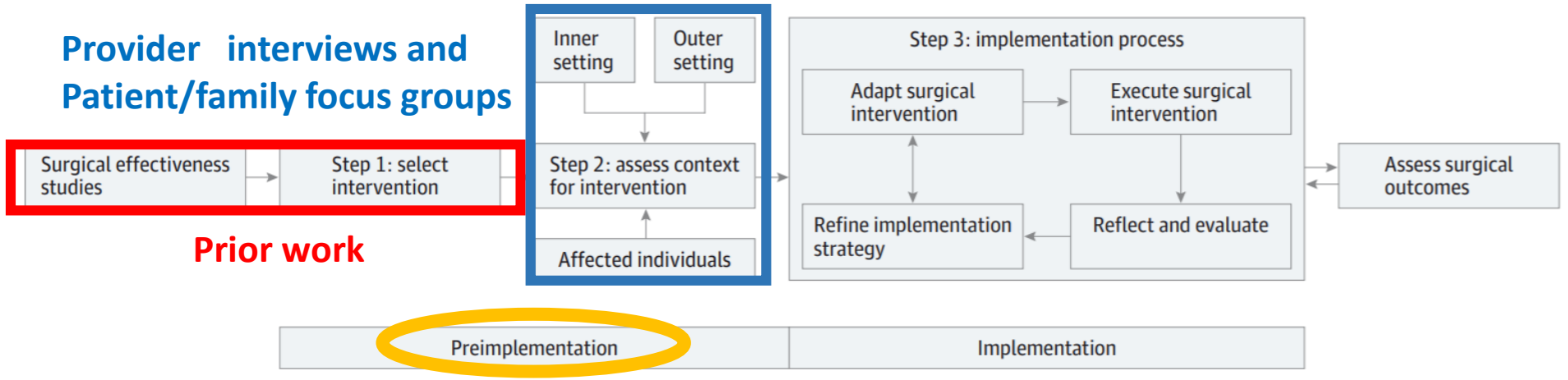
- NSQIP-Pediatric
- QI projects
- PDSA

- Challenges
  - Culture
  - Leadership
  - Resources

Past Failures….

- **Implementation Science is the study and application of methods to integrate evidence-based research into practice**

Figure. Conceptual Model for Applying Implementation Science to the Adoption of Evidence-Based Surgical Interventions



This step-by-step model is adapted from the Consolidated Framework for Implementation Research[4] and describes key domains that are part of the preimplementation and implementation processes.

JAMA Surgery October 2015 Volume 150, Number 10 jamasurgery.com

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Implementation Science and Quality Improvement

- **QI emerged from industry**
  - Systems-level work to improve the quality and safety of care
  - Performance is measured to assess improvements (process measure, compliance, order set use, etc)
- **Implementation evolved from behavioral science**
  - Uses theory-based models to promote the systematic uptake of evidence-based interventions into practice
  - Focuses on the scientific study of timely uptake (acceptability, feasibility, sustainability, etc)

Clinical Review & Education

Surgical Innovation

What Surgeons Can Learn From the Emerging Science of Implementation

Benjamin S. Brooke, MD, PhD; Samuel R. G. Finlayson, MD, MPH

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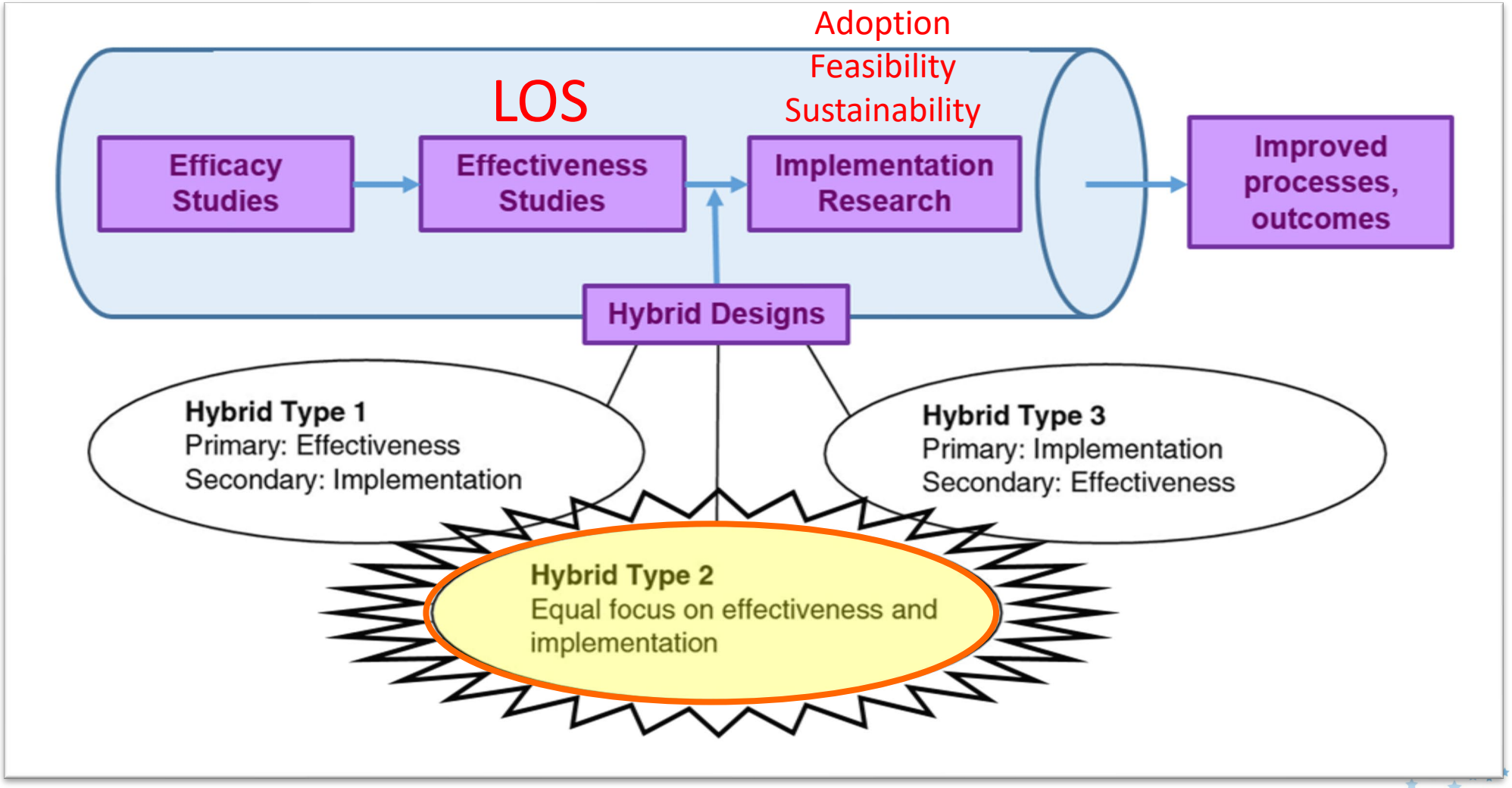
Innovative Study Designs



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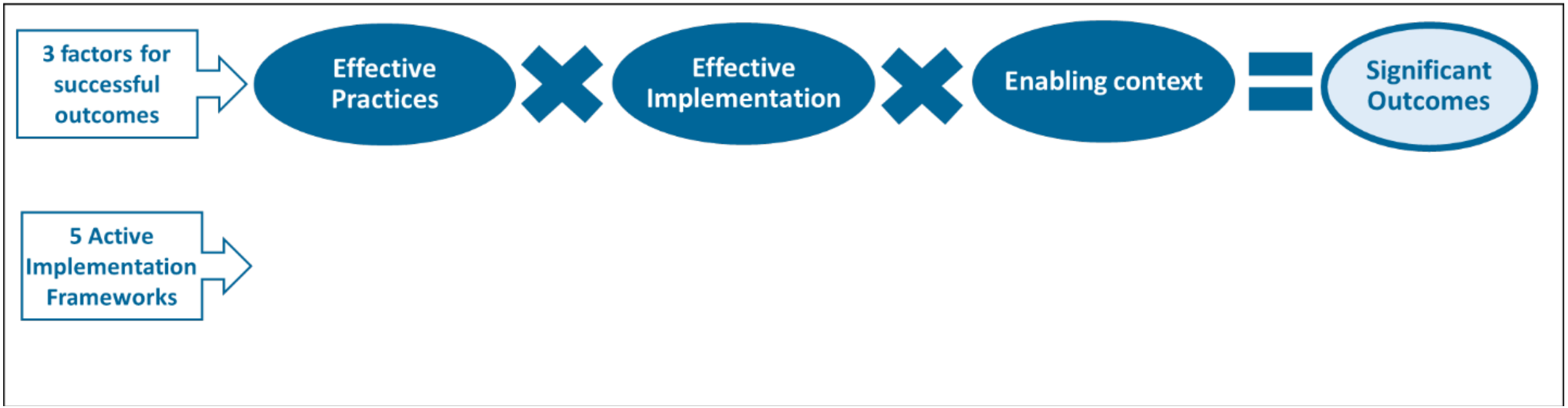
5 Active Implementation Frameworks (AIFs)



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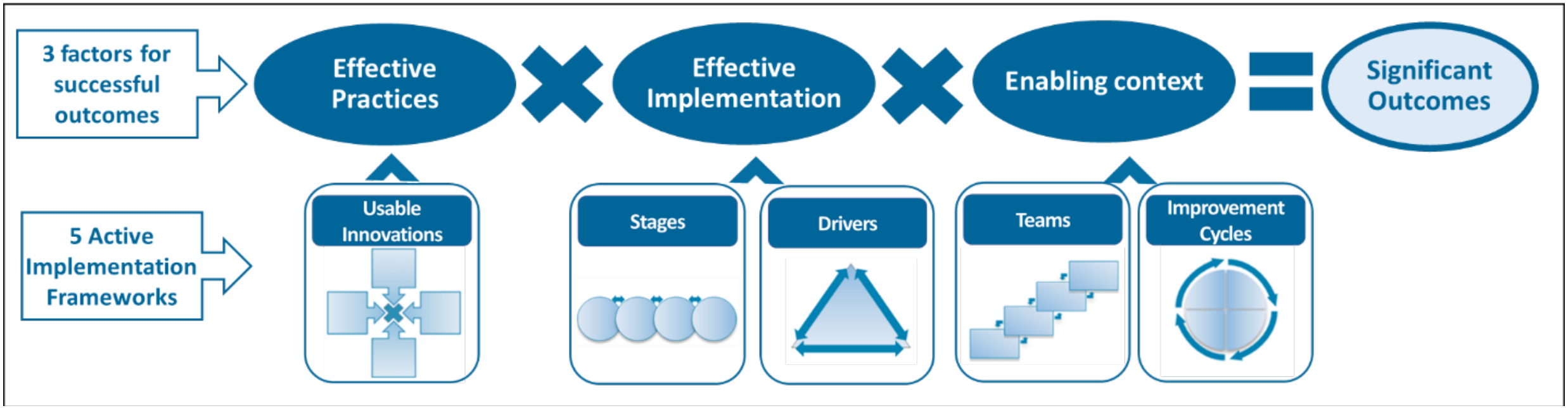
5 Active Implementation Frameworks (AIFs)



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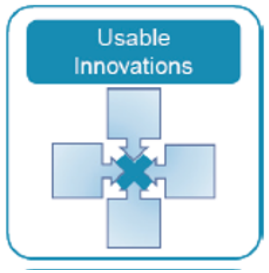
5 AIFs



AIF Descriptions

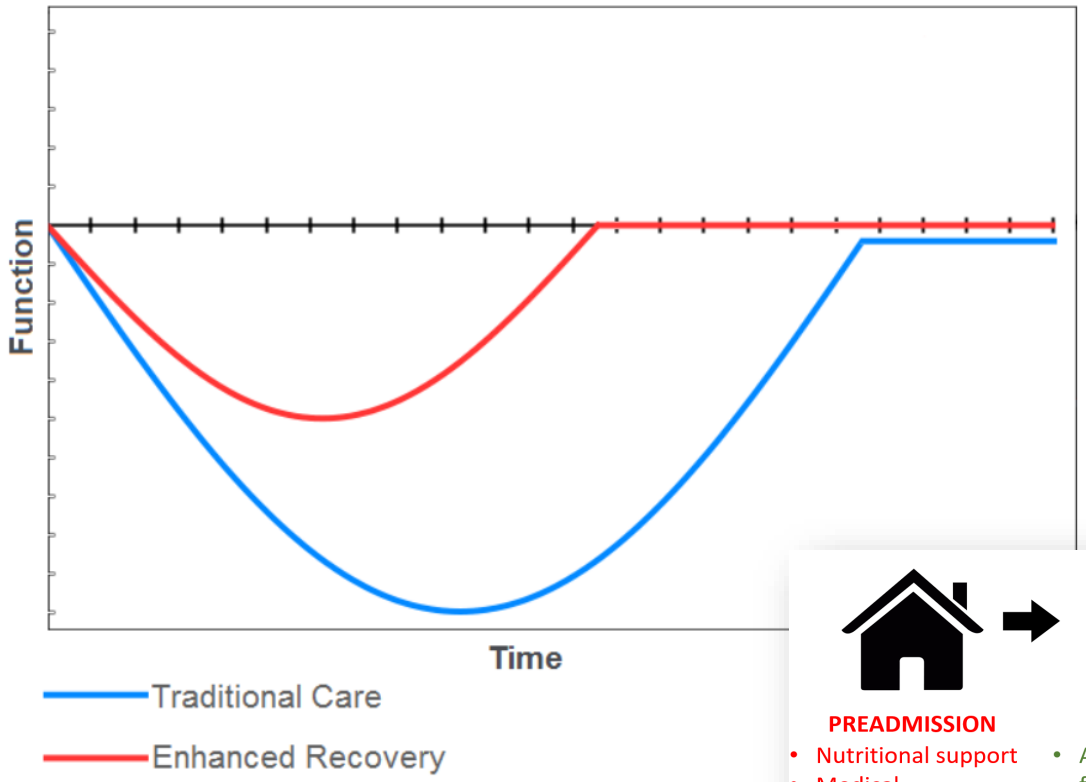
Well-operationalized innovations that are teachable, learnable, doable, and readily assessed in practice.

ENRICH-US Plan

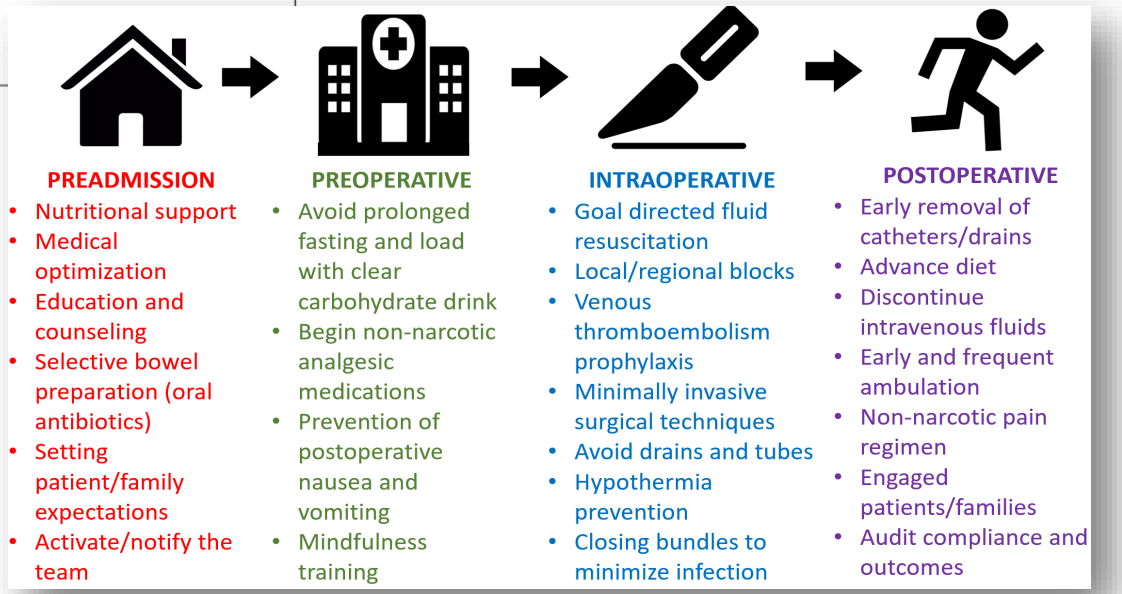
- Evidence-based ERPs with validation by expert panels
- High readiness for adoption
- Supportive pilot data
- Implementation tools ready

ENRICH–US

What is Enhanced Recovery???



- 1999 Henrick Kehlet et al. published
  - 2-day stay after sigmoid colon resection
- 20 years later we are still trying to implement and emulate



PREADMISSION
- Nutritional support
- Medical optimization
- Education and counseling
- Selective bowel preparation (oral antibiotics)
- Setting patient/family expectations
- Activate/notify the team

PREOPERATIVE
- Avoid prolonged fasting and load with clear carbohydrate drink
- Begin non-narcotic analgesic medications
- Prevention of postoperative nausea and vomiting
- Mindfulness training

INTRAOPERATIVE
- Goal directed fluid resuscitation
- Local/regional blocks
- Venous thromboembolism prophylaxis
- Minimally invasive surgical techniques
- Avoid drains and tubes
- Hypothermia prevention
- Closing bundles to minimize infection

POSTOPERATIVE
- Early removal of catheters/drains
- Advance diet
- Discontinue intravenous fluids
- Early and frequent ambulation
- Non-narcotic pain regimen
- Engaged patients/families
- Audit compliance and outcomes

ENRICH–US

Evidence Supporting Enhanced Recovery

- **13 Randomized Controlled Trials**
  - **Hundreds of publications**

- ERAS® Society — **www.erassociety.org**

- **ERAS results in**
  - **2-3 day reduction in the length of stay**
  - **Decreased rate of complications by 20-30%**
  - **No increase in readmission**

ENRICH–US

Enhanced Recovery in Children

JOURNAL OF SURGICAL RESEARCH 202 (2016) 165–176

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.JournalofSurgicalResearch.com

Research review

Enhancing recovery in pediatric surgery: a review of the literature

Julia K. Shinnick, BA,[a] Heather L. Short, MD,[a] Kurt F. Heiss, MD,[a] Matthew T. Santore, MD,[a] Martin L. Blakely, MD, MSCR,[b] and Mehul V. Raval, MD, MS[a,]*

ENRICH–US

Results

Table 4. Elements of ERAS guidelines implemented by studies addressing general pediatric surgery included in this review.

Author and Year	Preoperative Counseling	Standardized Anesthetic Protocol	Antimicrobial Prophylaxis and Skin Preparation	Modifications of Surgical Access	Nonroutine Nasogastric Intubation	Minimized Perioperative Fasting	Early Mobilization	Selective or No Preoperative Bowel Prep
Reismann, et al. 2007	+	+		+	+	+	+	
Reismann, et al. 2009	+	+		+	+	+	+	
Mattioli, et al. 2009	+	∗	+	+	–	+	+	–
Schukfeh, et al. 2014	+	+		+	+	+	+	
Vrecenak and Mattei. 2014	+	+		+	+	+		

∗ Use of blended and locoregional anesthesia systematically; + Present; – Not Present; *blank* = No data provided.

None of the studies discussed inclusion of the following ERAS Society recommendations for perioperative care in elective colonic surgery: preoperative optimization, preoperative fasting limited to clear fluids up to 2 h before the procedure and solid foods 6 h before the procedure, carbohydrate treatment, no preoperative bowl prep, thromboembolism prophylaxis, a multimodal approach to postoperative nausea and vomiting for those at risk, intraoperative normothermia, maintenance of normovolemia, nonroutine drainage of peritoneal cavity after colonic anastomosis, routine transurethral bladder drainage, efforts to prevent postoperative ileus, or postoperative glucose control.

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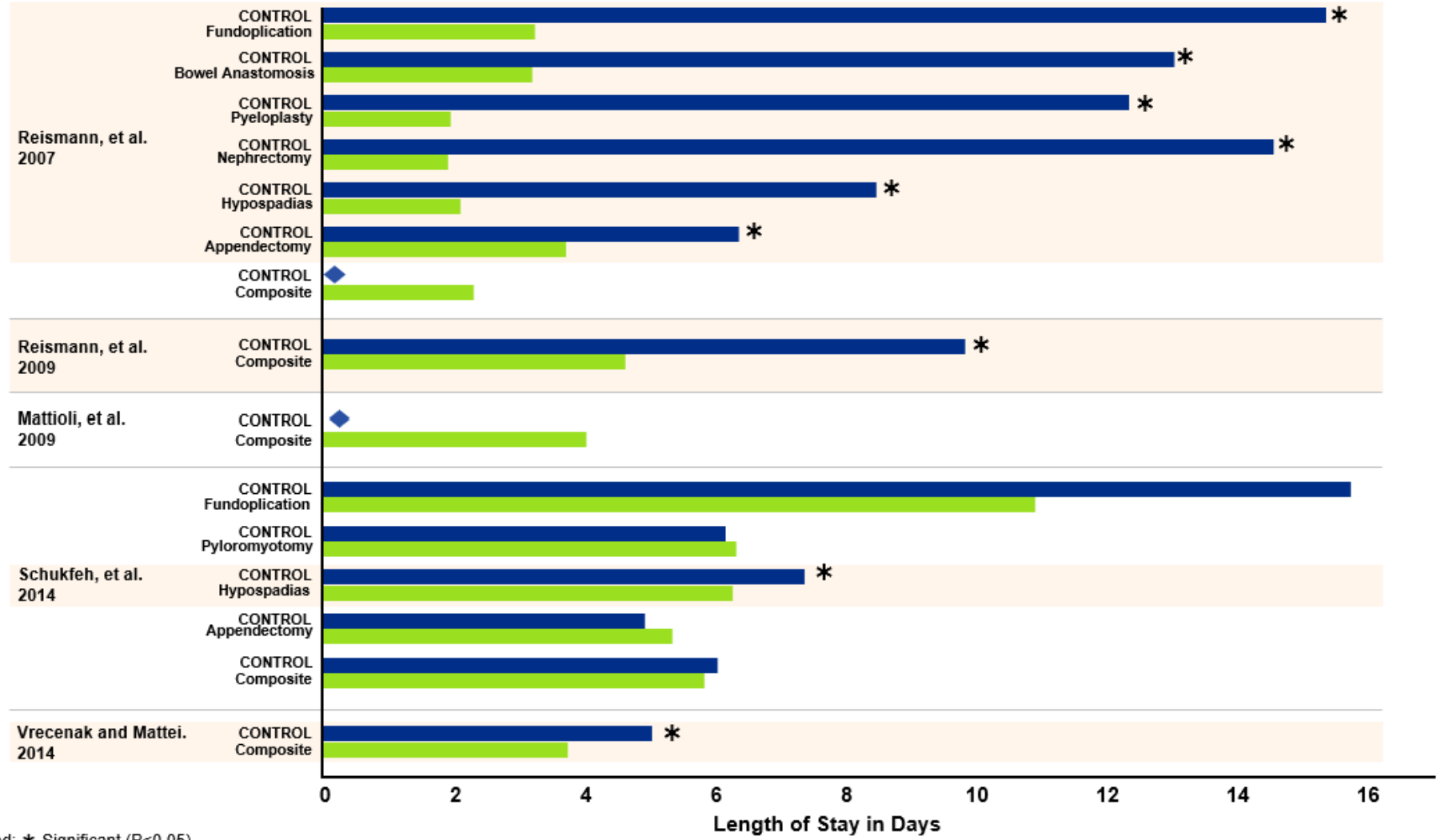
Mean Length of Hospital Stay



◆ No data provided; ∗ Significant (P<0.05)

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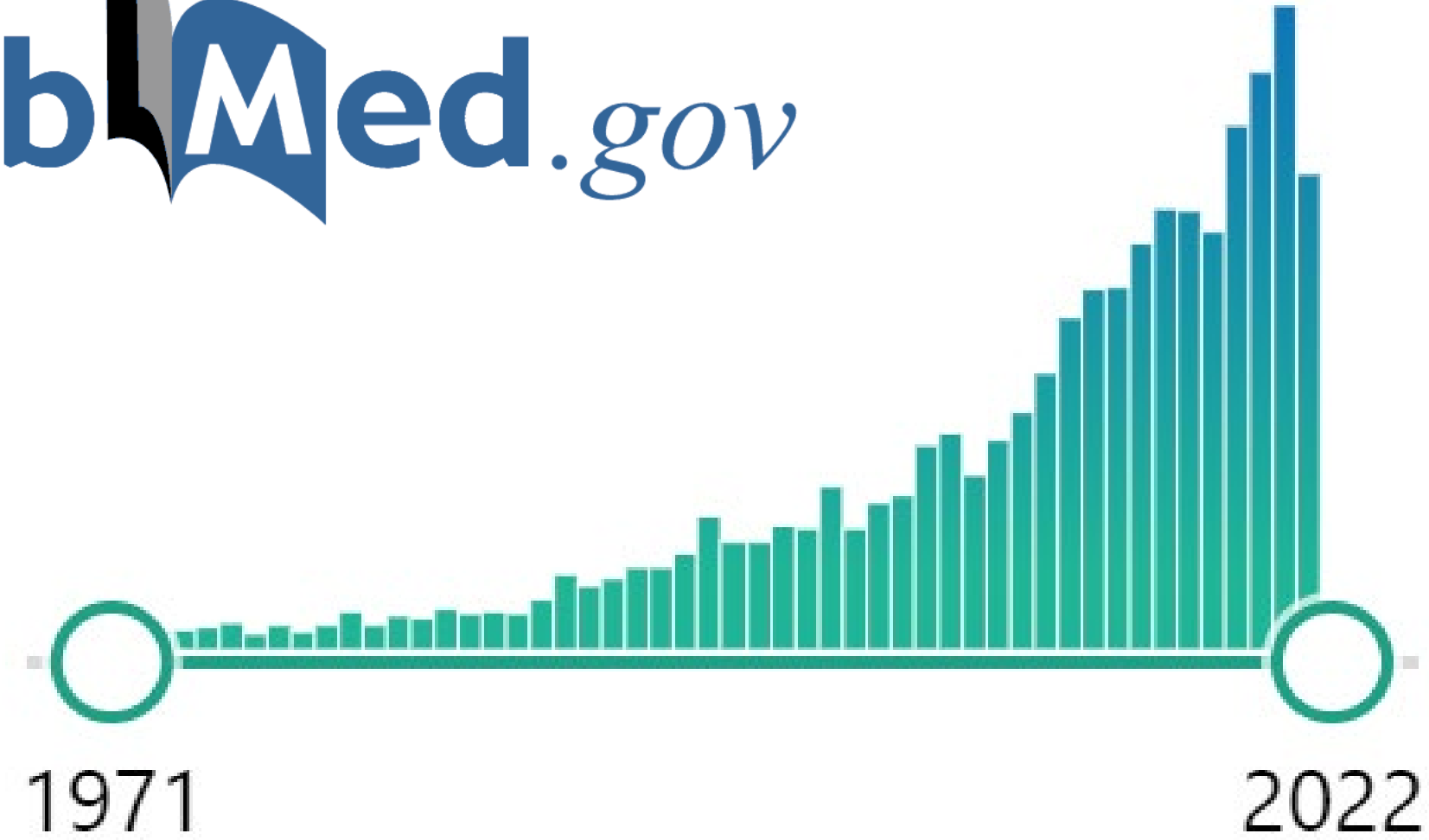
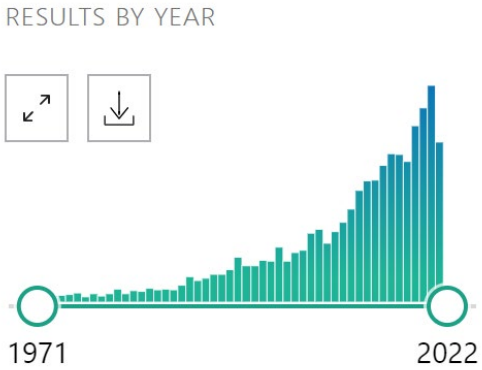
Enhanced Recovery in Children

PubMed.gov



Enhanced Recovery in Children



- Other examples:
  - Pediatric/thoracic
    - Bariatric
    - Pectus
    - Same day discharge:
      - Cholecystectomy
      - Appendectomy
  - Ortho/Neuro
    - Spine
  - Urology
    - Hypospadias surgery
    - Complex reconstructions
  - Plastics/ENT/OMFS
    - Cleft repairs
  - Etc.

> Surg Obes Relat Dis. 2020 Jul 23;S1550-7289(20)30419-6. doi: 10.1016/j.soard.2020.07.016. Online ahead of print.

Does ERAS impact outcomes of laparoscopic sleeve gastrectomy in adolescents?

Sule Yalcin [1], Stephanie M Walsh [2], Janet Figueroa [3], Kurt F Heiss [1], Mark L Wulkan [4]

Pediatr Surg Int. 2017 Oct;33(10):1123-1129. doi: 10.1007/s00383-017-4148-6. Epub 2017 Aug 29.

Enhancing recovery after minimally invasive repair of pectus excavatum.

Litz CN[1], Farach SM[2], Fernandez AM[3], Elliott R[3], Dolan J[3], Nelson W[3], Walford NE[2], Snyder C[4], Jacobs JP[4], Amankwah EK[5], Danielson PD[2], Chandler NM[2].

> J Pediatr Orthop. 2020 Mar;40(3):e166-e170. doi: 10.1097/BPO.0000000000001436.

High Satisfaction in Adolescent Idiopathic Scoliosis Patients on Enhanced Discharge Pathway

Joshua Yang [1], David L Skaggs [1], Priscella Chan [1], Gabriela A Villamor [1], Paul D Choi [2], Vernon T Tolo [1], Catherine Kissinger [1], Alison Lehman [1], Lindsay M Andras [1]

J Pediatr Surg. 2019 Mar 1. pii: S0022-3468(19)30118-6. doi: 10.1016/j.jpedsurg.2019.02.007. [Epub ahead of print]

Opioid use and length of stay following minimally invasive pectus excavatum repair in 436 patients - Benefits of an enhanced recovery pathway.

Holmes DM[1], Polites SF[2], Roskos PL[2], Moir CR[2].

Hong Kong Med J. 2018 Jun;24(3):238-244. doi: 10.12809/hkmj177039. Epub 2018 May 21.

Hypospadias surgery in children: improved service model of enhanced recovery pathway and dedicated surgical team.

Wong YS[1], Pang KK[1], Tam YH[1].

> J Craniofac Surg. 2019 Oct;30(7):2154-2158. doi: 10.1097/SCS.0000000000005718.

Implementation of a Modified Enhanced Recovery Protocol in Cleft Palate Repairs

Stefanie E Hush [1], Jenny T Chen [1], Colin M Brady [1], Magdalena Soldanska [1], David J Nusz [2], Darren L Rhinehart [2], Kurt Heiss [2], Connor Crowley [3], Joseph K Williams [1]

J Pediatr Urol. 2018 Jun;14(3):252.e1-252.e9. doi: 10.1016/j.jpurol.2018.01.001. Epub 2018 Feb 2.

Prospective study of enhanced recovery after surgery protocol in children undergoing reconstructive operations.

Rove KO[1], Brockel MA[2], Saltzman AF[1], Dönmez MI[3], Brodie KE[1], Chalmers DJ[4], Caldwell BT[1], Vemulakonda VM[1], Wilcox DT[5].

Enhanced Recovery in Children

Journal of Pediatric Surgery 53 (2018) 418–430

Contents lists available at ScienceDirect

Journal of Pediatric Surgery

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

A survey of pediatric surgeons' practices with enhanced recovery after children's surgery☆,☆☆

Heather L. Short [a], Natalie Taylor [b], Mitali Thakore [b], Kaitlin Piper [b], Katherine Baxter [a], Kurt F. Heiss [a], Mehul V. Raval [a,*]

[a] *Division of Pediatric Surgery, Department of Surgery, Emory University School of Medicine, Children's Healthcare of Atlanta, Atlanta, GA, USA*
[b] *Rollins School of Public Health, Emory University, Atlanta, GA, USA*

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Survey Results

- **APSA members (N=1,052): 257 surveys (24%)**

Implementation Preparedness	
Not Willing	6 (2.4%)
Willing, But Not Prepared	16 (6.3%)
Willing, Somewhat Prepared	89 (34.9%)
Willing, Extremely Prepared	**95 (37.3%)**
Already Implementing	**49 (19.3%)**

- **~14 of 21 adult ERP elements were uniformly acceptable to pediatric surgeons**

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Survey Results

Theme	Related Comments
Skepticism of ERAS Framework	"The ERP guideline should already be in effect as they are commonly studied guidelines that have shown benefit."
Current ERAS Implementation	"We already do all of the components that the survey covers, we just do not call it 'enhanced recovery'."
	"I am unfamiliar with formal 'enhanced recovery protocols', but it appears that my partners and I are already implementing most of the suggestions on an informal basis."
Hospital-level Acceptance/Feasibility	"Biggest limitation — a third of our faculty [is] not on board [or is] resistant to protocols/standardization. Some of us are already implementing aspects of this care, but not uniform for the group."
	"If advantage can be shown, [the] only problem is overcoming inertia."
Opposition to Protocolized Care	"I would say the major barrier to implementation would not be institutional, but would be convincing surgeons like myself that a checklist applied to every patient is better than individualized care."
Need for Evidence	"We need pediatric specific data…kids are not little adults, and there is too little outcome data to reach a consensus regarding best practice. The idea is intuitively appealing and many aspects are approaching standard of care in our hospital. The impact of age, weight, BMI, and disease process etc., may all impact optimal practice…those using components should publish."

"I would say the major barrier to implementation would not be institutional, but would be convincing surgeons like myself that a checklist applied to every patient is better than individualized care."

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Expert Panel

Contents lists available at ScienceDirect

Journal of Pediatric Surgery

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

Appropriateness of a pediatric-specific enhanced recovery protocol using a modified Delphi process and multidisciplinary expert panel☆,☆☆

Heather L. Short [a], Natalie Taylor [b], Kaitlin Piper [b], Mehul V. Raval [a,*]

[a] *Division of Pediatric Surgery, Department of Surgery, Emory University School of Medicine, Children's Healthcare of Atlanta, Atlanta, GA, USA*
[b] *Rollins School of Public Health, Emory University, Atlanta, GA, USA*

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Expert Panel

Modified Delphi Process (RAND/UCLA Methodology)

- Pre-rating
- Literature compendium
- In-person expert panel session
- Post-rating

Participants

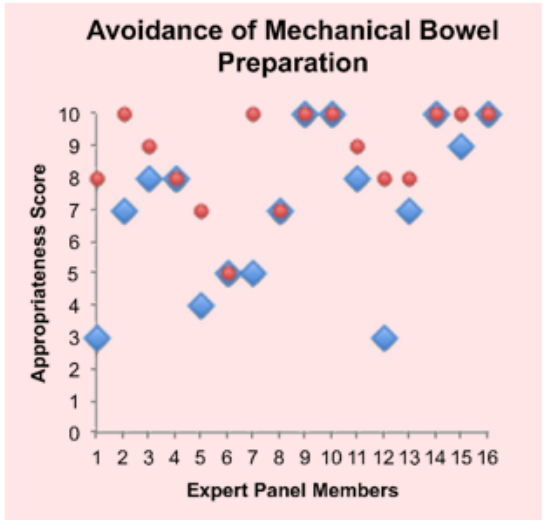
- 8 pediatric surgeons
- 2 pediatric anesthesiologist
- 1 pediatric anesthesia pain expert
- 2 pediatric gastroenterologist
- 1 nurse practitioner
- 2 patient representatives

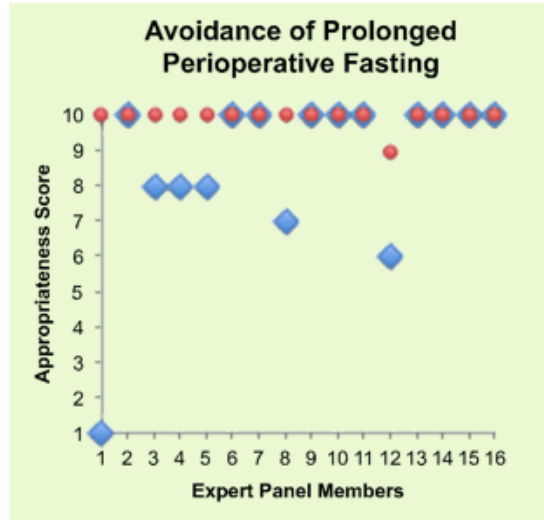
Focused on the 7 Most Contentious Elements from the National Survey

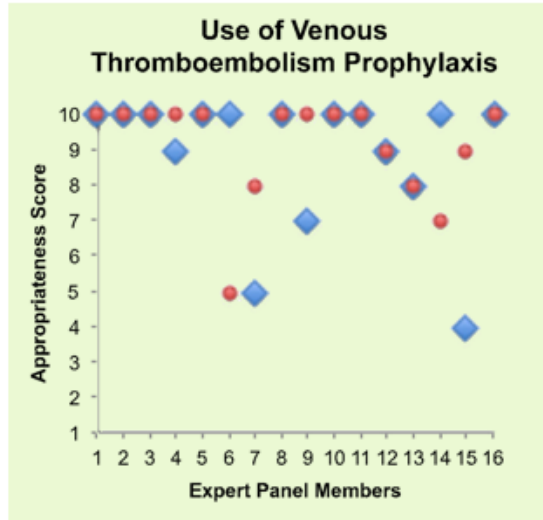
- Mechanical bowel prep
- Perioperative fasting
- VTE prophylaxis
- Standardized anesthetic protocols
- NGT use
- Goal directed fluids
- Hyperglycemia management

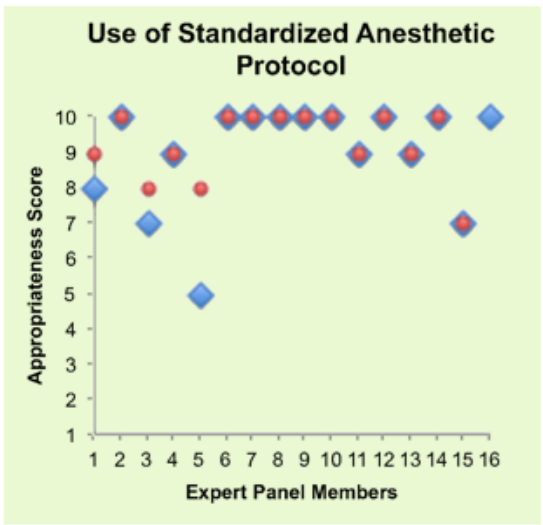
ENRICH-US

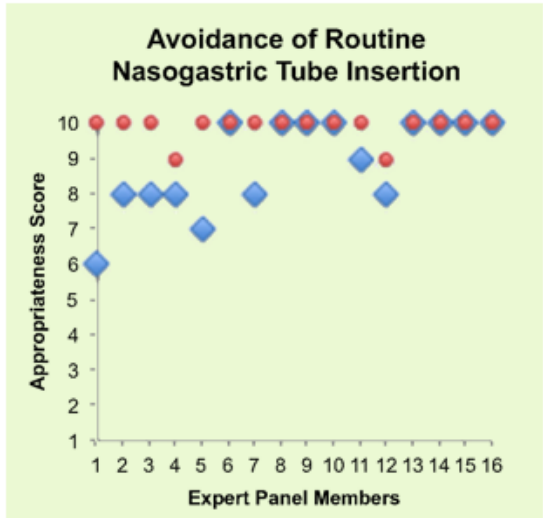
- Pre-Meeting Survey
- Post-Meeting Survey

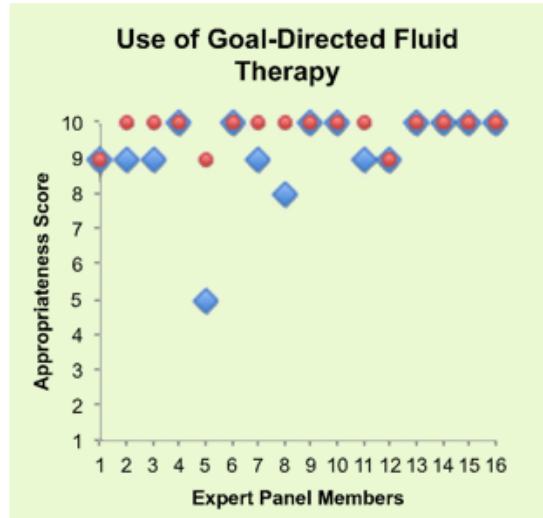


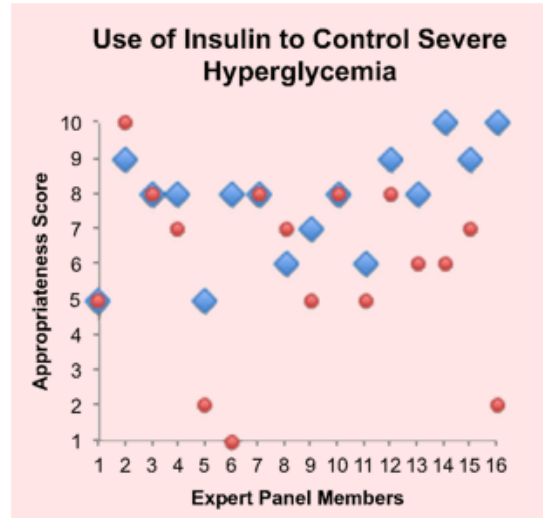












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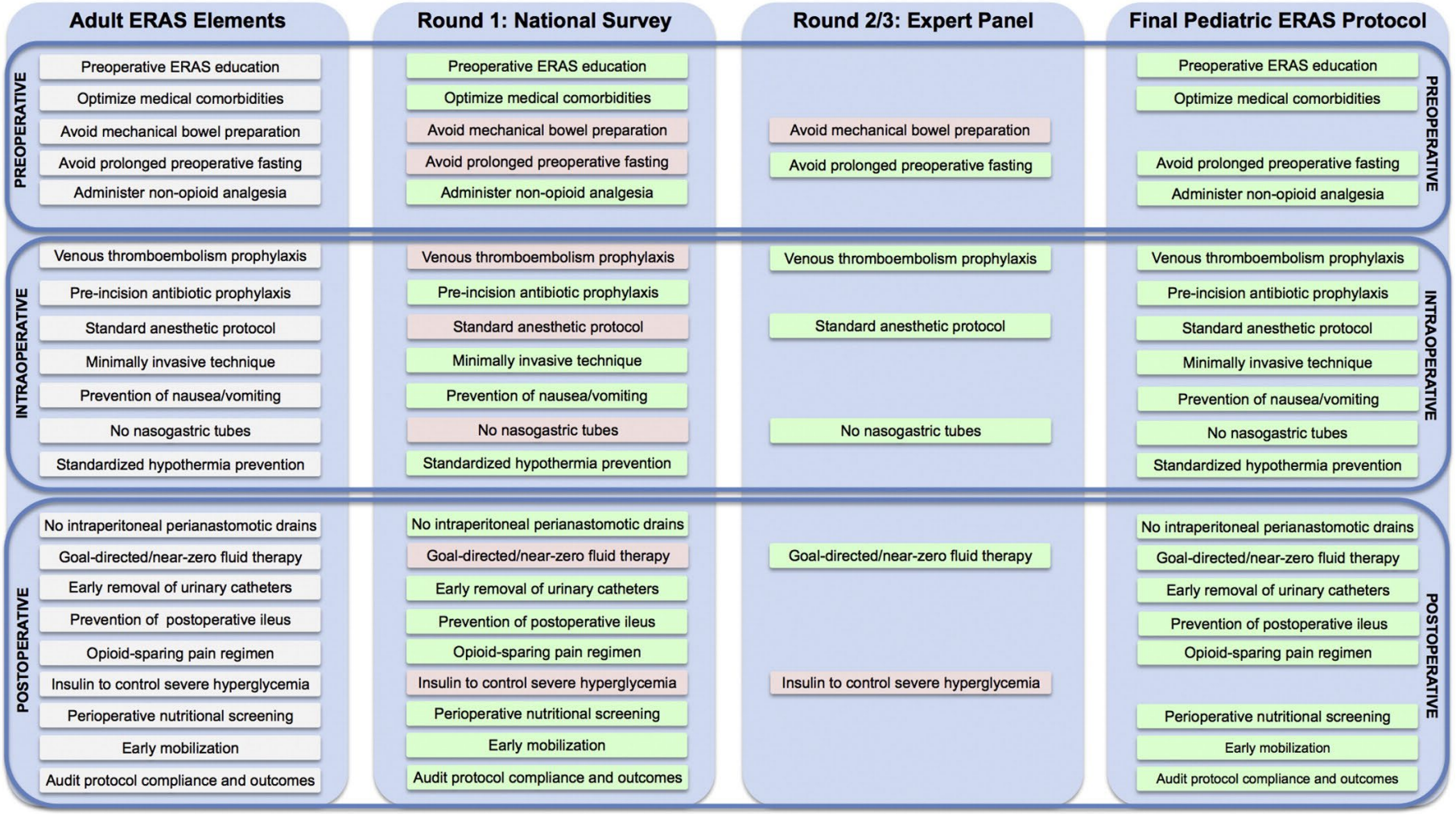
Recommended ERP for Children



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Pilot Study

Contents lists available at ScienceDirect

Journal of Pediatric Surgery

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

Implementation of an enhanced recovery protocol in pediatric colorectal surgery☆

Heather L. Short [a], Kurt F. Heiss [a], Katelyn Burch [a], Curtis Travers [b], John Edney [c], Claudia Venable [c], Mehul V. Raval [a,*]

[a] Division of Pediatric Surgery, Department of Surgery, Emory University School of Medicine, Children's Healthcare of Atlanta, Atlanta, GA, USA
[b] Division of Pediatrics, Emory University School of Medicine, Atlanta, GA, USA
[c] Division of Pediatric Anesthesiology, Department of Anesthesiology, Emory University School of Medicine, Children's Healthcare of Atlanta, Atlanta, GA, USA

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Pilot Study Results

- In the U.S. 70-100K children currently live with IBD
- ~15% undergo surgery within 5 years of diagnosis

Table 2
Demographics, patient characteristics and outcomes in the pre-protocol cohort compared to the post-protocol cohort.

	Pre-ERP Period 2012–2014	Post-ERP Period 2015–2016	p-value
Number of patients, n (%)	43 (54)	36 (46)	–
Age (year), n (IQR)	16 (13, 17)	14.5 (13, 15)	0.298
Sex, n (%)			0.653
Males	21 (49)	20 (56)	
Race, n (%)			0.333
White	27 (63)	18 (50)	
Black	15 (35)	15 (42)	
Asian	1 (2)	3 (8)	
ASA class, n (%)			0.389
II	26 (61)	21 (58)	
III	17 (39)	15 (42)	
Diagnosis, n (%)			0.293
Inflammatory bowel disease	39 (91)	31 (80)	
Colonic dysmotility, constipation	4 (9)	3 (10)	
Other	0 (0)	2 (10)	
Operation, n (%)			0.050
Ileocecectomy	17 (40)	7 (19)	
Partial/Total colectomy	16 (37)	17 (47)	
Proctectomy/J-pouch	9 (21)	6 (17)	
Ileostomy reversal	1 (2)	6 (17)	

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Results

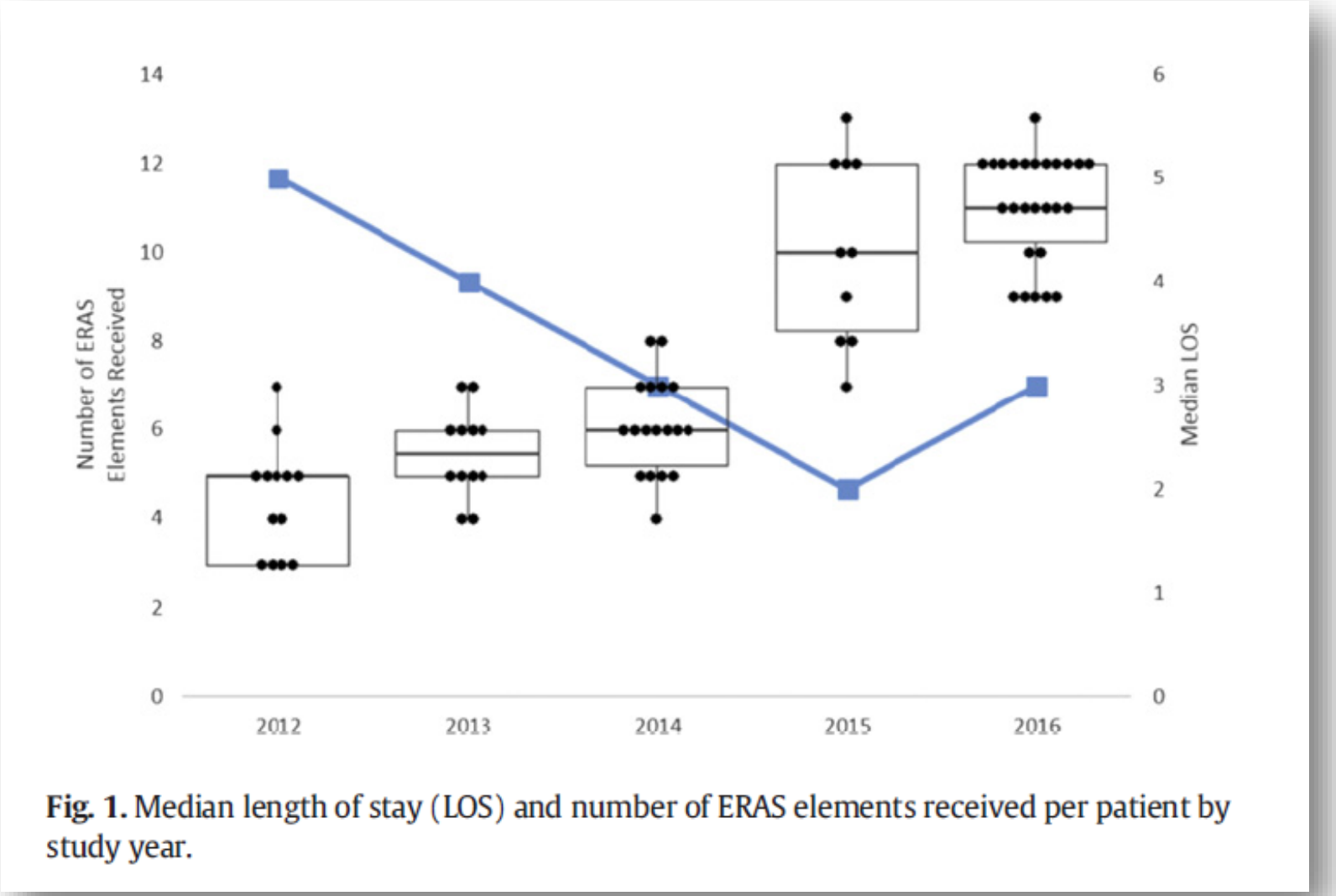

Fig. 1. Median length of stay (LOS) and number of ERAS elements received per patient by study year.

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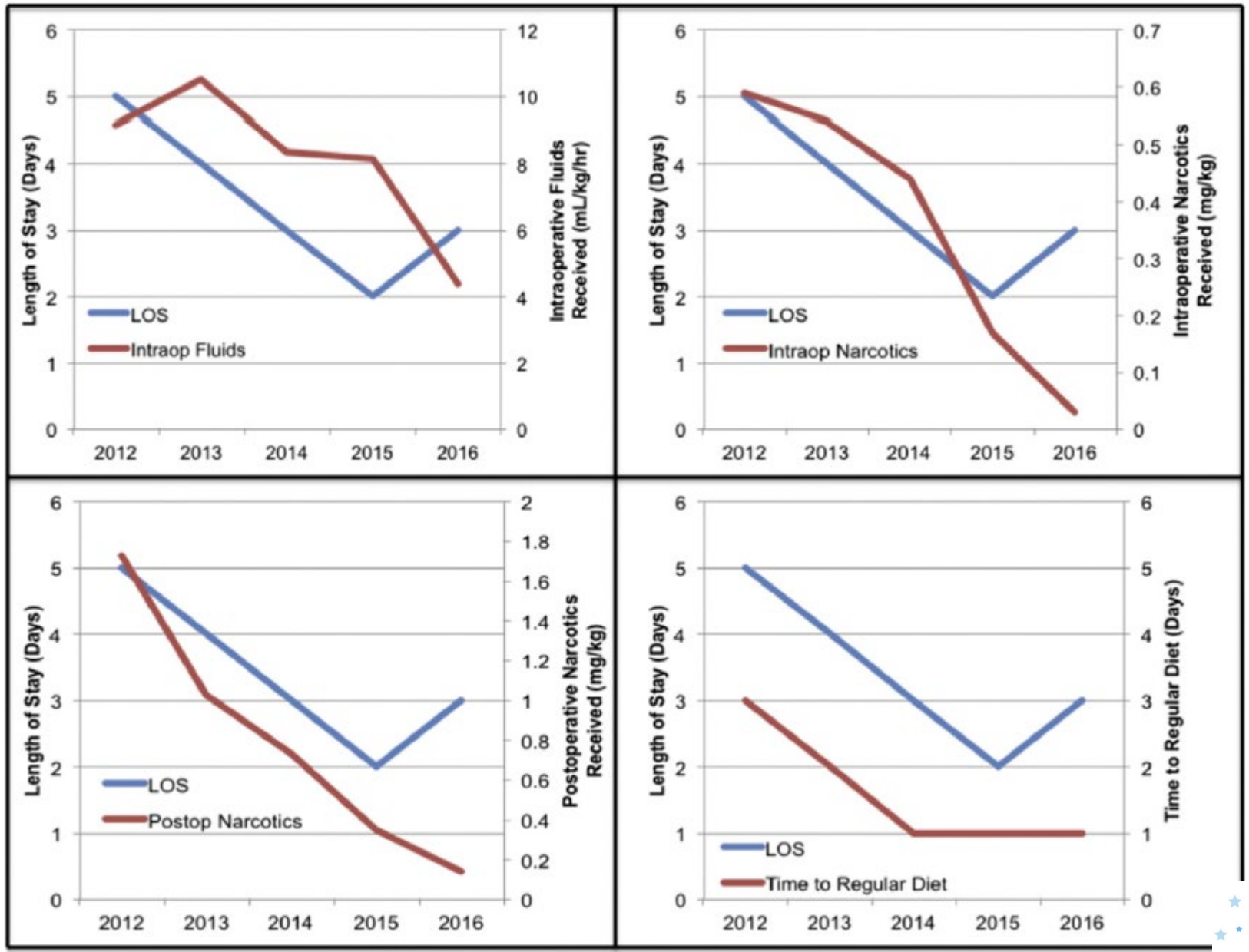

Fig. 2. Secondary outcomes and median length of stay (LOS) by year.

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Journal of Pediatric Surgery 54 (2019) 1104–1107

Contents lists available at ScienceDirect

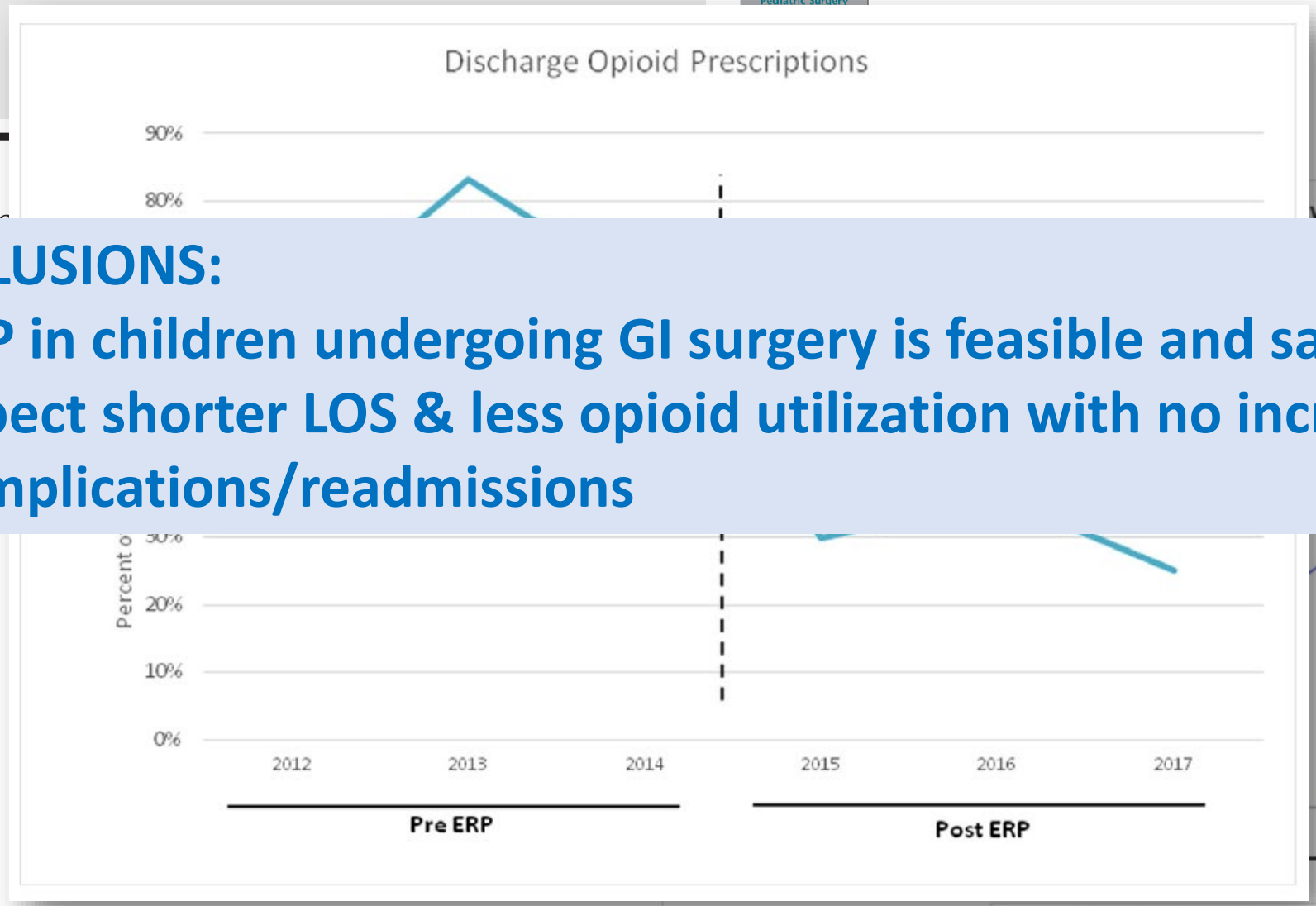
Journal of Pediatric Surgery

Practice Management

Decreased opioid pres
recovery

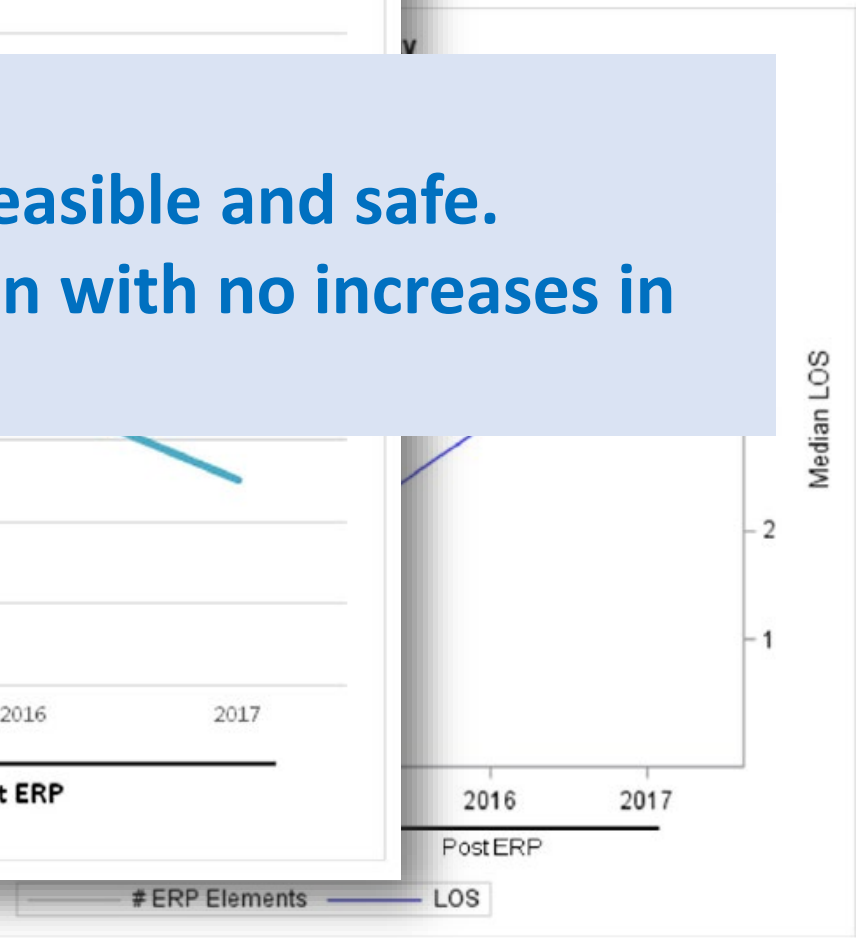
Katherine J.
Kurt F. Heis

[a] Division of Pediatri
[b] Department of Ped
[c] Division of Pediatri



CONCLUSIONS:

- ERP in children undergoing GI surgery is feasible and safe.
- Expect shorter LOS & less opioid utilization with no increases in complications/readmissions



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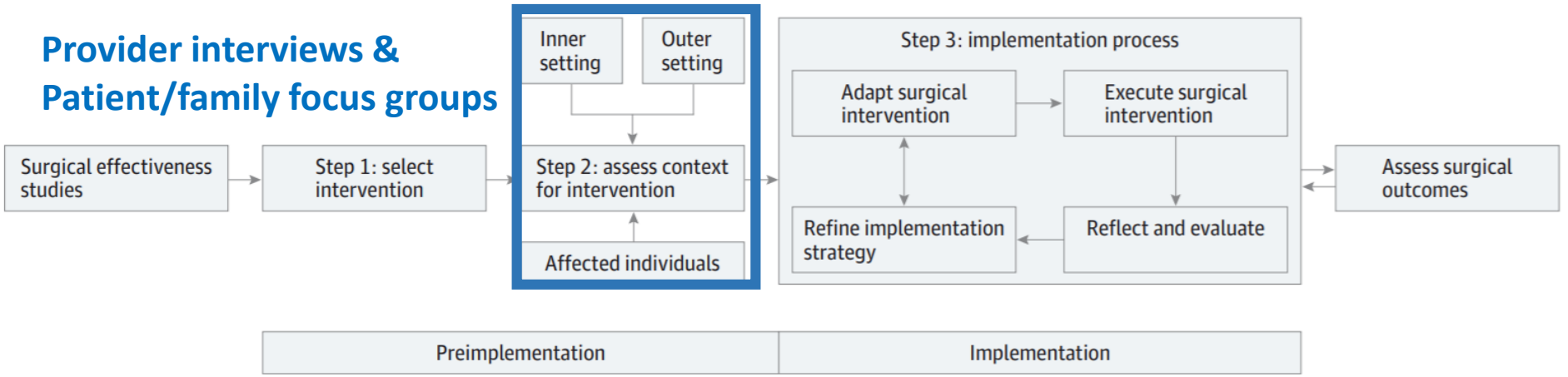
Context

Figure. Conceptual Model for Applying Implementation Science to the Adoption of Evidence-Based Surgical Interventions



This step-by-step model is adapted from the Consolidated Framework for Implementation Research[4] and describes key domains that are part of the preimplementation and implementation processes.

JAMA Surgery October 2015 Volume 150, Number 10 jamasurgery.com

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Context

Contents lists available at ScienceDirect

Journal of Pediatric Surgery

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

A baseline assessment of enhanced recovery protocol implementation at pediatric surgery practices performing inflammatory bowel disease operations☆,☆☆,★

Jonathan Vacek [a,*], Teaniese Davis [b], Benjamin T. Many [a], Sharron Close [c], Sarah Blake [d], Yue-Yung Hu [a,e,f], Jane L. Holl [e], Julie Johnson [e,f], Jennifer Stroppe [g], Mehul V. Raval [a,e,f]

[a] *Division of Pediatric Surgery, Department of Surgery, Northwestern University Feinberg School of Medicine, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL*
[b] *Center for Research and Evaluation, Kaiser Permanente, Georgia*
[c] *Department of Pediatric Advanced Practice Nursing, Nell Hodgson Woodruff School of Nursing, Emory University, Atlanta, GA*
[d] *Department of Health Policy and Management, Rollins School of Public Health, Emory University, Atlanta, GA*
[e] *Surgical Outcomes and Quality Improvement Center, Northwestern University Feinberg School of Medicine, Chicago, IL*
[f] *Center for Healthcare Studies, Institute of Public Health and Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL*
[g] *Division of Gastroenterology, Department of Pediatrics, Northwestern University Feinberg School of Medicine, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL*

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Context

ELSEVIER

A baseline assessment
pediatric surgery pract

Results: The assessment revealed an average of 6.3 ERP elements being practiced at each site. The most commonly practiced elements were using minimally invasive techniques (100%), avoiding intraabdominal drains (89%), and ileus prophylaxis (72%).

The preoperative phase had the most elements with no adherence including patient education, optimizing medical comorbidities, and avoiding prolonged fasting. There was no association with number of elements utilized and total number of surgeons in the department, annual IBD surgery volume, and hospital size. Lack of buy-in from colleagues, electronic medical record adaptation, and resources for data collection and analysis were identified barriers.

[d] *Department of Health Policy and Management,*
[e] *Surgical Outcomes and Quality Improvement Ce*
[f] *Center for Healthcare Studies, Institute of Public*
[g] *Division of Gastroenterology, Department of Ped*

Figure 1. Visual representation of ERP Readiness Survey results. *Outer ring:* domains of ERP implementation. *Middle ring:* variable implementation of ERP components (seen in burnt red, yellow, and green). *Innermost ring:* representing barriers.

Context

JOURNAL OF SURGICAL RESEARCH • JUNE 2022 (274) 46–58

Available online at www.sciencedirect.com

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ELSEVIER

Age- and Sex-Specific Needs for Children Undergoing Inflammatory Bowel Disease Surgery: A Qualitative Study

Salva N. Balbale, PhD,[a,b,] Willemijn L.A. Schäfer, PhD,[c] Teaniese "Tina" Davis, PhD, MPH,[d] Sarah C. Blake, PhD, MA,[e] Sharron Close, PhD, MS,[f] Joseph E. Perry, BS,[e] Raul Perez Zarate, BS,[e] Martha-Conley Ingram, MD, MPH,[b,c,g] Jennifer Strople, MD,[h] Julie K. Johnson, PhD, MSPH,[b,c] Jane L. Holl, MD, MPH,[i] and Mehul V. Raval, MD, MS[b,c,g]*

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JOURNAL OF SURGICAL RESEARCH • JUNE 2022 (274) 46–58

Reported by individual stakeholder groups: clinicians	Patient preoperative counseling and education should be tailored for preadolescent *versus* older children	*You are trying to explain to a 10-year-old why they're going to have this ostomy. That's a completely different conversation than explaining that to an 18-year-old. The level of education, the level of understanding, the way they may or may not feel about it, their previous biases, etc., are going to be completely different, right? So I think that those are two different… There's different ways in order to help the patient come along with you in the goal to optimize their recovery. Different resources for different families and different levels of understanding of what we're trying to achieve.* [Surgeon]

Undergoing Inflammatory Bowel Disease Surgery: A Qualitative Study

Reported by individual stakeholder groups: patients	Patient concerns about postoperative pain	*My only fear was the pain afterward. I will say that when I got my ileostomy, the only pain that I had afterward was muscular. I felt like [I] had done like two million sit ups, but my colostomy surgery was extremely painful. It was in a lot of pain. I was very out of it.* [Patient]

Julie K. Johnson, PhD, MSPH,[b,c] Jane L. Holl, MD, MPH,[f] and Mehul V. Raval, MD, MS[b,c,g]

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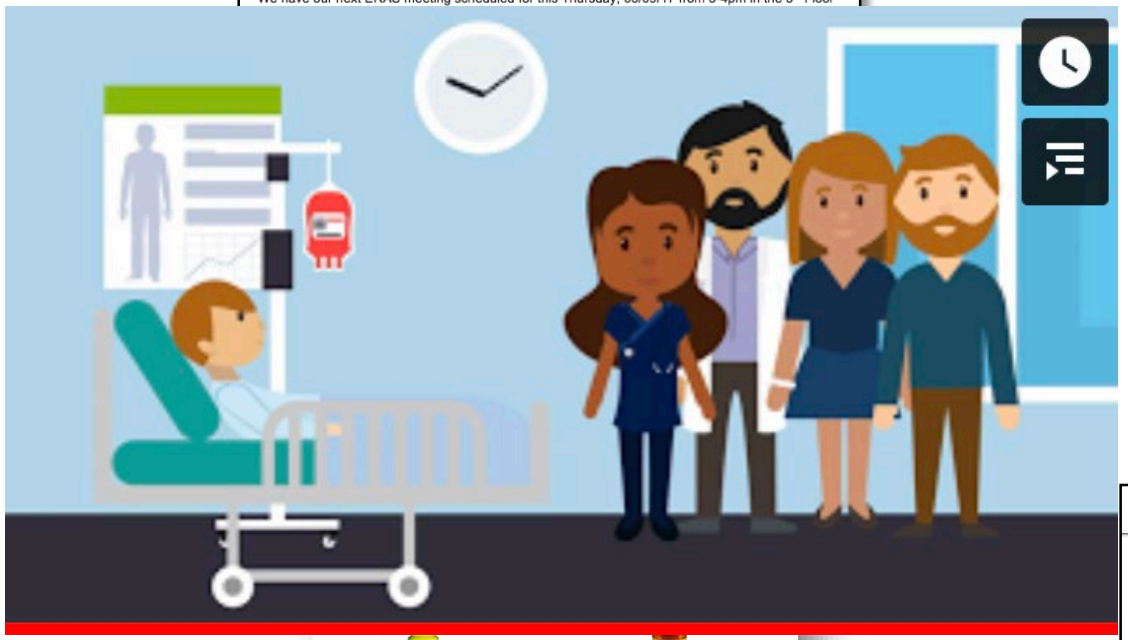
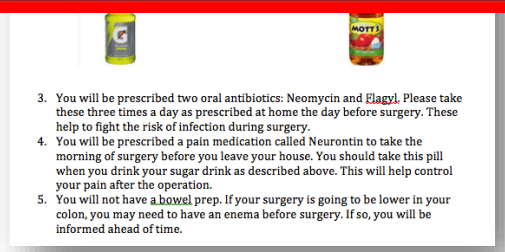
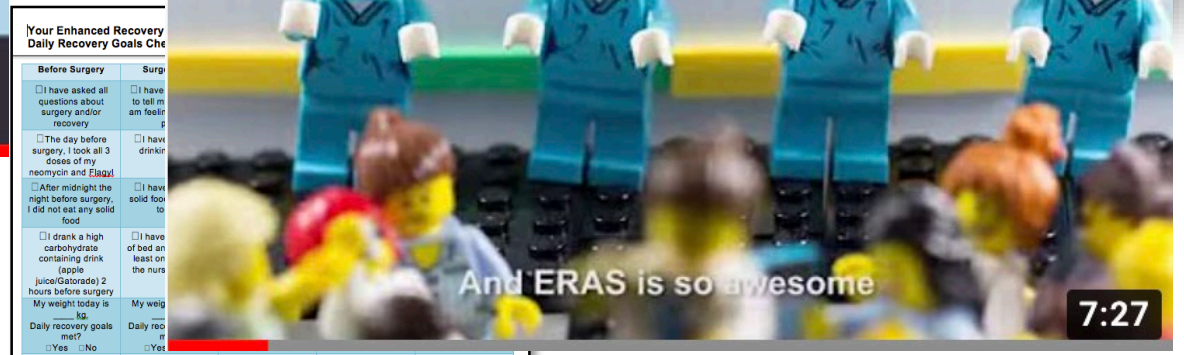
Implementation Teams

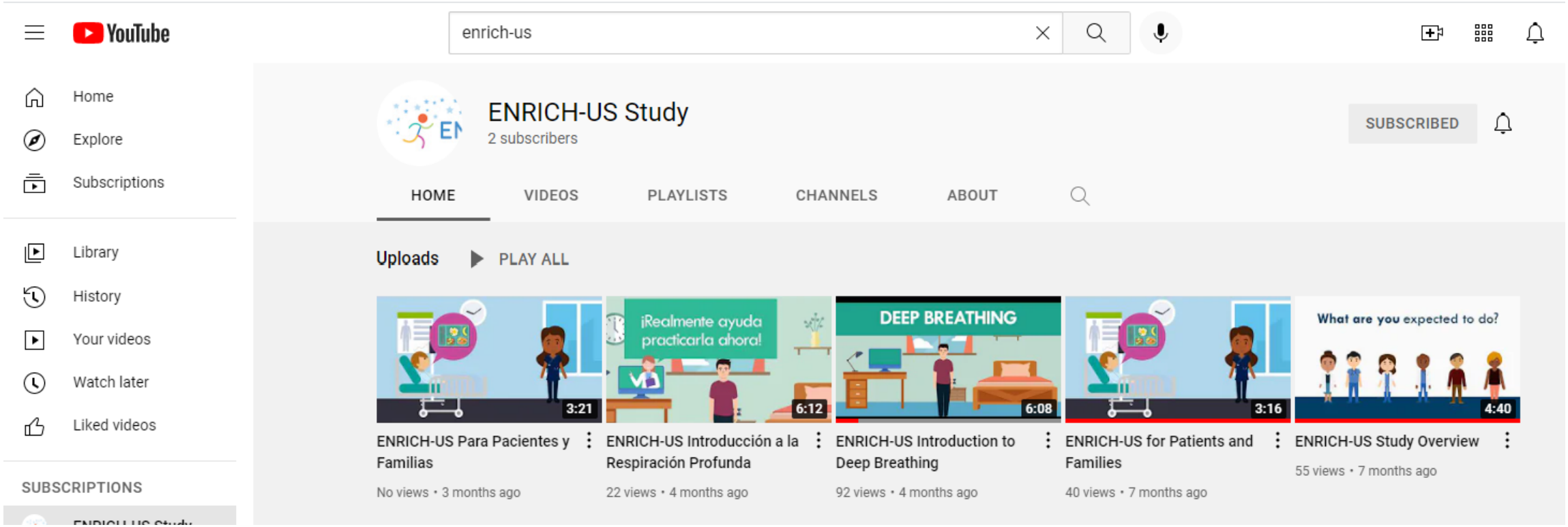
❖ Tools





3. You will be prescribed two oral antibiotics: Neomycin and Flagyl. Please take these three times a day as prescribed at home the day before surgery. These help to fight the risk of infection during surgery.
4. You will be prescribed a pain medication called Neurontin to take the morning of surgery before you leave your house. You should take this pill when you drink your sugar drink as described above. This will help control your pain after the operation.
5. You will not have a bowel prep. If your surgery is going to be lower in your colon, you may need to have an enema before surgery. If so, you will be informed ahead of time.

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ENRICH-US Study Overview
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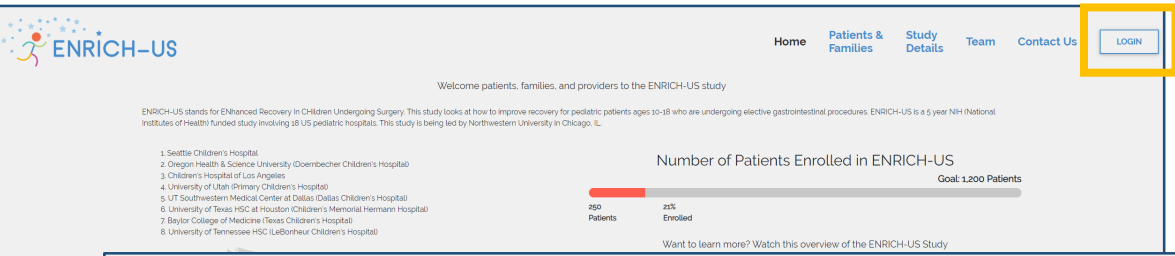

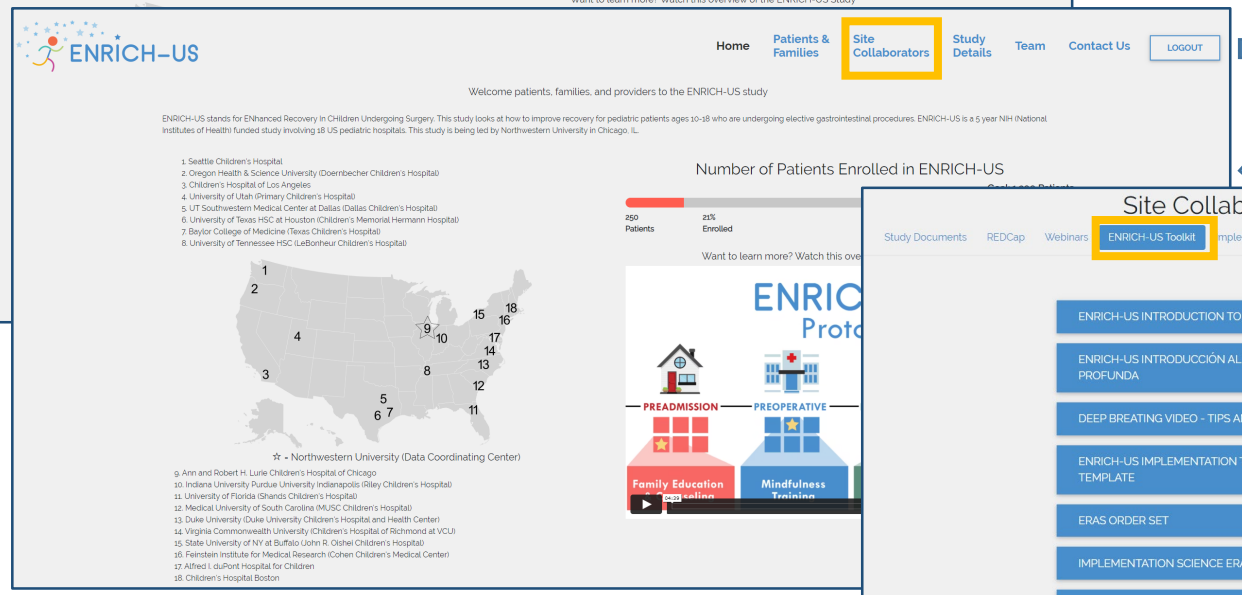

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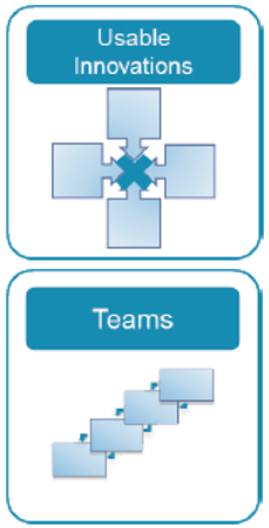
5 AIFs



AIF Descriptions

Well-operationalized innovations that are teachable, learnable, doable, and readily assessed in practice.

Supportive teams to define infrastructures and support methods and improve outcomes.

ENRICH-US Plan

- Evidence-based ERPs with validation by expert panels
- High readiness for adoption
- Supportive pilot data
- Implementation tools ready

- Local team: surgical champion, QI expert, coordinator, PALs, etc.
- PedSRC learning collaboratives (6 sites/LC)

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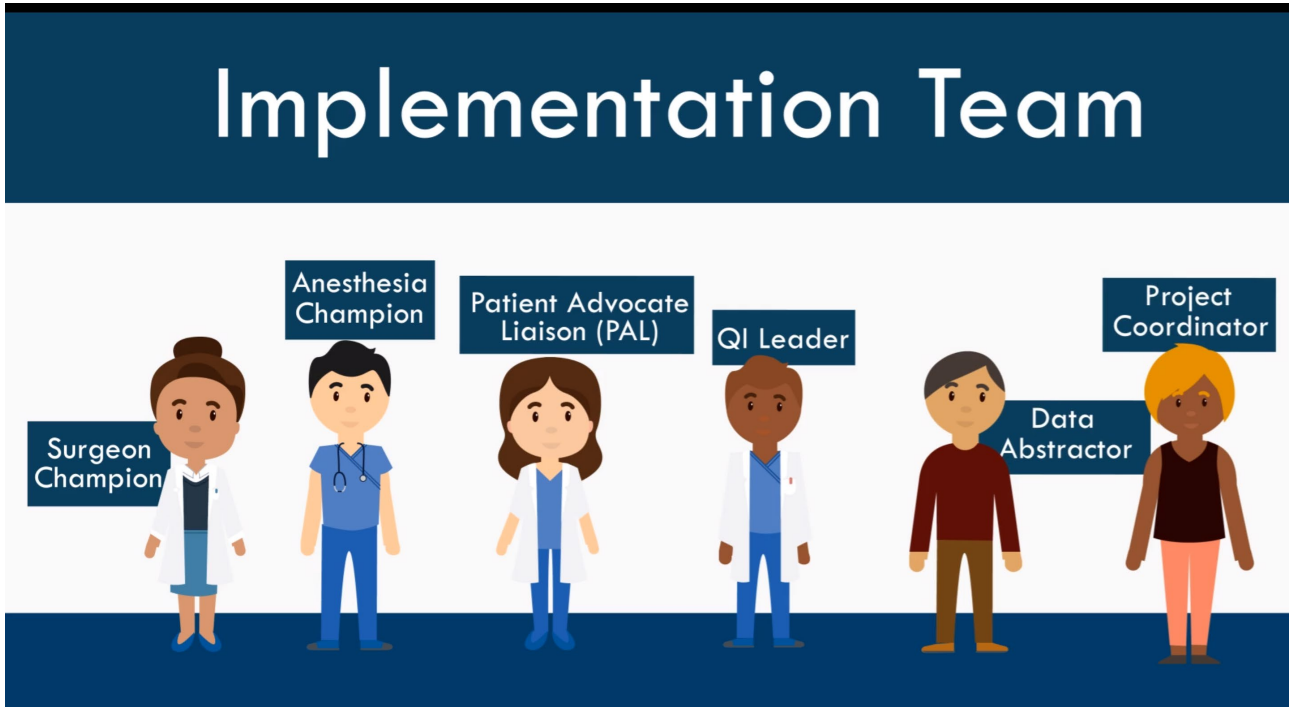
Implementation Teams

❖ Implementation Team



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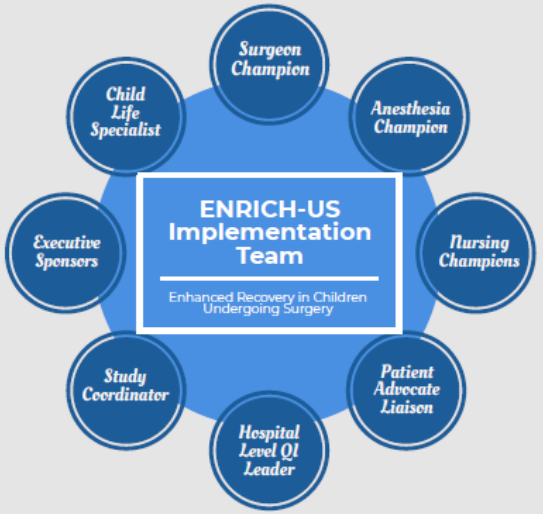


Surgeon Champion
- Implementation leader for surgery
- Secures leadership and colleague support
- Develops the ENRICH-US Protocol with Anesthesiology and Nursing Champions

Patient Advocate Liaison
- Ensures that the Local Implementation Team considers the integration of patient-centeredness
- Advocates for the patient "voice" in ENRICH-US Protocol implementation
- Represents Patients Undergoing GI Surgery

Study Coordinator
- Organizes regular Local Implementation Team meetings and takes minutes
- Partners with Champions and all project constituents to help identify key stakeholders
- Manages the project and completes all deliverables in a timely manner

Nurse Champions
- Creates nursing-specific ENRICH-US Protocols that span all phases of patient care (e.g., pre-operative, recovery, and floor representation).
- Co-leads implementation with the Surgeon and Anesthesiology Champions

Anesthesia Champion
- Develops anesthetic protocols for implementation
- Secures leadership and colleague support for ENRICH-US Protocol implementation
- Develops the ENRICH-US Protocol with Surgeon and Nursing Champions

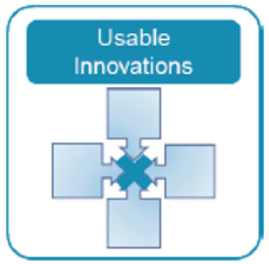
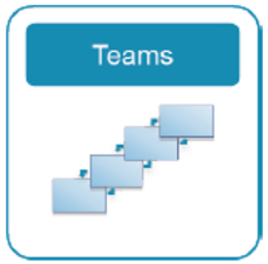
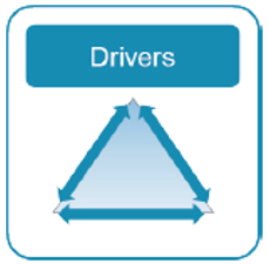
Child Life Specialist
- Coaches pediatric patients and families on mindfulness and deep breathing techniques to help with relaxation and pain control
- Utilizes ENRICH-US Protocol to help patients with pain management

Hospital Level QI Leader
- Plan and conduct rapid cycle improvements
- Helps the implementation team navigate system level changes (e.g., order sets, patient education materials).
- Works with the Study Coordinator to organize Local Implementation Team meetings

Executive Sponsors
- Approves project charter and reviews project progress
- Provides overall guidance and accountability for the project
- Mobilizes resources for the Implementation Team

Local Implementation Team Meetings 1-2x per Month
+ Local implementation of ENRICH-US to resolve obstacles
+ Discuss local context & adaptation
+ Develop workflow & delineate tasks
+ Review local data and lessons learned
+ Discuss past and upcoming patients

Cluster Learning Collaborative Meetings 1x per Month (12 months)
+ Promote shared experiences and learning
+ Hear from national experts on enhanced recovery
+ Review and discuss data to identify obstacles/drivers of implementation
+ Discuss optimal strategies of implementation

5 AIFs	AIF Descriptions	ENRICH-US Plan
	Well-operationalized innovations that are teachable, learnable, doable, and readily assessed in practice.	• Evidence-based ERPs with validation by expert panels • High readiness for adoption • Supportive pilot data • Implementation tools ready
	Supportive teams to define infrastructures and support methods and improve outcomes.	• Local team: surgical champion, QI expert, coordinator, PALs, etc. • PedSRC learning collaboratives (6 sites/LC)
	Drivers of success including development of competencies, obtaining organization supports, and engaging leadership.	• Monthly training curriculum • Coaching by topic experts • Fidelity assessment • System-level interventions • Facilitative leadership

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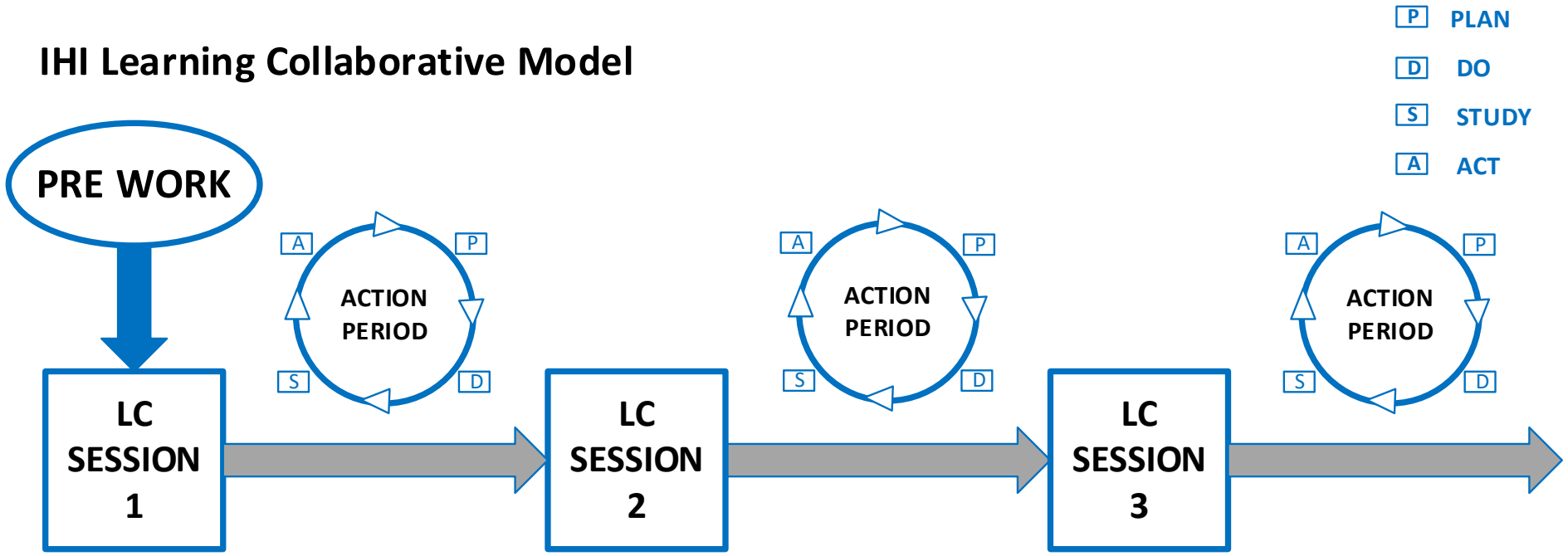
What is a Learning Collaborative?

- **Teams** coming together to learn, share, and apply quality improvement and implementation methods



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Learning Collaborative Agenda

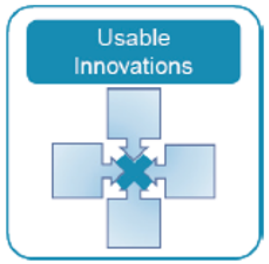
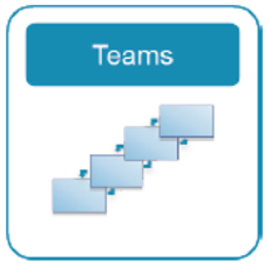
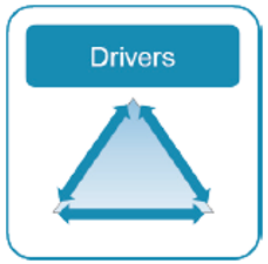
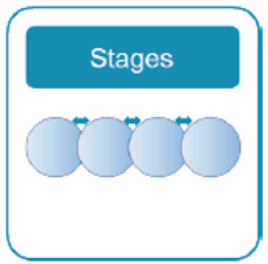
- **Scheduled <u>monthly</u> video-conference (1-hour) for the next 12 months**
  - **Encourage ALL members of your IMPLEMENTATION TEAM to take part (recording will be posted on Cluster 2 webpage)**

Page 9

ENRICH–US

LC SESSIONS 12-MONTH SCHEDULE

LC Session	Topic	Examples of topics to be discussed during the LC	Your tasks and Milestones (MSs)	Homework for the next LC Session
LC 1 **Cluster 2: Thurs Oct 28, 2021** Cluster 3: April 2022	**Introduction to ENRICH-US, 5 AIFs, LCs**	❖ How did your team identify and engage a patient representative? ❖ Did you use the recruitment flyer provided by the ENRICH-US coordinating team? ❖ What tasks and responsibilities do you anticipate the PALs to have (once recruited)?	❖ Review collaboration portal at https://www.enrich-us.org/Account/Login ❖ **MS 1:** Assemble your IMPLEMENTATION TEAM ❖ **MS 2:** Schedule your monthly/bi-monthly IMPLEMENTATION TEAM meetings	
LC 2 **2: Nov 18, 2021** 3: May 2022	**Changing Organizational Culture & Leadership Engagement**	❖ What meetings on ERPs are planned? ❖ Who will be invited to the meetings?	❖ **MS 3:** Prepare a Project Charter ❖ **MS 4:** Start identifying and engaging additional stakeholders ❖ **MS 5:** Draft 2 versions of an "Elevator Pitch" ❖ Prepare to answer questions about your IMPLEMENTATION TEAM meetings	❖ Further complete/update project charter ❖ Have each IMPLEMENTATION TEAM member give the elevator pitch to a peer/colleague ❖ Introduce and inform relevant clinicians about the ENRICH-US Protocol **(MS 6)** ❖ Prepare your SBAR I **(MS 7)**
LC 3 **2: Dec 16, 2021** 3: June 2022	**Quarterly Data Sharing / Collaborative Learning Session**	❖ Adoption and adaptations to specific ERP elements ❖ Planned strategies and tools for further implementation	❖ Notify us if you need help with any aspect of the ENRICH-US Protocol implementation ❖ Review and discuss your hospital's Data Report with your IMPLEMENTATION TEAM ❖ **MS 7:** Present your SBAR I	❖ Be prepared to comment on your hospital's Data Report
LC 4 **2: Jan 27, 2022** 3: July 2022	**Synergizing Anesthesia & Pain Service Perspectives with Surgical Care**	❖ Focus Groups to assess implementation progress	❖ Invite additional anesthesia/pain management clinicians to your IMPLEMENTATION TEAM meeting ❖ **MS 8:** Gather experts and start drafting your hospital's Anesthesia Protocol(s) for ENRICH-US	❖ Provide an update on the implementation status of your: ✓ Anesthesia Protocol(s) for ENRICH-US ✓ Order Sets for post-op surgical care ✓ Deep Breathing video

5 AIFs	AIF Descriptions	ENRICH-US Plan
	Well-operationalized innovations that are teachable, learnable, doable, and readily assessed in practice.	• Evidence-based ERPs with validation by expert panels • High readiness for adoption • Supportive pilot data • Implementation tools ready
	Supportive teams to define infrastructures and support methods and improve outcomes.	• Local team: surgical champion, QI expert, coordinator, PALs, etc. • PedSRC learning collaboratives (6 sites/LC)
	Drivers of success including development of competencies, obtaining organization supports, and engaging leadership.	• Monthly training curriculum • Coaching by topic experts • Fidelity assessment • System-level interventions • Facilitative leadership
	Integrated, non-linear process starting with exploration and ending with full implementation of an innovation into practice.	• Exploration completed • Installation/initial implementation phase • Full implementation and sustainability assessment

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Study Approaches

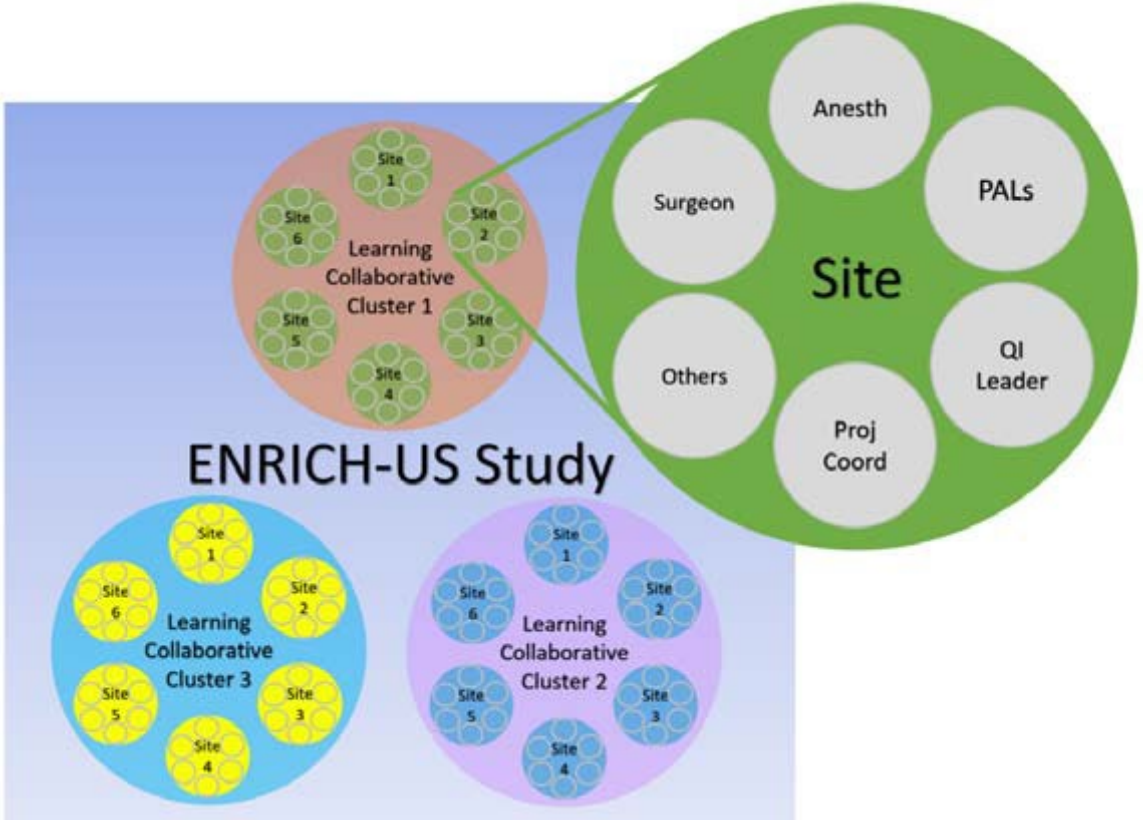
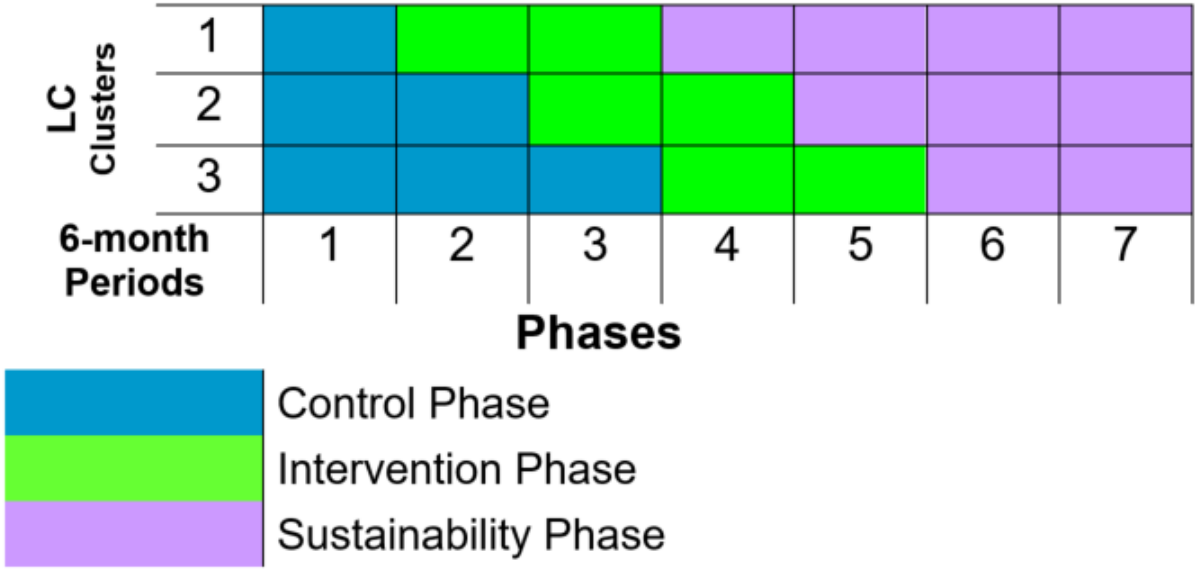
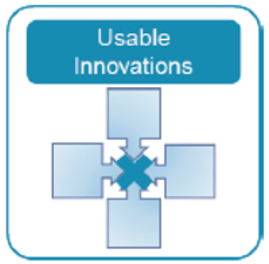
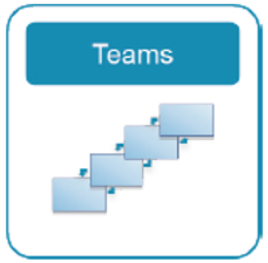


Figure 6. ENRICH-US Study Design



- **Creation of 3 Learning Collaboratives**
- **Stepped-wedge design**

ENRICH–US

5 AIFs	AIF Descriptions	ENRICH-US Plan
	Well-operationalized innovations that are teachable, learnable, doable, and readily assessed in practice.	• Evidence-based ERPs with validation by expert panels • High readiness for adoption • Supportive pilot data • Implementation tools ready
	Supportive teams to define infrastructures and support methods and improve outcomes.	• Local team: surgical champion, QI expert, coordinator, PALs, etc. • PedSRC learning collaboratives (6 sites/LC)
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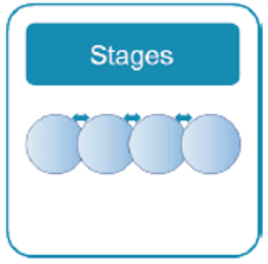
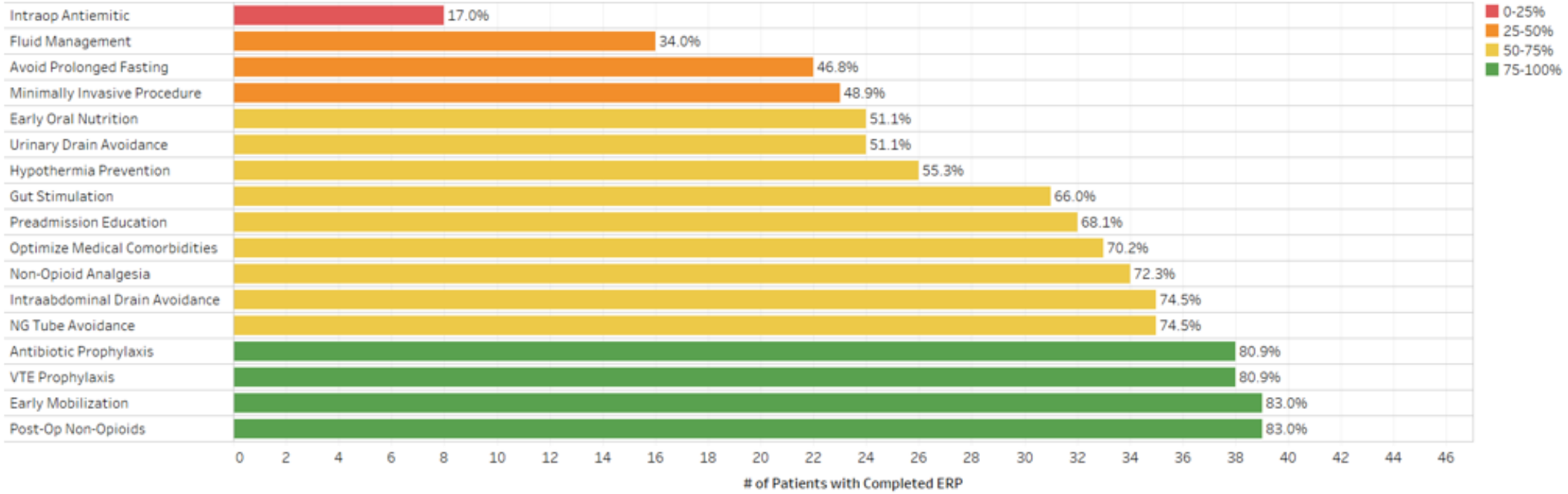
	Integrated, non-linear process starting with exploration and ending with full implementation of an innovation into practice.	• Exploration completed • Installation/initial implementation phase • Full implementation and sustainability assessment
	Based on Plan, Do, Study, Act (PDSA) process with rapid cycle feedback for continuous QI and learning	• Quarterly data-driven feedback sessions to learning collaboratives • QI expert on each team

ENRICH-US

Average ERP Completion – Cluster 1



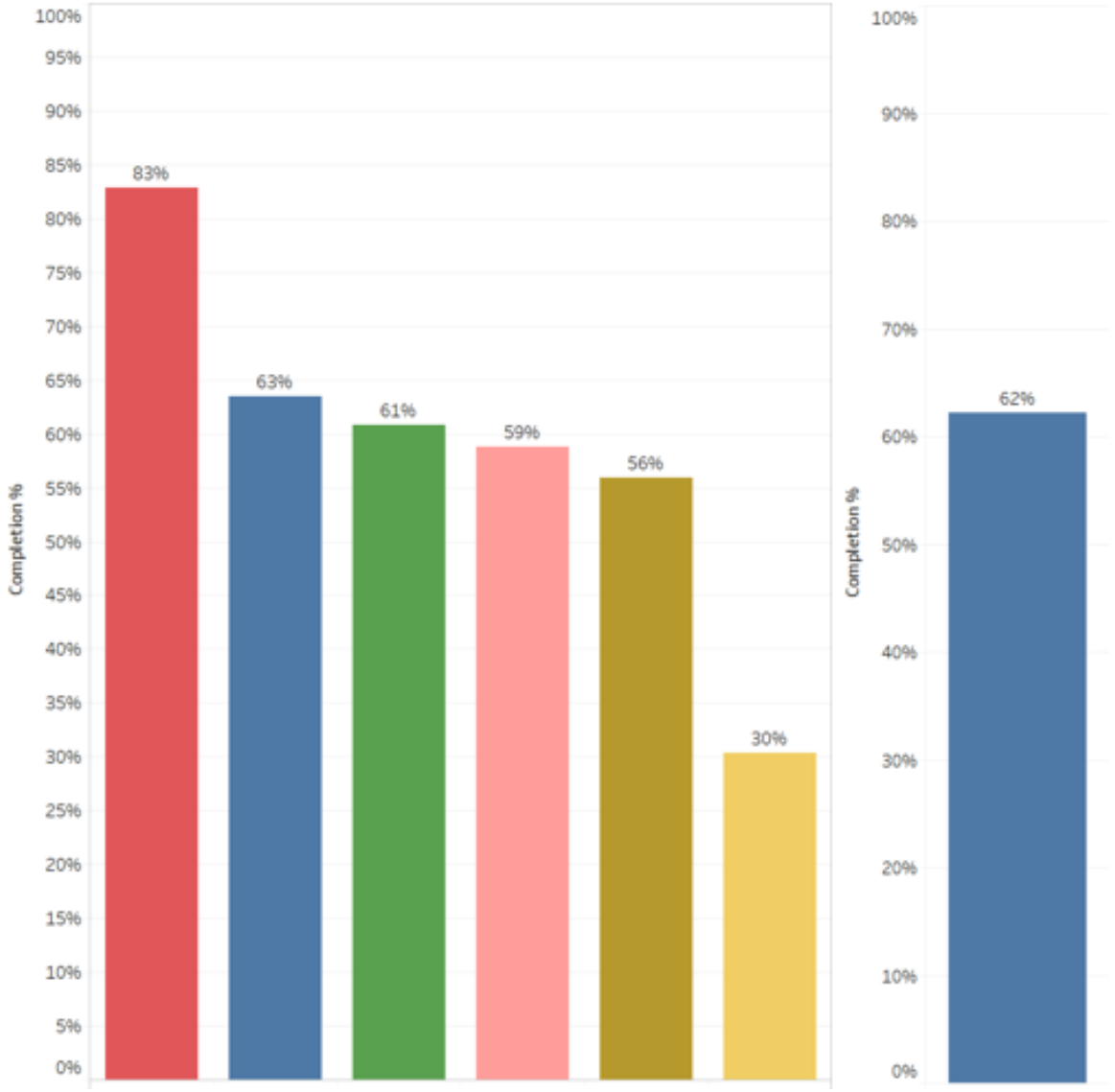
ERP Completion*

- Your cluster is **EXCELLENT** at 4 ENRICH-US elements.
- Your cluster is **VERY GOOD** at 9 ENRICH-US elements.
- Your cluster **NEEDS IMPROVEMENT** for 3 ENRICH-US elements.
- Your cluster **NEEDS SIGNIFICANT IMPROVEMENT** for 1 ENRICH-US element.

*Please note that patients who have been enrolled but have not yet undergone surgery are included in this analysis, which may affect percentages.

ENRICH–US

Average ERP Completion Rate for Cluster 1



Average ERP Completion*

- The average ERP completion for Cluster 1 is **62%**. This means that the average patient in Cluster 1 will receive 62% of the ENRICH-US protocol elements currently.

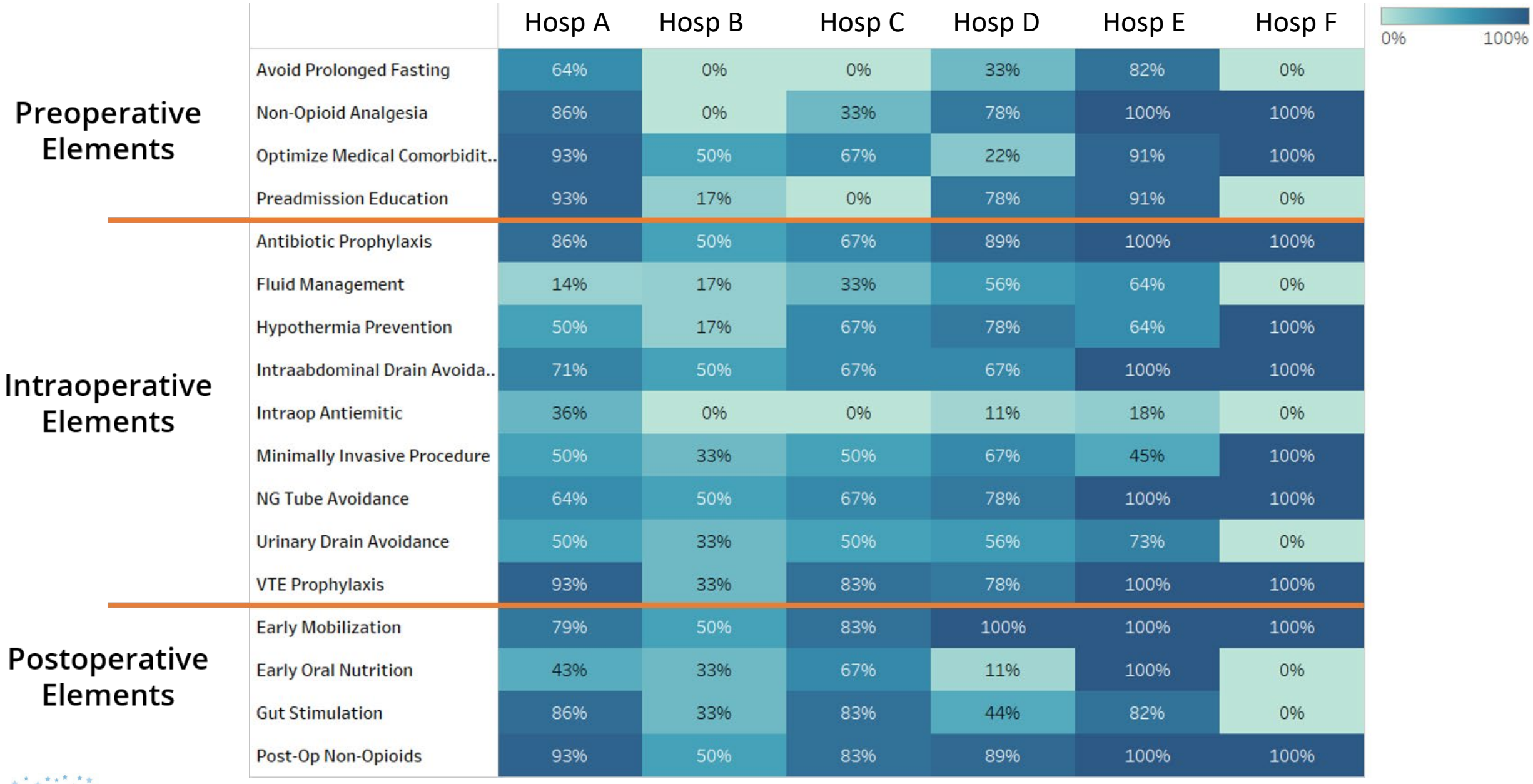
- ERP completion rate is calculated by taking the sum of:

[# of completed ERP elements] / [total # of ERP elements]

and dividing by the total number of enrolled patients.

*Please note that patients who have been enrolled but have not yet undergone surgery are included in this analysis, which may affect percentages.

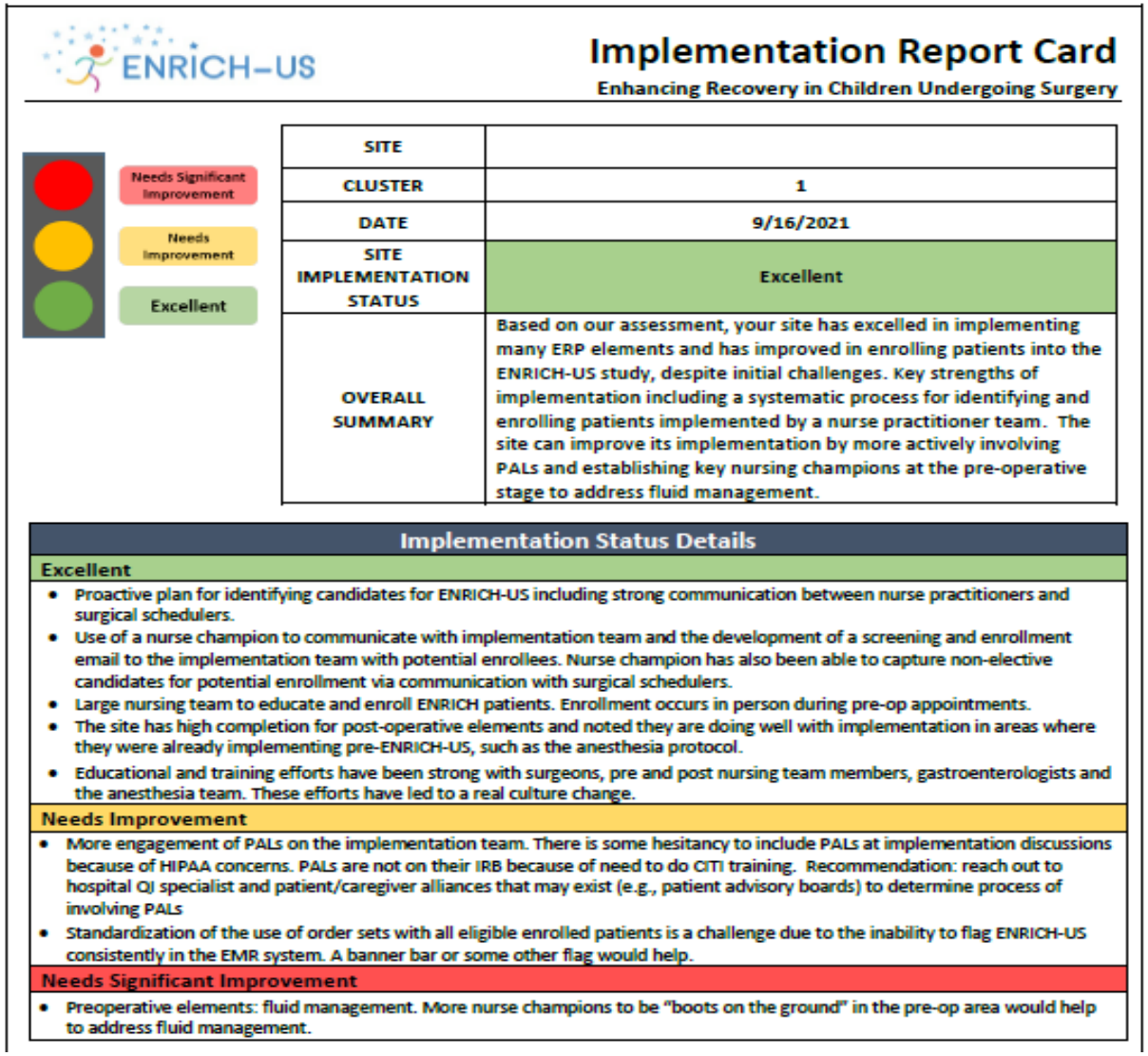
ENRICH–US


Hosp A
Hosp B
Hosp C
Hosp D
Hosp E
Hosp F
0%
100%
Preoperative Elements
Avoid Prolonged Fasting 64% 0% 0% 33% 82% 0%
Non-Opioid Analgesia 86% 0% 33% 78% 100% 100%
Optimize Medical Comorbidit.. 93% 50% 67% 22% 91% 100%
Preadmission Education 93% 17% 0% 78% 91% 0%
Intraoperative Elements
Antibiotic Prophylaxis 86% 50% 67% 89% 100% 100%
Fluid Management 14% 17% 33% 56% 64% 0%
Hypothermia Prevention 50% 17% 67% 78% 64% 100%
Intraabdominal Drain Avoida.. 71% 50% 67% 67% 100% 100%
Intraop Antiemitic 36% 0% 0% 11% 18% 0%
Minimally Invasive Procedure 50% 33% 50% 67% 45% 100%
NG Tube Avoidance 64% 50% 67% 78% 100% 100%
Urinary Drain Avoidance 50% 33% 50% 56% 73% 0%
VTE Prophylaxis 93% 33% 83% 78% 100% 100%
Postoperative Elements
Early Mobilization 79% 50% 83% 100% 100% 100%
Early Oral Nutrition 43% 33% 67% 11% 100% 0%
Gut Stimulation 86% 33% 83% 44% 82% 0%
Post-Op Non-Opioids 93% 50% 83% 89% 100% 100%

ENRICH–US

IMPLEMENTATION Report Card by Site

- Data-driven approach
- Quarterly progress report by site about implementation progress



ENRICH–US

Implementation Report Card

Enhancing Recovery in Children Undergoing Surgery

SITE	
CLUSTER	1
DATE	9/16/2021
SITE IMPLEMENTATION STATUS	Excellent
OVERALL SUMMARY	Based on our assessment, your site has excelled in implementing many ERP elements and has improved in enrolling patients into the ENRICH-US study, despite initial challenges. Key strengths of implementation including a systematic process for identifying and enrolling patients implemented by a nurse practitioner team. The site can improve its implementation by more actively involving PALs and establishing key nursing champions at the pre-operative stage to address fluid management.

Implementation Status Details

Excellent

- Proactive plan for identifying candidates for ENRICH-US including strong communication between nurse practitioners and surgical schedulers.
- Use of a nurse champion to communicate with implementation team and the development of a screening and enrollment email to the implementation team with potential enrollees. Nurse champion has also been able to capture non-elective candidates for potential enrollment via communication with surgical schedulers.
- Large nursing team to educate and enroll ENRICH patients. Enrollment occurs in person during pre-op appointments.
- The site has high completion for post-operative elements and noted they are doing well with implementation in areas where they were already implementing pre-ENRICH-US, such as the anesthesia protocol.
- Educational and training efforts have been strong with surgeons, pre and post nursing team members, gastroenterologists and the anesthesia team. These efforts have led to a real culture change.

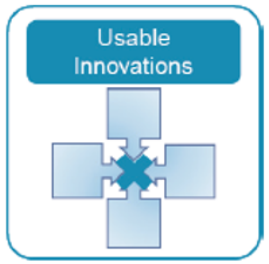
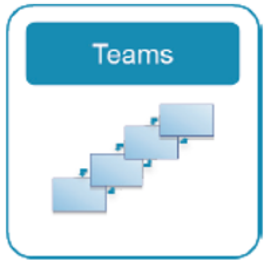
Needs Improvement

- More engagement of PALs on the implementation team. There is some hesitancy to include PALs at implementation discussions because of HIPAA concerns. PALs are not on their IRB because of need to do CITI training. Recommendation: reach out to hospital QI specialist and patient/caregiver alliances that may exist (e.g., patient advisory boards) to determine process of involving PALs
- Standardization of the use of order sets with all eligible enrolled patients is a challenge due to the inability to flag ENRICH-US consistently in the EMR system. A banner bar or some other flag would help.

Needs Significant Improvement

- Preoperative elements: fluid management. More nurse champions to be "boots on the ground" in the pre-op area would help to address fluid management.

ENRICH–US

5 AIFs	AIF Descriptions	ENRICH-US Plan
	Well-operationalized innovations that are teachable, learnable, doable, and readily assessed in practice.	• Evidence-based ERPs with validation by expert panels • High readiness for adoption • Supportive pilot data • Implementation tools ready
	Supportive teams to define infrastructures and support methods and improve outcomes.	• Local team: surgical champion, QI expert, coordinator, PALs, etc. • PedSRC learning collaboratives (6 sites/LC)
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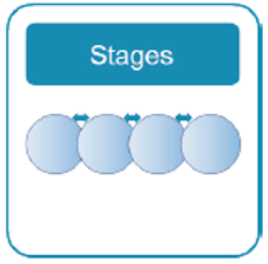	Integrated, non-linear process starting with exploration and ending with full implementation of an innovation into practice.	• Exploration completed • Installation/initial implementation phase • Full implementation and sustainability assessment
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ENRICH-US

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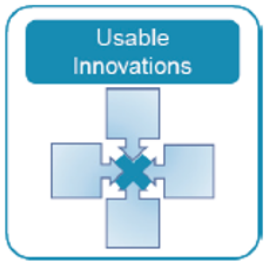
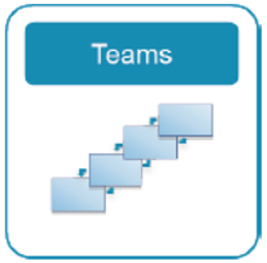
	Well-operationalized innovations that are teachable, learnable, doable, and readily assessed in practice.	• Evidence-based ERPs with validation by expert panels • High readiness for adoption • Supportive pilot data • Implementation tools ready
	Supportive teams to define infrastructures and support methods and improve outcomes.	• Local team: surgical champion, QI expert, coordinator, PALs, etc. • PedSRC learning collaboratives (6 sites/LC)
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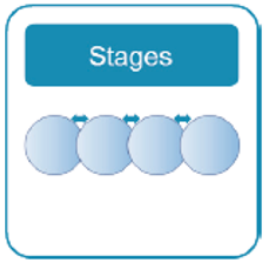	Integrated, non-linear process starting with exploration and ending with full implementation of an innovation into practice.	• Exploration completed • Installation/initial implementation phase • Full implementation and sustainability assessment
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Framework should:

- ✓ Optimize initial success
- ✓ Mitigate obstacles
- ✓ Foster collaboration for group learning
- ✓ Provide structure
- ✓ Ensure scheduled data feedback

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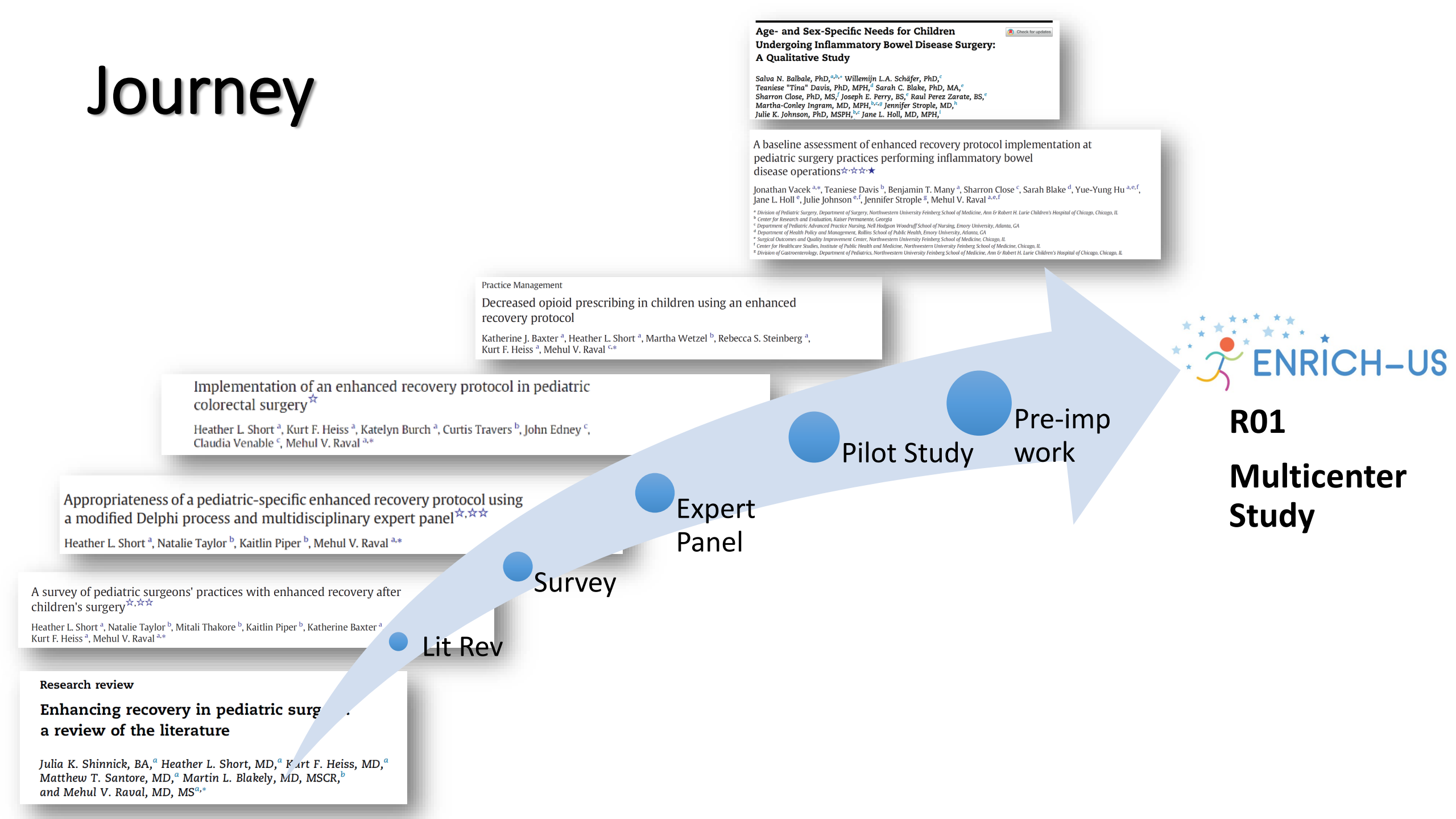
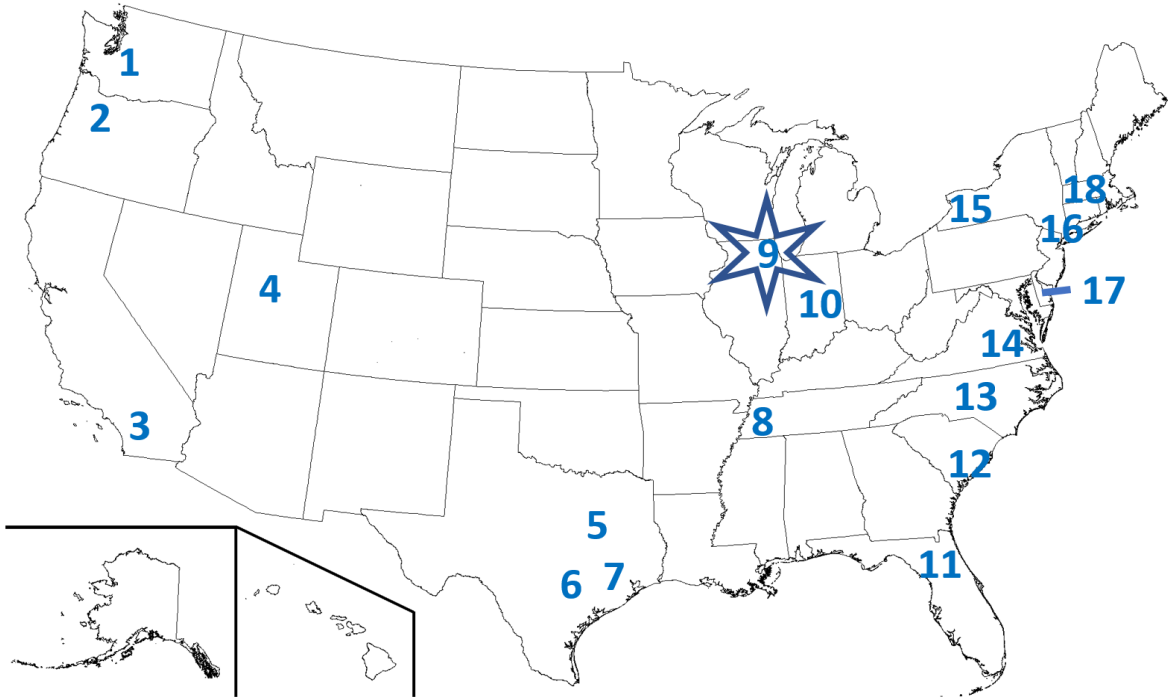
Journey


Age- and Sex-Specific Needs for Children Undergoing Inflammatory Bowel Disease Surgery: A Qualitative Study
A baseline assessment of enhanced recovery protocol implementation at pediatric surgery practices performing inflammatory bowel disease operations
Practice Management
Decreased opioid prescribing in children using an enhanced recovery protocol
Implementation of an enhanced recovery protocol in pediatric colorectal surgery
Appropriateness of a pediatric-specific enhanced recovery protocol using a modified Delphi process and multidisciplinary expert panel
A survey of pediatric surgeons' practices with enhanced recovery after children's surgery
Research review
Enhancing recovery in pediatric surg
a review of the literature
Lit Rev
Survey
Expert Panel
Pilot Study
Pre-imp work
ENRICH–US
R01
Multicenter Study

Sites and Site PIs



ENRICH–US

1	**Seattle Children's Hospital**	Adam Goldin
2	**Doernbecher Children's Hospital**	Mubeen Jafri
3	**Children's Hospital of Los Angeles**	Chris Gayer
4	**Primary Children's Hospital**	Scott Short
5	**Dallas Children's Hospital**	Samir Pandya
6	**Children's Memorial Hermann Hospital**	Matthew Harting
7	**Texas Children's Hospital**	Sohail Shah
8	**LeBonheur Children's Hospital**	Ash Gosain
9	**Ann and Robert H. Lurie Children's Hospital**	Seth Goldstein
10	**Riley Children's Hospital**	Brian Gray
11	**Shands Children's Hospital**	Saleem Islam
12	**MUSC Children's Hospital**	Rob Cina
13	**Duke University**	Liz Tracy
14	**Children's Hospital of Richmond at VCU**	Jason Sulkowski
15	**John R. Oishei Children's Hospital**	Kaveh Vali
16	**Cohen Children's Medical Center**	Aaron Lipskar
17	**Alfred I. duPont Hospital for Children**	Erin Teeple
18	**Children's Hospital Boston**	Craig Lellehei
★	**Northwestern Univ – coordinating center**	Raval/Holl

Conclusions

- Enhanced recovery in pediatrics is gaining significant momentum
- Dual focus on:
  - Clinical outcomes
  - Implementation outcomes
  - **Thus we can (hopefully) observe the effect of implementation on clinical outcomes**
- Future is promising

ENRICH–US

Study Team

Expert Collaborators

Northwestern University

- **A. Yang**, Collaborator
- **K. Bilimoria**, Collaborator
- **Y. Hu**, Qualitative Methods
- **J. Johnson**, Implementation
- **W. Schäfer**, Collaborator
- **N. Monson**, Web Design
- **S. Balbale**, Implementation

Emory University

- **S. Blake**, Mixed Methods
- **S. Close**, Patient Centered
- **T. Davis**, Qualitative Methods
- **K. Heiss**, Collaborator

COORDINATING CENTER TEAM

Co-PI
Jane Holl

Co-PI
Mehul Raval

Grants Administrator
Will Edwards

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NORTHWESTERN UNIVERSITY
FEINBERG SCHOOL OF MEDICINE

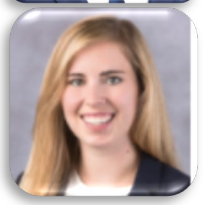
Project Manager
Erin Wymore

Administrative Support
Karen Miller

Project Coordinators
Peter Graffy
Deysi Paniagua

Research Fellows:
Martha Ingram
Andrew Hu
Audra Reiter
Wyn Sullivan

Statisticians:
Yao Tian
Lynn Huang



ENRICH–US

Study Website, Email, and Logo

- www.enrich-us.org

- **Email address:** enrich-us@northwestern.edu

- **Logo:**

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Questions?

ENRICH-US

www.enrich-us.org

Study: enrich-us@northwestern.edu

Mehul: mraval@luriechildrens.org

What Can the PSQC Do For You?

APSA

May 11, 2022

Children's Memorial Hermann Hospital

UTHealth The University of Texas Health Science Center at Houston | McGovern Medical School

Matchmaking

- 2021
  - Unplanned Extubations in NICU and PICU
  - Appy imaging choices protocols
  - Standardizing US Report Templates
- 2022
  - Post-op sepsis protocols
  - Billing practices
  - Neonatal return to OR

Children's MEMORIAL HERMANN Hospital

UTHealth The University of Texas Health Science Center at Houston | McGovern Medical School

SCR Webinars

- Monthly Topics
  - Time Management
  - NSQIP SAR Presentations
  - 30 Day Follow-up
  - Demographic Collection

Children's Memorial Hermann Hospital

UTHealth The University of Texas Health Science Center at Houston | McGovern Medical School

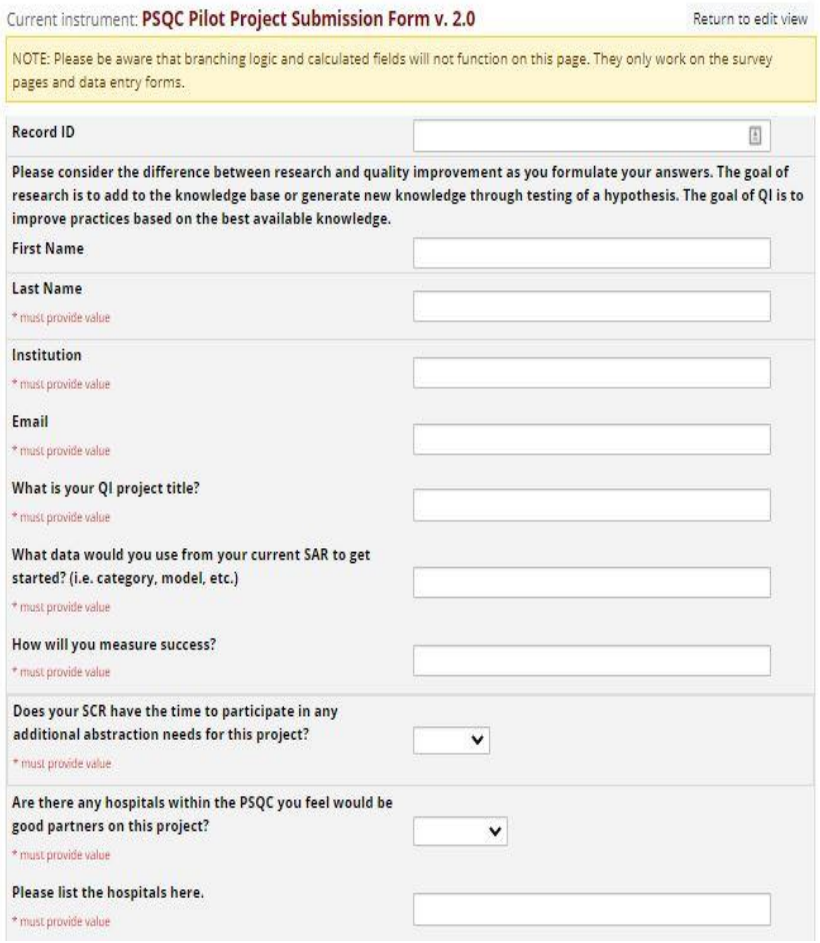
Pilot Project

- Members with a project idea will submit it using RedCAP.)A subgroup of the PSQC Project Development and Implementation Committee (PDIC) will review submissions once per month.
- Submissions will be evaluated using the following criteria:
  - Feasibility-20 points
  - Level of evidence-10 points
  - Importance to pediatric surgery community– 10 points
  - Outcome improvement– 20 points
  - Generalizability—20 points
- Submissions scoring 60 points or more will be reviewed by the entire PDIC at its next occurring meeting

Children's Memorial Hermann Hospital

UTHealth The University of Texas Health Science Center at Houston | McGovern Medical School

Pilot Submission Form



Current instrument: **PSQC Pilot Project Submission Form v. 2.0** Return to edit view

NOTE: Please be aware that branching logic and calculated fields will not function on this page. They only work on the survey pages and data entry forms.

Record ID

Please consider the difference between research and quality improvement as you formulate your answers. The goal of research is to add to the knowledge base or generate new knowledge through testing of a hypothesis. The goal of QI is to improve practices based on the best available knowledge.

First Name

Last Name
* must provide value

Institution
* must provide value

Email
* must provide value

What is your QI project title?
* must provide value

What data would you use from your current SAR to get started? (i.e. category, model, etc.)
* must provide value

How will you measure success?
* must provide value

Does your SCR have the time to participate in any additional abstraction needs for this project?
* must provide value

Are there any hospitals within the PSQC you feel would be good partners on this project?
* must provide value

Please list the hospitals here.
* must provide value

Children's Memorial Hermann Hospital

UTHealth The University of Texas Health Science Center at Houston | McGovern Medical School

Website

Research at Pediatric Surgery » Research Centers and Programs » Pediatric Surgery Quality Collaborative (PSQC)

- Pediatric Surgery Quality Collaborative (PSQC)
- About PSQC
- Meetings and Announcements
- PSQC Projects
- Member Hospitals
- SCR Resources
- PSQC Team
- Newsletter
- Contact

Pediatric Surgery Quality Collaborative (PSQC)

The Pediatric Surgery Quality Collaborative is a partnership with the American College of Surgeons National Surgery Quality Improvement Program Pediatric (ACS NSQIP-P) and NSQIP-P member hospitals.

The PSQC was launched on January 1, 2020, with a mission to develop a national partnership of children's hospitals, surgical providers, and the American College of Surgeons who share the mission of delivering high quality, cost effective, patient-centered surgical care.

UPCOMING EVENTS

In-Person Meeting at APSA
Marriott Marquis, San Diego, CA
Wednesday, May 11
1:00-5:00PM PDT

SCR Monthly Webinar
Tuesday, May 17
1:00-2:00PM CDT

In-Person Meeting after ACS Quality and Safety National Conference
Lurie Children's, Chicago, IL
Monday, July 18
1:00-5:00PM CDT

Children's Memorial Hermann Hospital

UTHealth The University of Texas Health Science Center at Houston | McGovern Medical School

Project Guides

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

Implementation Guide

Open Discussion

Children's MEMORIAL HERMANN Hospital

UTHealth | McGovern Medical School
The University of Texas Health Science Center at Houston