

Michigan Acute Care Surgery Collaborative

**Virtual, MI
December 9, 2021**



Disclosures

◆ Mark Hemmila Grants

- Blue Cross Blue Shield of Michigan
- Michigan Department of Health and Human Services
- National Institutes of Health - NIGMS

No Photos Please



Agenda

- ◆ Welcome/Updates
- ◆ Oliver Varban
 - More than TikTok: Using Surgical Videos for Quality Improvement
- ◆ Mark Hemmila
 - Data/Reports
- ◆ Jill Jakubus
 - ArborMetrix
- ◆ Kim Kramer
 - Data Updates
 - Validation



Future Meetings

- ◆ 3 per year
 - ◆ Wednesday April 27, 2022
 - ◆ Thursday September 15, 2022
 - ◆ Thursday December 8, 2022
-
- ◆ Let us know if you see problems with dates
 - ◆ Virtual vs. in-person

Recruitment

◆ Potentials

- Bronson
- Henry Ford Detroit
- Mid-Michigan Midland
- Munson

BCBSM 2021 and 2022

◆ SOW Deliverables

- 3 Meetings/yr
- ArborMetrix reporting - UAT up
- Data validation program - 2022
- Performance Index - 2022
 - Participation 2022
 - 2 metrics 2023

Data and Reports

Mark Hemmila, MD

Overview of Data Capture

- ◆ Diseases
 - Acute Appendicitis
 - Acute Gallbladder disease
 - ◆ Cholecystitis
 - ◆ Choledocholithiasis/Cholangitis
 - ◆ Gallstone pancreatitis
 - SBO
 - ◆ Hernia (if present)
 - Emergent Exploratory Laparotomy
- ◆ All Qualtrics - May 2020
- ◆ Data pull November 5, 2021

Reports

- ◆ Time frame
 - 7/1/2019 to 11/5/2021
- ◆ Risk-adjustment
 - Acute appendicitis
 - Gallbladder
 - Emergent Ex. Laparotomy
- ◆ No risk adjustment yet
 - SBO
 - Summary
- ◆ Some n's will not match up (can be in more than one disease)

Reports

◆ Index

- Primary disease for which admitted
- Days post-discharge restriction
 - ◆ Acute appendicitis, 12, 24, 36 mo
- Mortality and complications are collapsed down into the index admission
 - ◆ Joey Gall – admit and cholecystectomy, discharge home
 - ◆ Joey Gall – readmit for cystic duct stump leak
 - ◆ Joey Gall – readmit for C. diff colitis
- Joey Gall - readmit Y, cystic duct stump leak Y, and C.diff colitis Y

Reports

- ◆ Patients can cross over and be in two diseases
 - ◆ Joey Gall – admit and cholecystectomy, discharge home
 - ◆ Joey Gall – readmit for cystic duct stump leak
 - ◆ Joey Gall – readmit for SBO
- Joey Gall – Gallbladder index, readmit Y, cystic duct sump leak Y
- Joey Gall – SBO index

Risk Adjustment Models

- ◆ Overall
 - Acute appendicitis
 - Gallbladder disease
 - Emergent Ex. Lap
- ◆ Operation
 - Acute appendicitis
 - Gallbladder disease
- ◆ Non-operative
 - Acute appendicitis
 - Gallbladder disease

Acute Appendicitis

- ◆ Age (categorical)
- ◆ Sex
- ◆ Race
- ◆ Ethnicity*
- ◆ AAST grade ≥ 3 *
- ◆ ASA score ≥ 3 *
- ◆ Number of comorbid conditions
- ◆ Time to operation*
- ◆ Perforation*
- ◆ BMI (categorical)*
- ◆ Operation type*
- ◆ Insurance type*
- ◆ IR procedure index admit*

C-index = 0.863 to 0.624



Michigan Acute Care Surgery Report
Appendicitis • 27 • 7/1/2019-11/5/2021

Risk Adjusted Outcomes

Index Admission with Readmissions

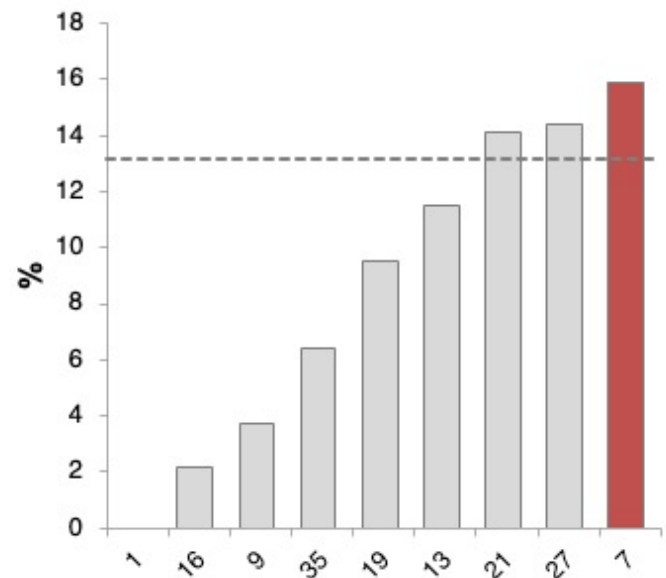
<u>Variable</u>		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>P*</u>	
Any complication	Overall, unadjusted	70	13.4	346	13.0	0.37	
	Overall, risk-adjusted		14.4		13.1		
	With operation, unadjusted	51	12.7	301	12.7	0.28	
	With operation, risk-adjusted		14.4		12.8		
	Without operation, unadjusted	19	15.8	45	15.5		0.89
	Without operation, risk-adjusted		14.9		15.6		
Incisional SSI	With operation, unadjusted	6	1.5	21	0.9	0.37	
	With operation, risk-adjusted		1.2		0.8		
Organ space SSI	With operation, unadjusted	4	1.0	47	2.0	0.34	
	With operation, risk-adjusted		1.4		1.8		



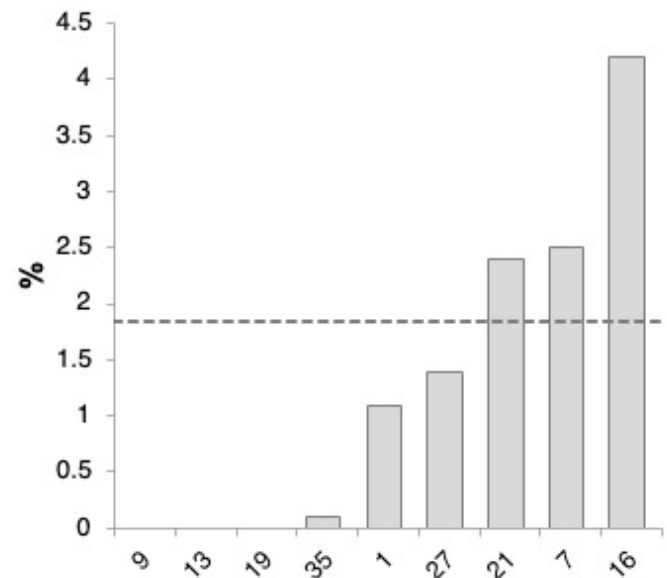
Michigan Acute Care Surgery Report
Gallbladder • 27 • 7/1/2019-11/5/2021

<u>Index Admission</u>		Your Center N = 803		Aggregate N = 4,104		<u>P*</u>
<u>Variable</u>		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	
Hospital LOS	Overall, hours					
	Mean \pm SD, unadjusted	128.7	± 344.3	95.9	± 215.8	
	Median (25th — 75th %), unadjusted	73.5	(46.7—123.2)	63.1	(36.8—103.6)	
	Mean, risk-adjusted	141.3		111		<.001
	With operation, hours					
	Mean \pm Standard deviation	95	± 96.8	80.4	± 156.9	
	Median (25th — 75th percentiles)	66.1	(44.6—109.3)	55.8	(34.5—92.6)	
	Mean, risk-adjusted	92		80.8		0.01
	Without operation, hours					
	Mean \pm Standard deviation	238.1	± 677.3	177.8	± 393.4	
	Median (25th — 75th percentiles)	110.1	(69.6—207.6)	110	(63.5—188.6)	
	Mean, risk-adjusted	208.7		173.7		0.21
	Acute cholecystitis, hours					
	Mean \pm Standard deviation	113	± 166.4	86.2	± 173.4	
	Median (25th — 75th percentiles)	67.5	(43.8—118.1)	53.5	(32.7—94.3)	
	Mean, risk-adjusted	124.4		99.3		<.001
	Cholangitis, hours					
	Mean \pm Standard deviation	446.5	± 1433.5	238.6	± 840.8	
	Median (25th — 75th percentiles)	144.6	(93.4—238.0)	118.4	(79.7—187.2)	
	Mean, risk-adjusted	487.1		261.7		<.001

Any Complications

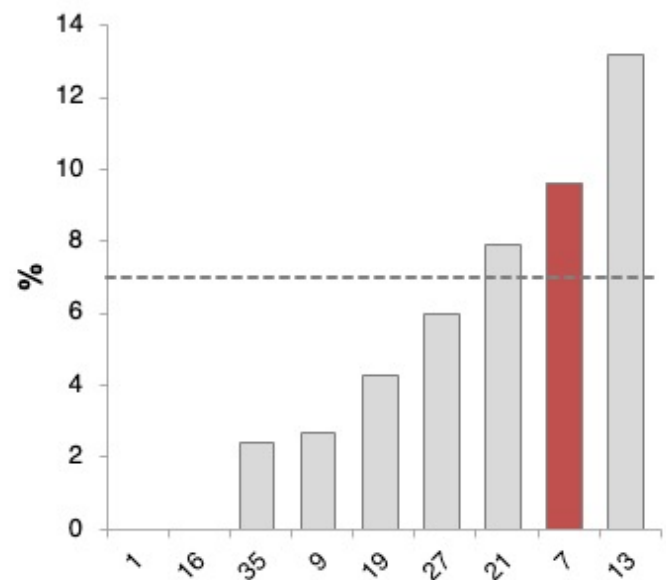


Organ Space SSI

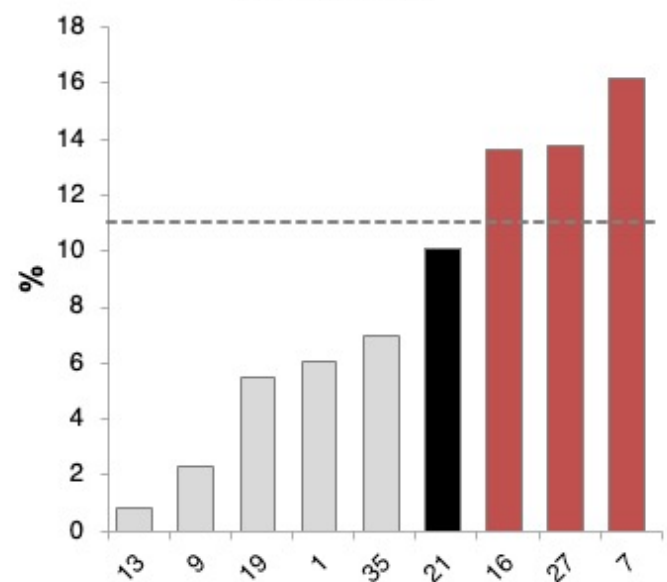


- Low Outlier
- Average
- High Outlier
- MACS Mean

Post-discharge ED Visit



Readmission



Gallbladder

- ◆ Age (categorical)
- ◆ Sex
- ◆ Race
- ◆ AAST grade $\geq 3^*$
- ◆ ASA score $\geq 3^*$
- ◆ Type of gall bladder disease
- ◆ Number of comorbid conditions
- ◆ Time to operation*
- ◆ Transfer in*
- ◆ BMI (categorical)*
- ◆ Operation type*
- ◆ Insurance type*
- ◆ IR procedure index admit*

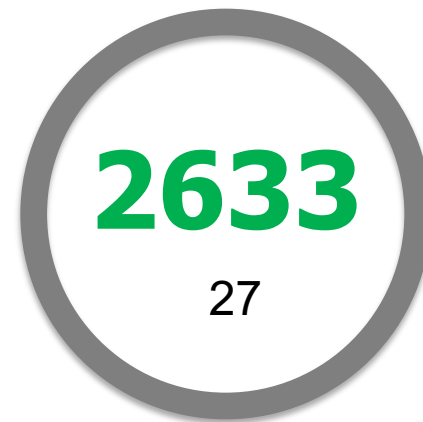
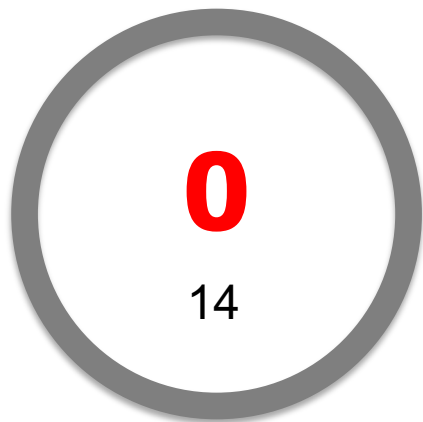
C-index = 0.908 to 0.690

Emergent Exploratory Laparotomy

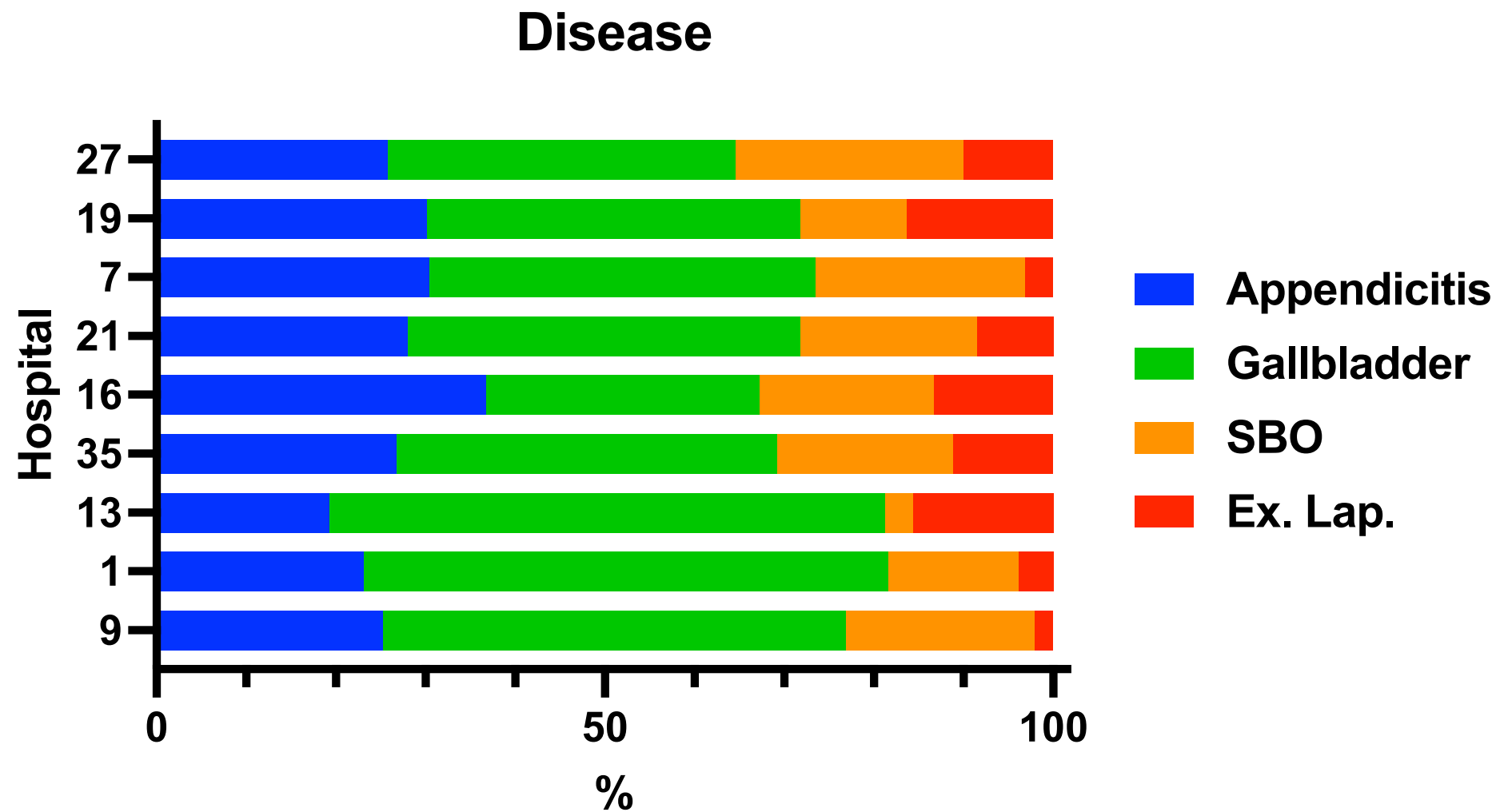
- ◆ Age (categorical)
- ◆ Sex
- ◆ Race*
- ◆ NEWS 2 Category*
- ◆ ASA score ≥ 3 *
- ◆ pH Category
- ◆ Diagnosis Category
- ◆ Number of comorbid conditions
- ◆ Mortality risk ratio (CPT code)
- ◆ Complication risk ratio (CPT code)
- ◆ CT scan findings
- ◆ Time to OR*
- ◆ Ostomy created
- ◆ IR procedure index admit*
- ◆ Mechanical ventilator*
- ◆ SIRS*

C-index = 0.899 to 0.568

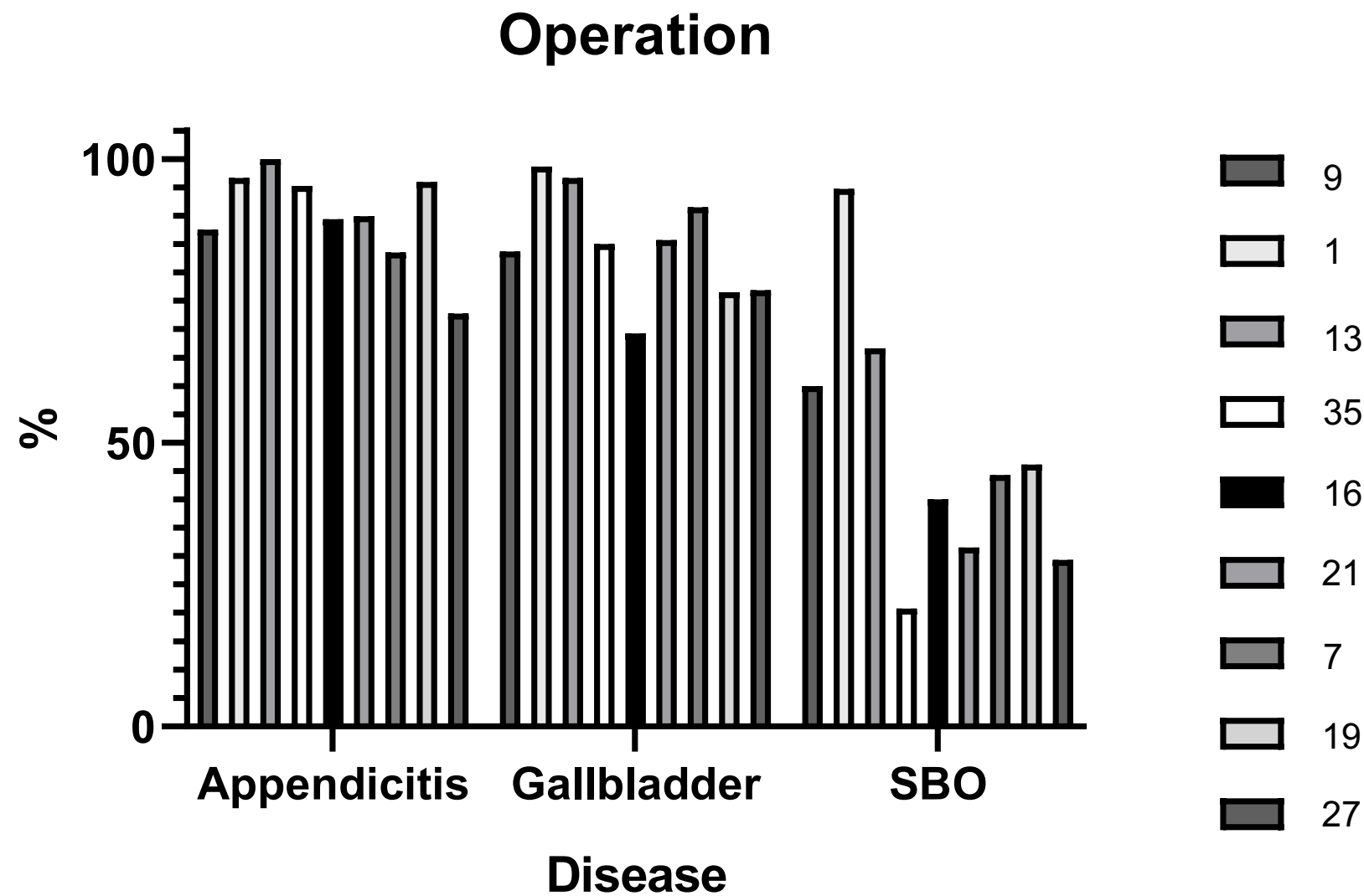
Total = 11,803



Total Patients = 11,803

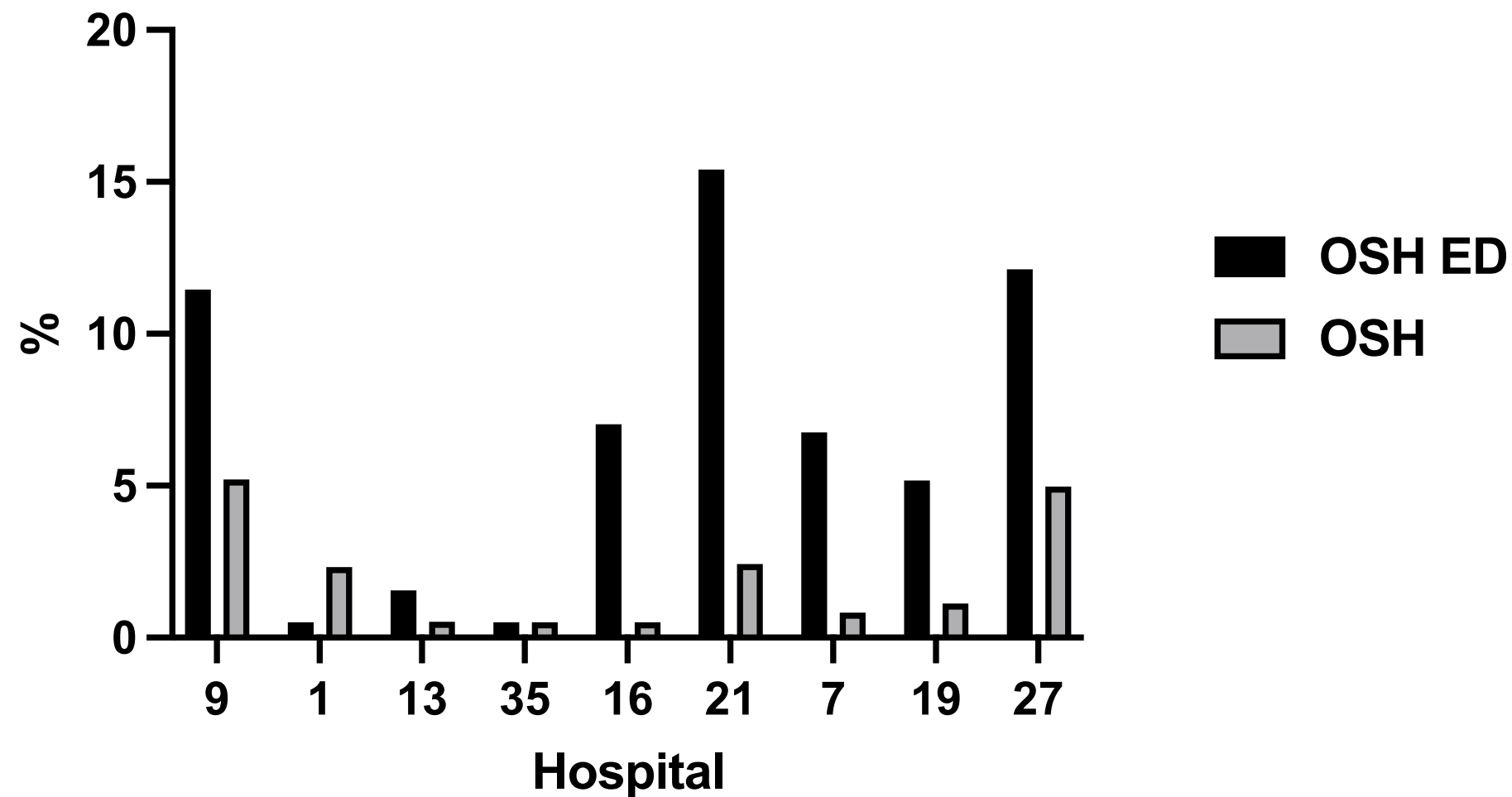


Operative Intervention



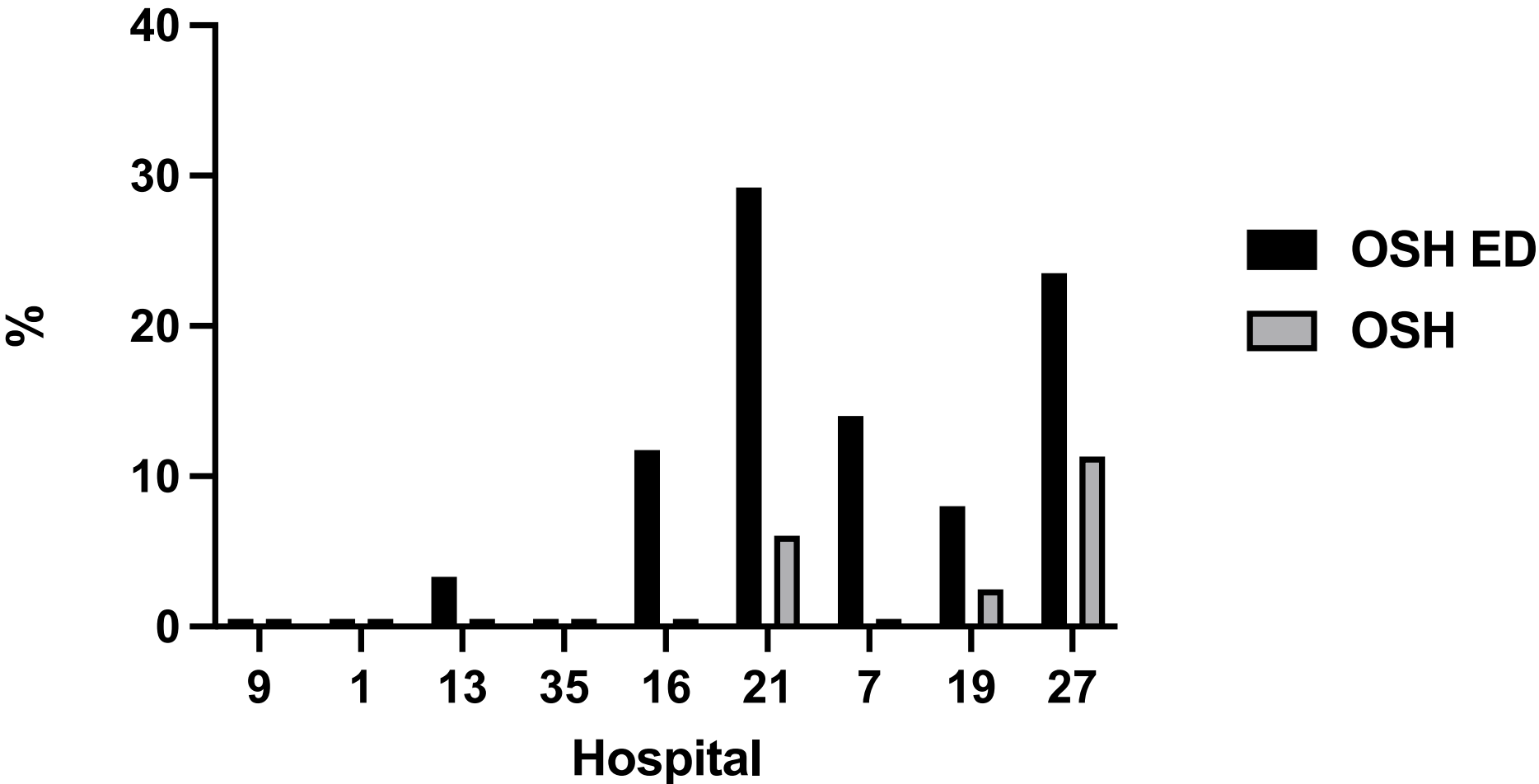
All

Transfer In



Emergent Exploratory Laparotomy

Transfer In



CPT – Operation, 15 most frequent

	N	%
47562, Laparoscopic cholecystectomy	2801	23.7
44970, Laparoscopic appendectomy	2139	18.1
47563, Lap cholecystectomy w IOC	369	3.1
44120, Resection of small intestine	316	2.7
44005, Freeing of bowel adhesion	244	2.1
47600, Open cholecystectomy	174	1.5
44143, Partial colectomy w colostomy	115	1.0
44140, Partial colectomy w anast	104	0.9
43840, Gastorrhaphy, Graham patch	96	0.8
49000, Exploration of abdomen	95	0.8
44160, Partial colectomy with TI	83	0.7
49561, Repair ventral/inc hernia	81	0.7
44950, Open appendectomy	71	0.6
49587, Repair umbilical hernia	61	0.5
44050, Reduction volvulus	50	0.4
All other	3489	29.6
No operation	1515	12.8

Outcomes (10,288 Index admissions)

	N	%
Any Complication	1907	18.5
Incisional SSI	112	1.1
Organ space SSI	187	1.8
Sepsis or severe sepsis	344	3.3
Anastomotic leak	31	0.3
Wound disruption	33	0.3
Enterocutaneous fistula	13	0.1
Ileus	217	2.1
C. difficile colitis	54	0.5
VTE	81	0.8
Pneumonia	120	1.2
Cardiac arrest	46	0.4
Post-discharge ED visit	721	7.0
Readmission	1229	11.9
Mortality	356	3.5

Comorbid Conditions



Height (cm)		
Mean ± Standard deviation	169.2	±10.7
Median (25th — 75th percentiles)	167.6	(162.0-177.8)
Weight (kg)		
Mean ± Standard deviation	86.8	±24.7
Median (25th — 75th percentiles)	83.6	(70.0-99.8)
BMI		
Mean ± Standard deviation	30.3	±8.1
Median (25th — 75th percentiles)	29.1	(24.7-34.3)
Ascites	106	1.0
CHF within 30 days	81	0.8
COPD (severe)	289	2.8
Covid-19 (confirmed positive)	127	1.2
Current cancer/malignancy	423	4.1
Diabetes mellitus		
Insulin	374	3.6
Non-insulin	522	5.1
Dialysis within 2 weeks	106	1.0
Disseminated cancer	185	1.8
Hypertension	2397	23.3
Functional health status (Dependent)	289	2.8
Personal history of DVT/PE	452	4.4
Preoperative sepsis		
Severe sepsis/septic shock	549	5.3
Sepsis	977	9.5
Sleep apnea	1284	12.5
Solid organ transplant	37	0.4
Steroid/Immunosuppressive medicatio	389	3.8
Tobacco within 1 year - cigarette	969	9.4
Ventilator dependent within 48 hours	117	1.1

Questions

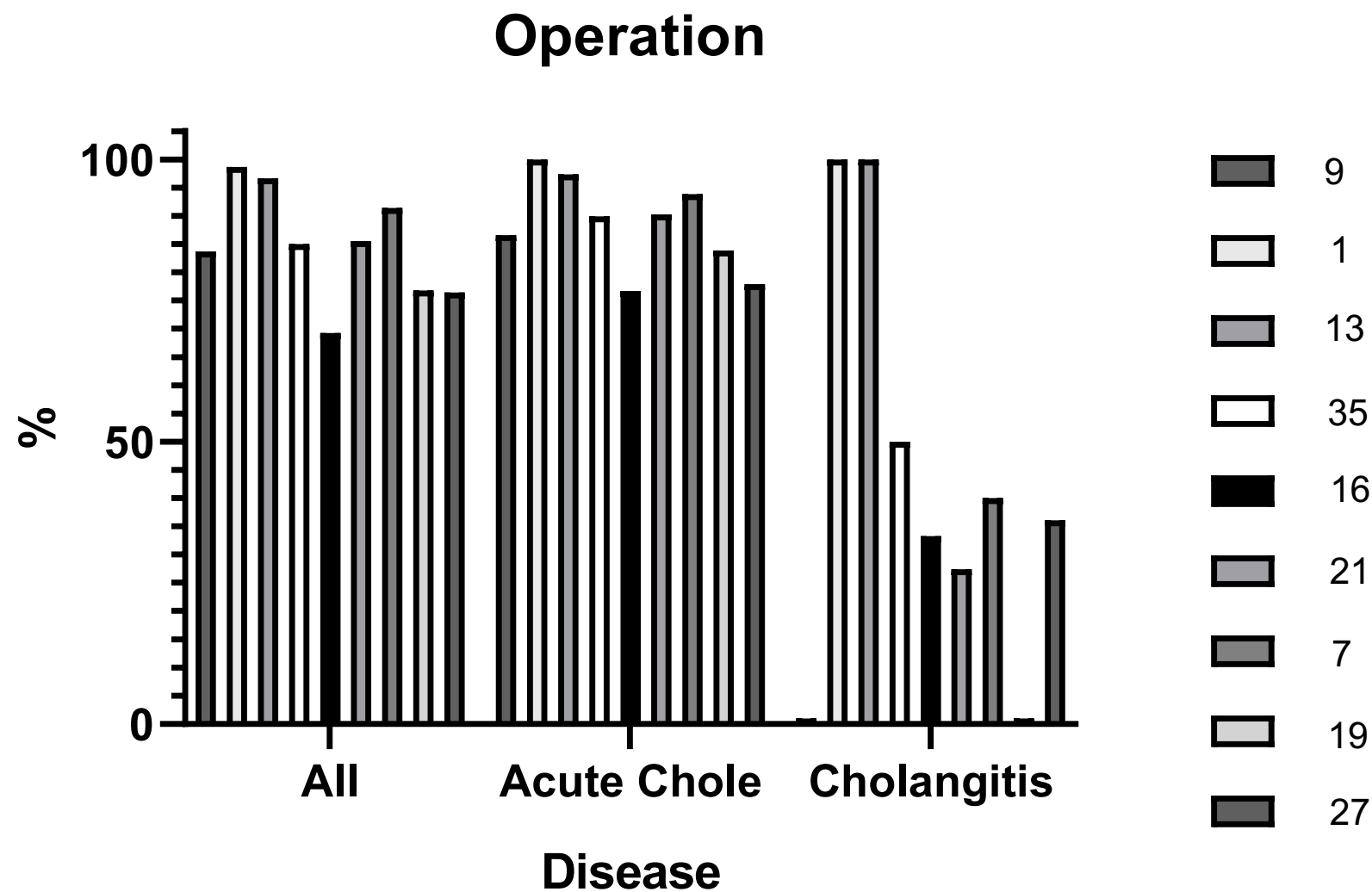


Gallbladder

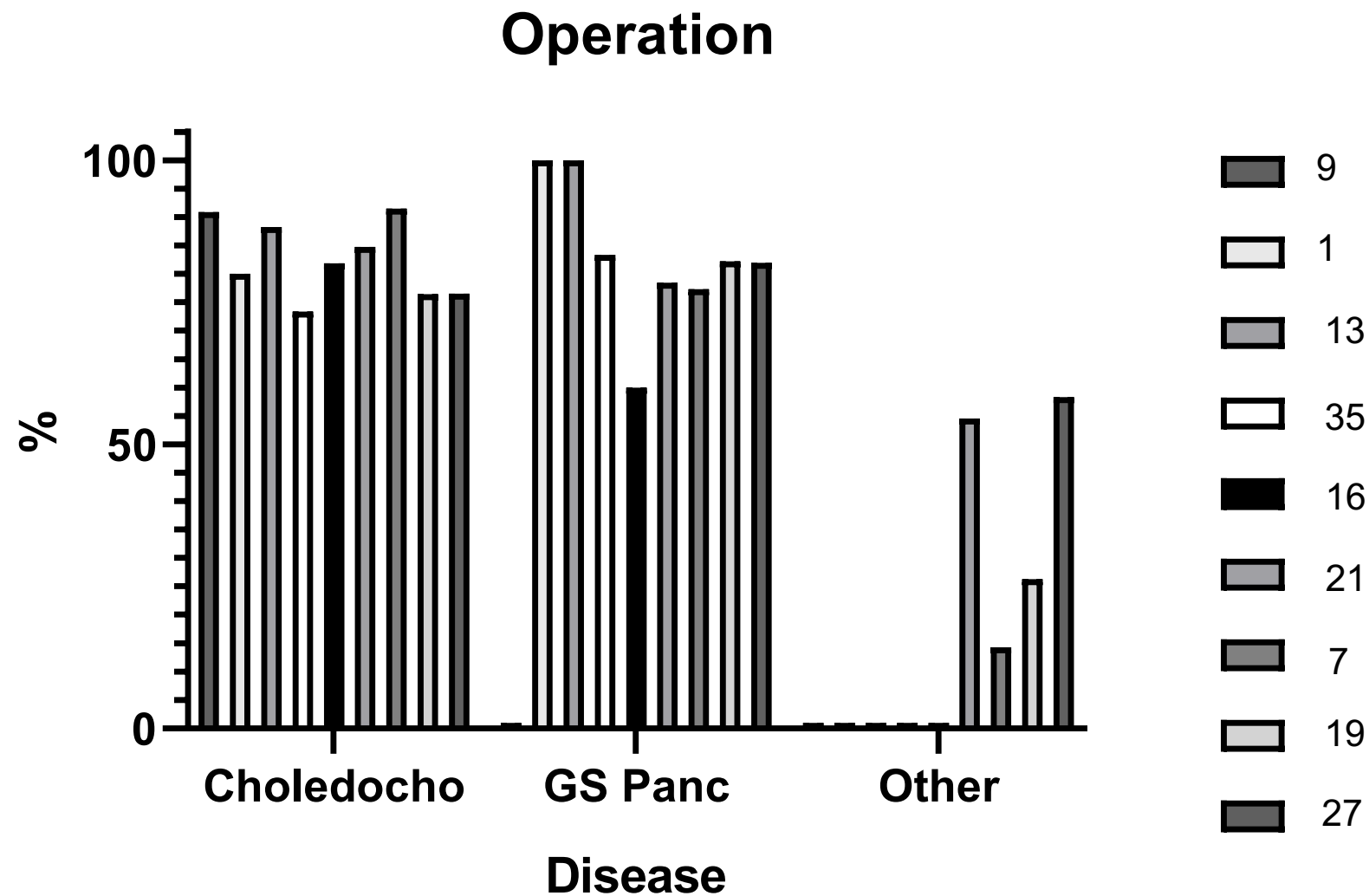
	N	%
Acute cholecystitis	3211	78.2
Symptomatic cholelithiasis	114	2.8
Cholangitis	107	2.6
Choledocholithiasis	881	21.5
Gallstone pancreatitis	382	9.3
Other	61	1.5

Can be in more than one diagnosis group

Gallbladder - Operation



Gallbladder - Operation



AAST Grade	Description	Clinical Criteria	Imaging Criteria (CT/US/HIDA findings)	Operative Criteria	Pathologic Criteria
I	Acute cholecystitis	Right upper quadrant (RUQ) or epigastric pain; Murphy's Sign; leukocytosis	Wall thickening; distention; gallstones or sludge; pericholecystic fluid; non-visualization of gallbladder (GB) on hepatobiliary iminodiacetic acid (HIDA) scan	Inflammatory changes localized to GB; wall thickening; distention; gallstones	Acute inflammatory changes in the GB wall without necrosis or pus
II	GB empyema or gangrenous cholecystitis or emphysematous cholecystitis	RUQ or epigastric pain; Murphy's Sign; leukocytosis	Above, plus air in GB lumen, wall or in the biliary tree; focal mucosal defects without frank perforation	Distended GB with pus or hydrops; necrosis or gangrene of wall; not perforated	Above, plus pus in the GB lumen; necrosis of GB wall; intramural abscess; epithelial sloughing; no perforation
III	GB perforation with local contamination	Localized peritonitis in RUQ	HIDA with focal transmural defect, extraluminal fluid collection or radiotracer but limited to RUQ	Perforated GB wall (non-iatrogenic) with bile outside the GB but limited to RUQ	Necrosis with perforation of the GB wall (non-iatrogenic)
IV	GB perforation with pericholecystic abscess or gastrointestinal fistula	Localized peritonitis at multiple locations; abdominal distention with symptoms of bowel obstruction	Abscess in RUQ outside GB; bilio-enteric fistula; gallstone ileus	Pericholecystic abscess; bilio-enteric fistula; gallstone ileus	Necrosis with perforation of the GB wall (non-iatrogenic)
V	GB perforation with generalized peritonitis	Above, with generalized peritonitis	Free intra-peritoneal bile	Above, plus generalized peritonitis	Necrosis with perforation of the GB wall (non-iatrogenic)

Acute Cholecystitis – AAST Grade

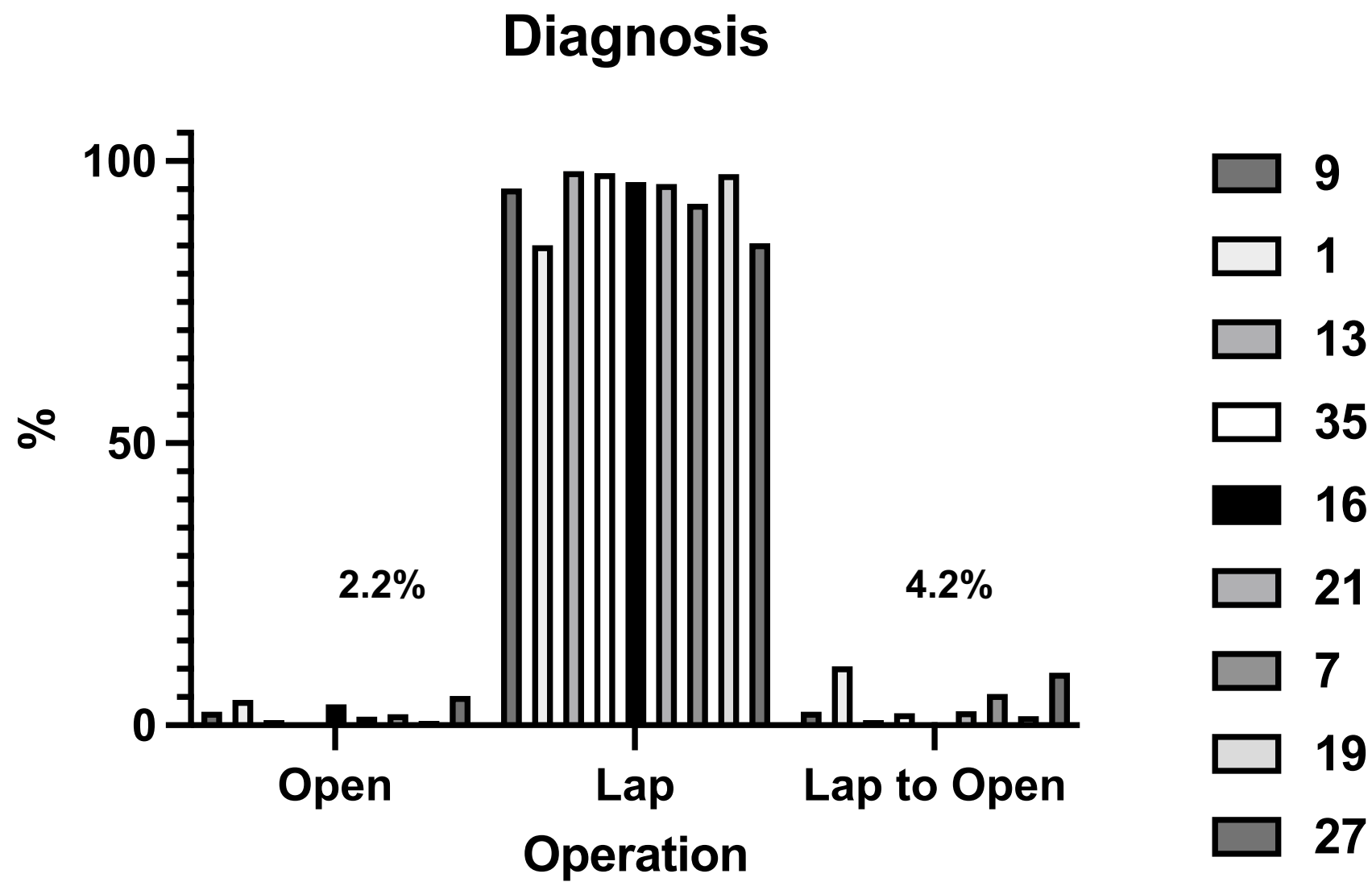
	N	%		
1, Acute cholecystitis	2560	74.2]	1
2, empyema or gangrenous	665	19.3]	2
3, perforation local	82	2.4]	3
4, perforation GI fistula	5	0.1		
5, perforation peritonitis	12	0.3		
NA	97	2.8		

Acute Cholecystitis – Bailout Operation

Cholecystectomy Technique	Freq.	Percent	Cum.
Total Excision	1,777	96.37	96.37
Sub-Total Excision w/Fenestration	32	1.74	98.10
Sub-Total Excision w/Reconstitution	19	1.03	99.13
Sub-Total Excision Other/Not Specified	16	0.87	100.00
Total	1,844	100.00	

3.6%

Type Operation



Cholecystostomy Tube (Non-op)

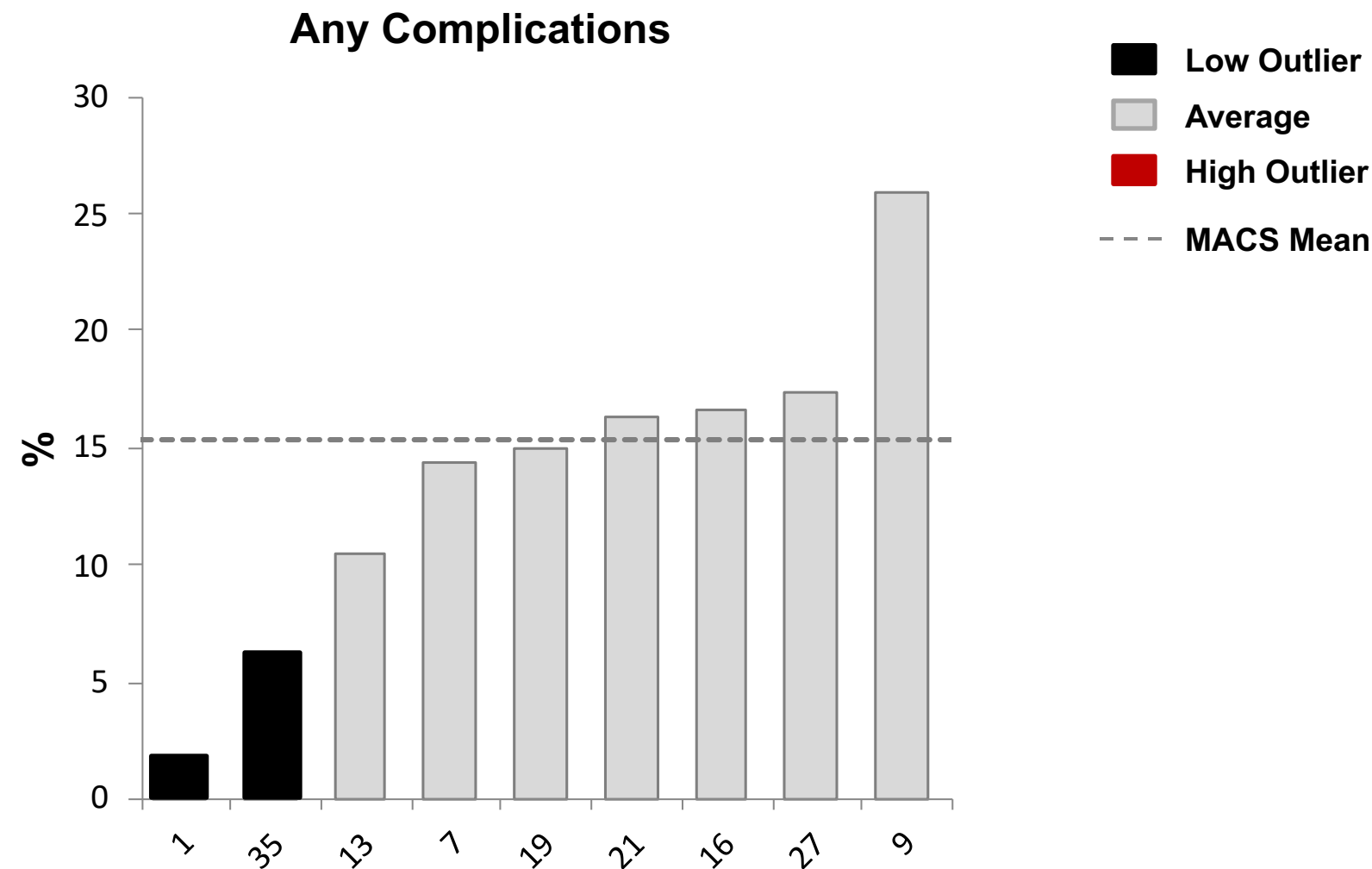
15.8% of GB patients received non-operative management (652 pts)
34% of non-op pts get a C-tube (195 pts), PTC (11), or Drain (17)

center	IR Procedure								Total
	Drain	Aspiratio	Angiogram	Embolizat	PTC	Cholecyst	Paracente	Thoracent	
9	0 0.00	0 0.00	0 0.00	0 0.00	1 25.00	3 75.00	0 0.00	0 0.00	4 100.00
13	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 100.00
35	2 25.00	0 0.00	0 0.00	0 0.00	0 0.00	5 62.50	1 12.50	0 0.00	8 100.00
16	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	5 83.33	0 0.00	0 0.00	6 100.00
21	6 6.45	0 0.00	0 0.00	1 1.08	4 4.30	71 76.34	3 3.23	3 3.23	93 100.00
7	2 10.53	0 0.00	0 0.00	0 0.00	0 0.00	15 78.95	0 0.00	0 0.00	19 100.00
19	1 3.03	0 0.00	1 3.03	0 0.00	2 6.06	26 78.79	1 3.03	1 3.03	33 100.00
27	5 5.81	1 1.16	0 0.00	1 1.16	4 4.65	70 81.40	1 1.16	1 1.16	86 100.00
Total	17 6.80	1 0.40	1 0.40	2 0.80	11 4.40	195 78.00	6 2.40	5 2.00	250 100.00

Gallbladder – Outcomes

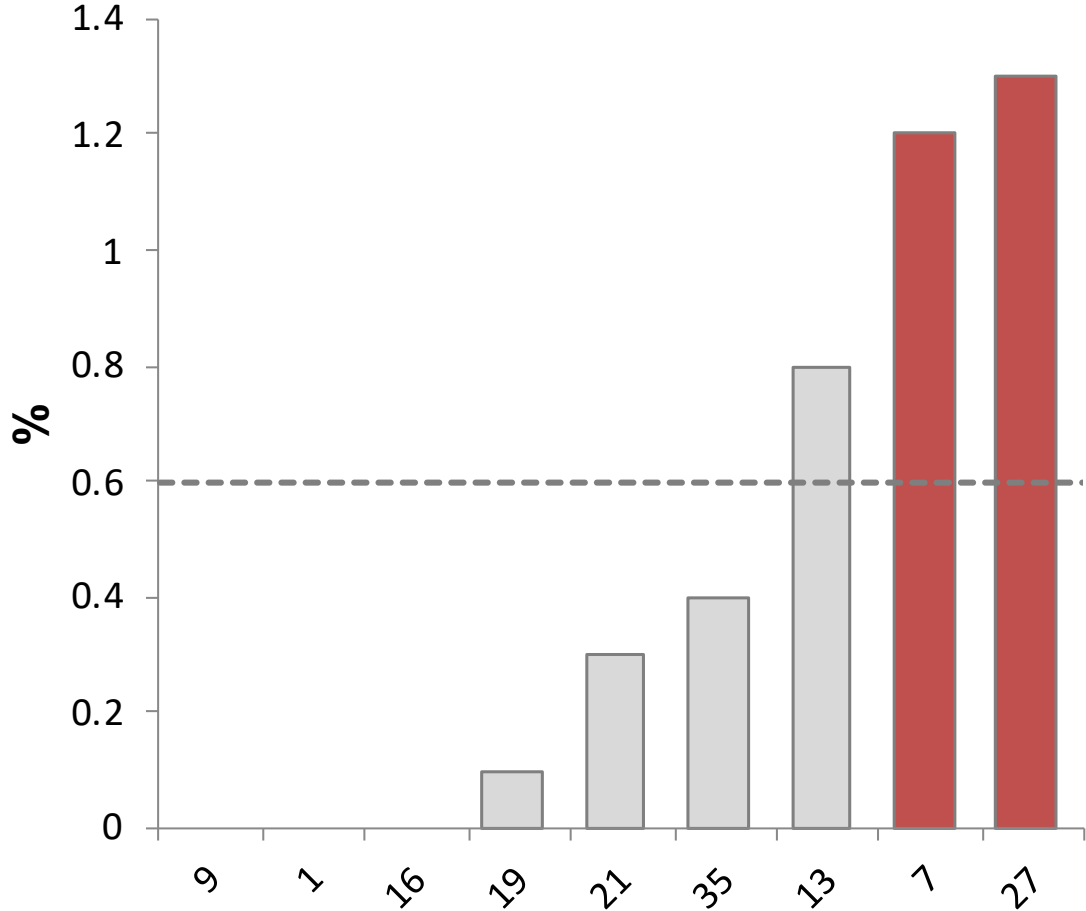
	N	%
Any Complication	633	15.4
Incisional SSI	24	0.6
Organ space SSI	23	0.6
Sepsis	84	2.0
Post-discharge ED visit	267	6.5
Readmission	372	9.1
Mortality	52	1.3
Cystic duct stump leak	30	0.7
Retained CBD stone	58	1.4
CBD injury	8	0.2

Risk-Adjusted Outcomes

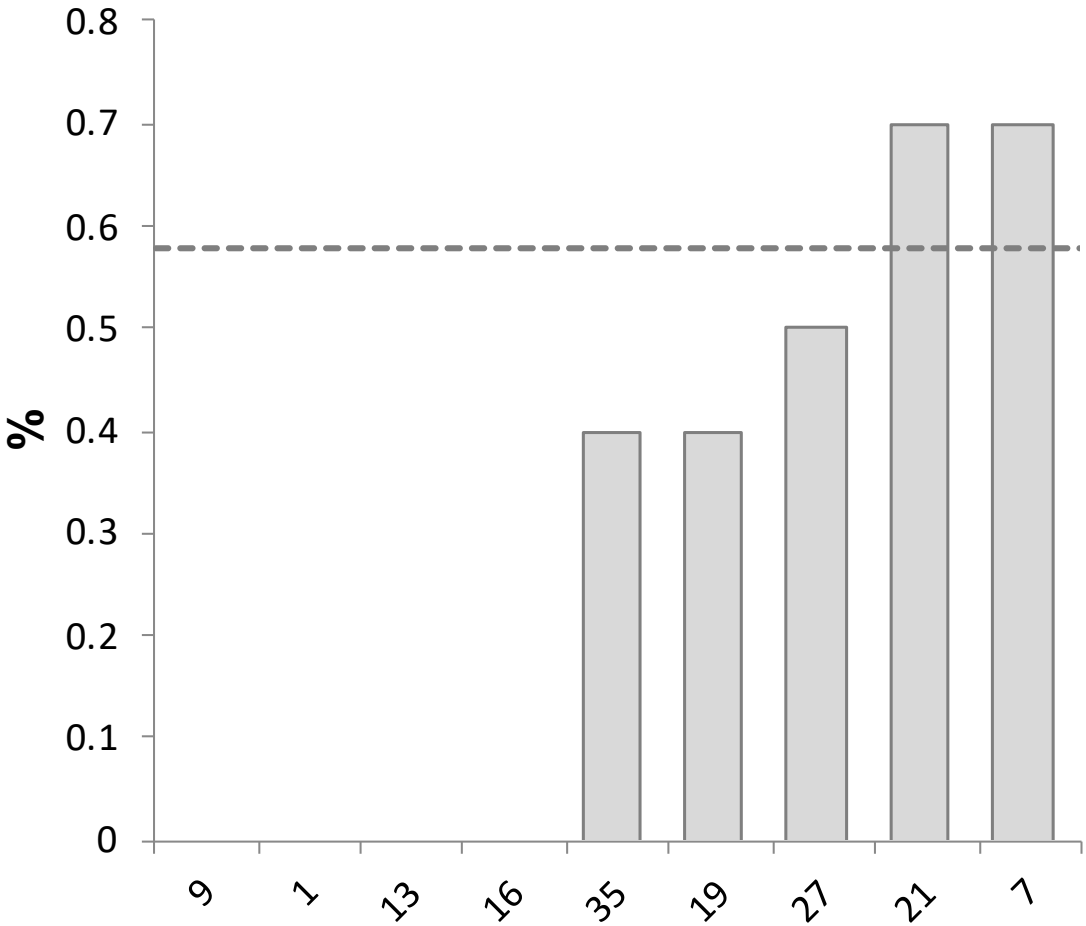


Risk-Adjusted Outcomes

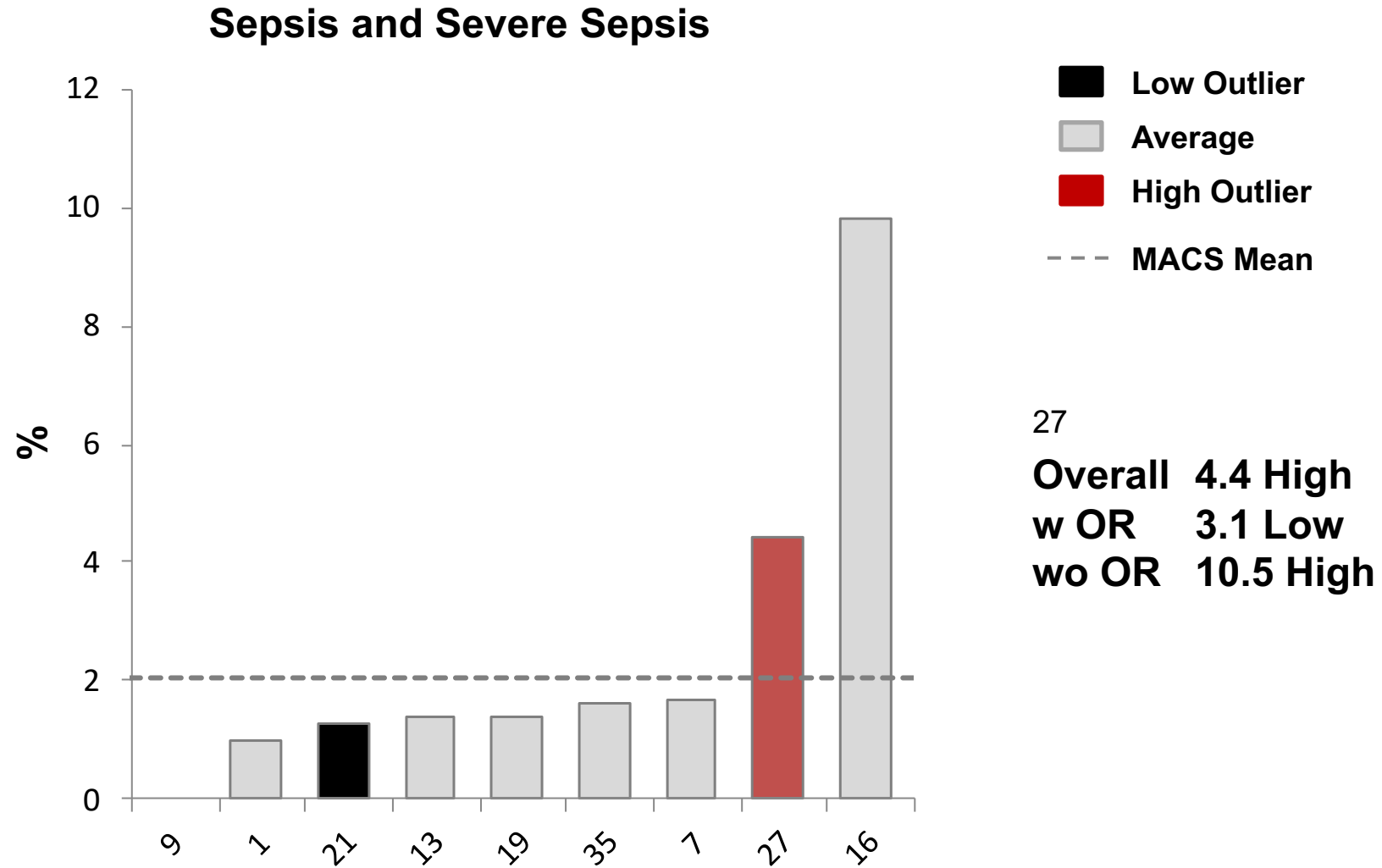
Incisional SSI



Organ Space SSI

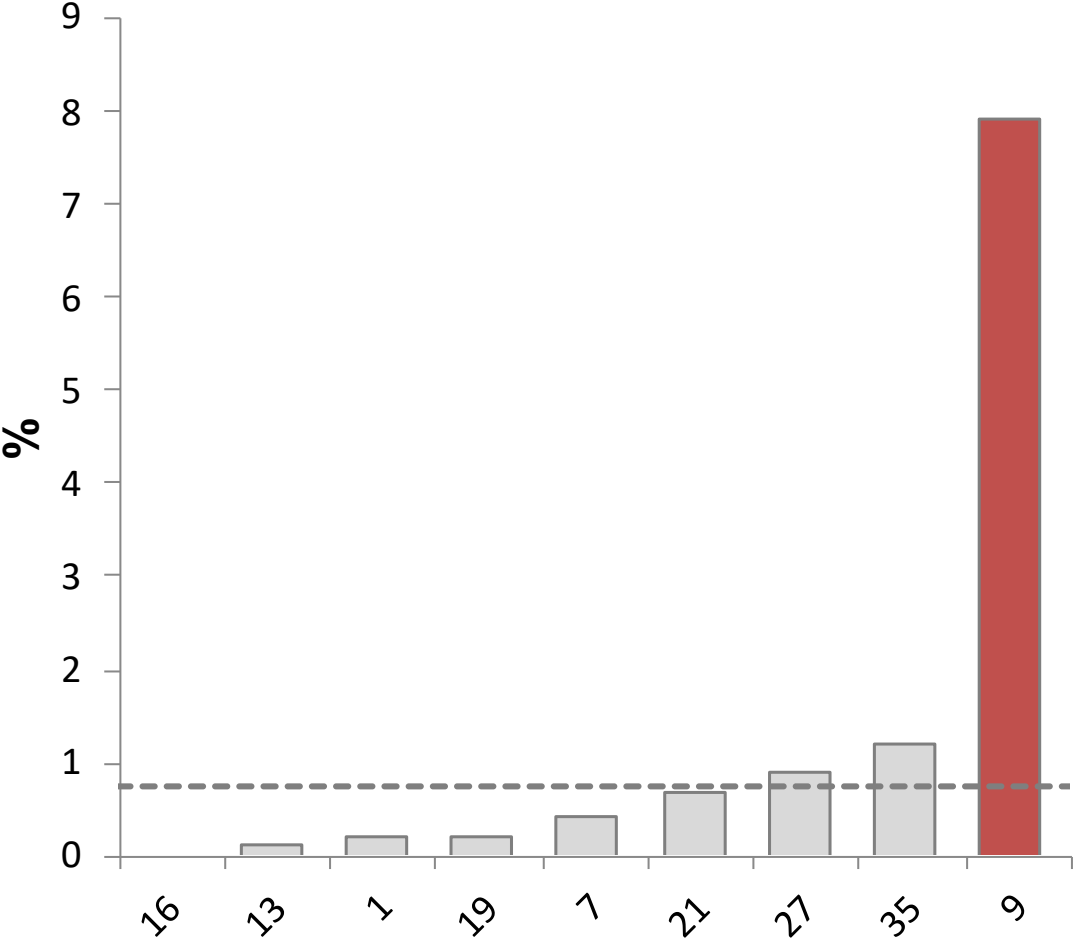


Risk-Adjusted Outcomes

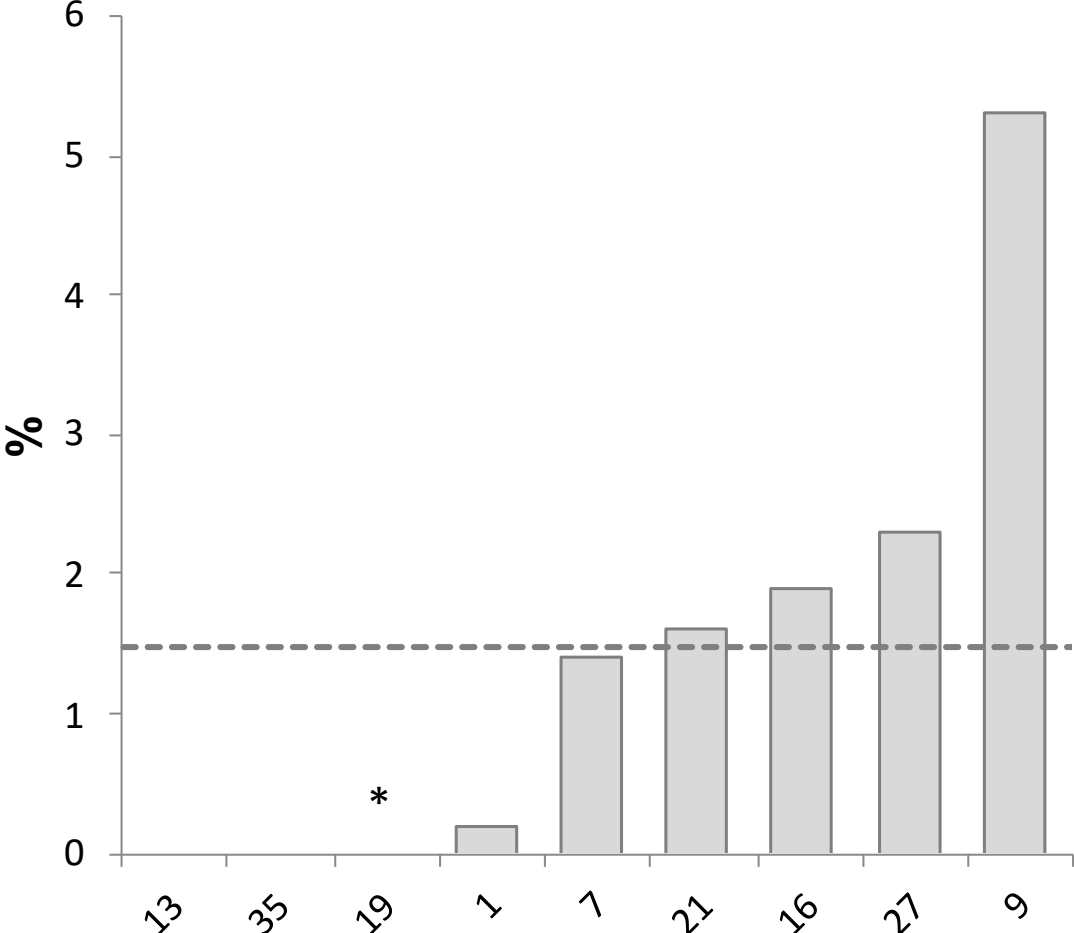


Risk-Adjusted Outcomes

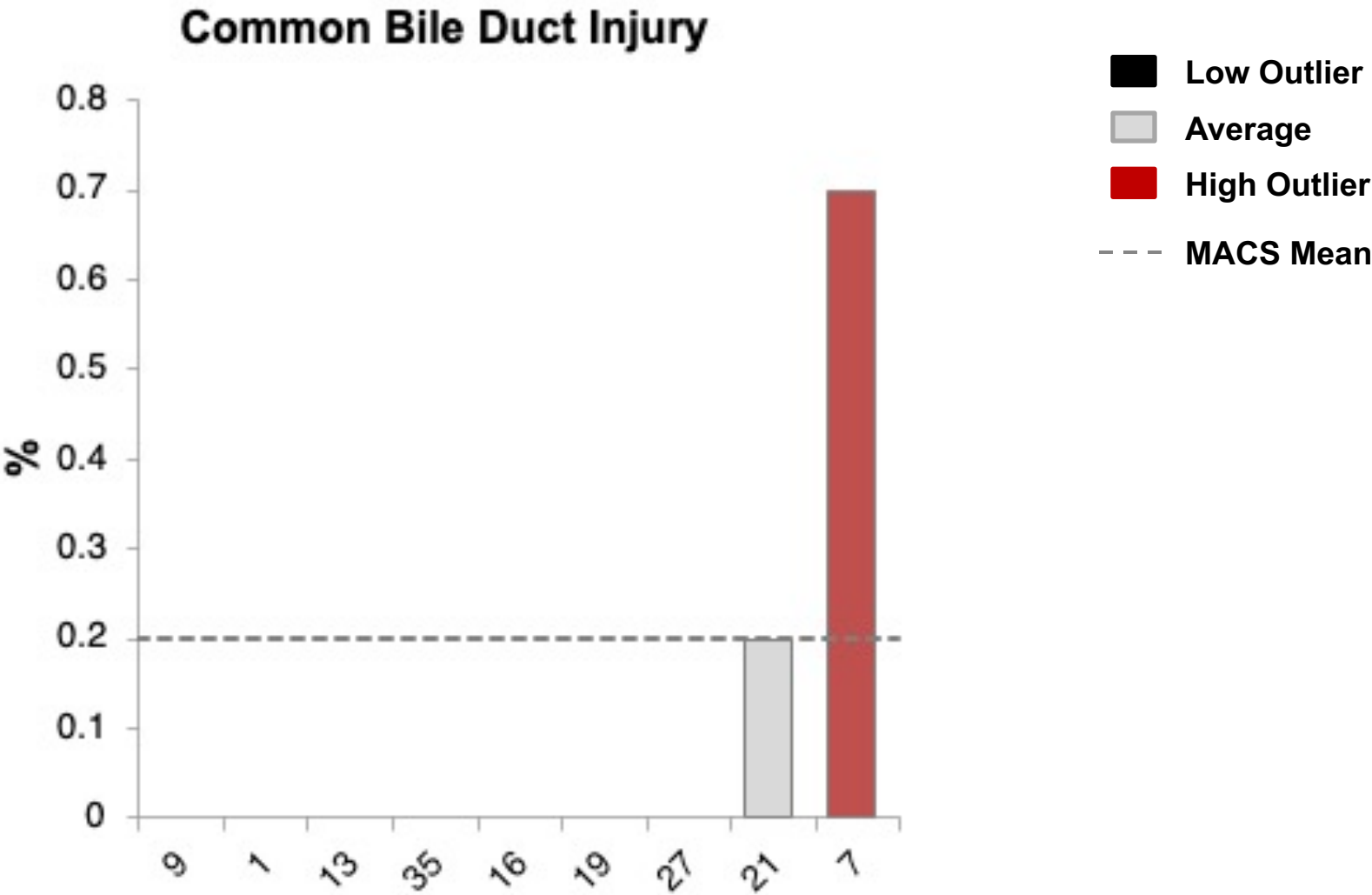
Cystic Duct Stump Leak



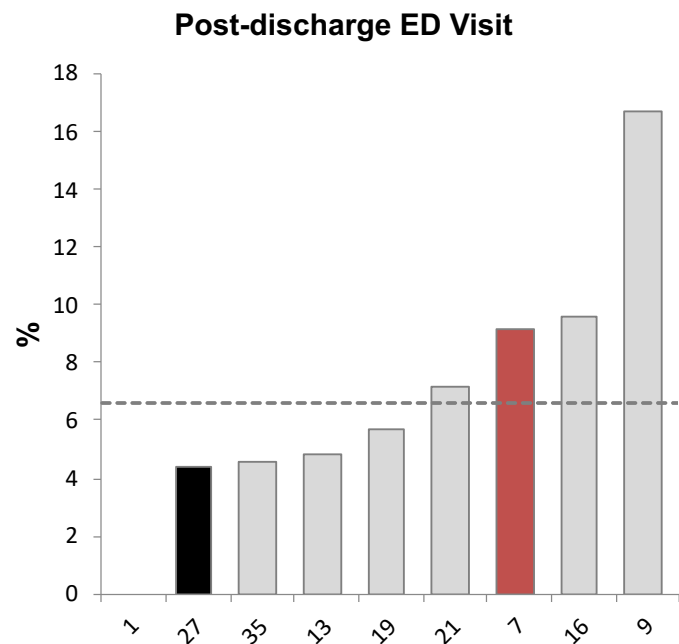
Retained Common Bile Duct Stone



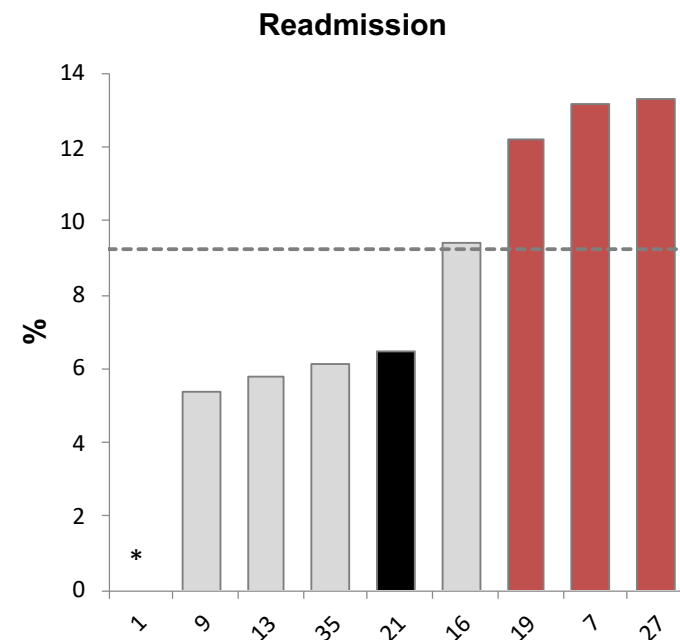
Risk Adjusted Outcomes



Risk-Adjusted Outcomes



27
Overall 4.4 Low
w OR 4.8 Average
wo OR 1.9 Low

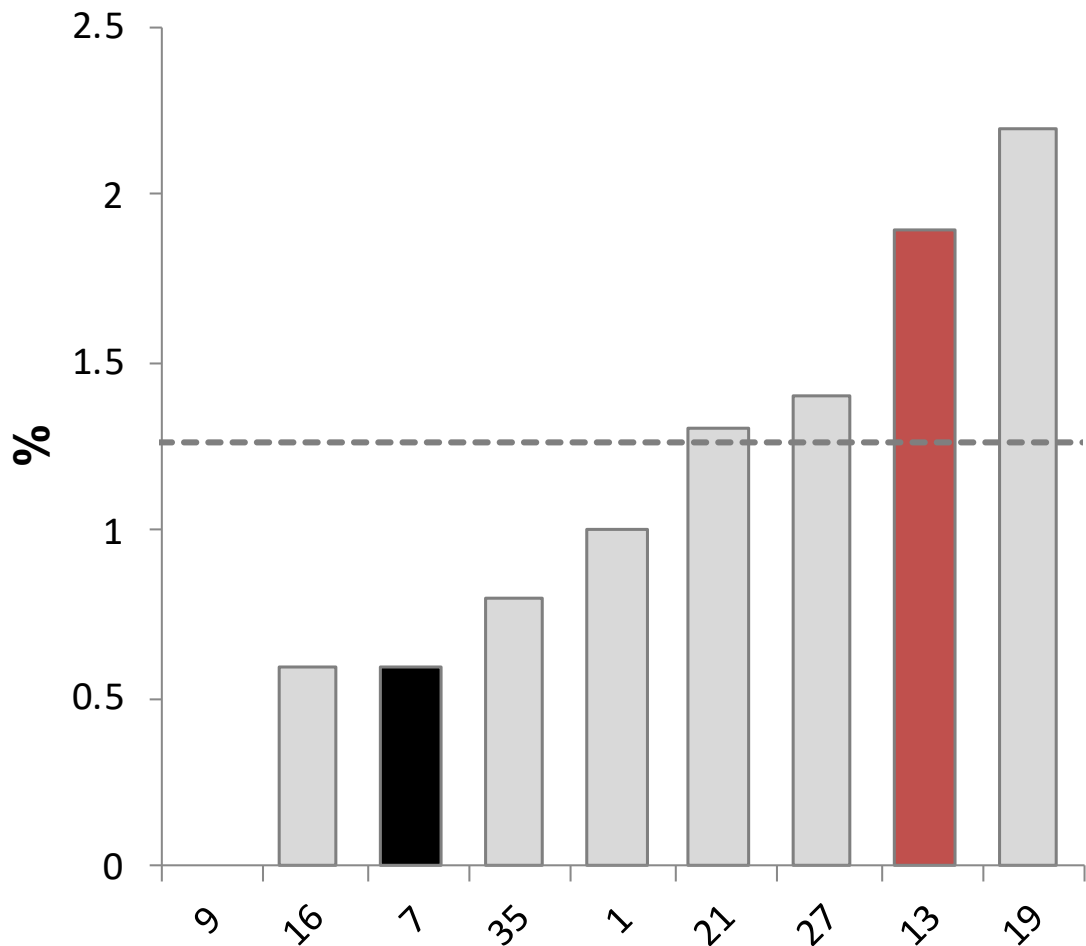


27
Overall 13.3 High
w OR 13.5 High
wo OR 11.2 Average

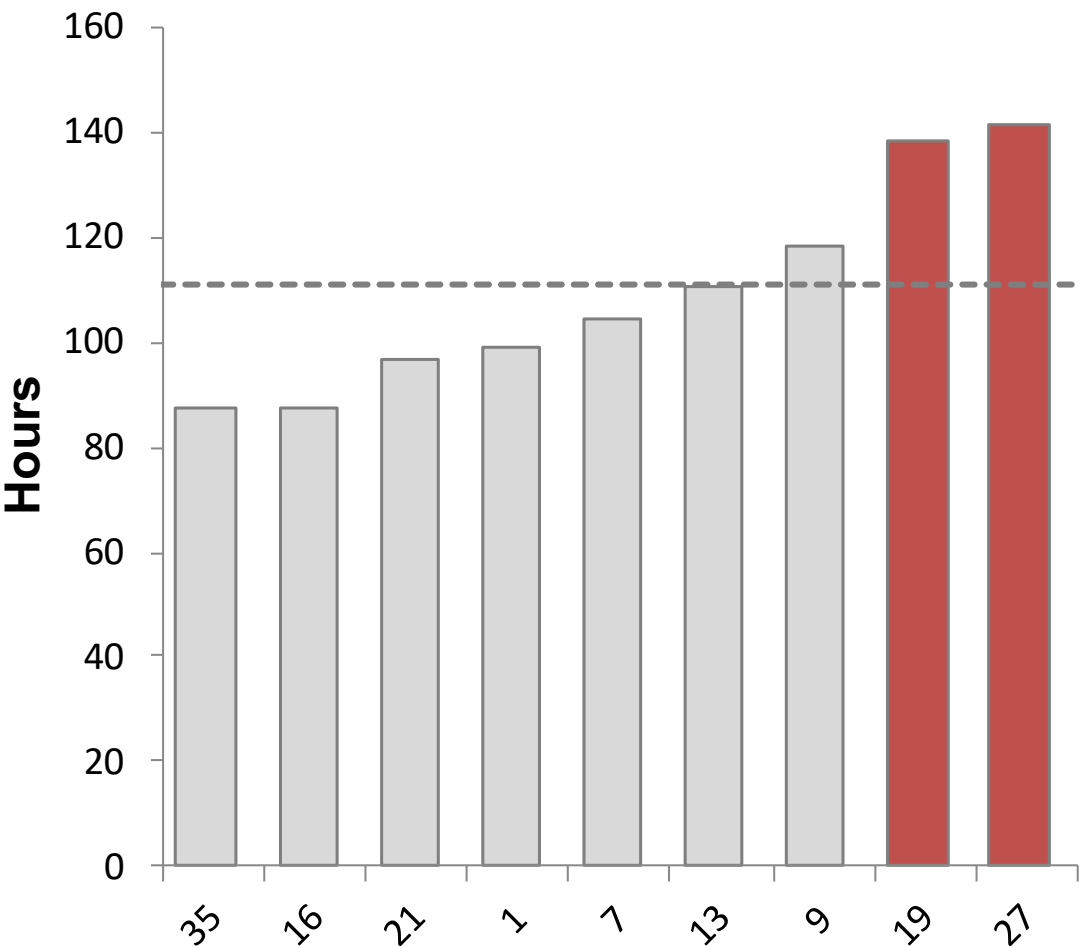
■ Low Outlier
■ Average
■ High Outlier
--- MACS Mean

Risk-Adjusted Outcomes

Mortality



Hospital LOS



Questions



Questions

Who gets an operation? Who is offered non-op?

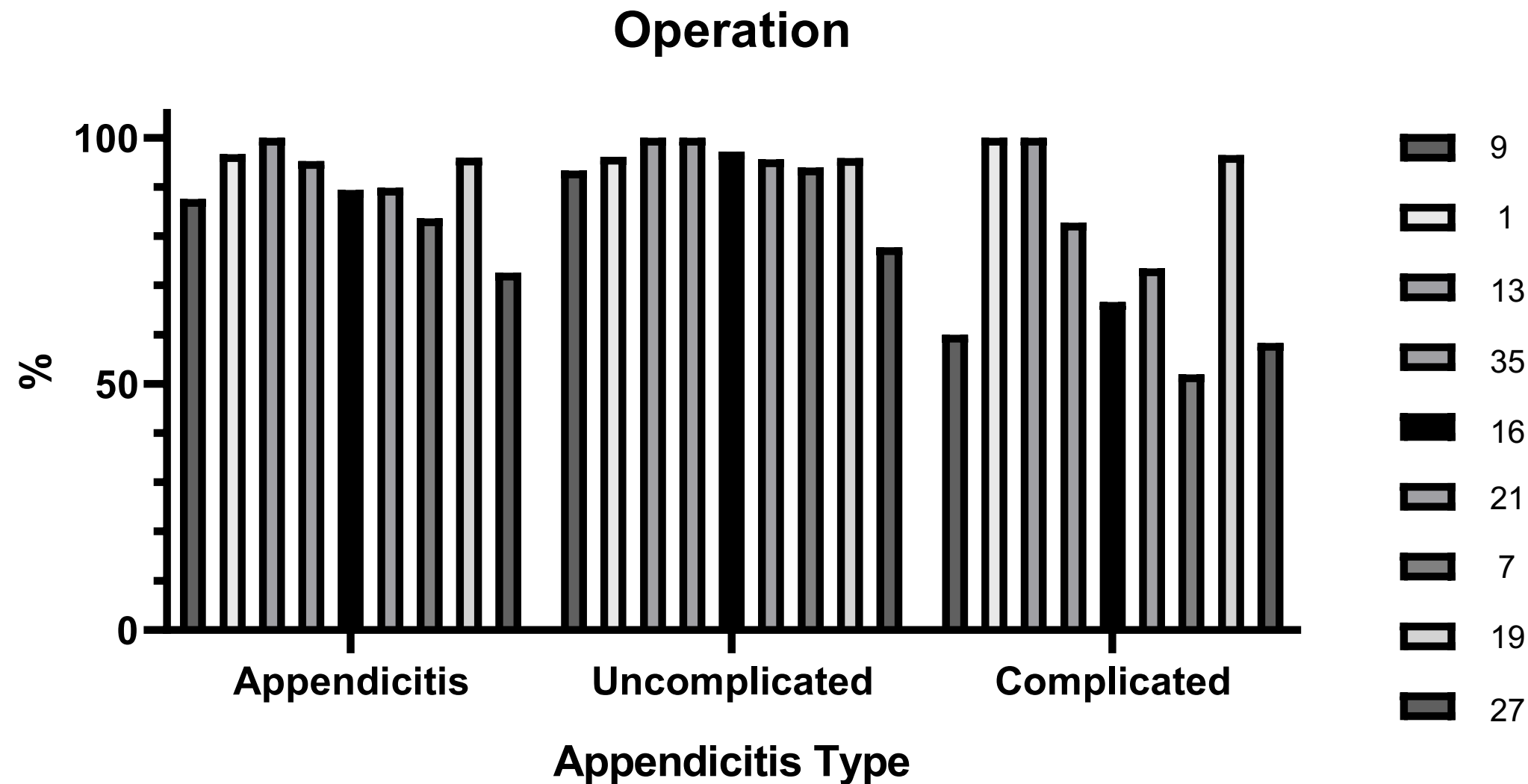
Readmission and/or post-discharge ED visits

Can we make acute gallbladder surgery safer?

Break

Back at 12:05p

Acute Appendicitis



Acute Appendicitis

- ◆ Type
 - Uncomplicated 76%
 - Complicated 24%
- ◆ Perforation - 27% (723 patients)
 - Operation - 71%
- ◆ CT Scan - 97% of patients
- ◆ USN - 11% of patients, ↓12%
- ◆ Pathology Result
 - 94.7% positive for appendicitis, ↓95.5%



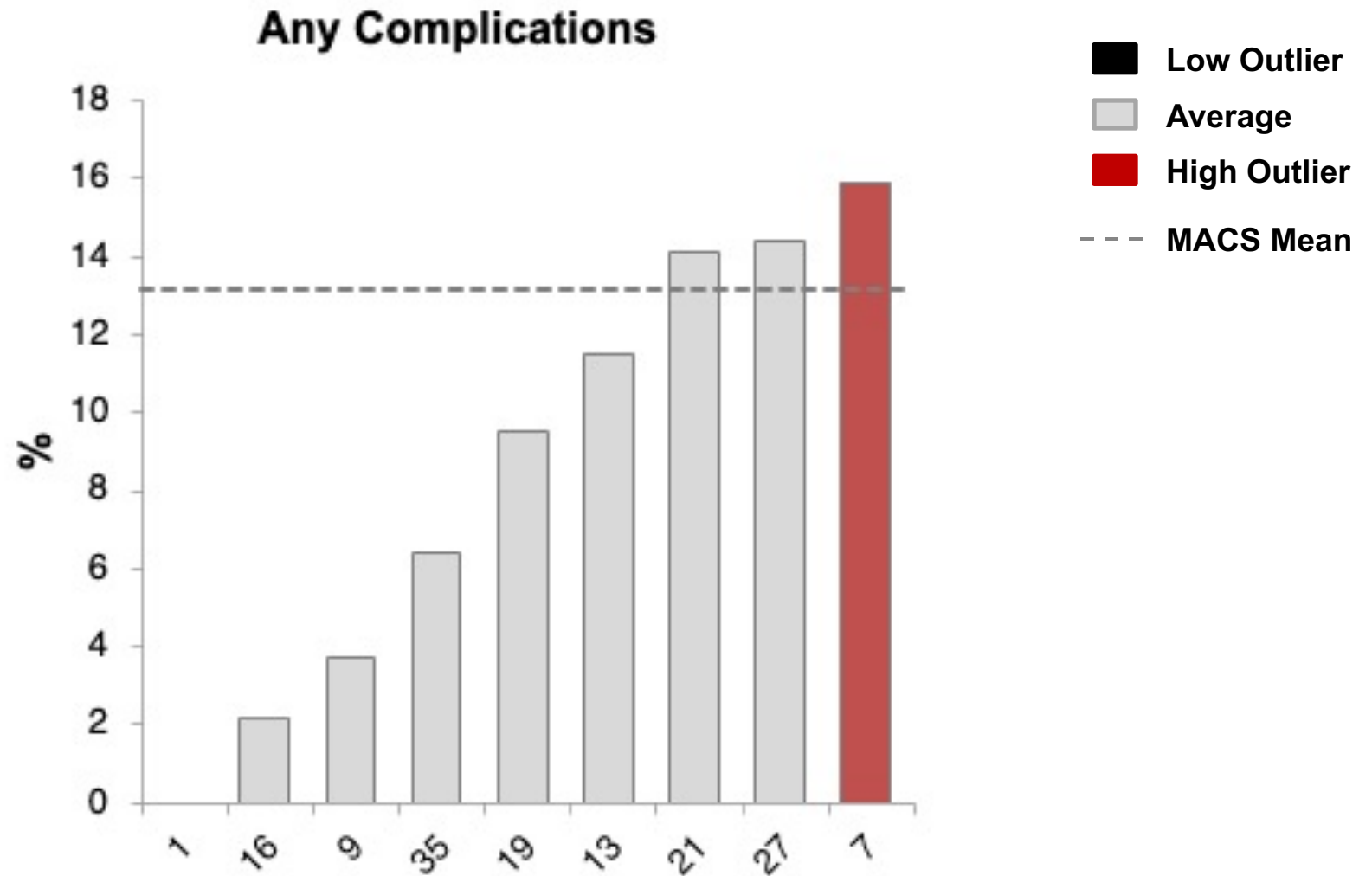
Acute Appendicitis

- ◆ IR procedure Index = 4.2% (Drain 79%, Aspiration 16%)
- ◆ Lap vs Open
 - Open 3.1%, 34 patients at 27 , 71 total
 - Laparoscopic 95%
 - Lap to open 2.2%

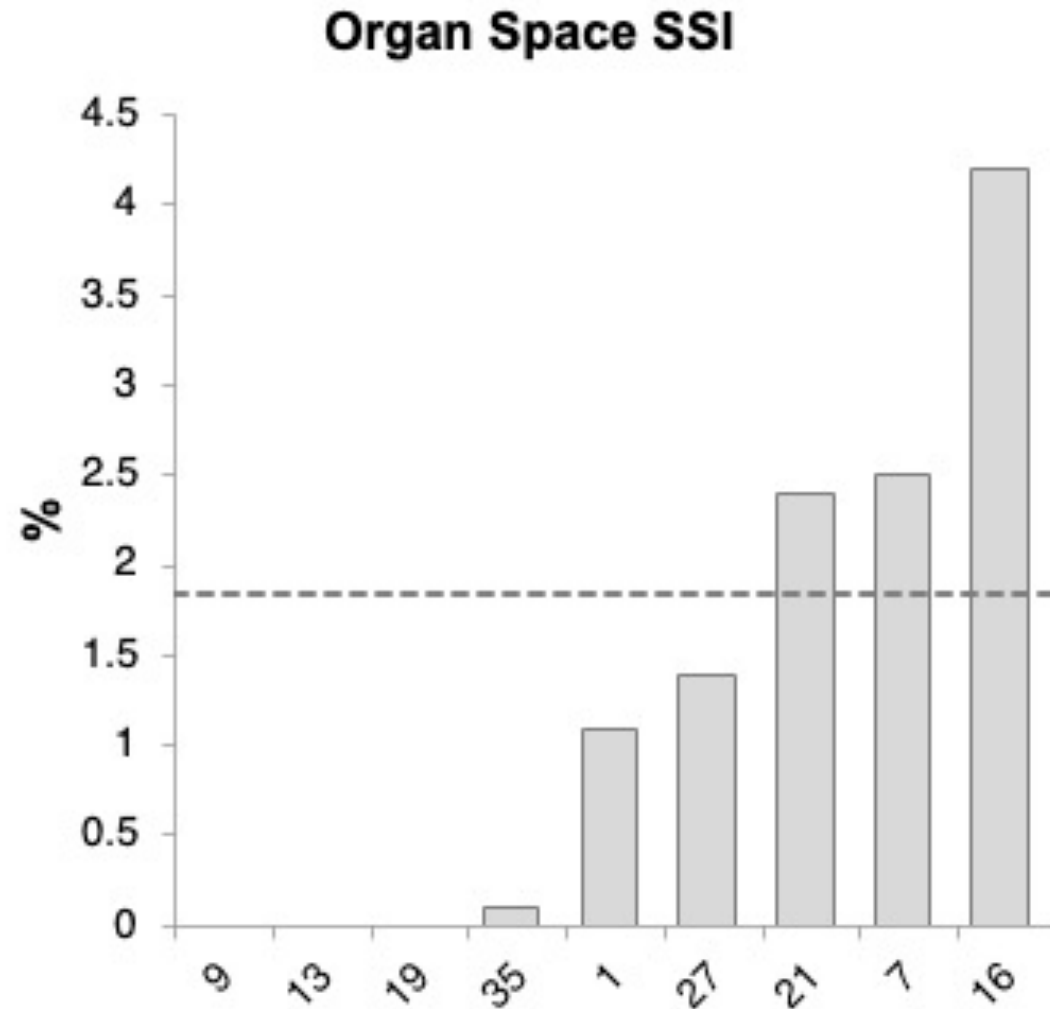
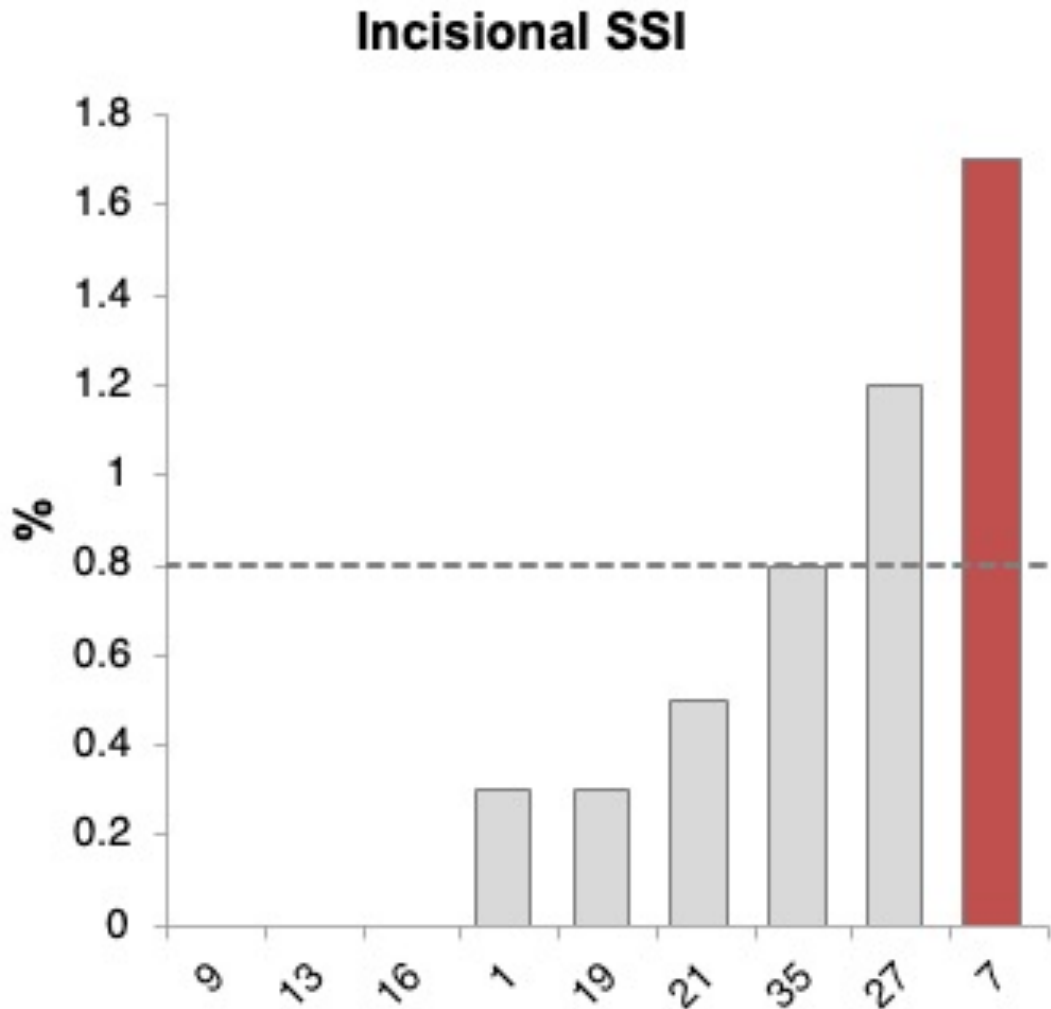
Acute Appendicitis - Medical Management

- ◆ Medical management = 13.7%, 363 patients
- ◆ 15 failed and got operation index = 4.1%
- ◆ 12 months
 - 90 failed and got operation = 24.8%
- ◆ 24 months and 36 months
 - 91 failed and got operation = 25.1%
- ◆ IV Abx Mean 3.1, Median 3 days
- ◆ Oral Home Abx Mean 9.2, Median 10 days

Risk-Adjusted Outcomes

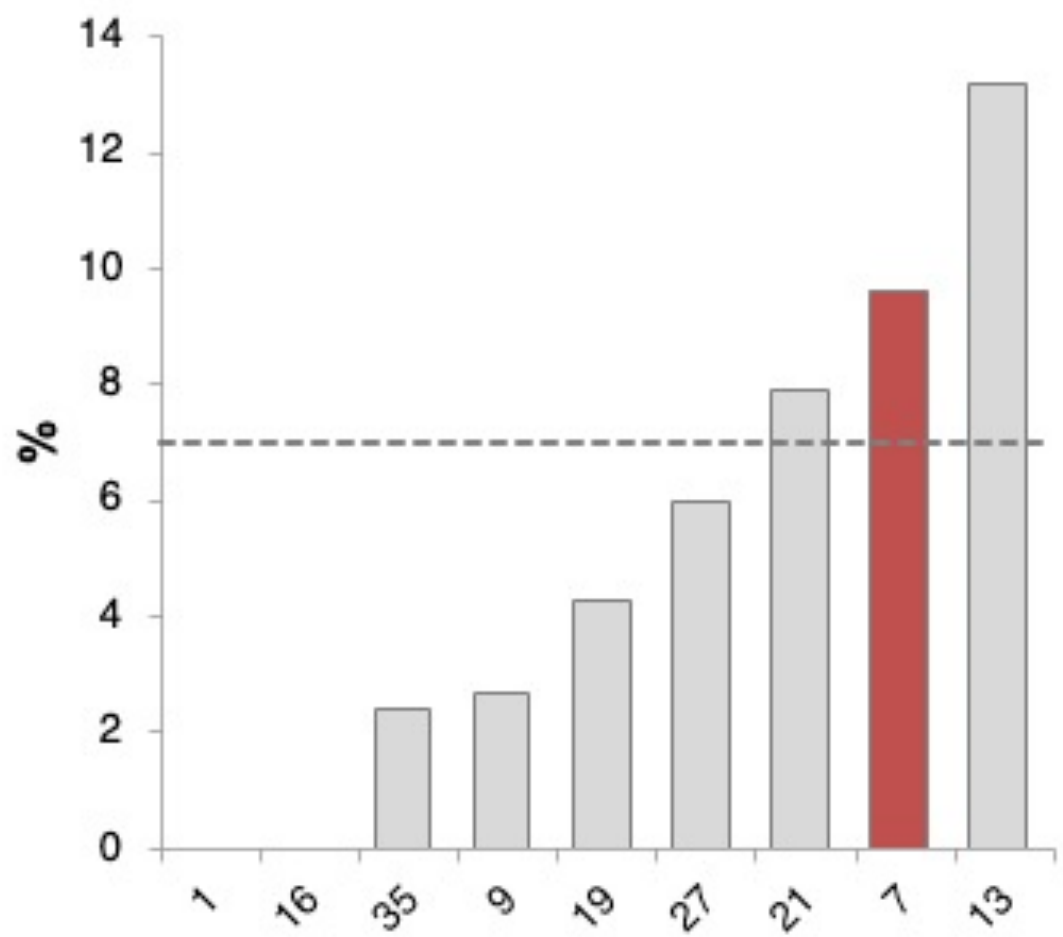


Risk-Adjusted Outcomes

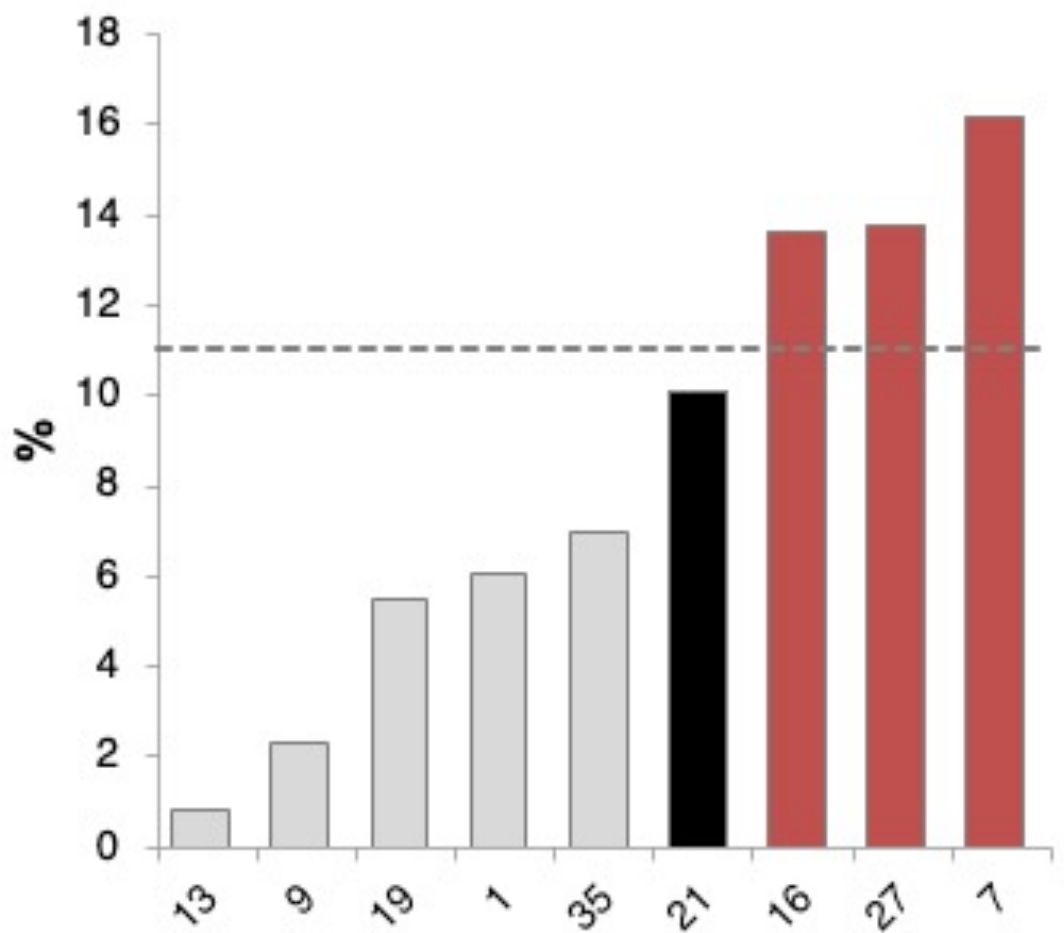


Risk Adjusted Outcomes

Post-discharge ED Visit



Readmission



Acute Appendicitis – Index with Readmission (2,657 admits)

◆ Outcomes

- Readmission = 7.8% (206 pts)
- Any complication = 13.0% (346 pts)
- Incisional SSI = 0.9% (21 pts)
- Organ space SSI = 2.0% (47 pts)
- Sepsis = 1.3% (34 pts)
- Post-discharge ED visit = 7.0% (185 pts)
- Mortality = 0.3% (7 pts)

Acute Appendicitis – Outcomes

All w/operation

Operation Index	All		Perforated		Uncomplicated	
	N	%	N	%	N	%
Any Complication	301	12.7	111	20.4	190	10.4
Incisional SSI	21	0.9	9	1.7	12	0.7
Organ space SSI	46	1.9	30	5.5	16	0.9
Sepsis	28	1.2	16	2.9	12	0.7
Post-discharge ED visit	164	6.9	40	7.3	124	6.8
Readmission	177	7.5	75	13.8	102	5.6
Mortality	6	0.3	3	0.6	3	0.2

Questions



Questions

Who gets an operation? Who is offered non-op?

Readmission and/or post-discharge ED visits

Compare perforated medical to perforated operation

Irrigation or not?

Emergent Exp. Laparotomy = 916 patients

	N	%
Perforation	266	29.0
Colon	181	19.8
Small bowel	6	0.7
Stomach/Duodenum	79	8.6
Obstruction	361	39.4
Hernia	121	13.2
Malignancy	25	2.7
Other (Volvuluous, Intussusception)	215	23.5
Ischemia	69	7.5
Other	92	10.0

NEWS2 Score

- ◆ National Emergency Laparotomy Audit (NELA)
 - Use NEWS2 for detection
 - RR, O2, Temp, SBP, HR, Consciousness
- ◆ Score
 - Range 0-20
 - Clinical Risk for Deterioration
 - ◆ Low: 0-4 62.2%
 - ◆ Medium: 5-6 12.0%
 - ◆ High: ≥ 7 25.8%
 - Consistent

news2_class	Discharge Status		Total
	Alive	Dead	
High	162 68.94	73 31.06	235 100.00
Low	539 94.73	30 5.27	569 100.00
Med	87 79.09	23 20.91	110 100.00
Total	788 86.21	126 13.79	914 100.00

NEWS2 Score

High

center	Discharge Status		Total
	Alive	Dead	
9	2 66.67	1 33.33	3 100.00
1	0 0.00	1 100.00	1 100.00
13	7 63.64	4 36.36	11 100.00
35	7 100.00	0 0.00	7 100.00
16	5 83.33	1 16.67	6 100.00
21	66 68.75	30 31.25	96 100.00
7	8 72.73	3 27.27	11 100.00
19	27 75.00	9 25.00	36 100.00
27	40 62.50	24 37.50	64 100.00
Total	162 68.94	73 31.06	235 100.00

Medium

center	Discharge Status		Total
	Alive	Dead	
13	2 66.67	1 33.33	3 100.00
35	5 83.33	1 16.67	6 100.00
16	3 75.00	1 25.00	4 100.00
21	42 87.50	6 12.50	48 100.00
7	6 75.00	2 25.00	8 100.00
19	13 76.47	4 23.53	17 100.00
27	16 66.67	8 33.33	24 100.00
Total	87 79.09	23 20.91	110 100.00

Low

center	Discharge Status		Total
	Alive	Dead	
9	1 100.00	0 0.00	1 100.00
1	4 100.00	0 0.00	4 100.00
13	14 93.33	1 6.67	15 100.00
35	32 96.97	1 3.03	33 100.00
16	6 85.71	1 14.29	7 100.00
21	224 94.92	12 5.08	236 100.00
7	30 96.77	1 3.23	31 100.00
19	103 94.50	6 5.50	109 100.00
27	125 93.98	8 6.02	133 100.00
Total	539 94.73	30 5.27	569 100.00

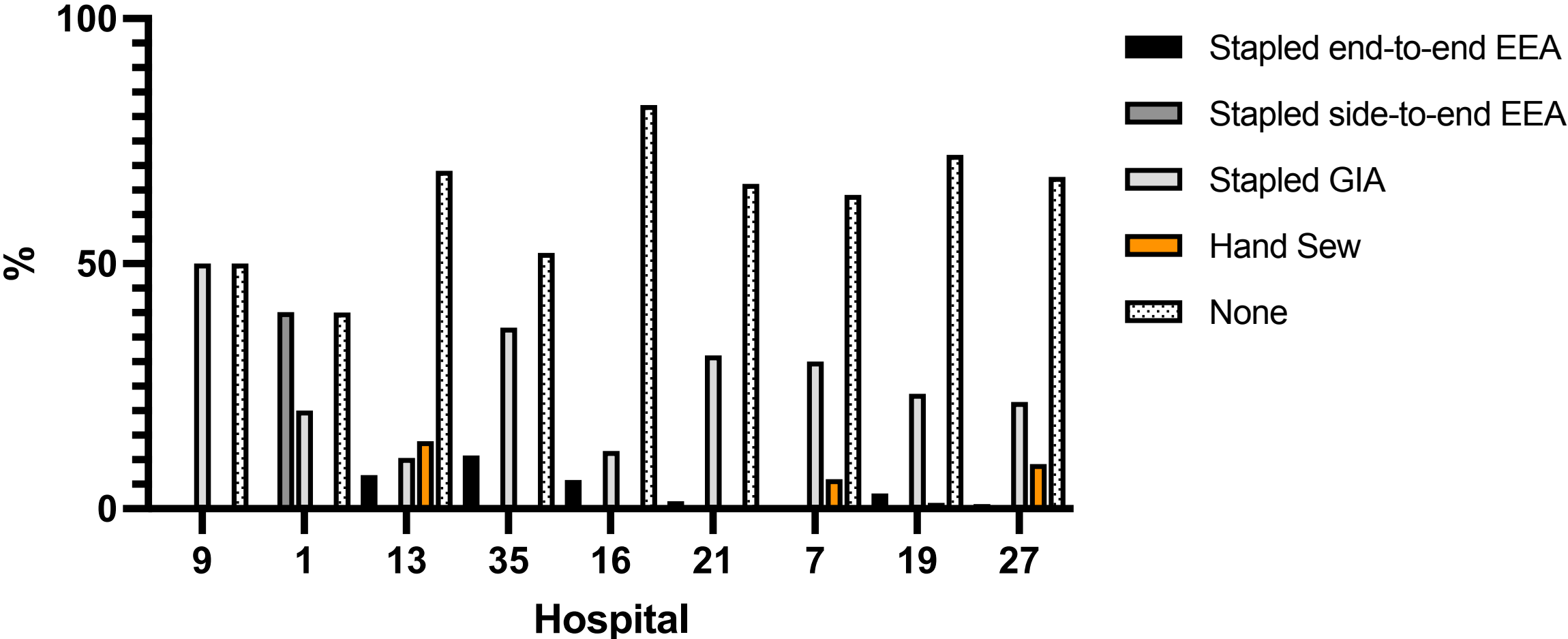
Operation

- ◆ Ostomy - 27%
 - Colostomy = 16.3%
 - Ileostomy = 11.0%
- ◆ Associated hernia repair - 16%
- ◆ Anastomosis
 - None: 67%
 - Stapled: 29%
 - Hand Sewn: 3.4%



Bowel Anastomosis Technique

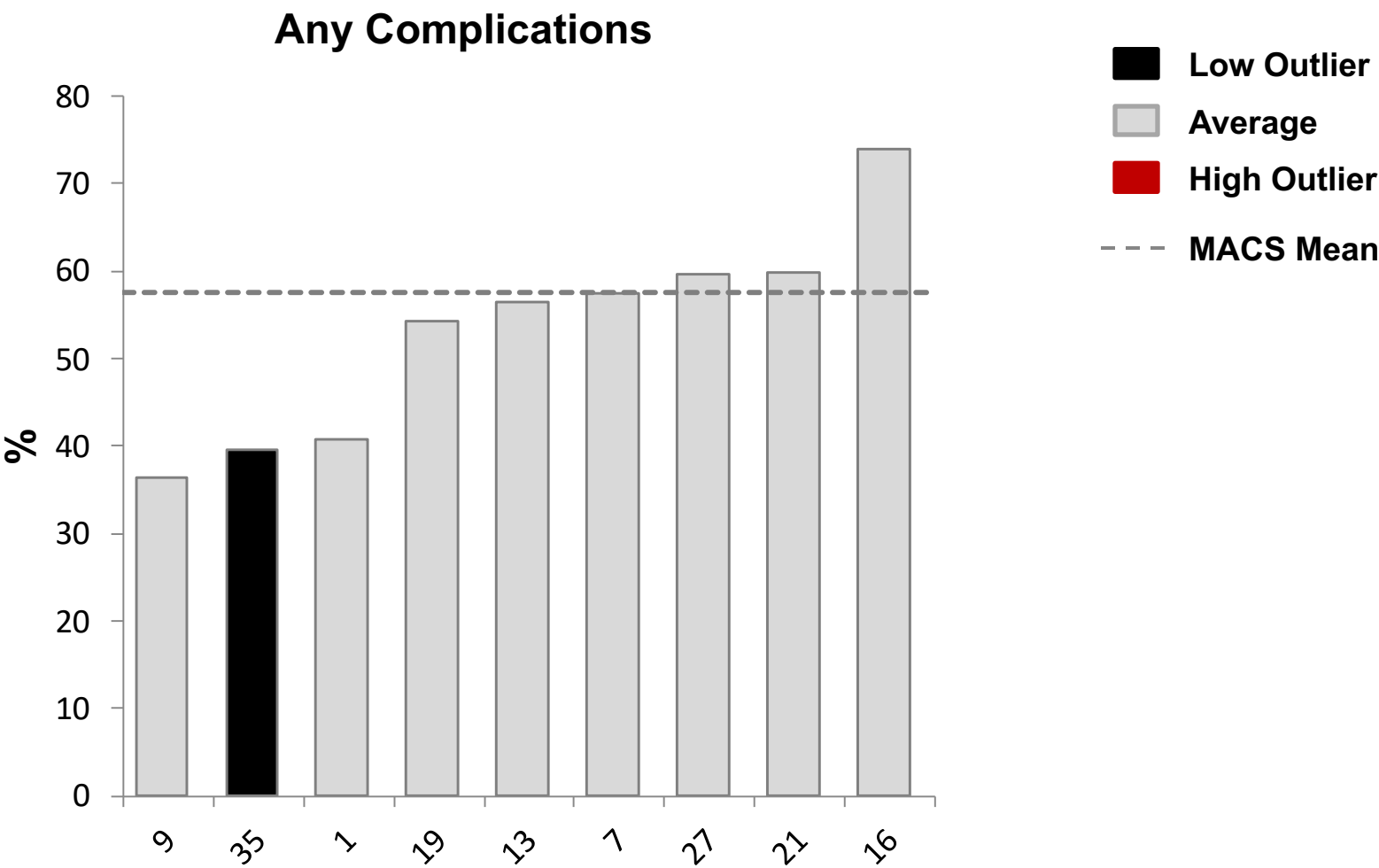
Technique



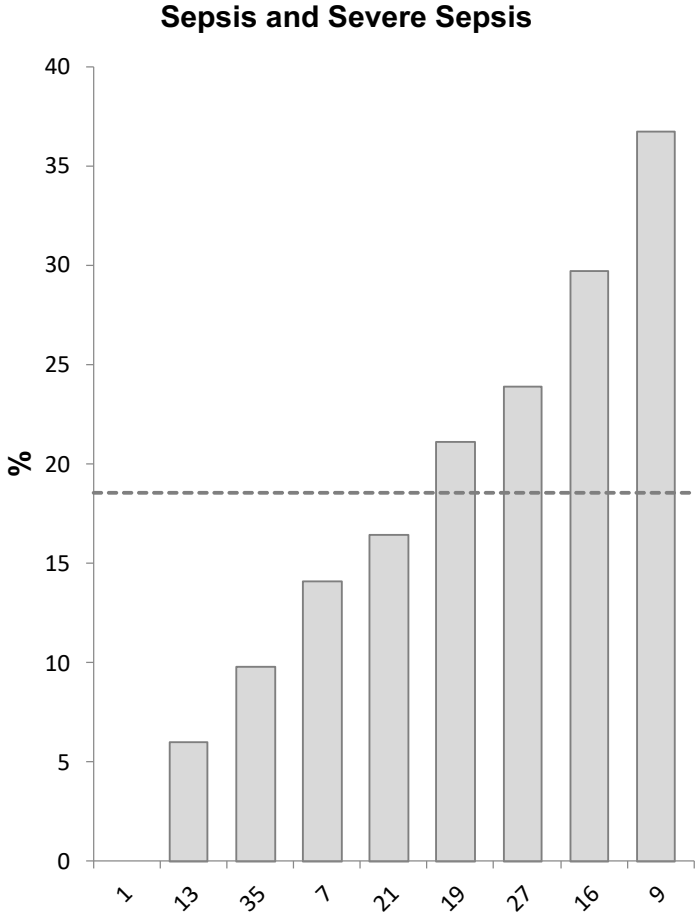
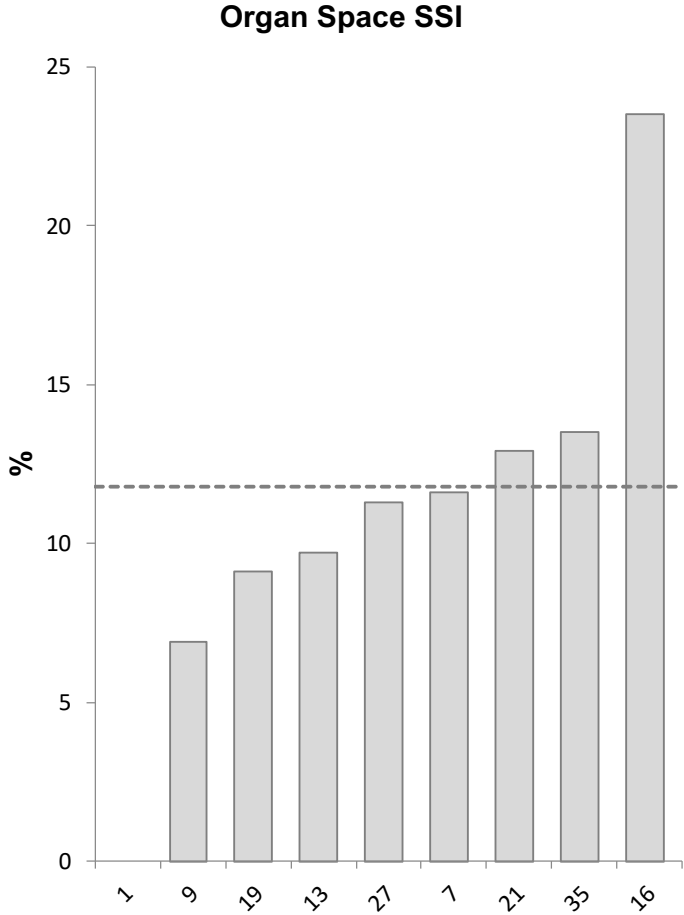
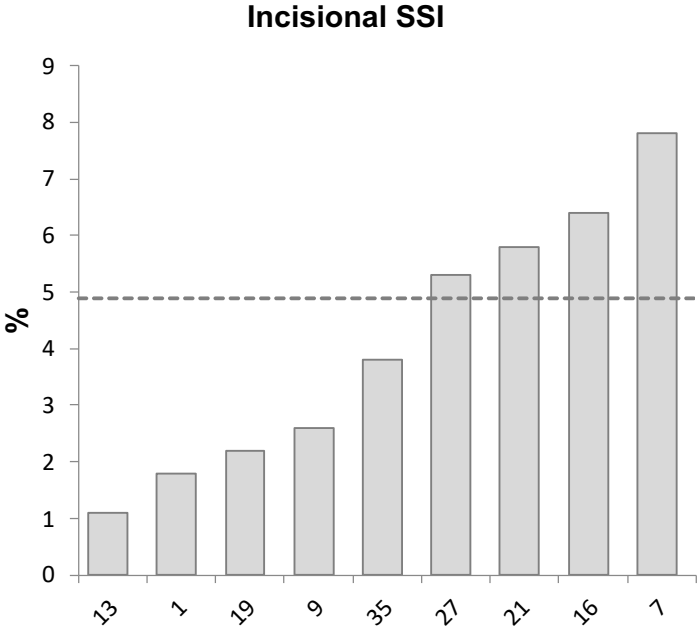
Emergency Ex. Lap – Outcomes

	N	%
Any Complication	527	57.5
Incisional SSI	45	4.9
Organ space SSI	108	11.8
Sepsis or severe sepsis	169	18.4
Anastomotic leak	22	2.4
Wound disruption	17	1.9
Enterocutaneous fistula	7	0.8
Ileus	106	11.6
C. difficile colitis	21	2.3
VTE	27	2.9
Pneumonia	62	6.8
Cardiac arrest	29	3.2
Post-discharge ED visit	126	13.8
Readmission	183	20.0
Mortality	147	16.0

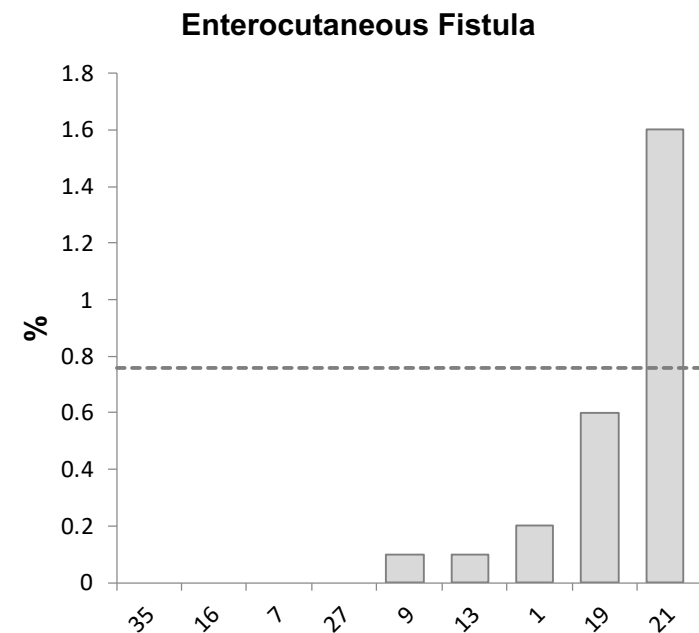
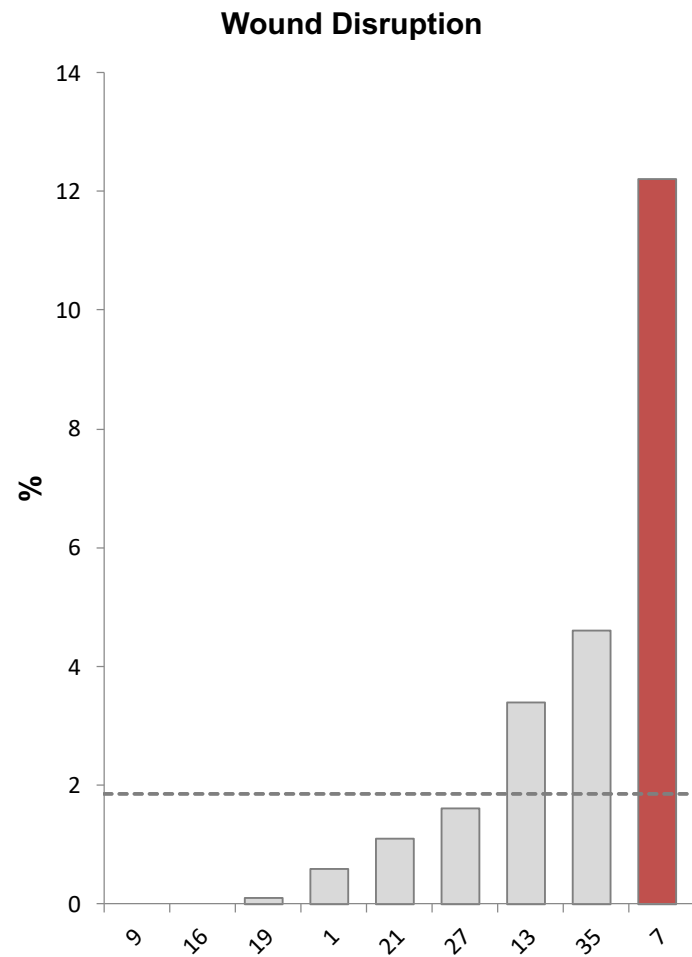
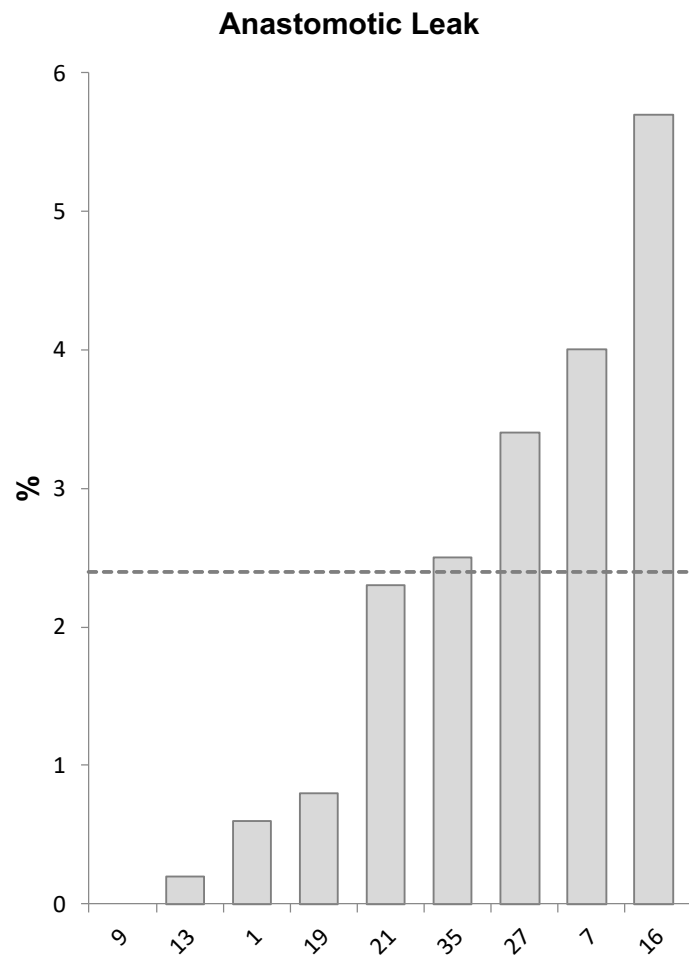
Risk-Adjusted Outcomes



Risk-Adjusted Outcomes

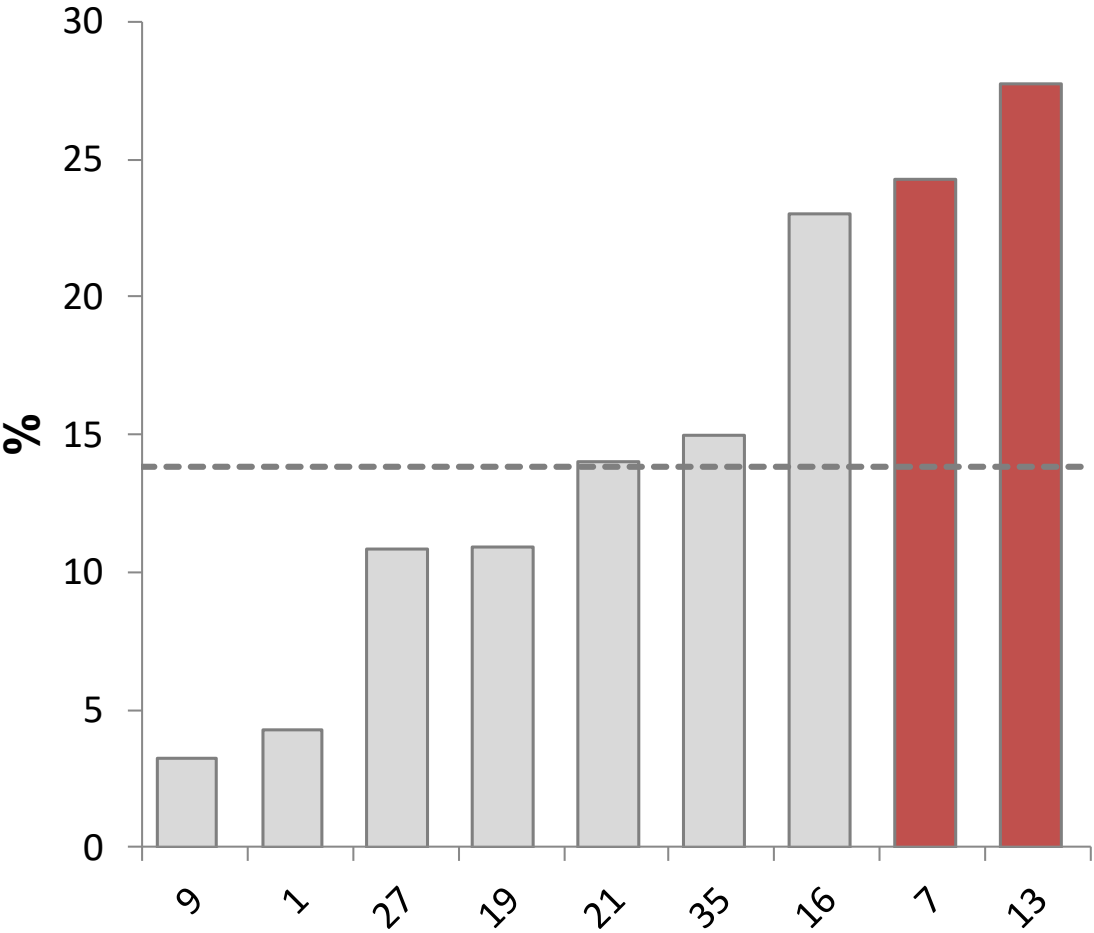


Risk-Adjusted Outcomes

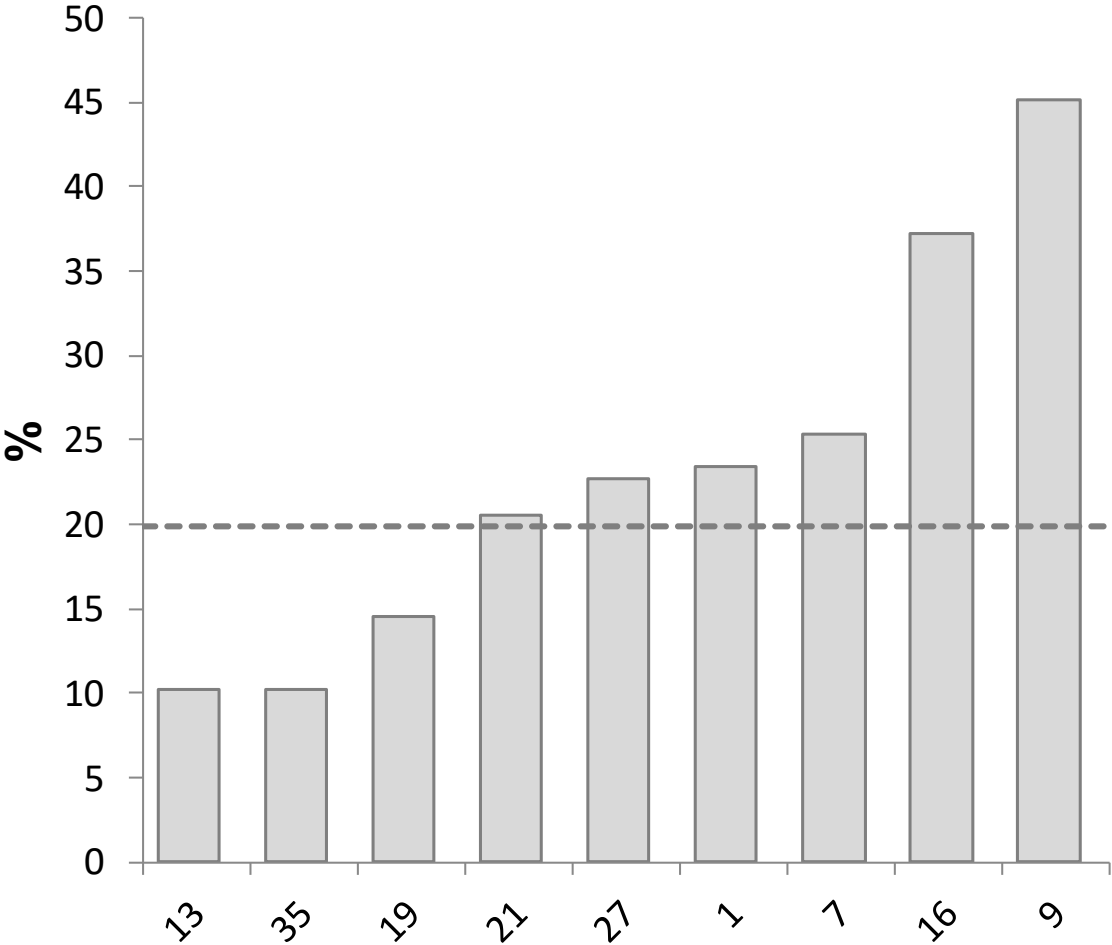


Risk-Adjusted Outcomes

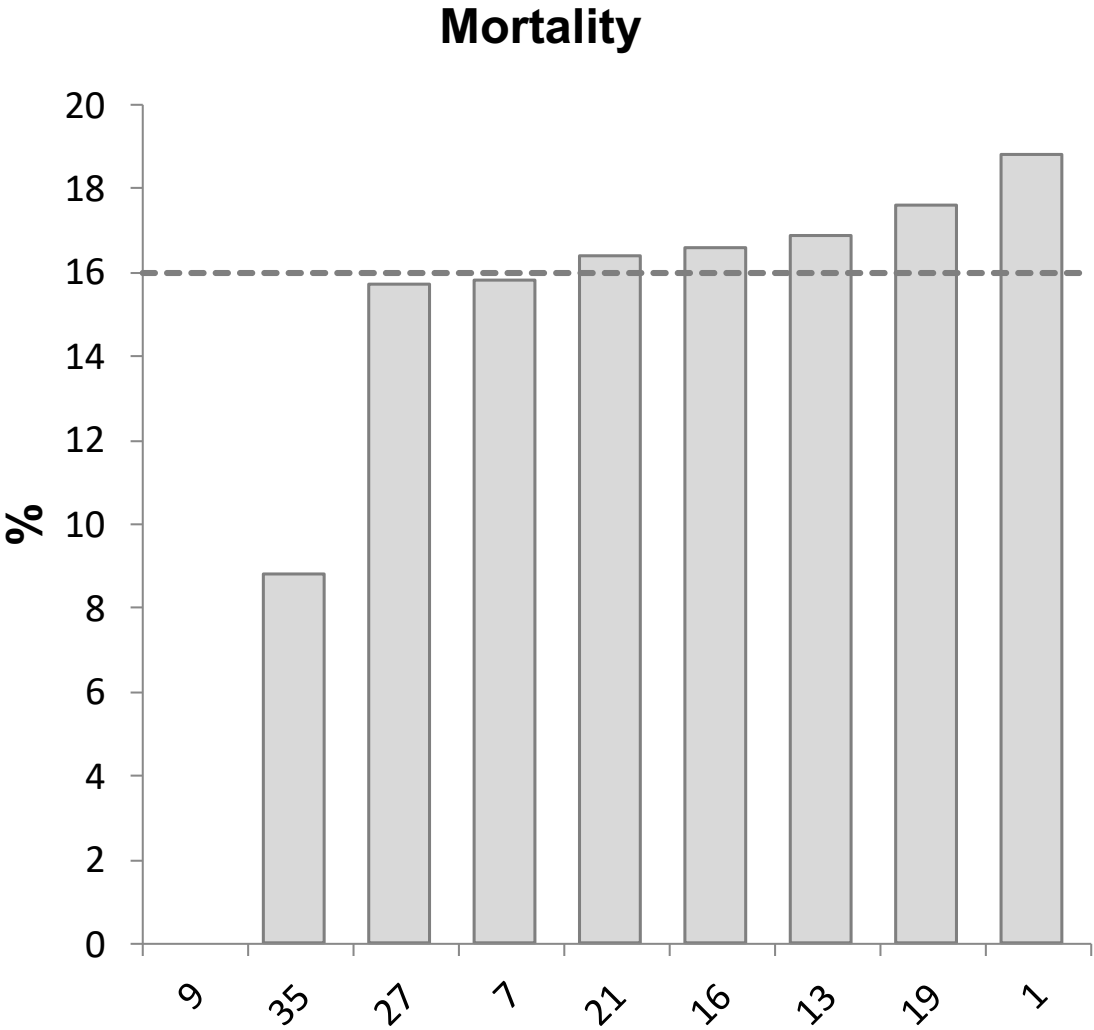
Post-discharge ED Visit



Readmission

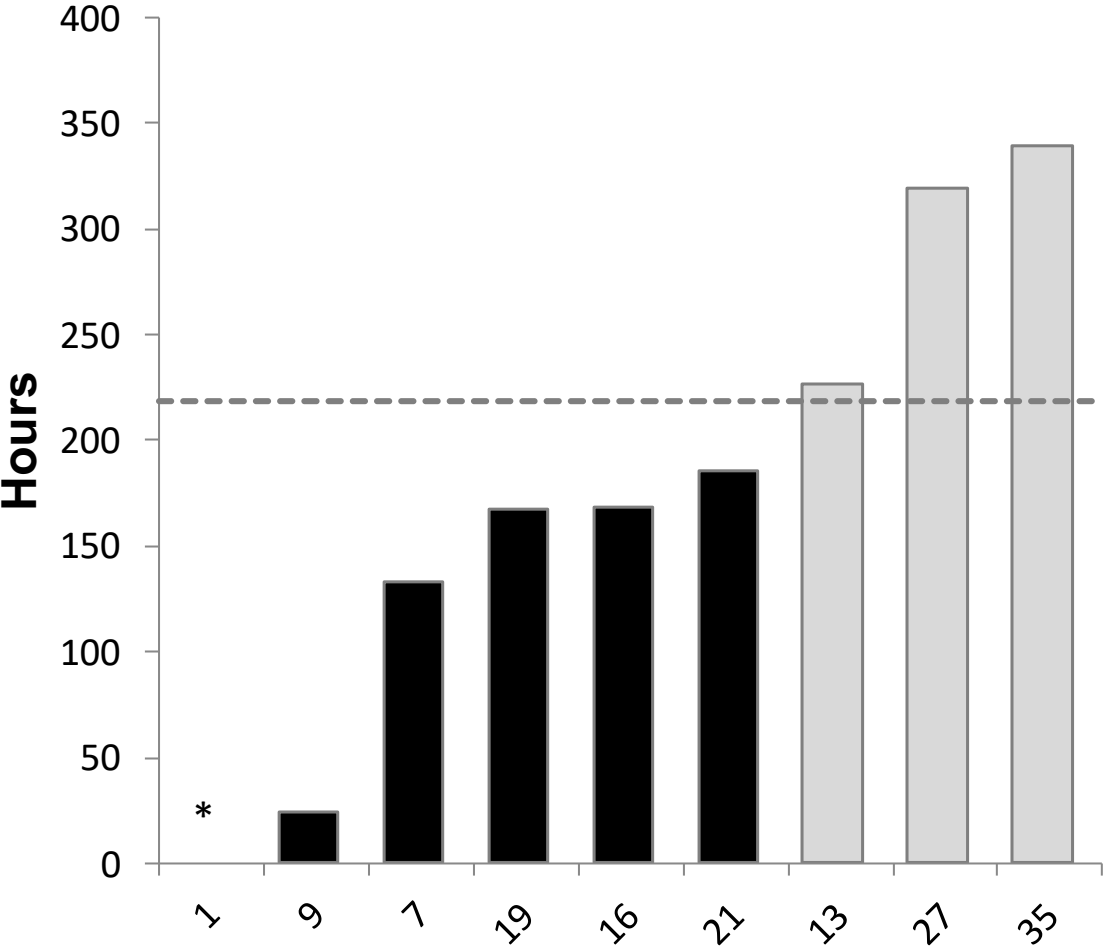


Risk-Adjusted Outcomes

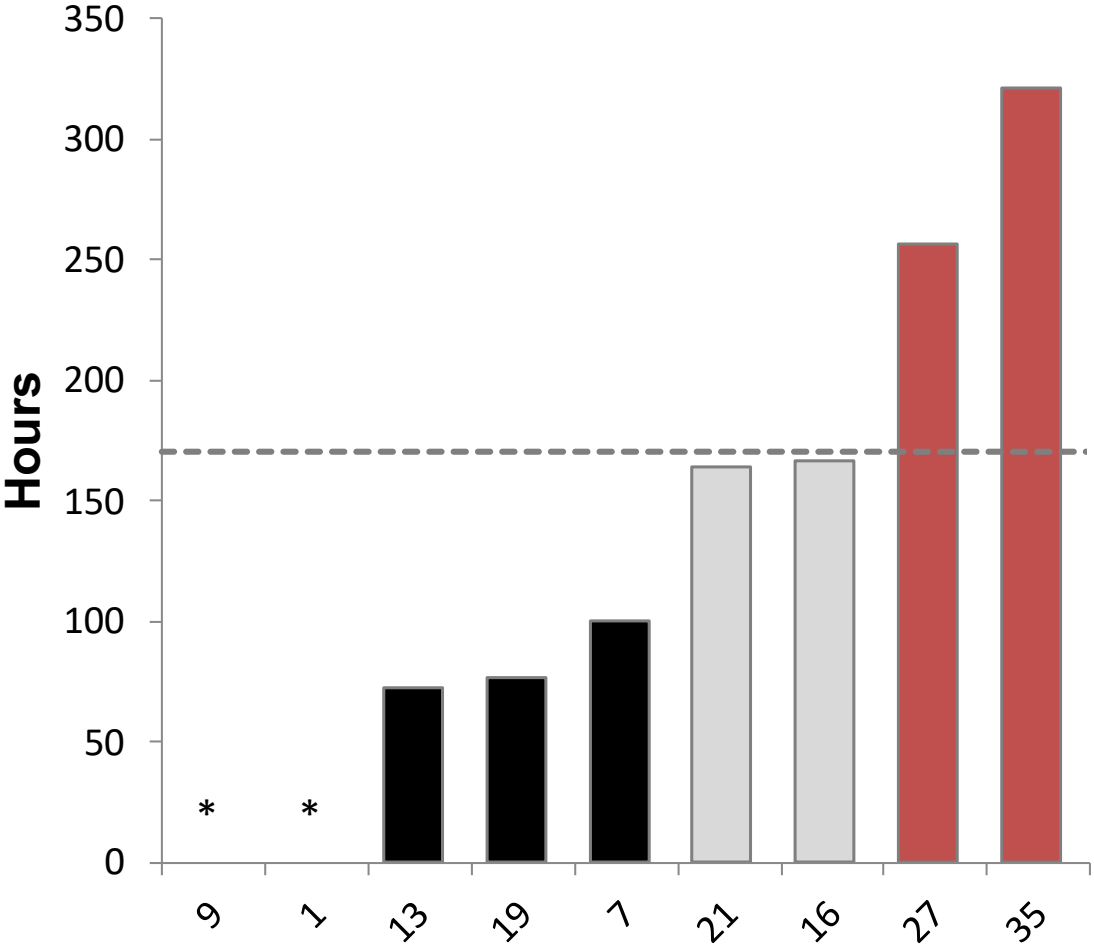


Risk-Adjusted Outcomes

Hospital Length of Stay



ICU Length of Stay



Care Bundle - Time to OR

center	N	p50	p25	p75	mean	sd
9	4	27.2	4.166667	81.66667	42.91667	52.6371
1	5	13.93333	12.43333	22.2	18.13333	13.82468
13	28	9.133333	4.333333	66.15	69.15595	112.333
35	45	19.26667	7	57	53.13852	76.93359
16	17	18.33333	5.533333	33.86666	31.37843	36.82579
21	374	7.4	4.633333	31.53333	48.40606	142.2054
7	49	7.766667	5.533333	15.3	18.11905	28.42277
19	158	27.25	7.266667	67.96667	129.6169	722.1592
27	221	19.56667	8.033334	70	68.74751	119.3413
Total	901	11.5	5.866667	51.06667	66.35709	323.4114

Care Bundle - Time to Antibiotic

center		N	p50	p25	p75	mean	sd
9		2	10.41667	5	15.83333	10.41667	7.660323
1		4	5.966666	1.6	13.81667	7.708333	7.958288
13		29	3.733333	2	8.4	11.03448	14.67932
35		9	5.5	2.6	13.63333	24.5	50.37387
16		12	5.1	3.216667	18.35	32.83889	69.59083
21		328	5.166667	3	18.56667	41.95173	146.6703
7		44	3.983333	2.033333	8.35	9.587879	14.86523
19		48	19.2	3.333333	144.65	143.2347	368.8931
27		182	7.45	3.733333	22.06667	42.85092	100.2769
Total		658	5.566667	2.966667	21.1	45.35319	155.6099

Questions



Questions

Readmission and/or post-discharge ED visits

Evaluation and OR pathway

Calc NEWS2 score during consultation

NSQIP Risk Calc

Pathway - Resuscitation, IV abx, ICU, time to OR

Anastomotic leak, wound disruption, ec fistula

CQI Index and Future Directions

Mark Hemmila MD

CQI Index

- ◆ 2022
 - Attendance
 - Data Submission
 - Validation visit
- ◆ 2023
 - 1-2 Metrics

Appendix III. Hospital P4P Performance Index Measure Weighting

CQI Performance/Participation Weighting Schedule for Newly Established CQIs		
Year	Performance	Participation
1	0%	100%
2	20%	80%
3	30%	70%
4	45%	55%
5	60%	40%
6	70%	30%

CQI Performance/Participation Weighting Schedule for Newly Participating Sites in Established CQIs		
Year	Performance	Participation
1	0%	100%
2	20%	80%
3	70%(or aligned with most established cohort's performance)	30%

CQI Index

- ◆ 2022
 - Attendance
 - Data Submission
 - Validation visit
- ◆ 2023
 - 1-2 Metrics

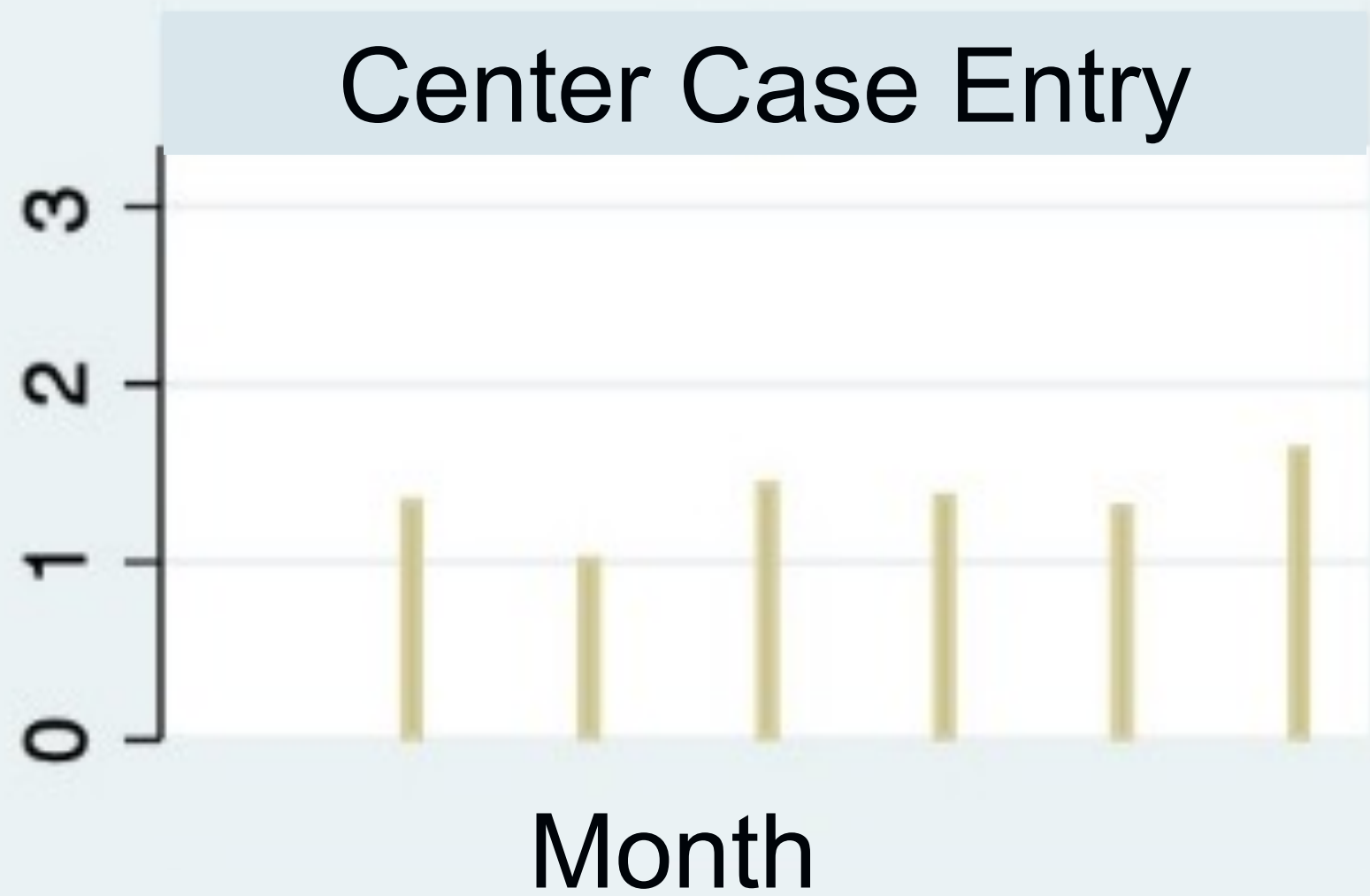
Michigan Acute Care Surgery (MACS) 2022 Performance Index January 1 to December 31, 2022				
Measure	Weight	Measure Description	Points	PARTICIPATION (100%)
#1	30	Data Submission		
		On time and complete 3 of 3 times	30	
		On time and complete 2 of 3 times	5	
		On time and complete 1 of 3 times	0	
#2	25	Meeting Participation-Surgeon		
		Participated in 3 of 3 meetings	25	
		Participated in 2 of 3 meetings	10	
		Participated in 1 of 3 meetings	5	
#3	25	Meeting Participation-Program Manager or Data Abstractor		
		Participated in 3 of 3 meetings	25	
		Participated in 2 of 3 meetings	10	
		Participated in 1 of 3 meetings	5	
#4	20	Data Validation		
		Completed	20	
		Not completed	0	
		Total (Max Points) =		

Additional Information

Measure 1: Data Submission: Partial/incomplete submissions receive no points. Complete data submission is defined as all cases submitted for the requested interval.

Measure 2: Meeting Participation: Surgeon represents one center only; alternate must be an attending level equivalent.

Density Plot



QI Homework

- ◆ Key Literature
 - e.g., CODA trial
 - Suggest articles
- ◆ Data validation
 - Feedback
- ◆ Data modifications
 - 2023
- ◆ Speakers/Topics
 - EGS Course
 - Gallbladder, SBO/Hernia, Abdominal Catastrophe



Feedback (mhemmila@umich.edu)

- ◆ Reports
 - Questions
 - Problems/Mistakes
 - Improvements
- ◆ CQI Index for 2022
- ◆ Evaluations of meetings/program 2022
- ◆ Speakers, Topics, Information

- ◆ See you in April

More than Tik Tok

Using Surgical Videos for Quality Improvement

Oliver Varban, MD, FACS, FASMBS
Associate Professor of Surgery
Co-Director, Adult Bariatric Surgery Program
Interim Chief, Division of Minimally Invasive Surgery
University of Michigan



Disclosures

“I receive salary support from Blue Cross Blue Shield of Michigan for leadership and participation in quality initiatives throughout the Michigan Bariatric Surgery Collaborative.”



MICHIGAN BARIATRIC SURGERY COLLABORATIVE

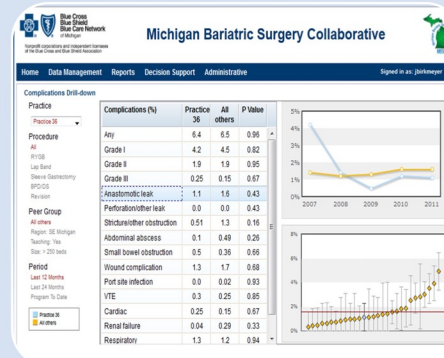
Advancing the Science and Practice of Bariatric Surgery

The Michigan Bariatric Surgery Collaborative is a regional group of hospitals and surgeons that perform bariatric surgery in Michigan. Formed in 2005, MBSC aims to innovate the science and practice of metabolic and bariatric surgery through comprehensive, lifelong, patient-centered obesity care-in Michigan and across the United States.



<https://www.mbscsurgery.org>

Michigan Bariatric Surgery Collaborative



Participants

- All ~40 hospitals
- All ~80 surgeons

Clinical Registry

- All bariatric patients (~7500/year)
- Regular performance feedback

Meetings

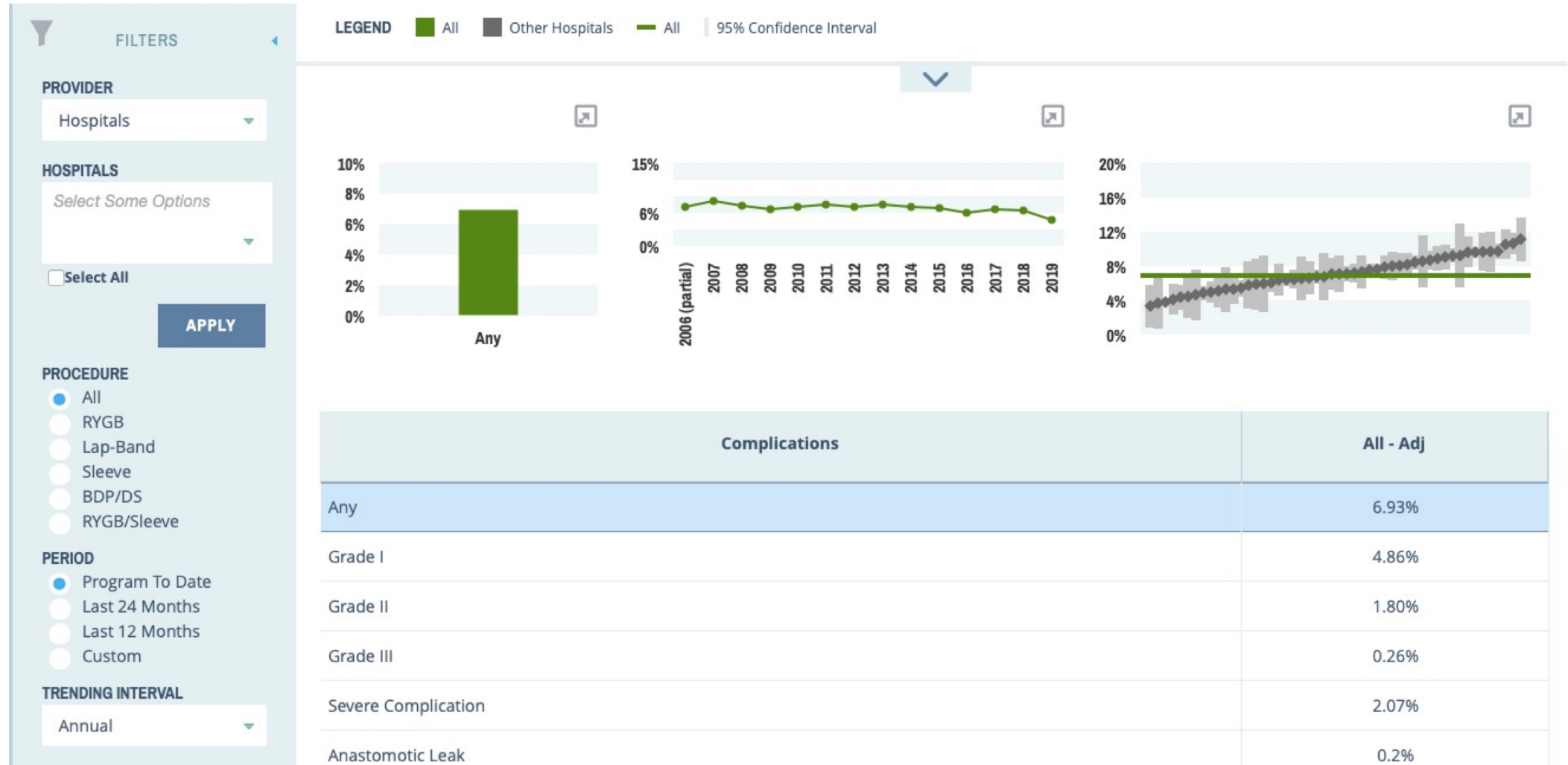
- 3 x year
- Plan/implement improvements

Started in 2006
Data Registry > 100K

Data Collected

Component	Data Sources/Timing	Content
Peri-operative care and outcomes	Chart review for all patients at 30 days post-op	Risk factors, treatment details, complications
Late outcomes	Baseline and annual surveys to all consenting patients	Late complications, weight loss, comorbidity resolution, quality of life
Structure and process of care	Annual survey of surgeons and other bariatric program staff	Specifics of bariatric practice, OR environment, patient safety culture
Subjective aspects of quality	Site visit	Observed structure and process specifics
Cost	BCBSM claims	Payments for facility, professional, ancillary care

Data Dashboard





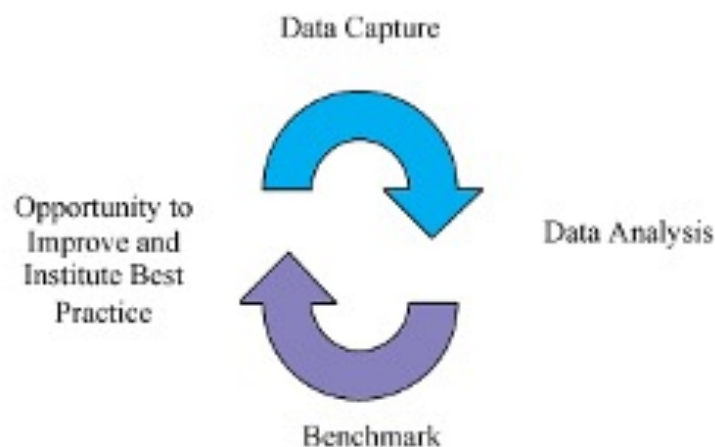
Tri-Annual Meetings



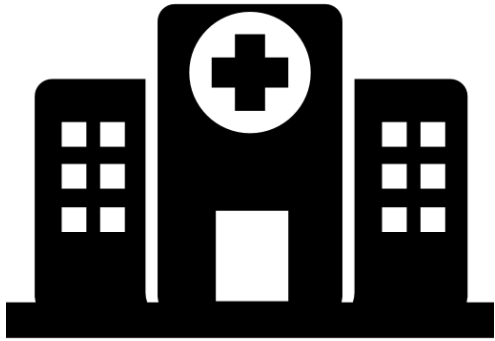
Collaborative Quality Improvement (CQI)

Use data registry to:

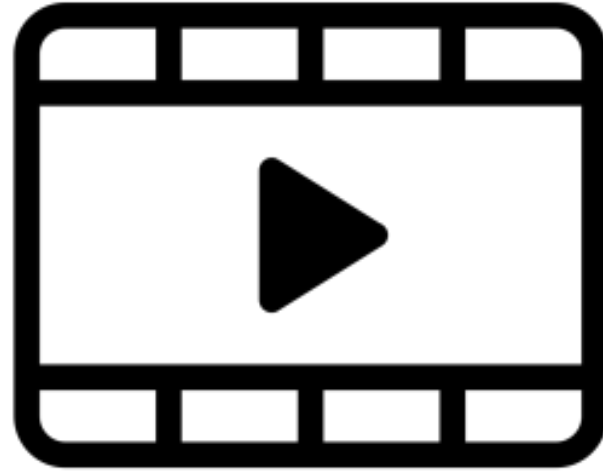
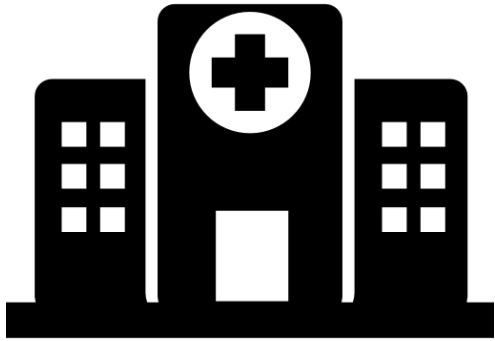
- Understand variation
- Learn from top performers
- Implement and track change













Which surgeon is more skilled?

Does skill have an impact on outcomes?

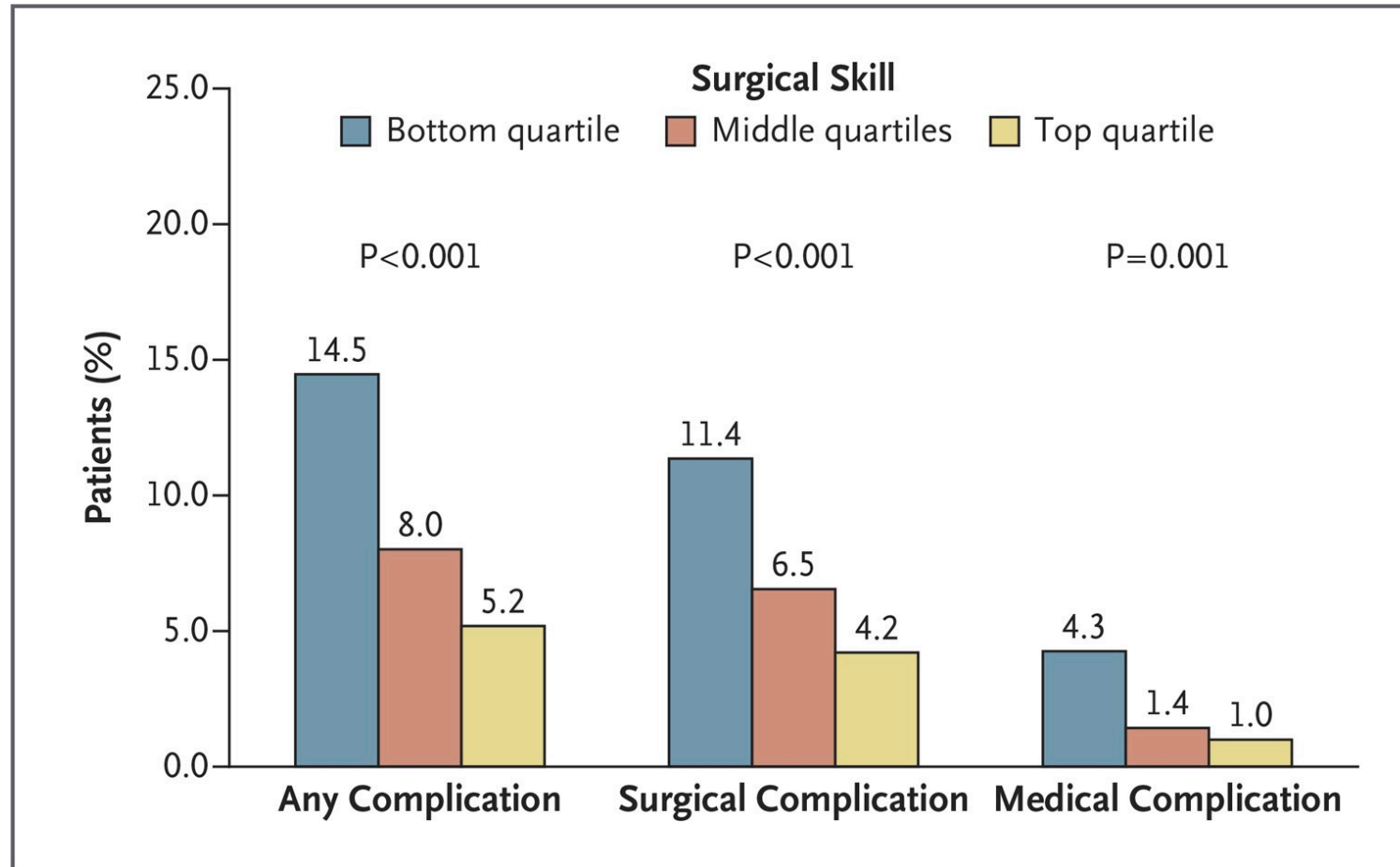
The NEW ENGLAND JOURNAL *of* MEDICINE

SPECIAL ARTICLE

Surgical Skill and Complication Rates after Bariatric Surgery

John D. Birkmeyer, M.D., Jonathan F. Finks, M.D., Amanda O'Reilly, R.N., M.S.,
Mary Oerline, M.S., Arthur M. Carlin, M.D., Andre R. Nunn, M.D.,
Justin Dimick, M.D., M.P.H., Mousumi Banerjee, Ph.D.,
and Nancy J.O. Birkmeyer, Ph.D., for the Michigan Bariatric Surgery Collaborative

Variable	Level of Surgical Skill			P Value
	Quartile 1	Quartile 2 or 3	Quartile 4	
Surgeons (no.)	5	10	5	
Mean peer rating of technical skill*				
Gentleness	3.3	3.9	4.4	
Time and motion	2.6	3.4	4.3	
Instrument handling	2.9	3.7	4.4	
Flow of operation	3.1	3.8	4.5	
Tissue exposure	3.0	3.9	4.4	
Overall technical skill	2.7	3.6	4.4	
Summary rating	2.9	3.7	4.4	



Video Analysis



Skill

Video Analysis



Technique

Technology

Skill

Video Submissions

- **Any format**
- **No patient identifiers**
- Submit **any case** you like
- You can bring submissions to the **MBSC quarterly meetings**
- Include the **technique guide**



Surgeon Technique

Please use the following form to describe your surgical technique.

Pre-Staple

Number of ports placed [?]

5

Who is the first assist?

Nurse Practitioner / Physi

Size of dilator (Fr) used [?]

34

Staple

Stapler Vendor

Ethicon

Staple height closest to the pylorus

Black

Staple height closest to the GE junction

Tan

Post Staple

Staple line management (check all that apply)

- ☒ Buttrressing
- ☒ Fibrin Sealant
- ☐ Oversewing (staple line visble)
- ☐ Imbricating (staple line is not visible)
- ☐ Omentoplasty
- ☐ None

Type of buttressing material (if yes)

Seamguard

Leak Test

No

Drain placed

No

Hiatal Hernia

Hiatal hernia repaired

Yes

Type of hiatal hernia repair (check all that apply)

- ☐ Anterior Repair
- ☒ Posterior Repair
- ☐ Use of mesh

Interested in being coached?

Yes

# of Ports	Bougie Size	Stapler Vender Ethicon	Stapler Loads						Oversewing	Imbricating	Omentoplasty	Fibrin Sealant
			(Pylorus)					(GE Junction)				
5	40	Covidien							X	✓	✓	X
5	34	Covidien							X	X	X	X
5	36	Ethicon							✓	X	X	X
5	34	Ethicon							✓	X	✓	✓
6	36	Ethicon							X	X	X	✓
6	34	Covidien							X	X	✓	X
5	34	Ethicon							X	X	✓	X
6	36	Covidien							X	X	X	X
5	36	Covidien							X	X	X	X
4	32	Covidien							X	✓	X	X
5	40	Ethicon							✓	X	✓	✓
4	36	Covidien							X	✓	X	✓
5	42	Ethicon							X	X	X	✓
6	34	Ethicon							X	X	✓	X
5	34	Ethicon							X	X	X	✓
6	36	Covidien							X	X	X	✓
6	36	Ethicon							✓	X	X	✓
5	36	Covidien							X	✓	✓	✓
5	34	Covidien							X	X	✓	X
6	36	Ethicon							X	X	X	X
5	34	Covidien							X	X	X	X
6	36	Ethicon							X	X	X	X
5	34	Covidien							X	✓	X	X
5	34	Ethicon							X	X	✓	X
5	34	Ethicon							X	X	✓	X
3	36	Covidien							X	✓	✓	✓
5	36	Covidien							X	X	X	X
5	40	Ethicon							X	X	✓	X

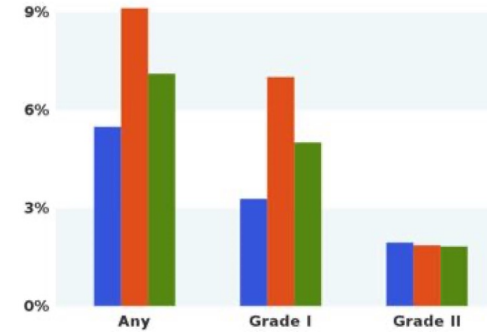
Sleeve Video QI Initiative



**Operative
Technique
+
Surgical Skill**



**48 Videos
> 500 Reviews**



**Surgeon-Specific
Outcomes**



Sleeve Gastrectomy Top Performers



Complications Rates

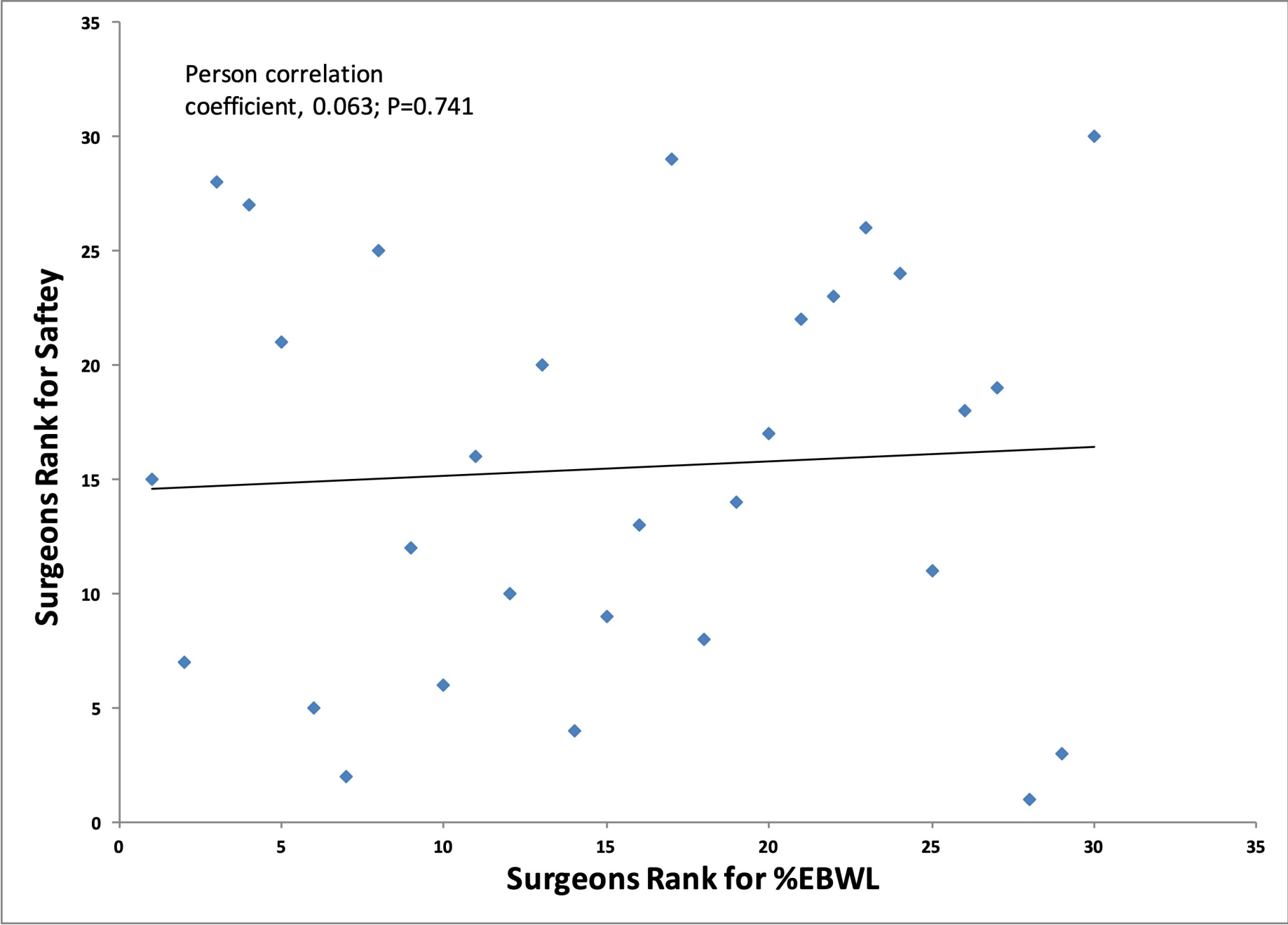
(0-4.3%)

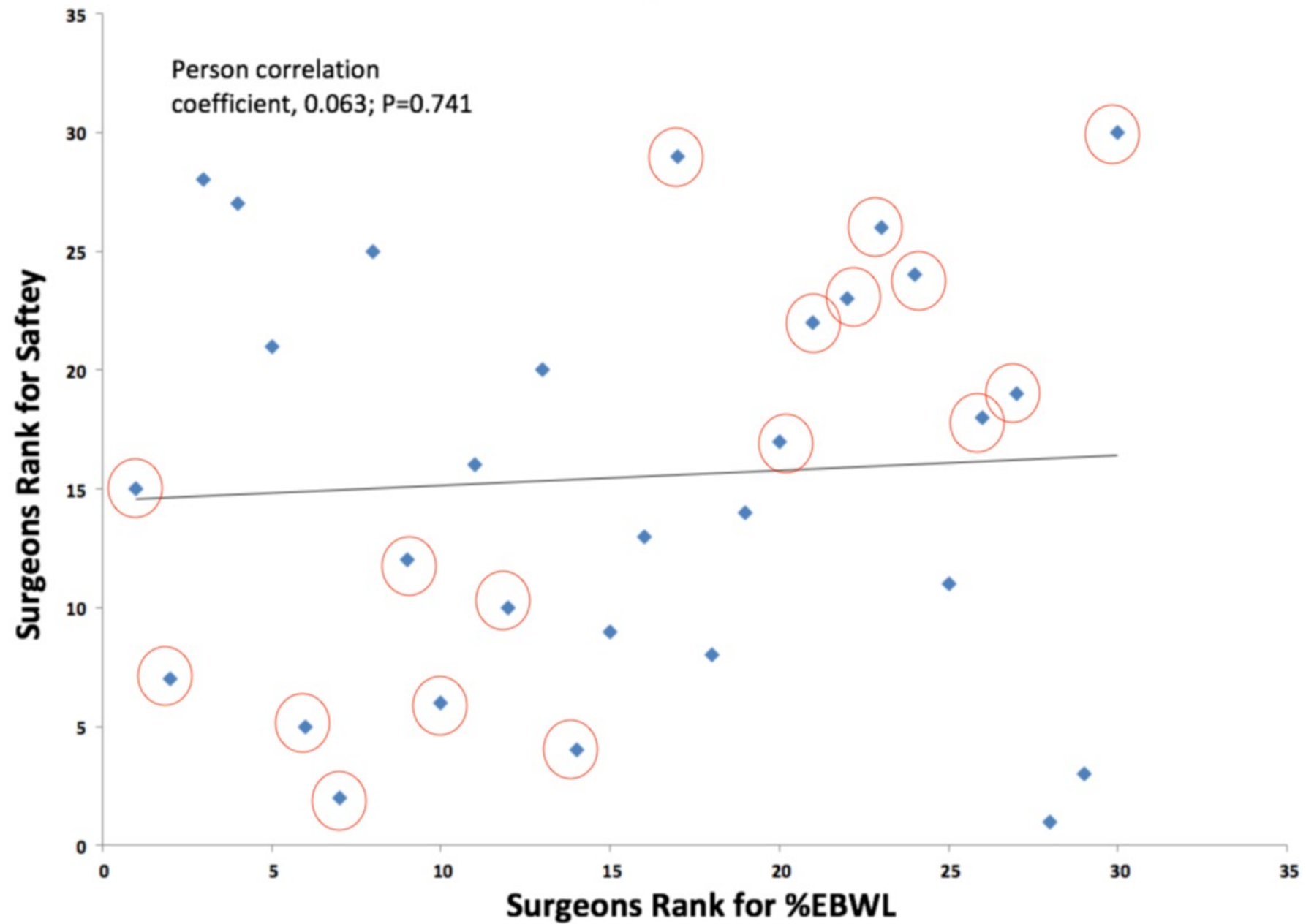
- Surgical Complications <1%
- Leak rate 0.16%
- Hemorrhage 0.42%
- Infection 0.22%
- Obstruction 0%
- Reoperation 0.21%

Weight Loss

(EBWL: 45.3-65.3%)

Mean EBWL 63%





> [Surg Endosc](#). 2019 Mar;33(3):895-903. doi: 10.1007/s00464-018-6382-y. Epub 2018 Aug 15.

Assessing variation in technique for sleeve gastrectomy based on outcomes of surgeons ranked by safety and efficacy: a video-based study

Oliver A Varban^{1 2}, Jyothi R Thumma³, Jonathan F Finks^{4 3}, Arthur M Carlin⁵,
Paul R Kemmeter⁶, Amir A Ghaferi^{4 3}, Justin B Dimick^{4 3}

n=30 surgeons
Surgeons ranked in the top quartile
Top Ranked Safety and Efficacy
(65min vs 69min, $p<0.0001$)

Highest leak rate
Buttressing (85.7% vs 40.0%, $p=0.032$)

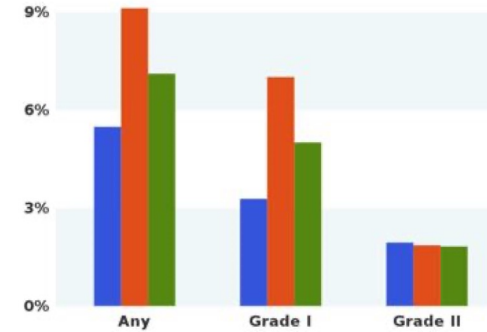
Sleeve Video QI Initiative



**Operative
Technique
+
Surgical Skill**



**48 Videos
> 500 Reviews**



**Surgeon-Specific
Outcomes**

Video Review List // Video Review Details

Details

Surgeon Technique

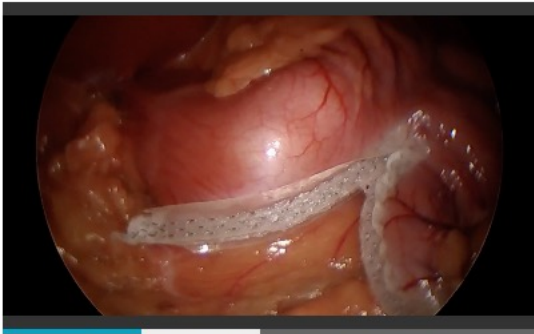
Pre-Staple

Staple

Post - Staple

Hiatal Hernia Repair

Global



COMMENTS:

Generally very nice job. I would not remove esophagogastric fat pad; I just staple through it.

nice sleeve - lots of buttress material - not wrong, but not my preference

despite the ruler, i think the distance from the pylorus was about 5cm and a bit far. i like to get closer to 3cm from the pylorus so as not to leave too much antrum.

Maybe start a little further from the pylorus

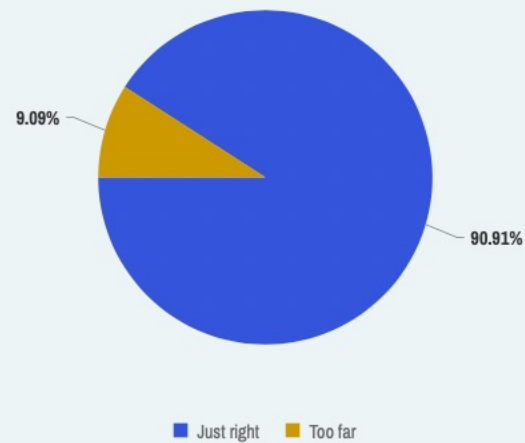
Just a tad further from GE junction

Question:

How close is the staple line to the incisura? ▾

You Answered:

Just right



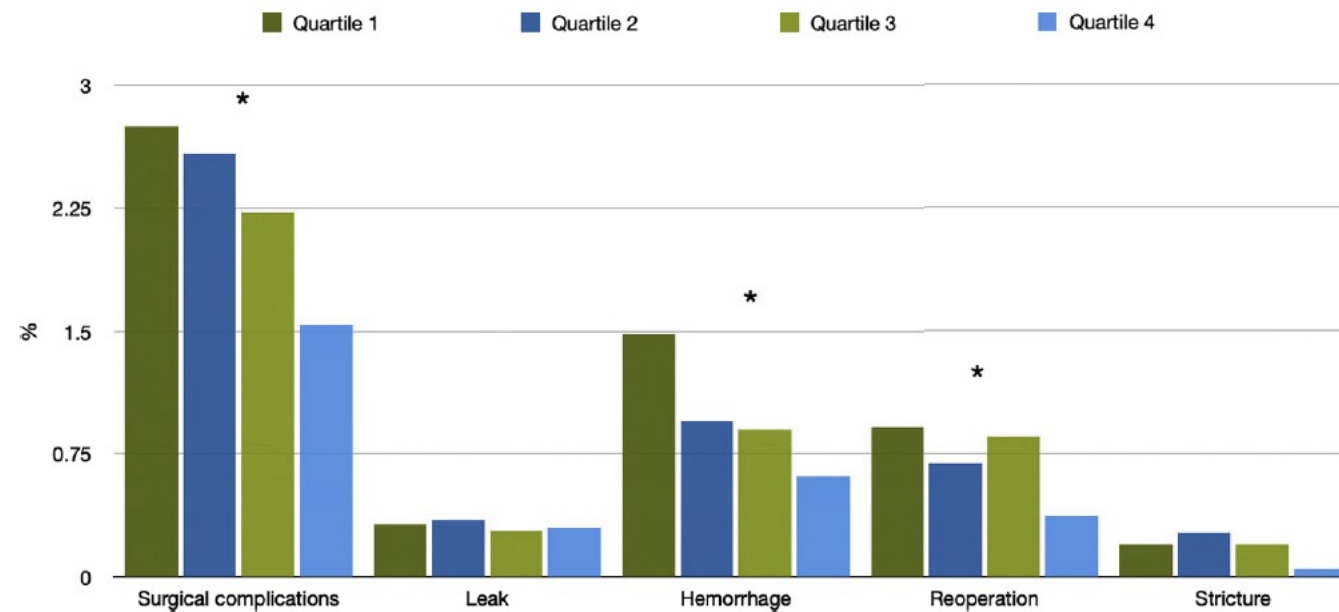
- Assessing perceptions of what is “**right**”
- Mobilization of fundus
- Identification of hiatal hernia and repair
- Location of stapling (pylorus/GE jxn)
- Retraction during stapling
- Sleeve width
- Spiral effect
- Hemostasis
 - 30 videos
 - >10 peer reviews



Optimal Sleeve Gastrectomy Score:
49.1% - 82.9%

Peer Assessment of Operative Videos with Sleeve Gastrectomy to Determine Optimal Operative Technique

Oliver A Varban¹, Jyothi R Thumma², Arthur M Carlin³, Jonathan F Finks⁴, Amir A Ghaferi⁵, Justin B Dimick⁵



Median bougie size: 34 Fr
Location of staple line:
5cm from pylorus
2.25 cm from GE junction

Video Analysis



Technique

Technology

Skill

Video Analysis



Intra-operative
Decision Making

Technique

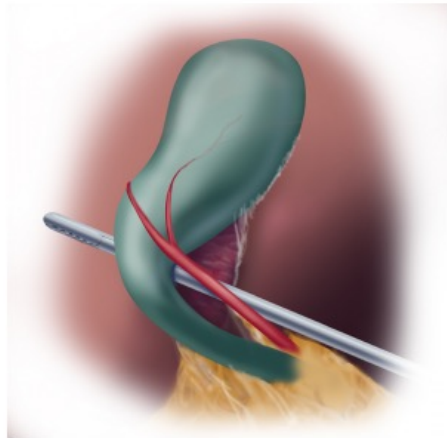
Technology

Skill

Critical View of Safety

1. Use the Critical View of Safety (CVS) method of identification of the cystic duct and cystic artery during laparoscopic cholecystectomy.⁷

- Three criteria are required to achieve the CVS:
 1. **The hepatocystic triangle is cleared of fat and fibrous tissue.** The hepatocystic triangle is defined as the triangle formed by the cystic duct, the common hepatic duct, and inferior edge of the liver. The common bile duct and common hepatic duct do *not* have to be exposed.
 2. **The lower one third of the gallbladder is separated from the liver to expose the cystic plate.** The cystic plate is also known as liver bed of the gallbladder and lies in the gallbladder fossa.
 3. **Two and only two structures should be seen entering the gallbladder.**



Critical view of safety anterior view



Critical view of safety posterior view

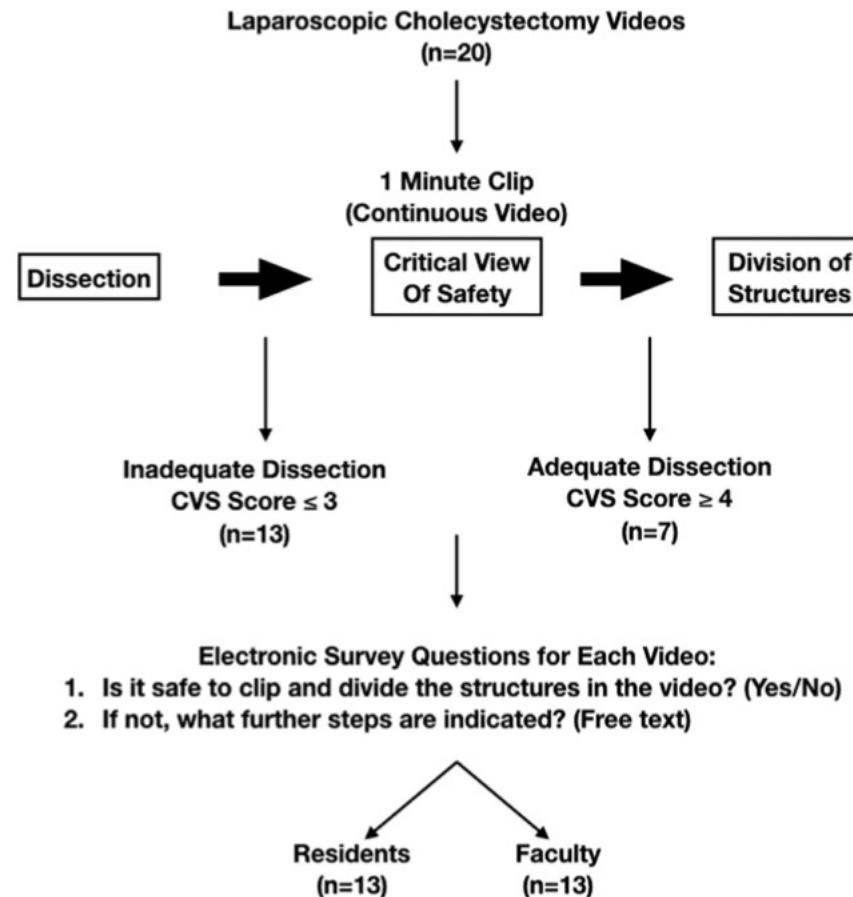
Critical View of Safety Score

Criteria	0 points	1 point	2 points
1. Two structures connected to the gallbladder	Unable to identify 2 structures or only 1 structure is seen	2 structures connected by some overlap	2 structures clearly seen connected to gallbladder
2. Cystic plate clearance	Not visible	Visible but overlapped by structures or not clearly shown	Bottom 1/3 of gallbladder is clearly demonstrated and cystic plate is shown
3. Hepatocystic triangle clearance	Tissue in triangle obscures view of structures	Some obscurement of triangle	Hepatocystic triangle cleared of all tissue except the cystic duct and cystic artery

The 6-point CVS Assessment Tool [10]. Minimum score: 0, Maximum score: 6. A score ≥ 5 is considered a satisfactory Critical View of Safety

Cut or Do Not Cut? Assessing Perceptions of Safety During Laparoscopic Cholecystectomy Using Surgical Videos

Benjamin D Carr¹, Niki Matusko², Gurjit Sandhu², Oliver A Varban²



Cut or Do Not Cut? Assessing Perceptions of Safety During Laparoscopic Cholecystectomy Using Surgical Videos

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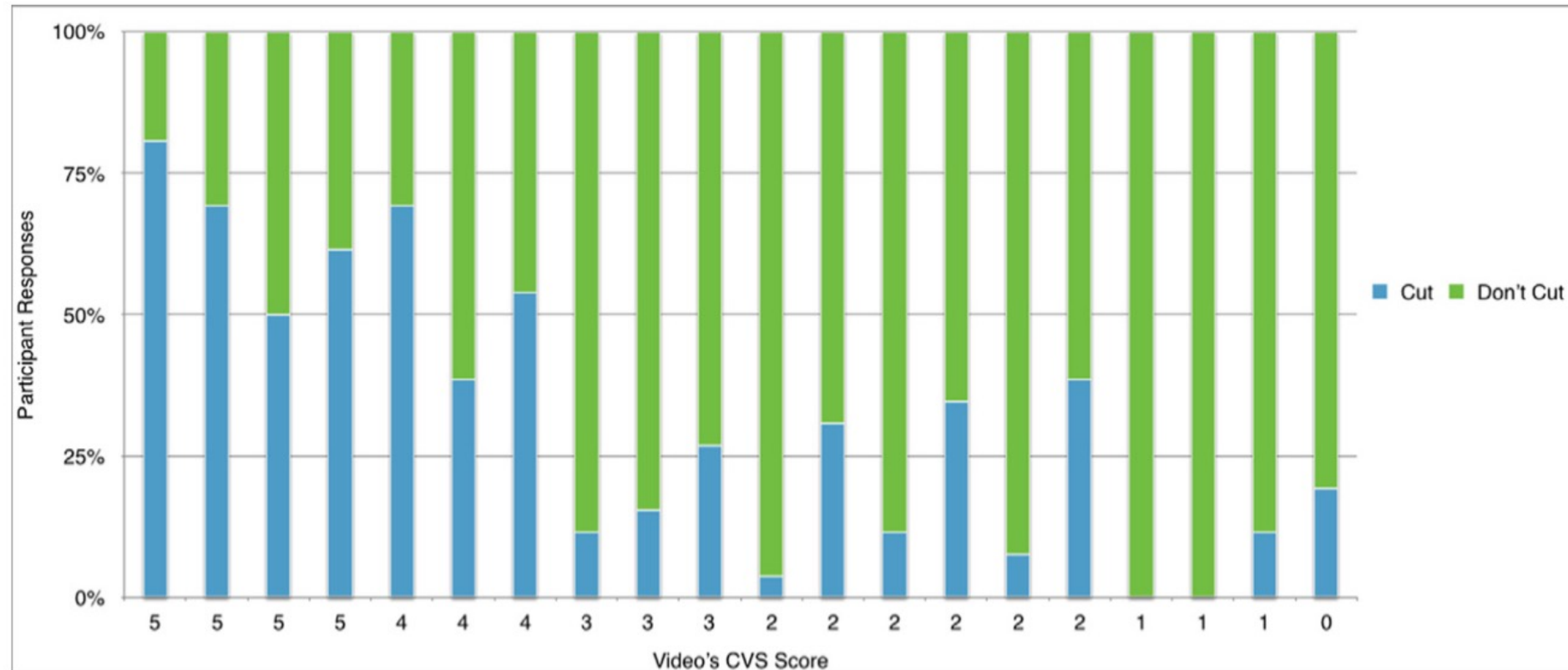


TABLE 3. Comparison of Resident and Faculty Responses of Decision to Divide Critical Structures After Video Review of Adequate and Inadequate CVS Dissection

	Adequate CVS Dissection	Inadequate CVS Dissection	p
Cut			
- Overall	60.4%	16.3%	0.0433*
- Faculty	62.6%	14.2%	0.0258*
- Residents	58.2%	18.3%	0.0687
Do not cut			
- Overall	39.6%	83.7%	0.0433*
- Faculty	37.4%	85.8%	0.0298*
- Residents	41.8%	81.7%	0.0760
	Faculty	Residents	p
All videos			
- Cut	31.2%	32.3%	0.9529
- Do not cut	68.8%	67.7%	
Adequate CVS dissection			
- Cut	62.6%	58.2%	0.8220
- Do not cut	37.4%	41.8%	
Inadequate CVS dissection			
- Cut	14.2%	18.3%	0.7811
- Do not cut	85.8%	81.7%	

*denotes statistical significance.

TABLE 4. Comparison of Additional Steps Recommended by Residents and Faculty Among Cases in Which the Decision Was Not to Divide Critical Structures

Answer	Resident	Faculty	p
1. More dissection of the hepatocystic triangle	30.0%	31.5%	0.71
2. More dissection of lower 1 /3 of gallbladder from cystic plate	14.2%	12.7%	0.62
3. Provide an alternative camera angle to verify safety (doublet view)	12.3%	10.8%	0.59
4. More dissection to identify only 2 structures entering the gallbladder	8.8%	9.2%	0.87
5. Perform a cholangiogram	0.8%	1.9%	0.28



Evaluating the Impact of Surgeon Self-Awareness by Comparing Self vs Peer Ratings of Surgical Skill and Outcomes for Bariatric Surgery

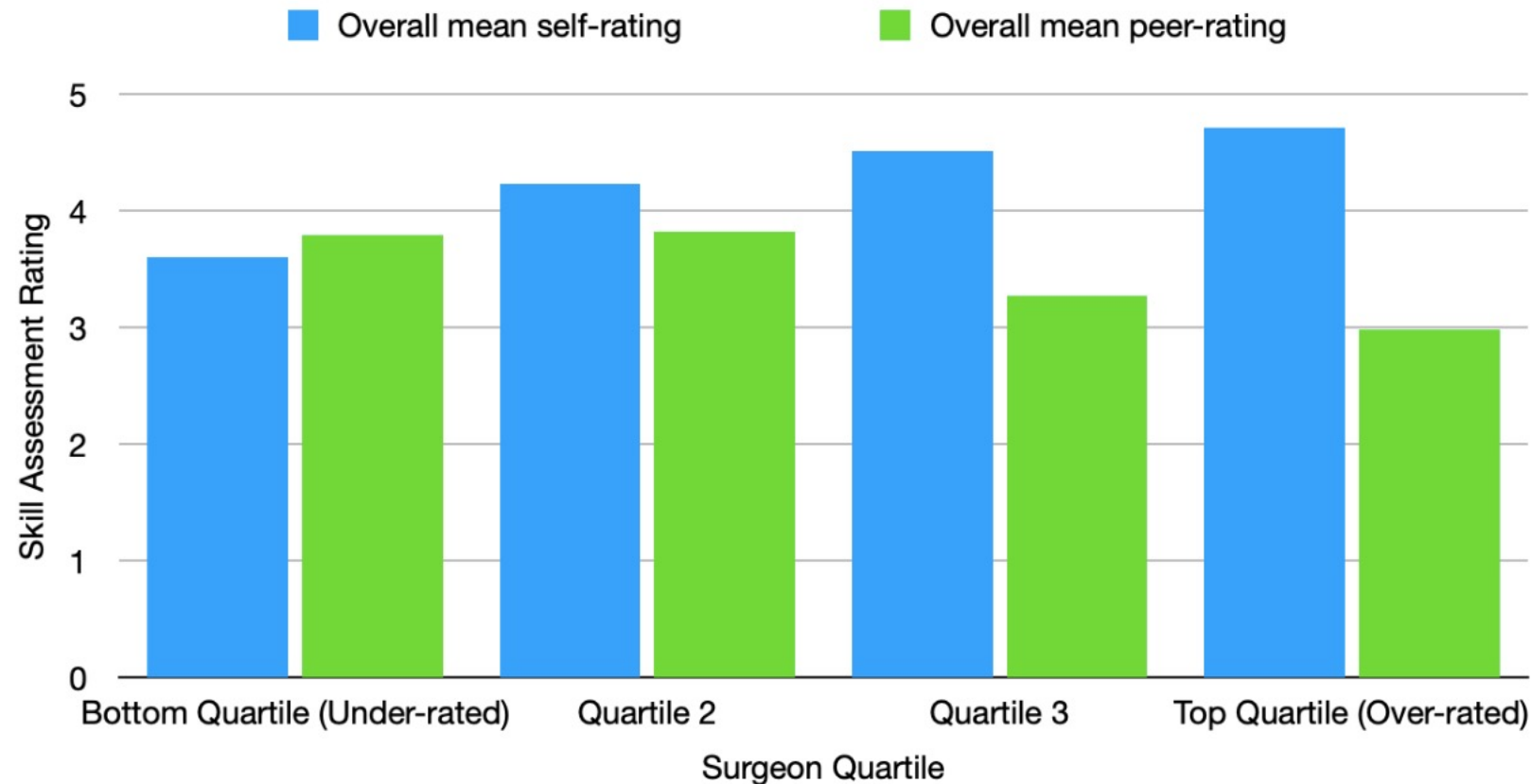
Oliver A Varban¹, Jyothi R Thumma², Arthur M Carlin³, Amir A Ghaferi^{1 2}, Justin B Dimick^{1 2}, Jonathan F Finks¹

CATEGORY	REVIEWER												OVERALL
Respect for tissue	3	4	4	4	4	3	3	5	4	4	4	5	4
Time and motion	4	1	4	3	3	3	2	4	2	4	1	4	2.82
Instrument handling	4	1	4	4	5	3	2	4	3	4	2	5	3.36
Use of assistants	4	2	4	4	3	3	2	4	3	3	2	4	3.09
Flow of operation	4	2	4	4	4	3	2	4	3	4	2	5	3.36
Exposure	4	3	4	3	4	3	3	3	3	4	1	4	3.18
Difficulty of the case	2	1	3	1	1	2	2	1	1	1	2	3	1.64

*Your answers are not included in the Overall results.

Evaluating the Impact of Surgeon Self-Awareness by Comparing Self vs Peer Ratings of Surgical Skill and Outcomes for Bariatric Surgery

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Justin B Dimick^{1 2}, Jonathan F Finks¹

n=25 Surgeons

Overall Self-rating of skill: 2.5-5

Surgeon who over-rated themselves:

Mean peer score: 2.98

Surgeons who under-rated themselves:

Mean peer score: 3.79

No difference in complications with sleeve

Higher leak rates with gastric bypass

Video Analysis



Intra-operative
Decision Making

Technique

Technology

Skill

Video Analysis



Sharing Best
Practices



Intra-operative
Decision Making



Technique



Technology



Skill





Sleeve Gastrectomy Top Performers



Complications Rates

(0-4.3%)

- Surgical Complications <1%
- Leak rate 0.16%
- Hemorrhage 0.42%
- Infection 0.22%
- Obstruction 0%
- Reoperation 0.21%

Weight Loss

(EBWL: 45.3-65.3%)

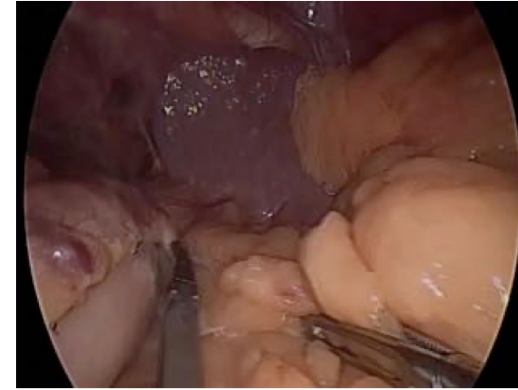
Mean EBWL 63%



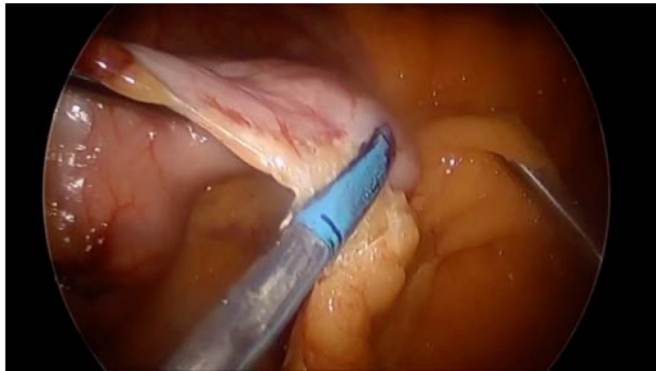
Top Performers (Complication Rates)



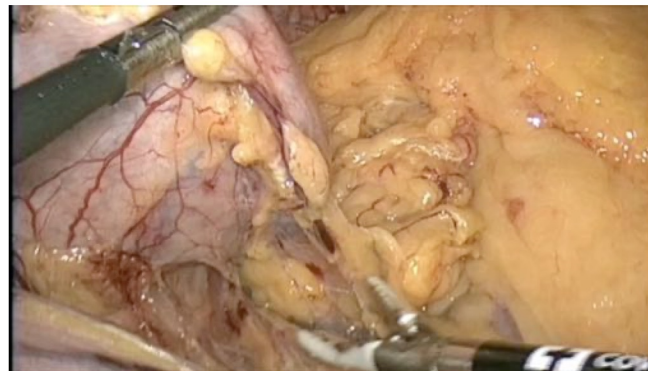
46



1

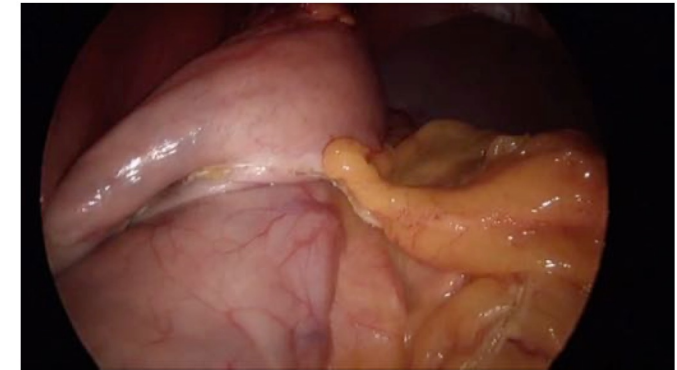


14



6

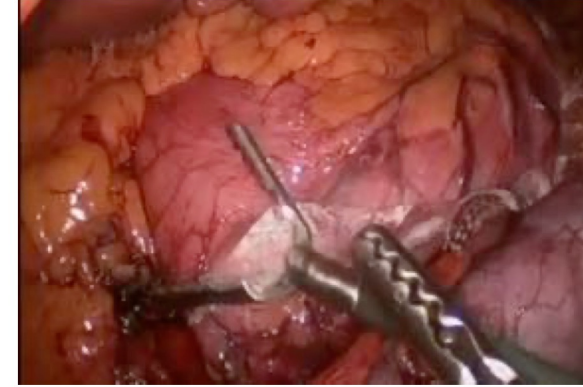
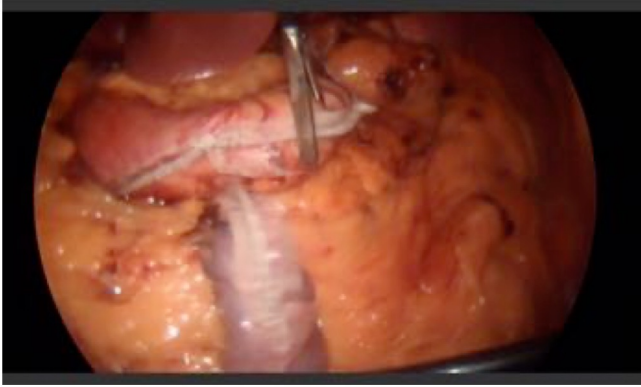
Video ID



53



Top Performers (Weight Loss)



58

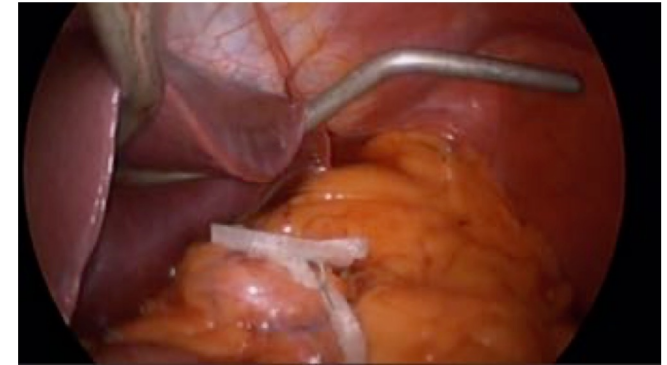
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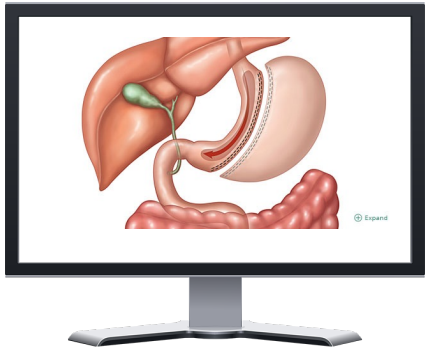
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Video ID

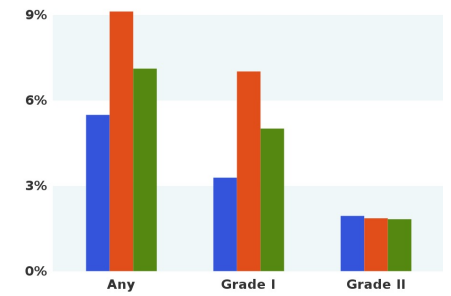
25



21



Video Feedback



[Video Review List](#) // Video Review Details



Details

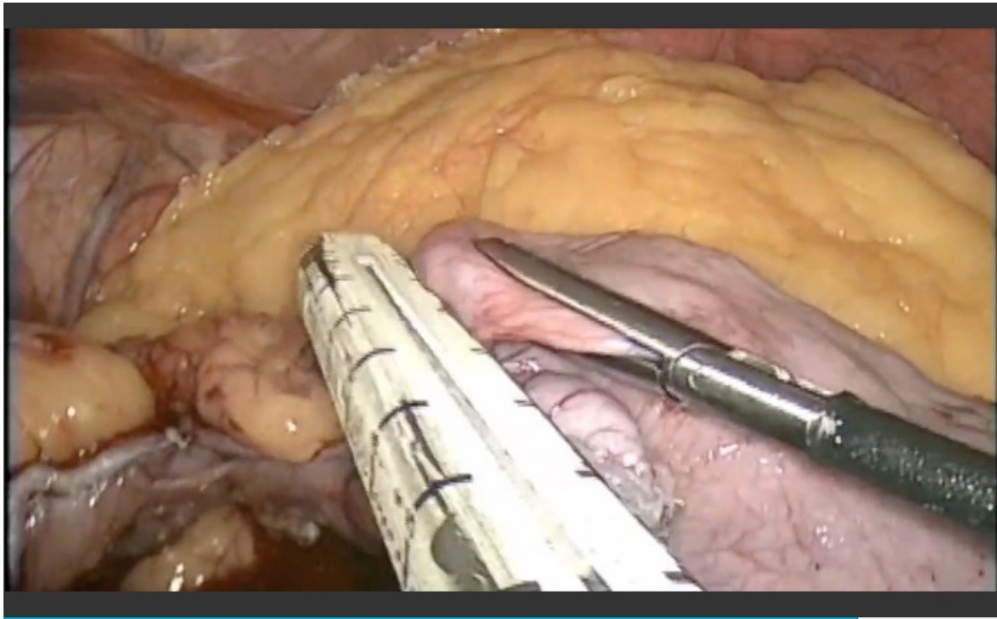
Surgeon Technique

Pre-Staple

Staple

Post - Staple

Global

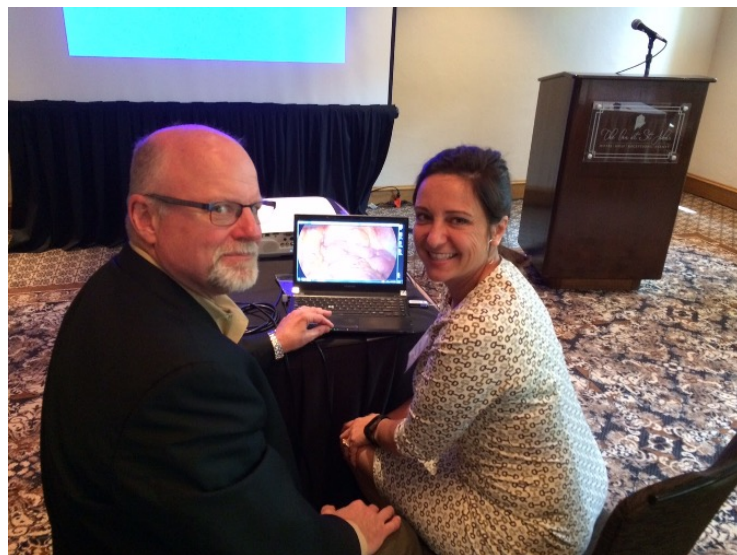
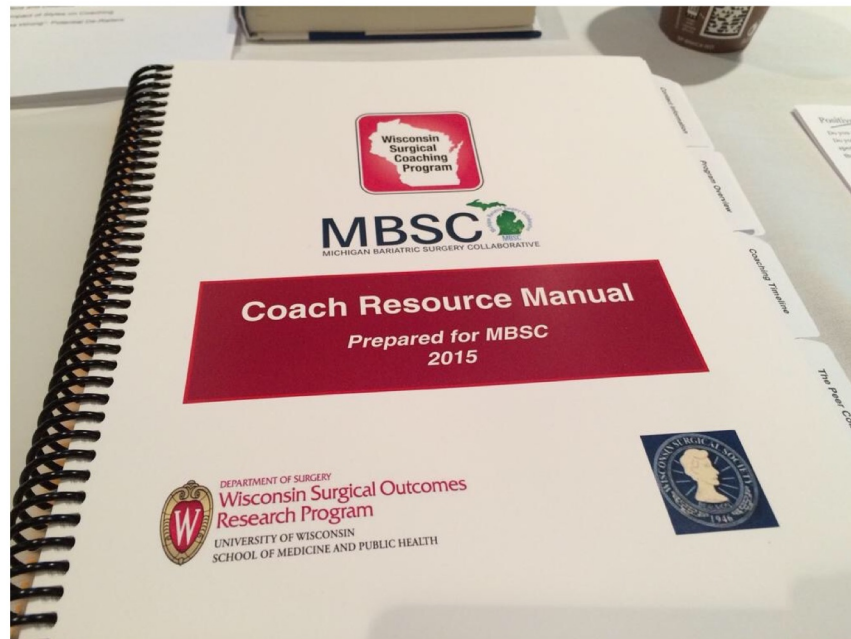


COMMENTS:

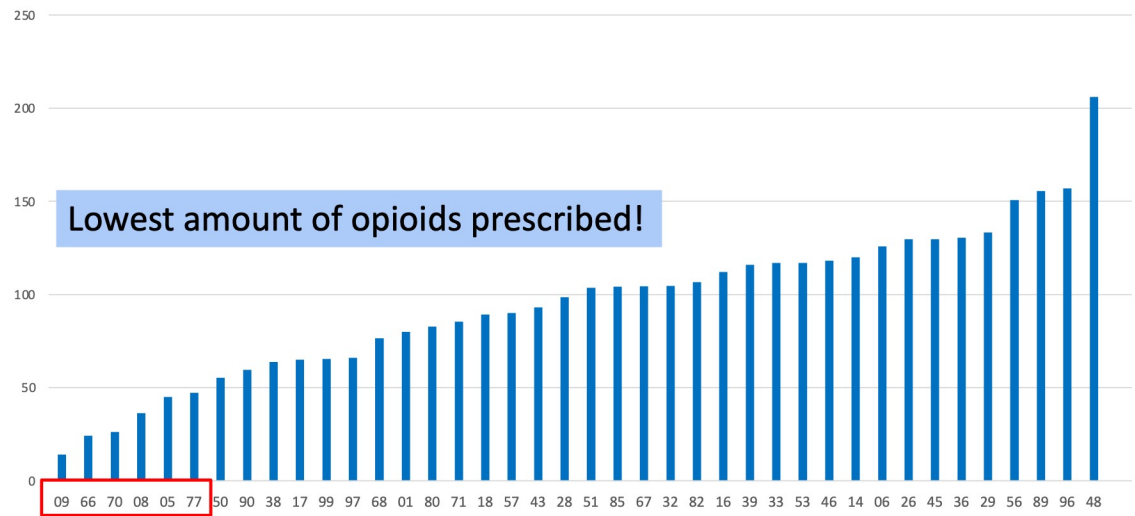
I would put clips on the bleeding vessel prior to the last staple fire. Blood from prior staple fires can obscure and potential bleeding of future staple fires.

I would take down the GE fat pad more to visualize the GE junction more clearly.

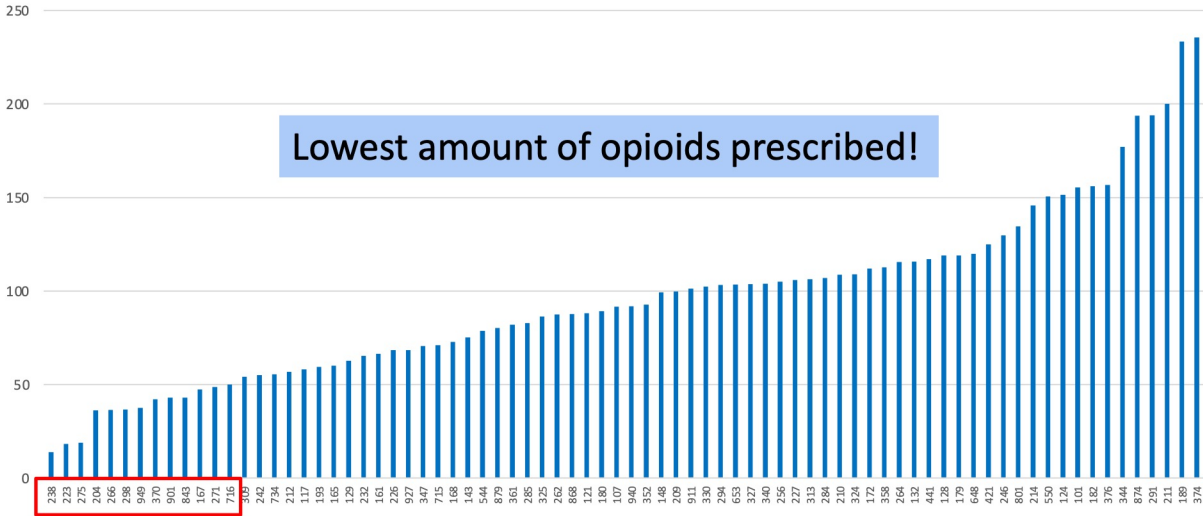
You need to roll the stomach medially to make sure you aren't leaving posterior fundus. This is a critical step that is extremely important at the last few firings. This was not done in this case. One should also try to place each stapler in the crotch of the previous firing. This was NEVER done in this case, implying that each firing was not close enough to the bougie. This case demonstrated a very careless technique.



MME prescribed by Site
(5/1/19 to 4/30/20)



MME prescribed by Surgeon
(5/1/19 to 4/30/20)



Transversus Abdominis Plane (TAP) Block

Video Analysis



Sharing Best
Practices



Intra-operative
Decision Making



Technique



Technology



Skill



Acknowledgements

MBSC Project Coordinators

- *Amanda Stricklen, RN MS*
- *Rachel Ross, RN MS*



- ✓ Beaumont Hospital, Dearborn
- ✓ Beaumont Hospital, Grosse Pointe
- ✓ Beaumont Hospital, Royal Oak
- ✓ Beaumont Hospital, Troy
- ✓ Beaumont Hospital, Wayne
- ✓ Borgess Medical Center
- ✓ Bronson Methodist Hospital
- ✓ Chippewa County War Memorial Hospital
- ✓ Covenant Healthcare
- ✓ Forest Health Medical Center
- ✓ Mid Michigan Medical Center – Gratiot
- ✓ Harper University Hospital
- ✓ Henry Ford Hospital
- ✓ Henry Ford West Bloomfield
- ✓ Henry Ford Wyandotte Hospital
- ✓ Hurley Medical Center
- ✓ Huron Valley-Sinai Hospital
- ✓ Lakeland Community Hospital
- ✓ Marquette General Hospital UP Health System Marquette
- ✓ McLaren Macomb Hospital
- ✓ McLaren Regional Medical Center
- ✓ Mercy Health Partners
- ✓ Mid Michigan Medical Center – Midland
- ✓ Munson Medical Center (Grand Traverse Surgery)
- ✓ North Ottawa Community Health System
- ✓ Oakland Regional Hospital
- ✓ Port Huron Hospital McLaren Port Huron
- ✓ Providence Park Hospital
- ✓ Sparrow Health System
- ✓ Spectrum Health System
- ✓ Spectrum Health Zeeland
- ✓ St. John Hospital and Medical Center
- ✓ St. John Oakland
- ✓ St. Joseph Mercy Livingston
- ✓ St. Joseph Mercy Oakland
- ✓ St. Joseph Mercy – Port Huron Lake Huron Medical Center
- ✓ St. Mary's Health Care – Grand Rapids
- ✓ St. Mary's of Michigan (Saginaw)
- ✓ St. Mary Mercy Hospital (Livonia)
- ✓ University of Michigan



Oliver Varban, MD, FACS, FASMBS
Associate Professor of Surgery
Co-Director, Adult Bariatric Surgery Program
Interim Chief, Division of Minimally Invasive Surgery
University of Michigan

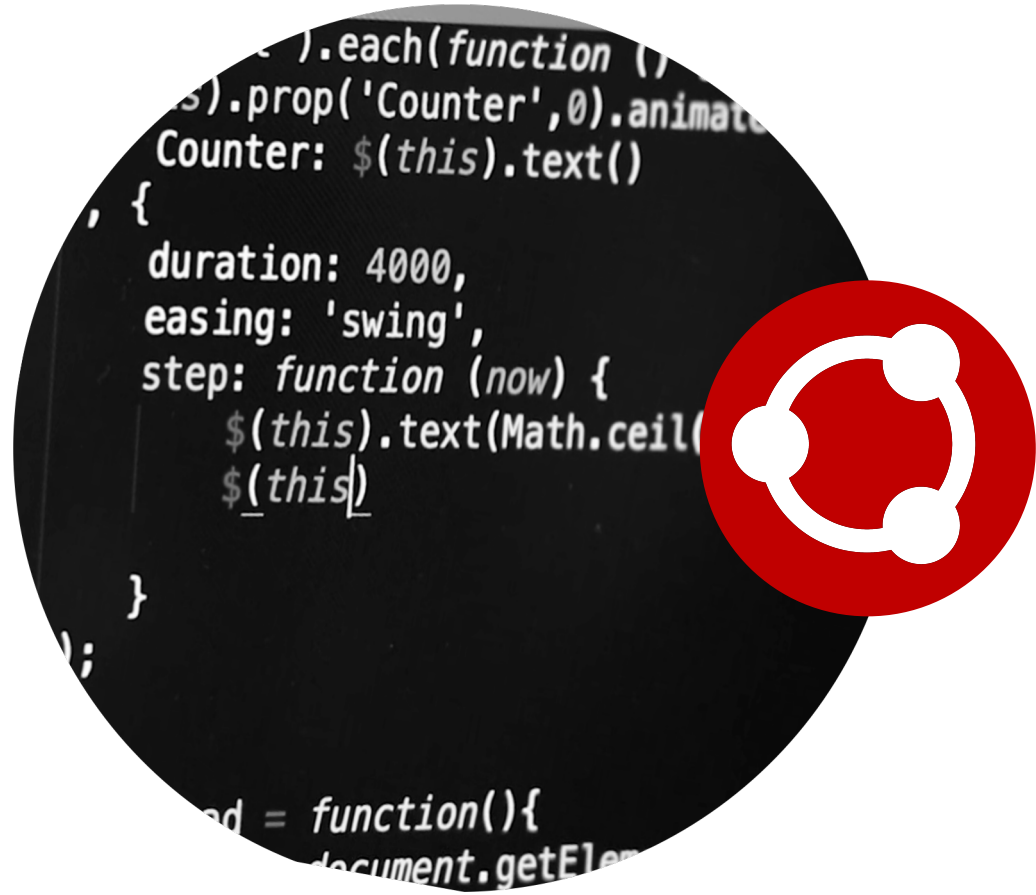




MACS Online Analytics

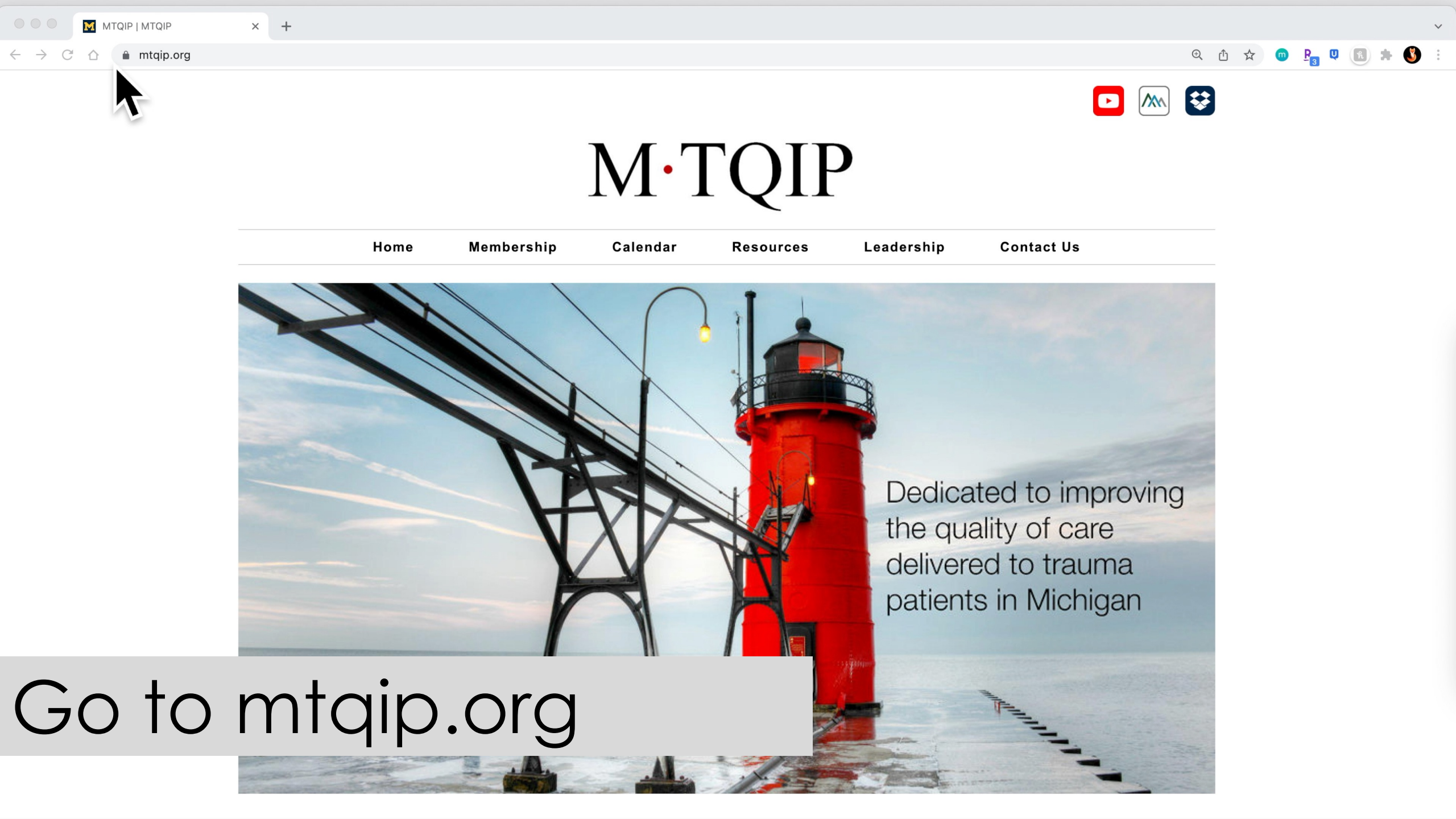
M•TQIP

Progress



User Acceptance
Testing

How will I access
online analytics?



M·TQIP

Home

Membership

Calendar

Resources

Leadership

Contact Us

Dedicated to improving
the quality of care
delivered to trauma
patients in Michigan

Go to mtqip.org

How does it
work?

FILTERS

HOSPITALS

☐ Select All

APPLY

COHORT

Cohort 00 (All)

DEAD

No Filter

AGE

All

ASA SCORE

No Filter

TRANSFERS IN

Include Transfers In

PERIOD GROUP

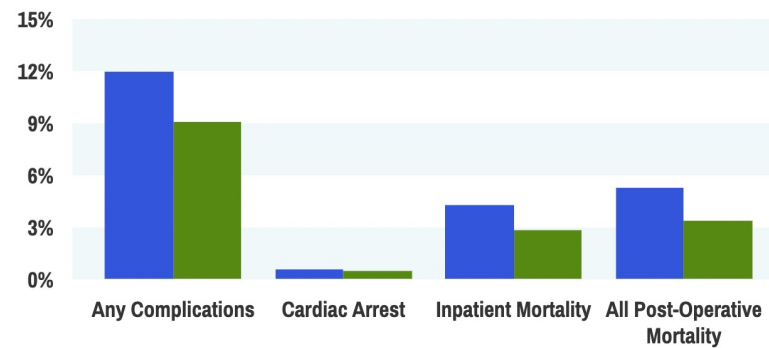
Default Periods

DEFAULT PERIODS

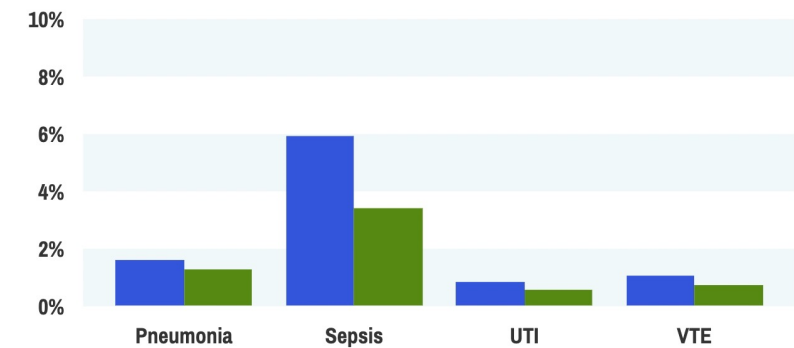
Program To Date

LEGEND ■ ■ MTQIP - All

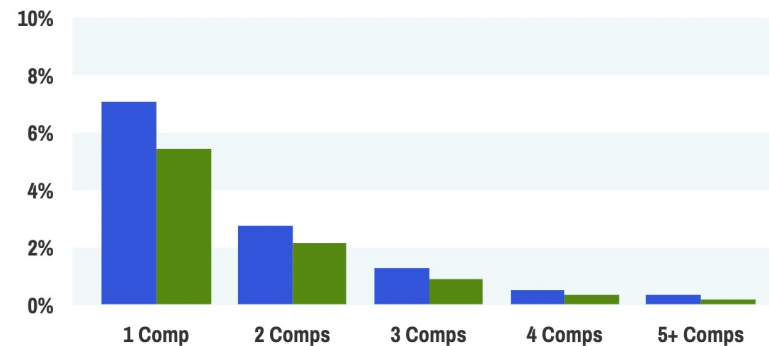
Outcomes Overview



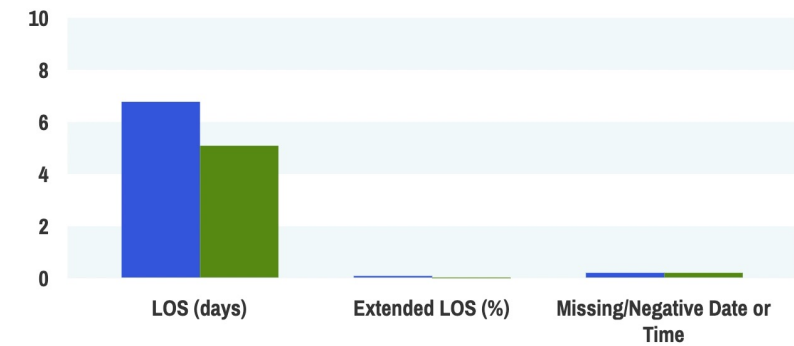
Complications by Type




of Complications



Service Utilization



Where do I find
my outcomes?


 FILTERS

HOSPITALS

☐ Select All

APPLY

COHORT

Cohort 00 (All)

DEAD

No Filter

AGE

All

ASA SCORE

No Filter

TRANSFERS IN

Include Transfers In

PERIOD GROUP

Default Periods

DEFAULT PERIODS

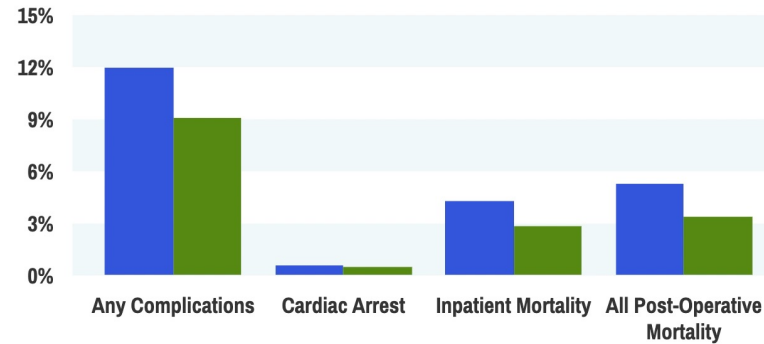
Program To Date

LEGEND

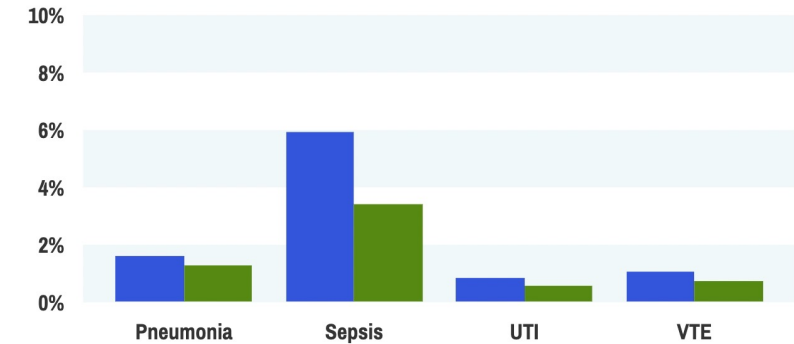


■ MTQIP - All

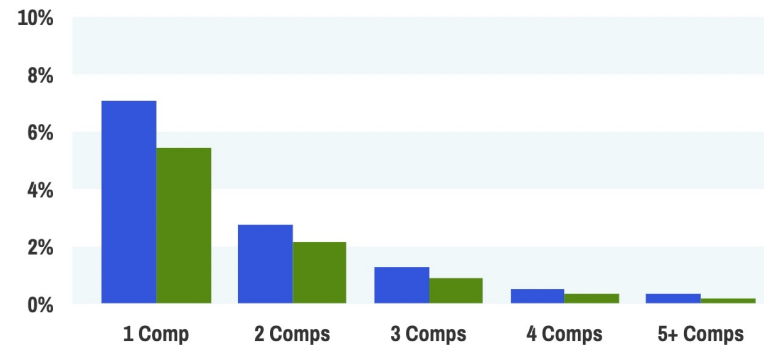
Outcomes Overview



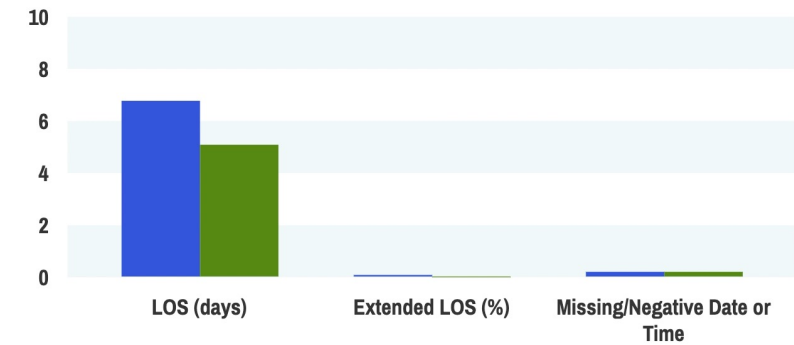
Complications by Type



of Complications



Service Utilization



How do I drill into
my patients?

FILTERS

HOSPITALS

Select All

APPLY

COHORT

Cohort E0 (Ex Lap All)

DEAD

No Filter

AGE

All

ASA SCORE

No Filter

TRANSFERS IN

Include Transfers In

PERIOD GROUP

Default Periods

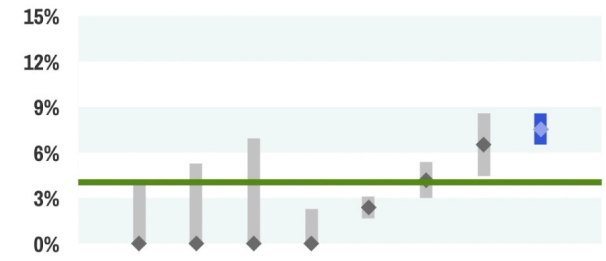
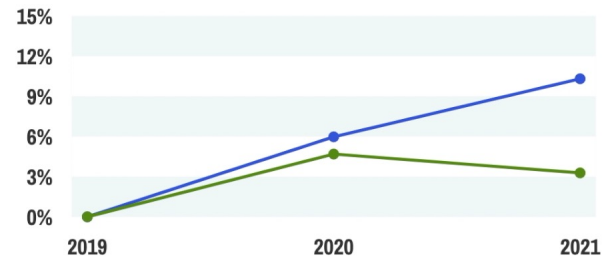
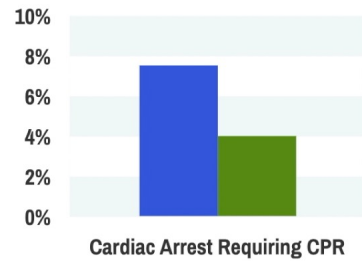
DEFAULT PERIODS

Program To Date

TRENDING INTERVAL

LEGEND

MTQIP - All
 Other Hospitals
 MTQIP - All
 95% Confidence Interval



Outcomes Drill-Down	Cases Numerator	Cases Denominator	University Of Michigan Health System - Unadj	MTQIP - All - Unadj	P Value (Unadj)
Anastomotic Leak	7	186	3.76	2.47	<0.001
C. Difficile	10	186	5.38	2.47	<0.001
Cardiac Arrest Requiring CPR	14	186	7.53	4.03	<0.001
Common Bile Duct Injury	0	186	0	0	1
COVID-19	1	186	0.54	0.78	0.45
Cystic Duct Leak	0	186	0	0.13	0.67
DVT Requiring Therapy	6	186	3.23	2.47	0.12
Enterocutaneous Fistula	0	186	0	0.91	<0.001



M•TQIP



M•ACS

2021 DECEMBER
COLLABORATIVE MEETING

KIM KRAMER PA-C
PROGRAM COORDINATOR

Data Validation Meeting 12/15 for Abstractors


Please watch the 2022 MACS Updates video prior to this meeting.

- CPT coding questions
- Opioid entry demo



New Elements

Point of Entry

Home/Direct Admit
Direct from Skilled Care
ED
Transfer from Outside Hospital ED 
Transfer from Outside Hospital
Transfer Other
Emergency Department Only/Not Admitted
Other



Transport Mode

Ground Ambulance
Helicopter Ambulance
Fixed-wing Ambulance
Private/Public Vehicle/Walk-in
Police
Other



Risk Factors



Pregnancy

Yes

No

Preoperative Sepsis

Severe Sepsis/Septic Shock

Sepsis

No



Prior Opioid Use

Yes

No

Gallbladder

Diagnosis ERCP and Secondary ERCP

Diagnosis ERCP

Yes

No

Secondary ERCP

Yes

No

ERCP



Before OR
or
No OR



DIAGNOSIS ERCP

ERCP



After OR



SECONDARY ERCP

Diagnosis ERCP Date 1 (mm/dd/yyyy)

Diagnosis ERCP Time 1 (Military Time 00:00)

Diagnosis ERCP Procedure 1

	Yes	No
Stent Placement - Common Bile Duct	<input type="radio"/>	<input checked="" type="radio"/>
Stent Placement - Cystic Duct	<input type="radio"/>	<input checked="" type="radio"/>
Stent Placement - Pancreatic Duct	<input type="radio"/>	<input checked="" type="radio"/>
Stent Placement - Other	<input type="radio"/>	<input checked="" type="radio"/>
Gallstone/Sludge Removal	<input type="radio"/>	<input checked="" type="radio"/>
Sphincterotomy	<input type="radio"/>	<input checked="" type="radio"/>

Enter up to two ERCP procedures in each section

May include outpatient ERCP procedures done after discharge.

Additional IR Procedures

IR Procedure Type 1



Aspiration	★ Gallbladder Ablation
Angiogram	★ Gallstone Extraction
Biopsy	IVC Filter
★ Cholecystostomy Tube Exchange	Paracentesis
★ Cholecystostomy Tube Placement	PTC
★ Cholecystostomy Tube Removal	Thoracentesis
Drain	TIPS
Embolization	None

Date and Time

Include up to
three IR
Procedures



Operation



Conversion

Open	Laparoscopic	Laparoscopic to Open	★ Robotic
------	--------------	-------------------------	-----------

Operation		Operative Findings			
	Yes	No		Yes	No
Lysis of Adhesions	<input type="radio"/>	<input checked="" type="radio"/>	Negative Exploration	<input type="radio"/>	<input checked="" type="radio"/>
Bypass	<input type="radio"/>	<input checked="" type="radio"/>	Single Band Adhesion	<input type="radio"/>	<input checked="" type="radio"/>
Resection with Anastomosis	<input type="radio"/>	<input checked="" type="radio"/>	Multiple Band/Dense Adhesions	<input type="radio"/>	<input checked="" type="radio"/>
Resection with Stoma	<input type="radio"/>	<input checked="" type="radio"/>	Obstruction	<input type="radio"/>	<input checked="" type="radio"/>
Anti-Adhesion Barrier Use	<input type="radio"/>	<input checked="" type="radio"/>	Ischemic Bowel★	<input type="radio"/>	<input checked="" type="radio"/>
Hernia Repair Primary	<input type="radio"/>	<input checked="" type="radio"/>	Dead Bowel★	<input type="radio"/>	<input checked="" type="radio"/>
Hernia Repair Mesh	<input type="radio"/>	<input checked="" type="radio"/>	Inadvertent Enterotomy	<input type="radio"/>	<input checked="" type="radio"/>
Milking the Bowel★	<input type="radio"/>	<input checked="" type="radio"/>	Other	<input type="radio"/>	<input checked="" type="radio"/>

Bowel Anastomosis Technique

Stapled with an EEA (or circular) stapler (end-to-end)

Stapled with an EEA (or circular) stapler (side-to-end)

Stapled with an EEA (or circular) stapler (with pouch or coloplasty created)

Stapled with an EEA (or circular) stapler and hand-sutured ★

Stapled with a GIA stapler (side-to-side)


Stapled with a GIA stapler (side-to-side) and hand-sutured ★

Hand-sutured through the abdomen

Hand-sutured through the anus

Combination stapled with hand-sutured (multiple anastomoses) ★

No anastomosis was performed



Established Hernia Care

Yes

No


Opioids

- Input the basic Opioid Rx data
- Logic calculates MME

None	Hydrocodone	Oxycodone
Buprenorphine	Hydromorphone	Pentazocine
Codeine	Meperidine	Tapentadol
Dihydrocodeine	Methadone	Tramadol
Fentanyl	Morphine	Other

Slightly different basic elements for the different forms.

- Tabs
- Solution
- Other



Inpatient Opioid Use (24 Hours)

Yes

No



Thank you