Michigan Acute Care Surgery Collaborative

Virtual, MI

April 27, 2021

Agenda

- Welcome
- Updates
- Data
  - Reports
  - QI Ideas
- St. Joseph Mercy - Improving lengths of stays and time to OR
- Data Validation
- Data Platform
  - New analytics
  - Data definitions and capture

Future Meetings

- 3 per year
- April 27, 2021
- September 16, 2021
- December 9, 2021

Welcome

- MetroHealth (Wyoming)
  - Eric Mitchell, MD, Surgeon
  - Yvonne Prowant, Program Manager
  - Susan Bevier, Data abstractor
  - Stacie Bommersbach, Quality Administrator
- Detroit Receiving/Harper Hospital (DMC)
  - Anna Ledgerwood, MD, Surgeon
  - Alita Pitogo, Program Manager
  - Teresa Vicencio, Data abstractor
  - Kim Johnson, Administrator

Recruitment

- Strong Potentials
  - McLaren Macomb
  - Borgess Hospital
  - Mercy Health St. Marys (Grand Rapids)
- Potentials
  - Henry Ford Detroit
  - Mid-Michigan Midland

BCBSM 2021 and 2022

- SOW Deliverables
  - 2 yrs
  - Coordinator - Kim Kramer, PA
  - Analytic Support - Laura Gerhardinger
  - 3 Meetings/yr
  - ArborMetrics reporting
  - Data validation program
  - Performance Index

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

Mark Hemmila, MD

Reports

- Time frame
  - 7/1/2019 to 3/1/2021
- Data Source
  - Qualtrics
  - Outcomes from 5/2020 onward
  - Outcomes may be artificially low
- Unblinded
- No risk adjustment yet
- Some n’s will not match up (can be in more than one disease)

Reports

- Summary
- Acute Appendicitis
- Acute Gallbladder Disease
- Small Bowel Obstruction
  - Hernia if present
- Emergent Exploratory Laparotomy

- Ask questions

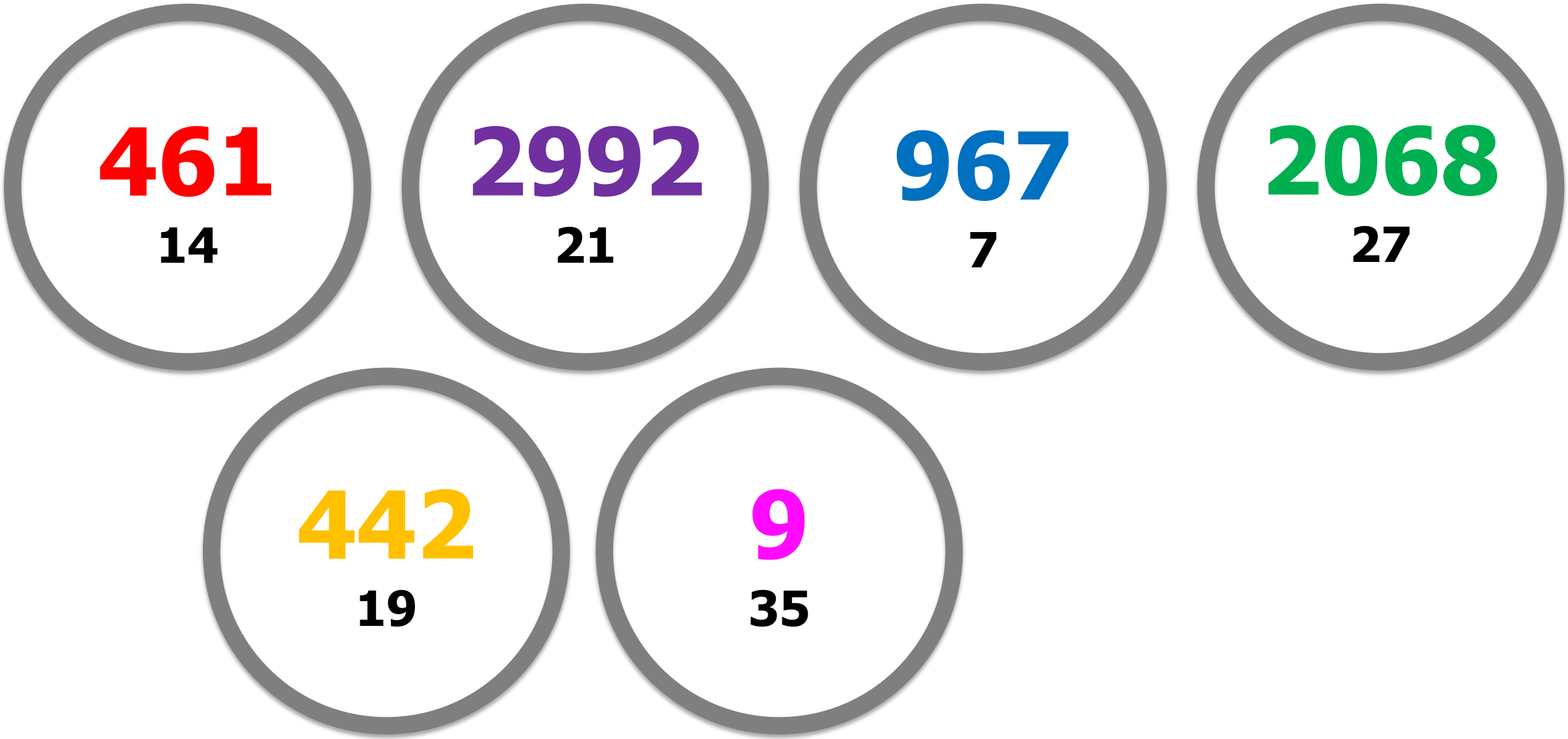
Reports

- Index
  - Primary disease for which admitted
  - No days post-discharge restriction yet
  - 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 – Gall bladder index, readmit Y, cystic duct sump leak Y
- Joey Gall – SBO index

Total Patients = 6,939



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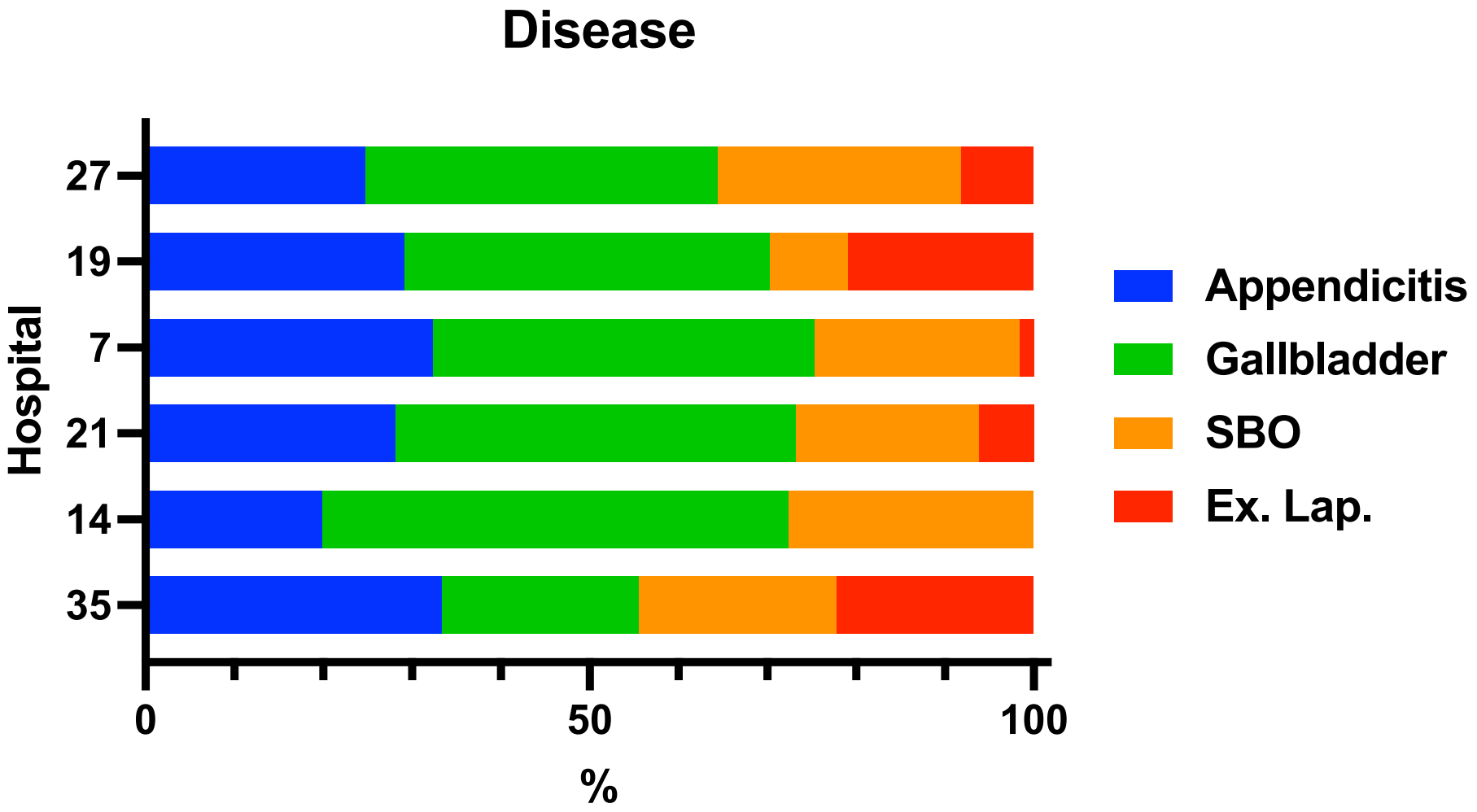
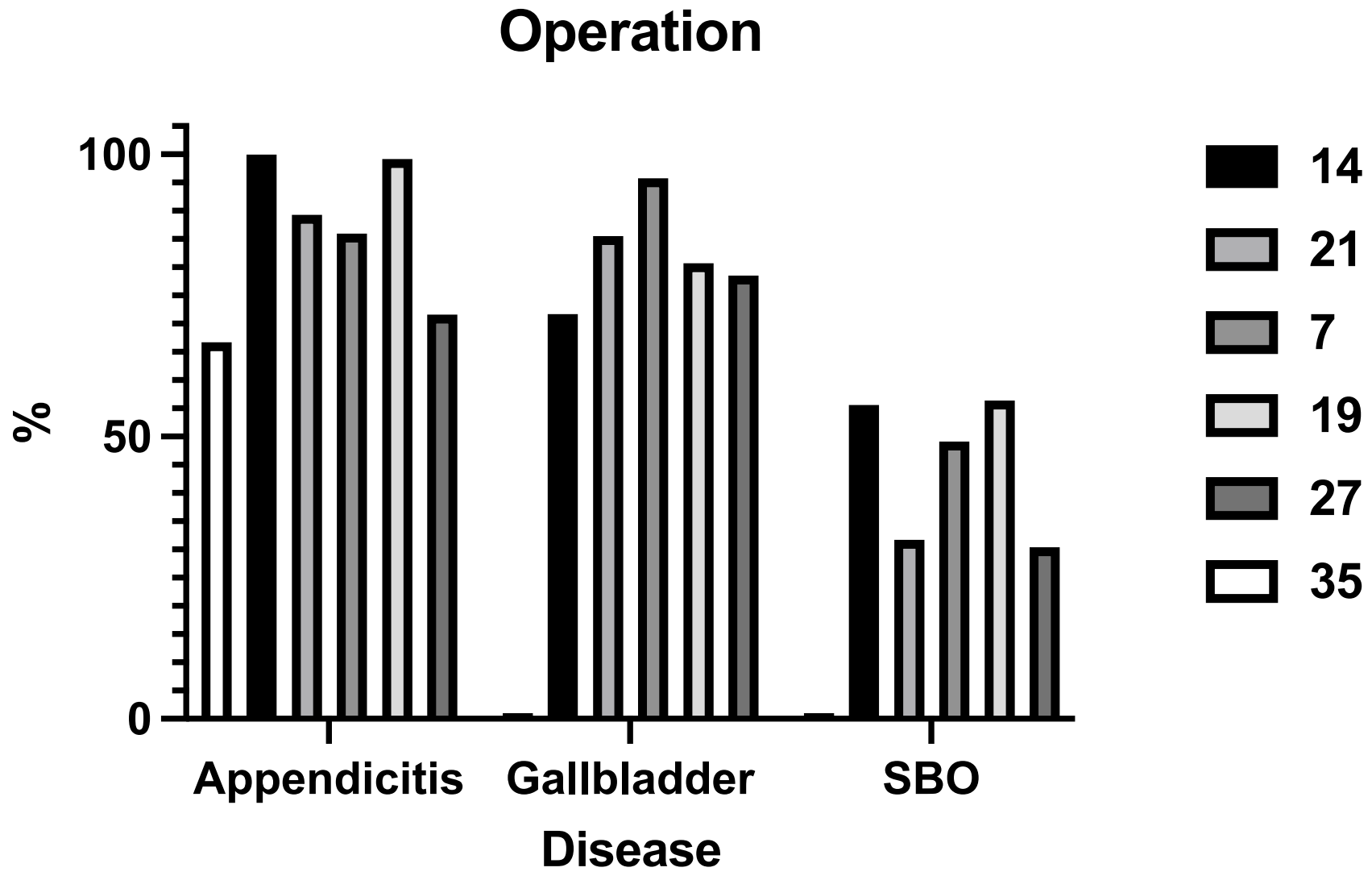
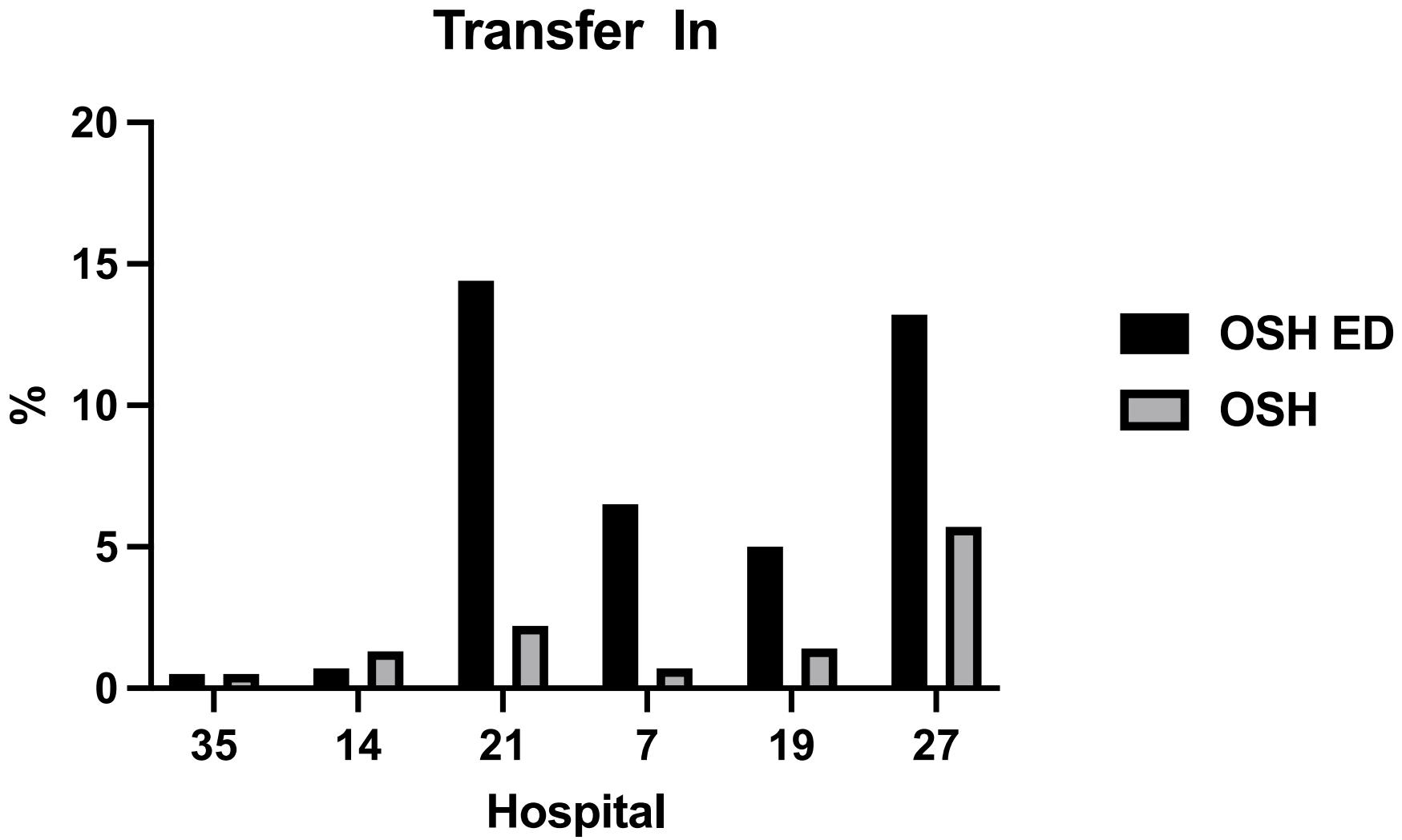


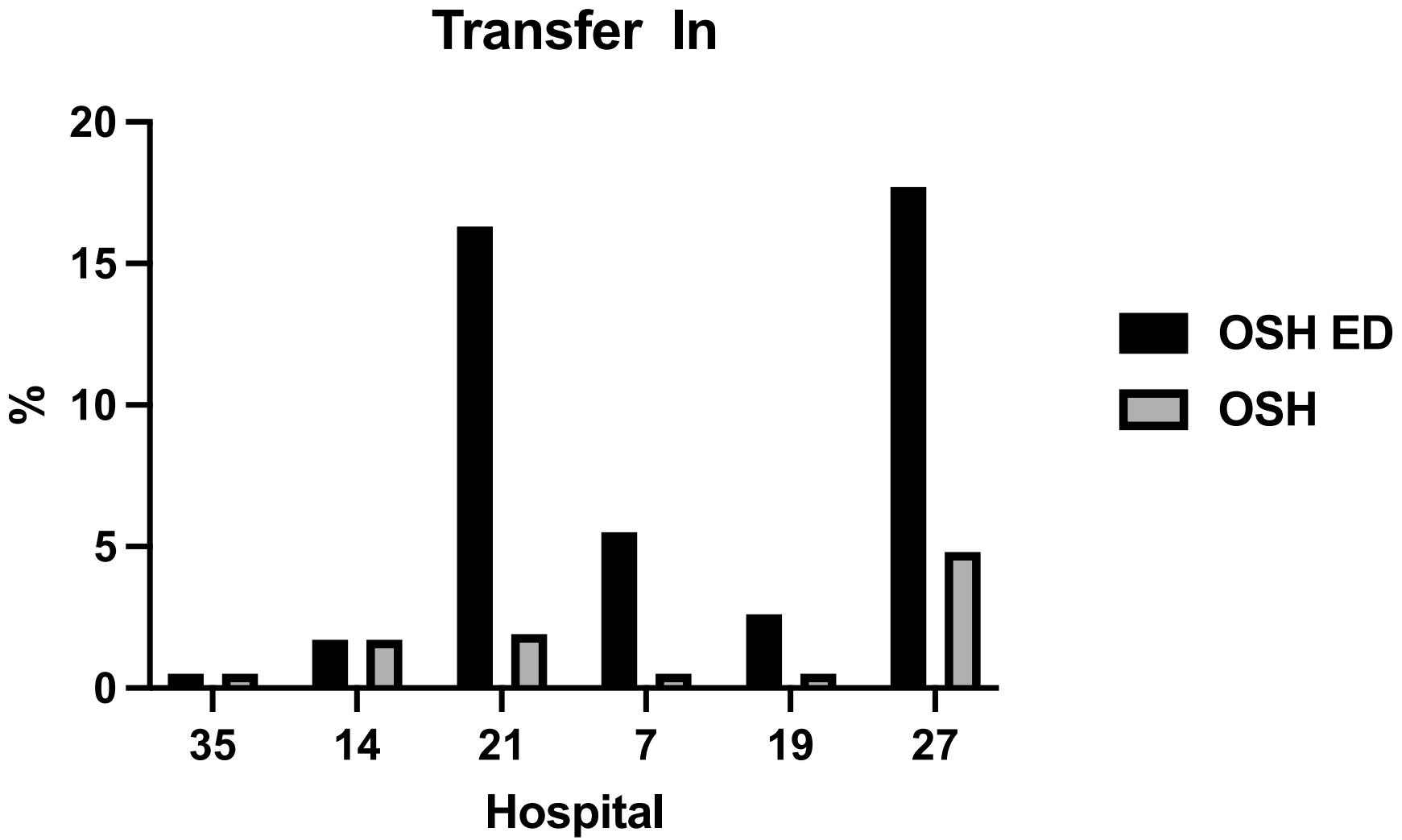
Operative Intervention



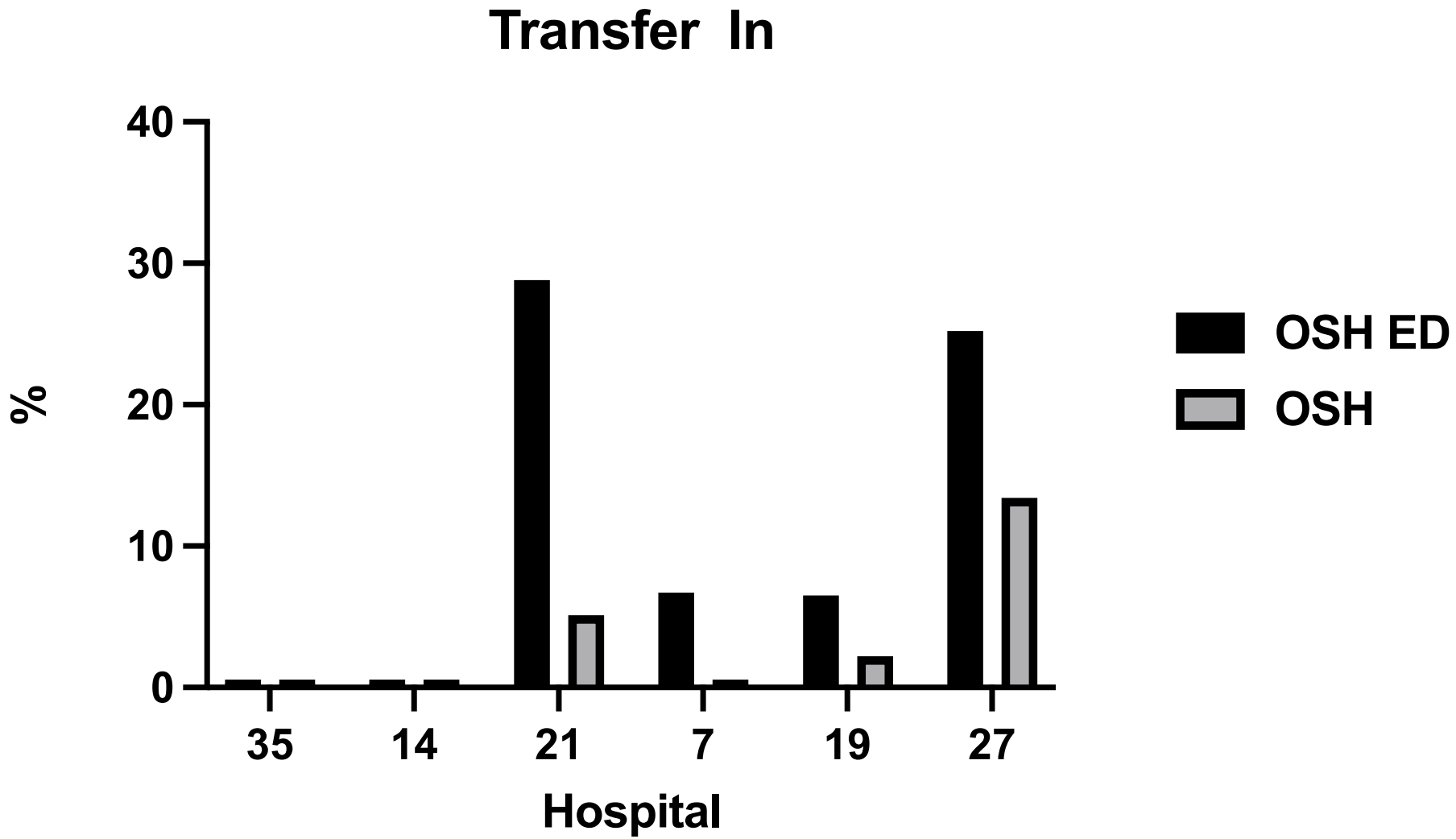
All



SBO



Emergent Exploratory Laparotomy



Type of Service

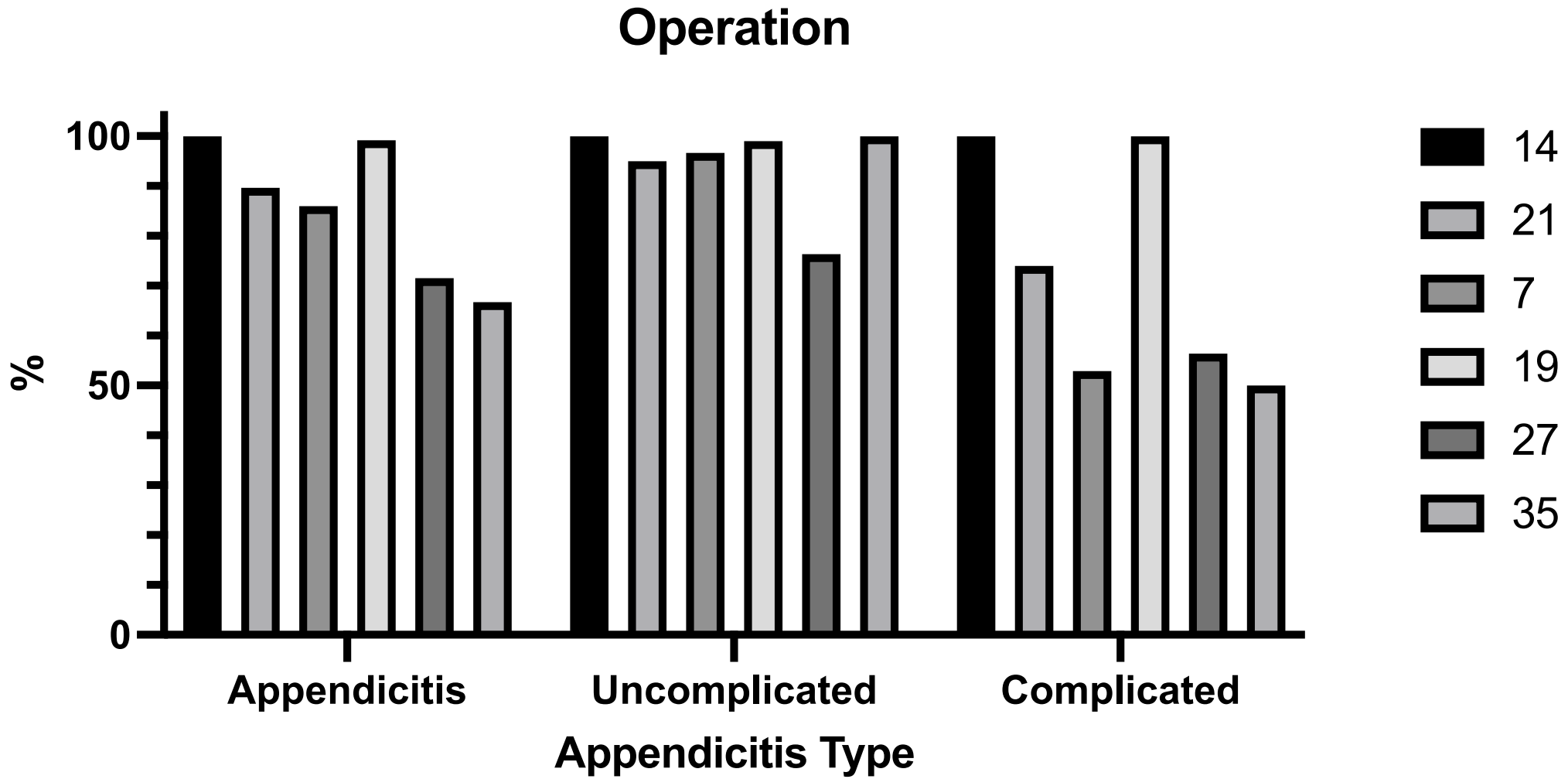
- Admit = 69%
- Consult = 29%
- Outpatient = 2.4%

CPT – Operation, 15 most frequent

	N	%
47562, Laparoscopic cholecystectomy	1902	27.4
44970, Laparoscopic appendectomy	1357	19.6
44120, Resection of small intestine	215	3.1
47563, Lap cholecystectomy w IOC	178	2.6
44005, Freeing of bowel adhesion	157	2.3
47600, Open cholecystectomy	123	1.8
44143, Partial colectomy w colostomy	81	1.2
44160, Partial colectomy with TI	66	1.0
44140, Partial colectomy w anast	61	0.9
49561, Repair ventral/inc hernia	60	0.9
43840, Gastorrhaphy, Graham patch	60	0.9
49000, Exploration of abdomen	55	0.8
44950, Open appendectomy	39	0.6
49587, Repair umbilical hernia	36	0.5
44050, Reduction volvulus	34	0.5
All other	2515	36.2

Questions

Acute Appendicitis



Acute Appendicitis

- AAST Grade - 1,426, more than any published paper
- Type
  - Uncomplicated 77%
  - Complicated 23%
- Perforation - 27%
  - Operation - 71%
  - Operation > 65 yo - 71%
- CT Scan - 96% of patients
- USN - 13% of patients
- Pathology Result
  - 96.3% positive for appendicitis

Acute Appendicitis

CT Result	Ultrasound Result			
	Positive	Negative	Equivocal	Total
Positive	43	45	61	149
	28.86	30.20	40.94	100.00
Negative	1	2	1	4
	25.00	50.00	25.00	100.00
Equivocal	2	5	12	19
	10.53	26.32	63.16	100.00
Total	46	52	74	172
	26.74	30.23	43.02	100.00

USN Sensitivity = 43/(43+106) = 29% USN Specificity = 20/(20+3) = 87%

Positive USN may be helpful, negative/equivocal USN useless

Acute Appendicitis

- IR procedure = 4.3% (Drain 83%, Aspiration 11%)
- Lap vs Open
  - Open 3.0%, 20 patients at 27
  - Laparoscopic 94%
  - Lap to open 2.7%

Acute Appendicitis - Medical Management

- Medical management = 14%
- 8/254 fail and get operation = 3%*
- IV Abx Mean 3.1, Median 3 days
- po Home Abx Mean 9.5, Median 10 days
- IV abx
  - 2nd or 3rd gen cephalosporin (47%)
  - Other - Flagyl
- PO abx
  - Penicillin (58%)

Acute Appendicitis - Times

- Hospital LOS
  - Overall: Mean 56, Median 27 hrs
  - Operation: Mean 46, Median 24 hrs
  - No operation: Mean 126, Median 63 hrs
- Time to operation
  - Mean 13.2 hrs
  - Median 8.5 hrs

Acute Appendicitis – Outcomes

	N	%
Any Complication	139	8.2
Incisional SSI	6	0.4
Organ space SSI	18	1.1
Sepsis	14	0.8
Post-discharge ED visit	75	4.4
Readmission	112	6.6
Mortality	3	0.2
OR in 12 mos Emergent	8	3.1
OR in 12 mos Interval	2	0.8

Questions

Emergent Exp. Laparotomy

- 433 Patients since May
- Point of Entry
  - Home: 1.4%
  - ED: 61%
  - OSH ED Transfer: 21%
  - OSH Transfer: 6.2%
  - ED Only, no admit: 10%

	N	%
Perforation	**117**	**27.0**
Colon	**80**	**18.5**
Small bowel	**2**	**0.5**
Stomach/Duodenum	**35**	**8.1**
Obstruction	**184**	**42.5**
Hernia	**57**	**13.2**
Malignancy	**17**	**3.9**
Other (Volvulous, Intussusception)	**110**	**25.4**
Ischemia	**34**	**7.9**
Other	**53**	**12.2**

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NEWS2 Score

- National Early Warning Score
  - Royal College of Physicians
  - England NHS
  - December 2017 update → NEWS2
- Why? NEWS was founded on the premise that
  - (i) early detection,
  - (ii) timeliness and,
  - (iii) competency of the clinical response comprise a triad of determinants of clinical outcome in people with acute illness.

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 10.9%
    - Medium: 5-6 67.4%
    - High: ≥7 21.7%

news2_class	Discharge Status		
	Alive	Dead	Total
High	64	30	94
	68.09	31.91	100.00
Low	275	17	292
	94.18	5.82	100.00
Med	33	14	47
	70.21	29.79	100.00
Total	372	61	433
	85.91	14.09	100.00

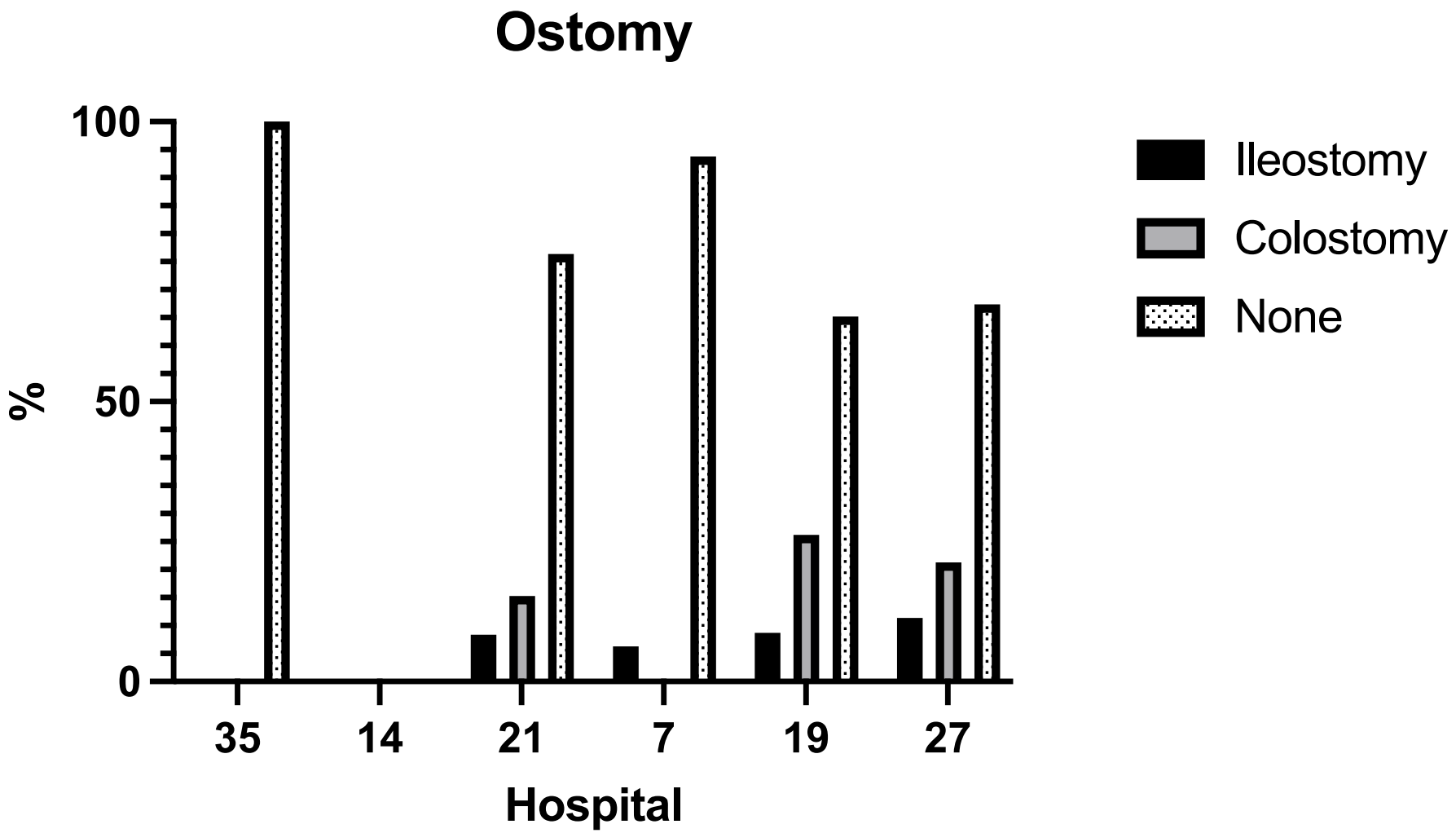
Emergency Ex. Lap – CT Scan Results

	N	%
CT scan performed	405	93.5
CT scan findings: other	230	56.8
CT scan findings: obstruction	171	42.2
CT scan findings: free fluid	166	41.0
CT scan findings: free air	111	27.4
CT scan findings: ischemic/dead bowel	47	11.6
CT scan findings: pneumatosis	31	7.7
CT scan findings: swirl sign	20	4.9
CT scan findings: fecalization	12	3.0

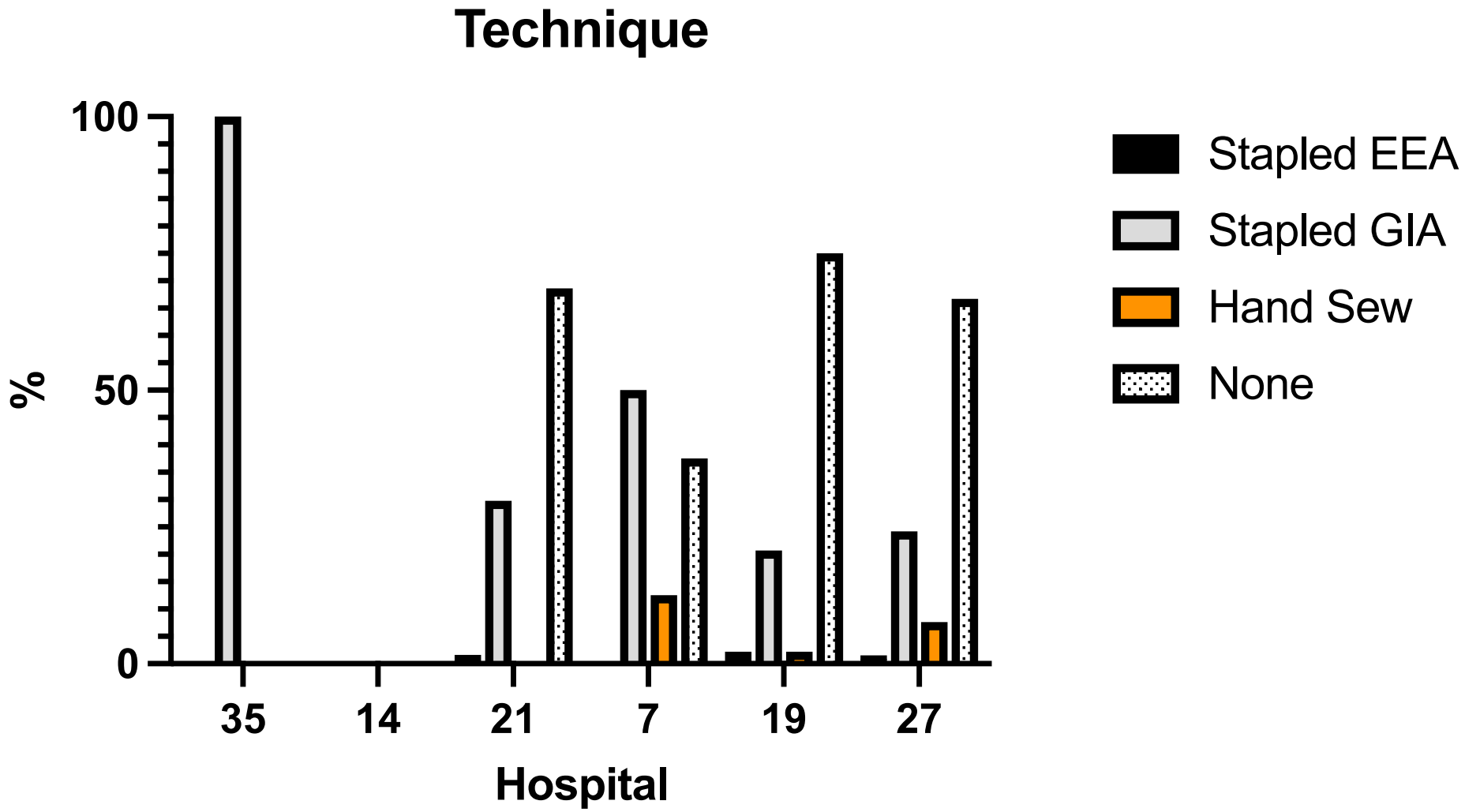
Operation

- Ostomy - 28%
  - Colostomy = 18.7%
  - Ileostomy = 9.2%
- Associated hernia repair - 14%
- Anastomosis
  - None: 68%
  - Stapled: 29%
  - Hand Sewn: 3.2%

Ostomy


Ostomy
100
50
0
%
35
14
21
7
19
27
Hospital
Ileostomy
Colostomy
None

Bowel Anastomosis Technique



Emergency Ex. Lap – Outcomes

	N	%
Any Complication	256	59.1
Incisional SSI	22	5.1
Organ space SSI	46	10.6
Sepsis or severe sepsis	86	19.9
Anastomotic leak	9	2.1
Wound disruption	5	1.2
Enterocutaneous fistula	3	0.7
Ileus	48	11.1
C. difficle colitis	11	2.5
VTE	9	2.1
Pneumonia	37	8.5
Cardiac arrest	17	3.9
Post-discharge ED visit	52	12.0
Readmission	71	16.4
Mortality	72	16.6

Emergency Laparotomy Pathway - Quality Improvement Care Bundle

Royal Devon and Exeter NHS
NHS Foundation Trust

ELPQuIC 2

EMERGENCY LAPAROTOMY PATHWAY

This pathway should be started for ALL patients presenting with acute abdominal conditions that may need unscheduled surgery.

Patient name:
NHS no:
Hospital no: *Please affix patient ID label within this box*
DOB:

1. Immediate assessment and resuscitation

- EWS within 30 minutes of admission
- MRCS grade surgical registrar review within 2 hours of referral (30 minutes if EWS > 3)
- Arterial lactate measurement to identify sick patients
- Early fluid resuscitation

2. Early antibiotics

- Within 1 hour of admission/referral if sepsis or suspected peritonoitis/perforation

3. Rapid diagnosis and surgical plan

- Rapid CT scan - within 2 hours of request, verbal report within 1 hour
- Communication with consultant surgeon for within 1 hour of CT

4. Surgery within 6 hours of admission/referral for urgent/emergency cases

- Prioritise theatre – next available slot on CEPOD
- Consultant-led perioperative care

5. Clear management plan for 'expedited' cases, e.g. bowel obstruction

- CT scan within 12 hours to confirm diagnosis
- Regular review with consideration of lactate estimation if sepsis or possible ischaemic bowel
- 12 hourly consultant surgical review, 6 hourly MRCS registrar review if sepsis

6. Goal Directed Fluid therapy

- Stroke volume optimisation using cardiac output monitoring intra- and postoperatively

7. Postoperative ICU for patients with predicted mortality >5%

- ICU admission for all patients with P-POSSUM predicted mortality ≥ 5%
- ICU admission for patients with P-POSSUM < 5% at discretion of perioperative team

P-POSSUM scores can be calculated from the tab for each patient on Plato, or using the 'Surgical risk' app on a smart phone

Emergency Laparotomy Pathway Version 2
Approved by: *Surgery and Critical Care Governance Groups*
Approved by Health Records Documentation Approval Group: Jan 2014
Review date: June 2015

Health Records:
Clinical Notes
UID:

PLEASE DO NOT WRITE IN THIS BOX

Admission / Referral

Patient name:
NHS no:
Hospital no: *Please affix patient ID label within this box*
DOB:

Target times — DD/MM/YY HH:MM — Recorded times

30 min	**EWS** EWS >3 – early ST review	DD/MM/YYYY HH:MM
1 hour	**Foundation doctor/ Core trainee review**	DD/MM/YYYY HH:MM
30 min	**Antibiotics** Sepsis, likely perf or dead bowel *after taking blood cultures* — prescribed	DD/MM/YYYY HH:MM
	given	DD/MM/YYYY HH:MM
2 hours	**Reg review** post MRCS	DD/MM/YYYY HH:MM

Diagnosis

Urgent / emergency ☐ ← Diagnosis → Expedited ☐ — Arterial lactate.....mmol/l — tick one box

	CT scan booked		DD/MM/YYYY HH:MM
2 hours	**performed**	12 hours	DD/MM/YYYY HH:MM
1 hour	**reported**	4 hours	DD/MM/YYYY HH:MM

Surgical decision

Discussion with consultant within 1 hour of CT ☐ — Urgent / emergency ☐ — Consultant — Post-MRCS Reg — Expedited ☐ — DD/MM/YYYY HH:MM — Time of decision to operate or for observation/conservative management

Conservative management
Consider ABG / lactate if ischaemic bowel possible
Consultant surgical review every 12 hours

6 hours from admission/referral

Urgent / emergency laparotomy

Time booked	DD/MM/YYYY HH:MM
Anaesthesia started	DD/MM/YYYY HH:MM

Expedited laparotomy

Time booked	DD/MM/YYYY HH:MM
Anaesthesia started	DD/MM/YYYY HH:MM

12 hours

Management in theatre

Grade of most **senior anaesthetist**: _____
Grade of most **senior surgeon**: _____
Goal directed fluid therapy: **Yes** ☐ **No** ☐

Calculated P-POSSUM mortality: %
Use physiological values immediately prior to anaesthesia and surgical findings

Antibiotics administered prior to theatre ☐
Antibiotics administered in theatre ☐
DD/MM/YYYY HH:MM

Destination from theatre

A P-POSSUM score should be calculated from the tab for each patient on Plato, or using the 'Surgical risk' app on a smart phone

Calculated P-POSSUM mortality ≥ 5% - Refer to ICU

Arterial lactate.....mmol/l

Calculated P-POSSUM mortality < 5% - Consider ward management but refer to ICU at discretion of anaesthetist or surgeon

Emergency Laparotomy Pathway Version 2
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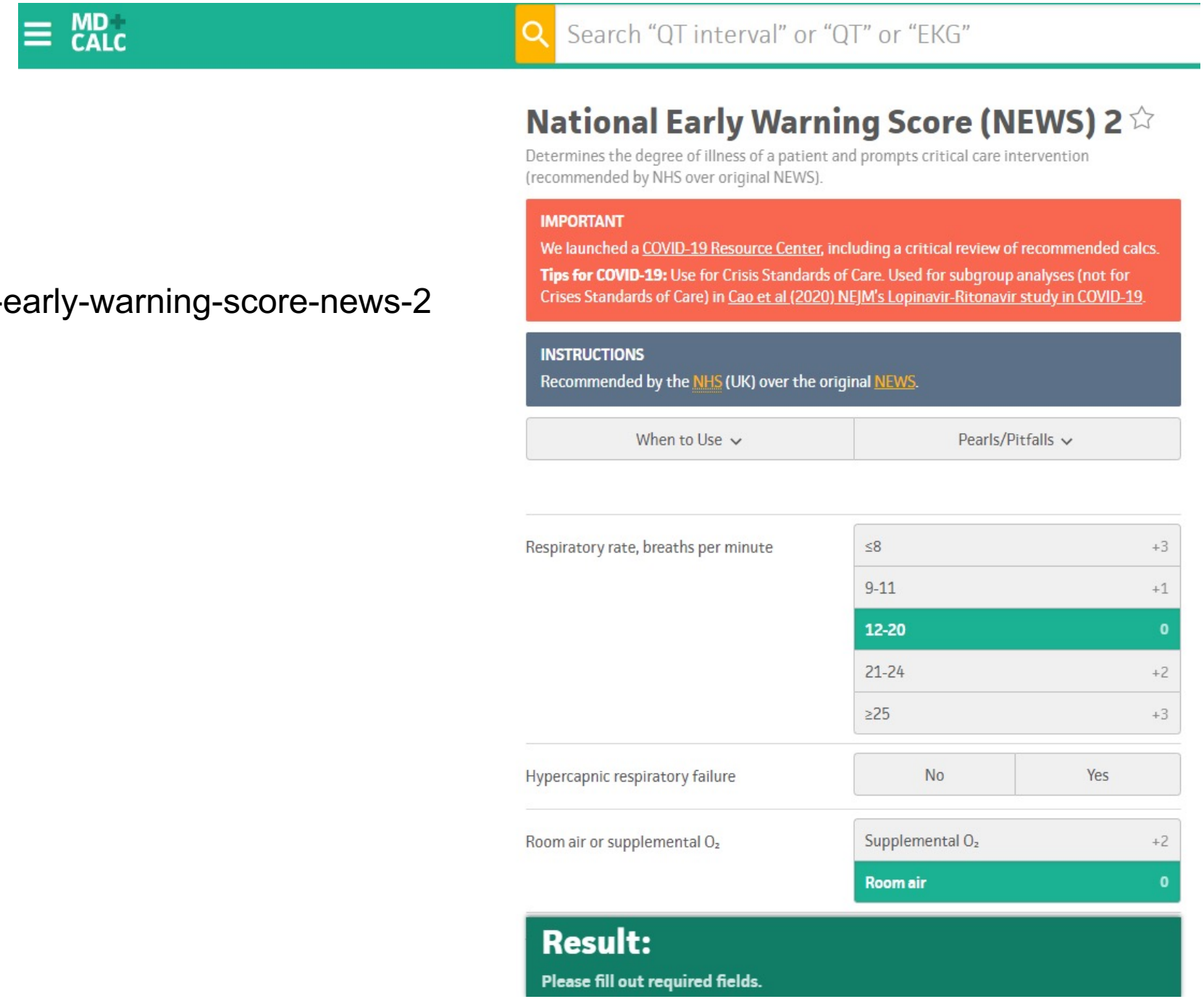
Care Bundle - ELPQuiC

- Identification - NEW Score
- Timely consult (Surgeon)
- Timely antibiotics
- Prompt diagnosis (CT scan)
- Goal directed resuscitation → Flo Trac, LIDCO
- Early operation (6 hrs from decision to operate)
- ICU care
  - P-POSSUM mortality calculator
  - NELA risk calculator

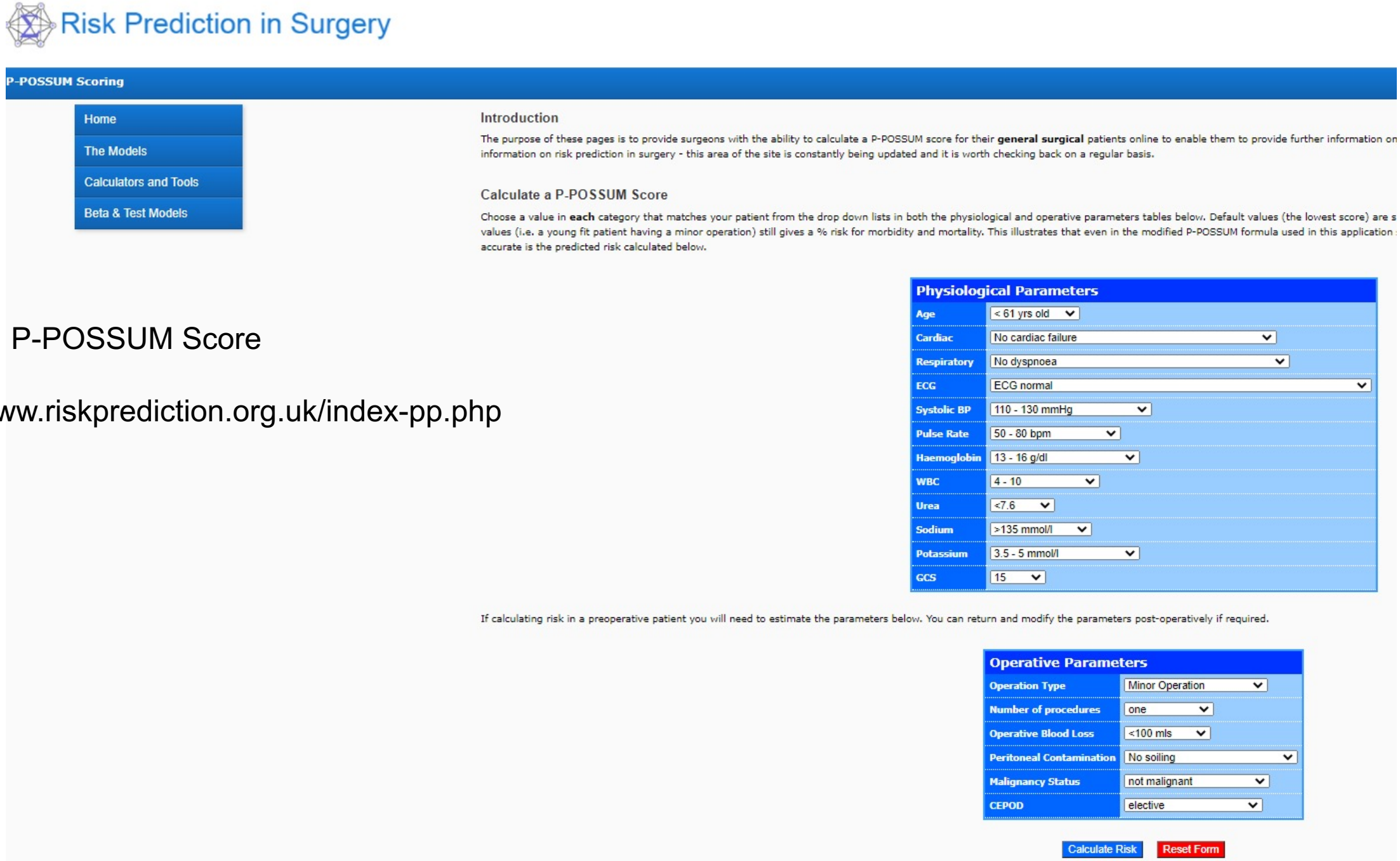
Google: NEWS2 Score

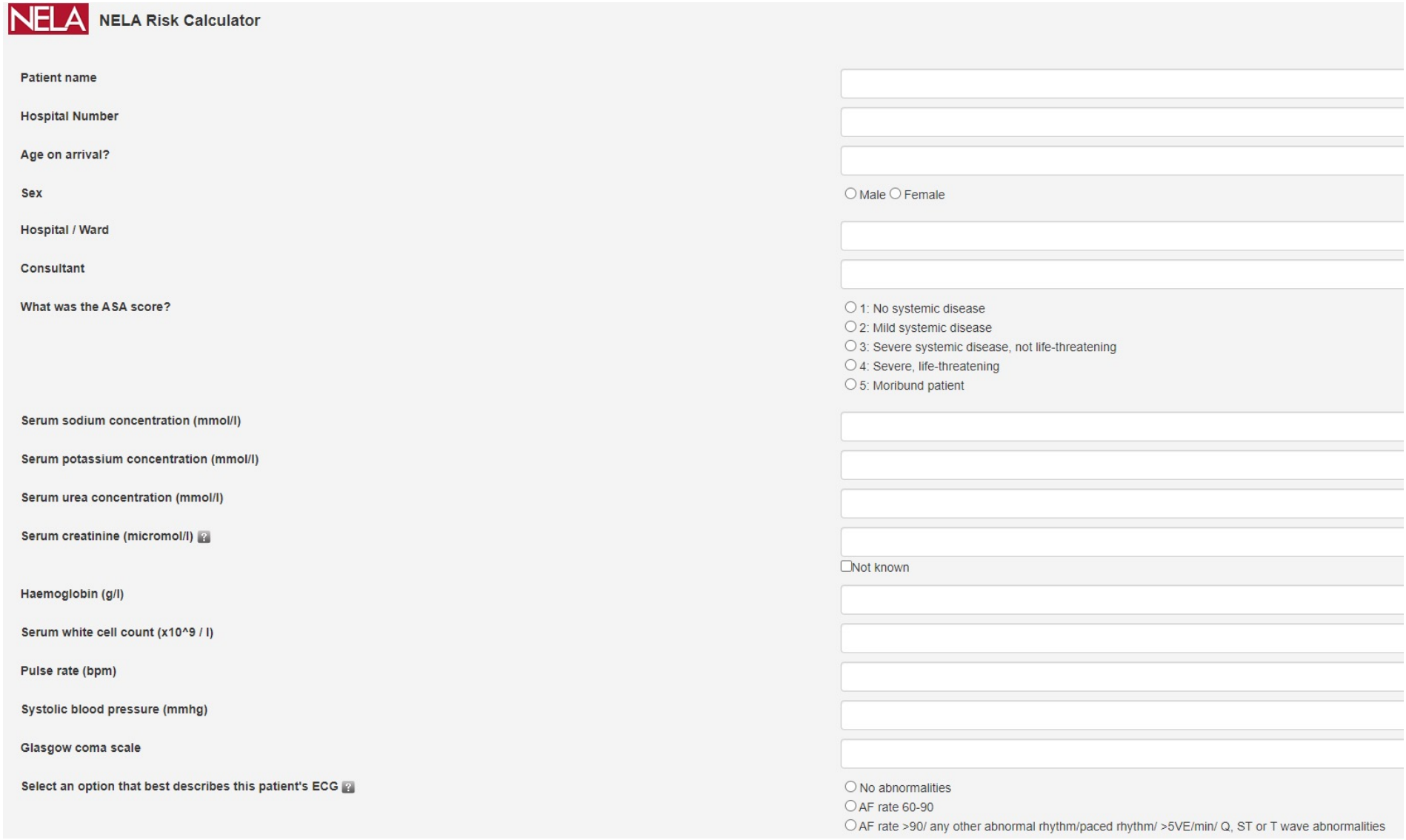
https://www.mdcalc.com/national-early-warning-score-news-2



Google: P-POSSUM Score

http://www.riskprediction.org.uk/index-pp.php





Google: NELA Mortality Calculator

https://data.nela.org.uk/riskcalculator/

ACS NSQIP® | Surgical Risk Calculator

American College of Surgeons
Inspiring Quality: Highest Standards, Better Outcomes

Home | About | FAQ | ACS Website | ACS NSQIP Website

Enter Patient and Surgical Information

Procedure

Clear

Begin by entering the procedure name or CPT code. One or more procedures will appear below the procedure box. You will need to click on the desired procedure to properly select it. You may also search using two words (or two partial words) by placing a '+' in between, for example: "cholecystectomy + cholangiography"

Reset All Selections

Are there other potential appropriate treatment options? ☐ Other Surgical Options ☐ Other Non-operative options ☐ None

Please enter as much of the following information as you can to receive the best risk estimates.
A rough estimate will still be generated if you cannot provide all of the information below.

Age Group: Under 65 years

Sex: Female

Functional Status: Independent

Emergency Case: No

ASA Class: Healthy patient

Steroid use for chronic condition: No

Ascites within 30 days prior to surgery: No

Systemic Sepsis within 48 hours prior to surgery: None

Ventilator Dependent: No

Disseminated Cancer: No

Diabetes: No

Hypertension requiring medication: No

Congestive Heart Failure in 30 days prior to surgery: No

Dyspnea: No

Current Smoker within 1 Year: No

History of Severe COPD: No

Dialysis: No

Acute Renal Failure: No

BMI Calculation:

Height: in / cm

Weight: lb / kg

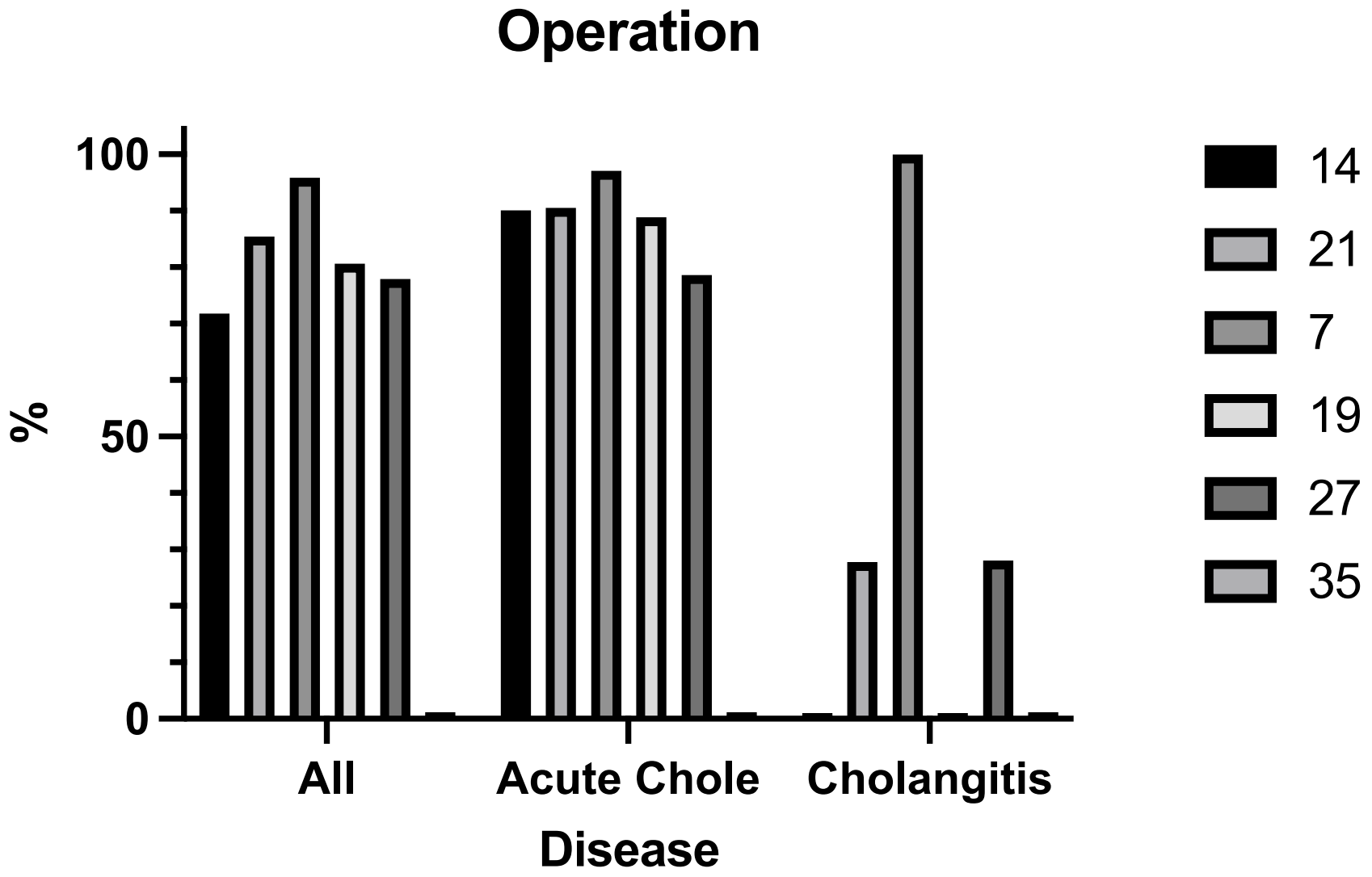
Questions

Gallbladder

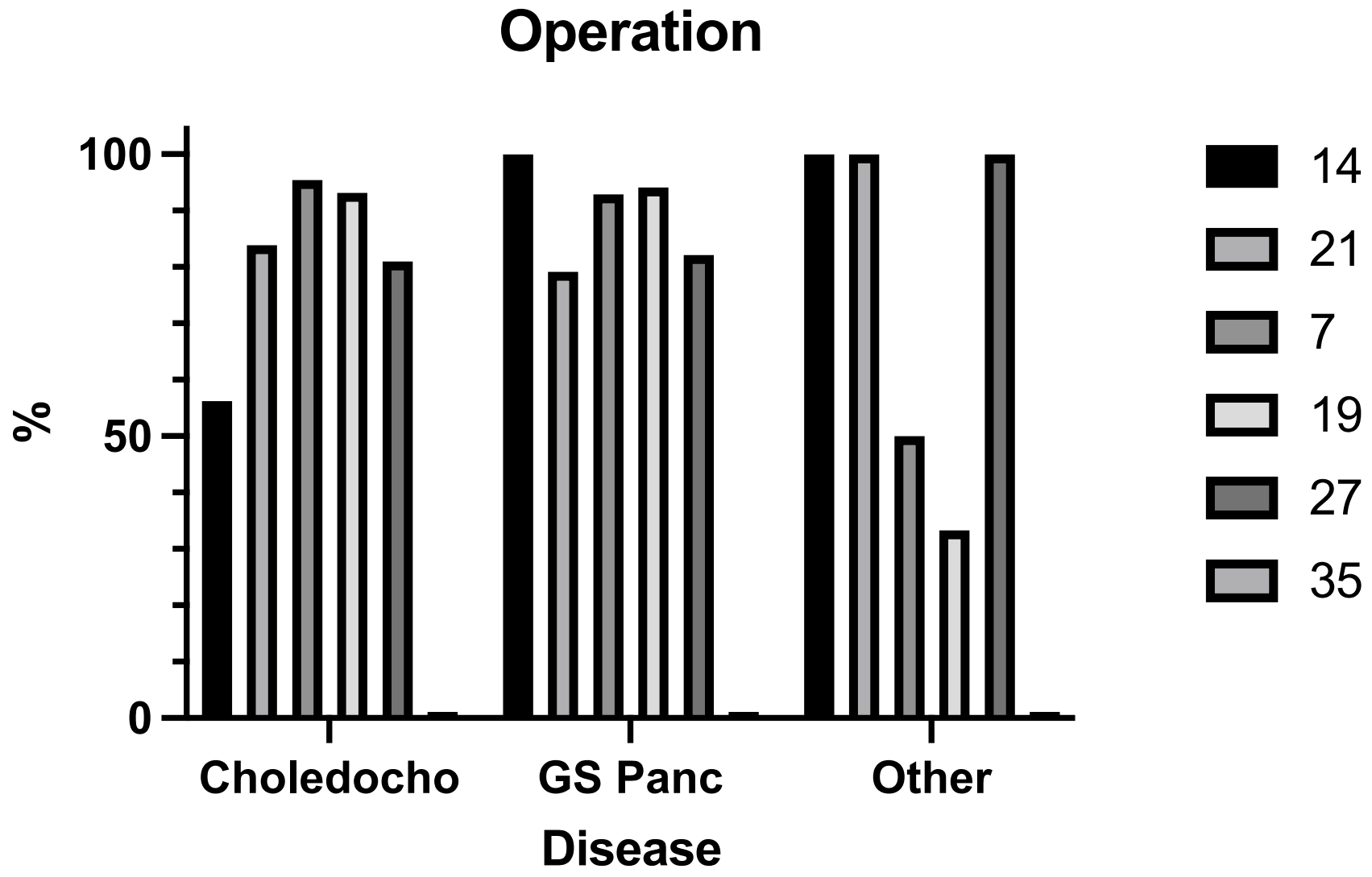
	N	%
Acute cholecystitis	1990	73.9
Symptomatic cholelithiasis	113	4.2
Cholangitis	64	2.4
Choledocholithiasis	567	21.1
Gallstone pancreatitis	234	8.7
Other	29	1.1

Can be in more than one diagnosis group

Gallbladder - Operation



Gallbladder - Operation

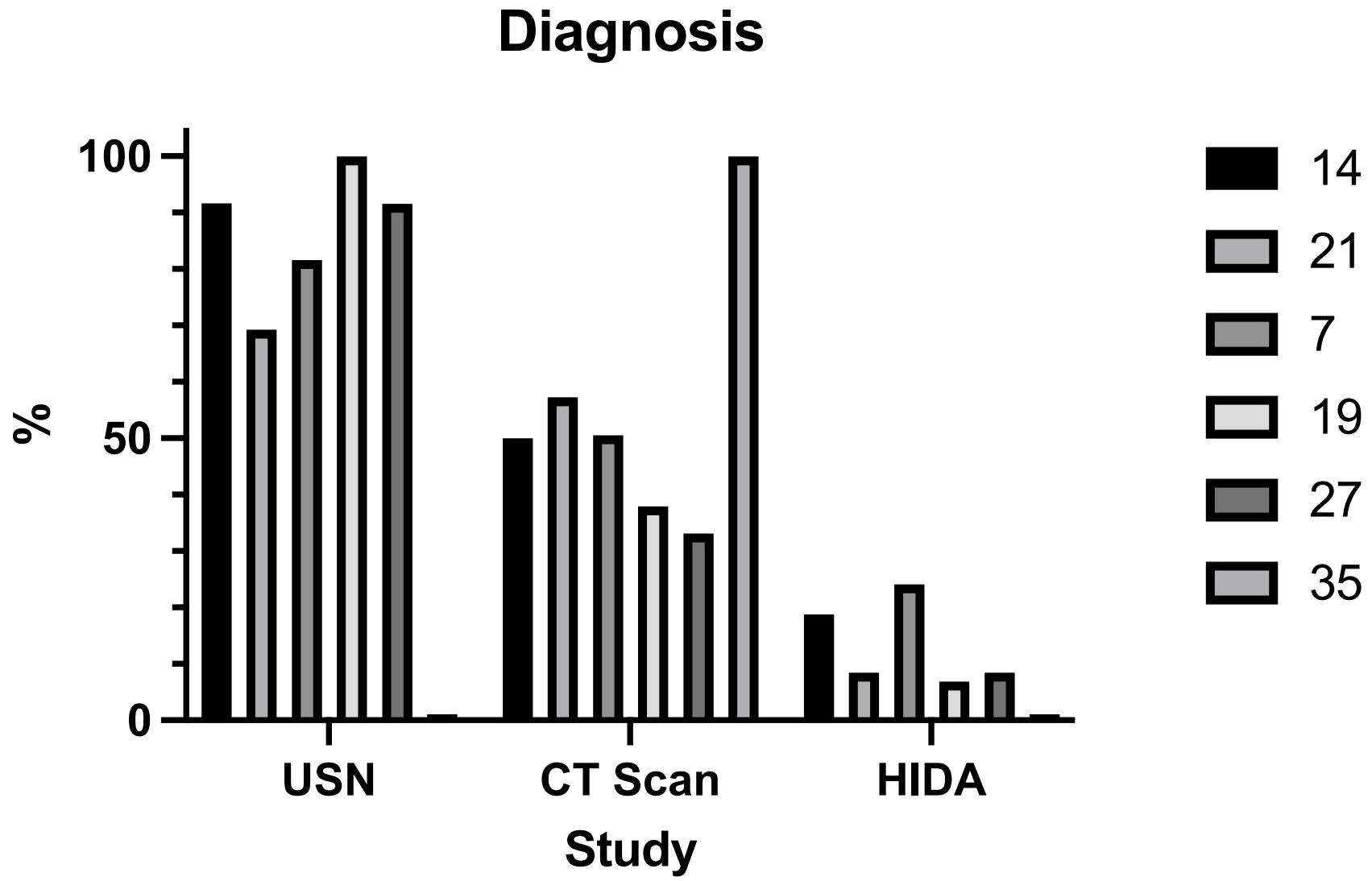


AAST Grade	Description	Clinical Criteria	Imaging Criteria (CT/US/HIDA findings)	Operative Criteria	Pathologic Criteria
I	Acute cholecystitis	Right upper quadrant (RUQ) or epigastric pain; Murphy's Sign; leukocytosis	Wall thickening; distention; gallstones or sludge; pericholecystic fluid; non-visualization 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 perichole-cystic 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)

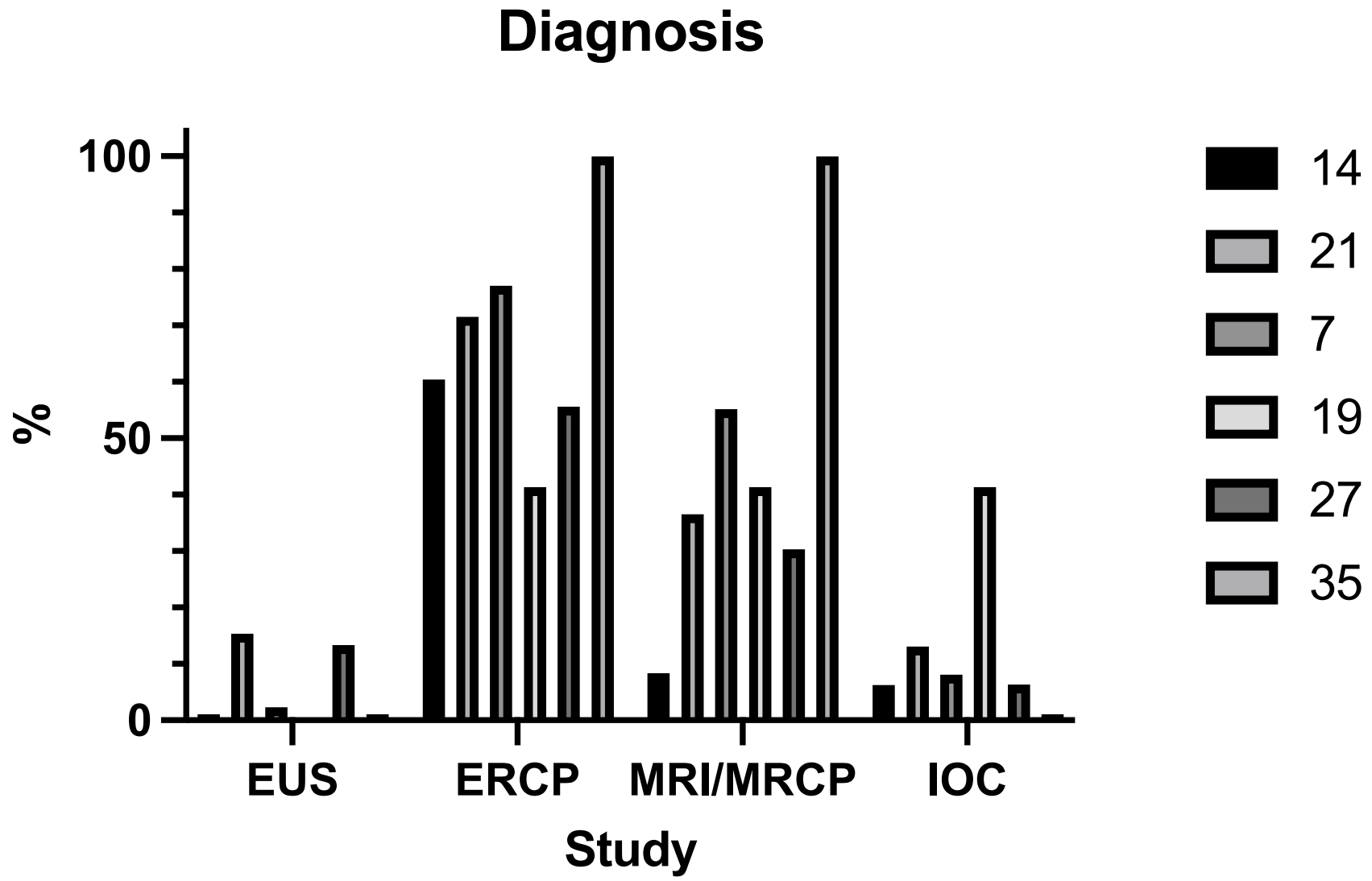
Acute Cholecystitis – AAST Grade

	N	%
1, Acute cholecystitis	1261	70.9
2, empyema or gangrenous	394	22.2
3, perforation local	60	3.4
4, perforation GI fistula	4	0.2
5, perforation peritonitis	7	0.4
NA	17	1.0

Choledocholithiasis



Choledocholithiasis



Cholecystostomy Tube (Non-op)

15% of GB patients received non-operative management (403 pts)
28% of non-op pts get a C-tube (114 pts)

center	IR Procedure							
	Drain	Embolizat	PTC	Cholecyst	Paracente	Thoracent	Biopsy	Total
35	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 100.00
21	6 9.38	0 0.00	3 4.69	46 71.88	2 3.13	2 3.13	5 7.81	64 100.00
7	1 12.50	0 0.00	0 0.00	7 87.50	0 0.00	0 0.00	0 0.00	8 100.00
19	1 7.14	0 0.00	0 0.00	10 71.43	1 7.14	1 7.14	1 7.14	14 100.00
27	4 6.45	1 1.61	3 4.84	51 82.26	1 1.61	1 1.61	1 1.61	62 100.00
Total	13 8.72	1 0.67	6 4.03	114 76.51	4 2.68	4 2.68	7 4.70	149 100.00

Cholecystostomy Tube (Non-op)

15% of GB patients received non-operative management (403 pts)
28% of non-op pts get a C-tube (114 pts)

27 13/47 ended up with a subsequent admit for open or lap chole

Gallbladder – Outcomes

	N	%
Any Complication	264	9.8
Incisional SSI	7	0.3
Organ space SSI	11	0.4
Sepsis	36	1.3
Post-discharge ED visit	107	4.0
Readmission	224	8.3
Mortality	31	1.2
Cystic duct stump leak	10	0.4
Retained CBD stone	25	0.9
CBD injury	7	0.3

Questions

SBO

- Point of Entry
  - ED= 80%
  - OSH ED = 12%
  - OSH = 2.3%
- Cause
  - Adhesive = 83%
  - Other = 17% (Other 12%, Malignancy, Crohn, Vascular)
- Operative
  - All = 34%

SBO

- Operative
  - All = 34%
  - Adhesive = 31%
  - Malignant = 57%
  - Crohn = 32%
  - Vascular = 96%
  - Other = 49%

SBO

- Prior SBO = 42% (686/1627)
  - Operation = 22% (151/686)
- Gastrografin challenge= 35% (237/686)
  - Negative to colon = 16% (37/237)
- No Prior SBO = 58% (941/1627)
  - Operation = 43% (404/941)
- Gastrografin challenge= 32% (298/941)
  - Negative to colon = 24% (72/298)

SBO - Gastrografin

- Prior SBO

center	Gastrografin Challenge Yes	No	Total
35	1 100.00	0 0.00	1 100.00
14	0 0.00	14 100.00	14 100.00
21	130 42.21	178 57.79	308 100.00
7	3 2.59	113 97.41	116 100.00
19	8 38.10	13 61.90	21 100.00
27	95 42.04	131 57.96	226 100.00
Total	237 34.55	449 65.45	686 100.00

center	Gastrografin Result Positive	Negative	Other	Total
35	1 100.00	0 0.00	0 0.00	1 100.00
21	101 77.69	25 19.23	4 3.08	130 100.00
7	2 66.67	1 33.33	0 0.00	3 100.00
19	5 62.50	0 0.00	3 37.50	8 100.00
27	82 86.32	11 11.58	2 2.11	95 100.00
Total	191 80.59	37 15.61	9 3.80	237 100.00

center	operation 0	1	Total
21	19 65.52	10 34.48	29 100.00
7	0 0.00	1 100.00	1 100.00
19	2 66.67	1 33.33	3 100.00
27	6 46.15	7 53.85	13 100.00
Total	27 58.70	19 41.30	46 100.00

SBO - Gastrografin

- No Prior SBO

center	Gastrografin Challenge Yes	No	Total
35	1 100.00	0 0.00	1 100.00
14	1 0.96	103 99.04	104 100.00
21	179 42.82	239 57.18	418 100.00
7	4 3.15	123 96.85	127 100.00
19	8 27.59	21 72.41	29 100.00
27	105 40.08	157 59.92	262 100.00
Total	298 31.67	643 68.33	941 100.00

center	Gastrografin Result Positive	Negative	Other	Total
35	1 100.00	0 0.00	0 0.00	1 100.00
14	0 0.00	1 100.00	0 0.00	1 100.00
21	129 72.07	47 26.26	3 1.68	179 100.00
7	3 75.00	1 25.00	0 0.00	4 100.00
19	3 37.50	0 0.00	5 62.50	8 100.00
27	80 76.19	23 21.90	2 1.90	105 100.00
Total	216 72.48	72 24.16	10 3.36	298 100.00

14	1 100.00	0 0.00	1 100.00
21	24 48.00	26 52.00	50 100.00
7	1 100.00	0 0.00	1 100.00
19	5 100.00	0 0.00	5 100.00
27	9 36.00	16 64.00	25 100.00
Total	40 48.78	42 51.22	82 100.00

SBO

- Prior Interventions = 81%
  - Open= 49%
  - Lap = 25%
  - Mesh = 11%
- Associated hernia requiring repair = 32%
  - Primary = 49%
  - Mesh = 47%
- Hernia size, mean
  - Width 1.7 ± 3.7 cm
  - Length 2.1 ± 4.3 cm

SBO – Operative interventions

	N	%
Obstruction related to adhesion	230	39.7
Lysis of adhesion	315	54.4
Single band adhesion	77	13.3
Multiple band/dense adhesion	212	36.6
Bypass	2	0.3
Resection with anastomosis	198	34.2
Stoma	18	3.1
Anti-adhesion barrier	6	1.0
Obstruction	409	70.6
Ischemic/dead bowel	555	95.9
Inadvertent enterotomy	35	6.0
Negative exploration	5	0.9

SBO – Outcomes

	N	%
Any Complication	203	12.1
Incisional SSI	5	0.3
Organ space SSI	5	0.3
Sepsis or severe sepsis	21	1.2
Anastomotic leak	2	0.1
Wound disruption	3	0.2
Enterocutaneous fistula	1	0.1
Ileus	20	1.2
C. difficle colitis	4	0.2
VTE	10	0.6
Pneumonia	14	0.8
Cardiac arrest	0	0.0
Post-discharge ED visit	56	3.3
Readmission	372	22.1
Mortality	54	3.2

Questions

QI Homework

- Key Literature
  - e.g. CODA trial
- Data modifications
  - Fecalith
- Areas to consider
  - Goals of care
  - Appropriate to operate
- Targets for QI and CQI index

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%

QI Homework

- Ex. Lap
  - Resuscitation
  - Pathway
  - Appropriateness
- Gall Bladder
  - C-tube
  - Ablation, stone extraction, cystic duct stent
- Appendectomy
  - Appendicolith

Emergent Ex. Lap

- Consult > No operation wanted or offered
- Withdrawal of Care
- Impacts mortality

- How to judiciously add data elements?

Future Meeting Topics

- Gall Bladder operative insights
- Non-operative Gall Bladder interventions
  - Cystic duct stent
  - IR Chole tube and gallstone extraction
  - Gall bladder ablation
- Hernia repair
- Advanced endoscopy
- Speakers

St. Joseph Mercy Ann Arbor

Roy Golden, MD

Improving Lengths of Stay and Time to Operating Room

Roy Golden, MD
Departments of Trauma, Acute and Critical Care Surgery
St Joseph Mercy Ann Arbor

SAINT JOSEPH MERCY HEALTH SYSTEM
A Member of Trinity Health

Focuses

- Hospital lengths of stay
- ED lengths of stay
- Dispositions
- Hand-off's
  - Between surgery teams
  - Within surgery team

SAINT JOSEPH MERCY HEALTH SYSTEM
A Member of Trinity Health

Appendicitis

- Efficient diagnosis/imaging
- Faster processing through ED
  - ED arrival to OR table
- Earlier involvement of surgery
  - Consult placement
  - Consult response
- OR availability

SAINT JOSEPH MERCY HEALTH SYSTEM
A Member of Trinity Health

Gallbladder Disease

- ED LOS, Hospital LOS, Time to OR
- Establishing imaging protocol
  - Modes of imaging
  - Number of tests
    - Minimize superfluous imaging in clear cases

SAINT JOSEPH MERCY HEALTH SYSTEM
A Member of Trinity Health

Fast Track Protocol

- Discharge directly from PACU
- Criteria
  - Appendectomy and Cholecystectomy
  - ASA I or II
  - Uncomplicated disease and surgery
    - Conversion to open excluded
    - Perforated disease excluded

SAINT JOSEPH MERCY HEALTH SYSTEM
A Member of Trinity Health

Fast Track Protocol

- Criteria (cont'd)
  - Admitted to surgery service
  - Discharge plan established pre-op
  - Stable in PACU
    - Hemodynamics and respirations
    - Voiding
    - Pain controlled

SAINT JOSEPH MERCY HEALTH SYSTEM
A Member of Trinity Health

Department Model

- Consolidating to acute care model
  - Trauma + Emergency General + SICU
  - Decrease handoffs
  - Continuity of care

SAINT JOSEPH MERCY HEALTH SYSTEM
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Future Projects

- Small bowel obstructions
  - Length of stay
  - Duration of conservative management
  - Guidelines for surgical intervention
  - Choices for imaging/re-imaging

SAINT JOSEPH MERCY HEALTH SYSTEM
A Member of Trinity Health

- Thank you

SAINT JOSEPH MERCY HEALTH SYSTEM
A Member of Trinity Health

Data Validation
New Online Analytics

Jill Jakubus, PA-C

M·ACS

Background

Annual Validation

MTQIP Centers

Collaborative Credibility

Impact of external data validation on data validity and reliability for benchmarking variables

29 Centers
166 Center Visits

1,243 Cases
127,238 Variables

Data Accuracy

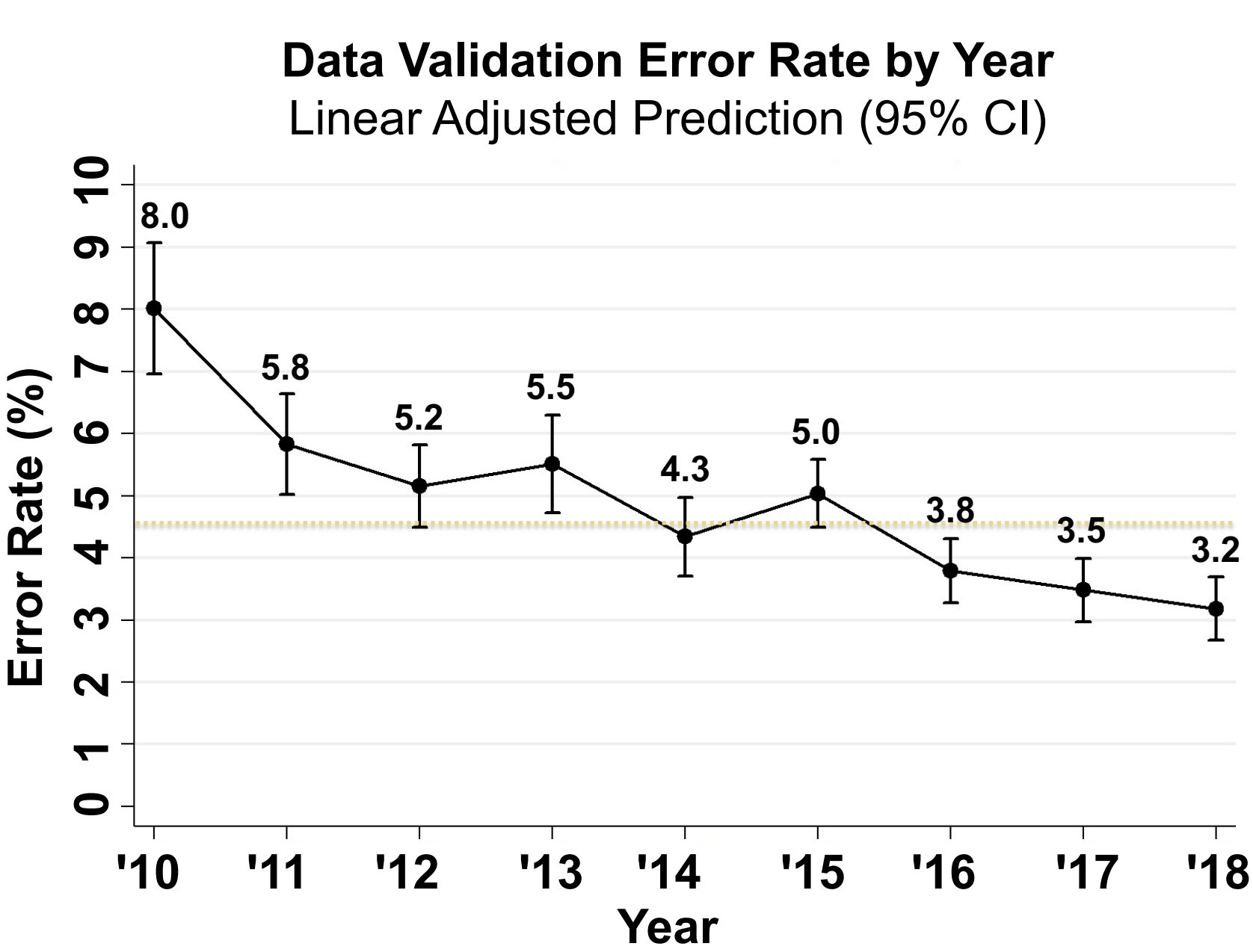
Data Reliability

6.2% Error Rate: Visit 1

↓ Error Rate : Visits 2-8

90% Kappa > 0.61
Comorbids (n=20)

39% Error rate ↓
Comorbids (n=18)


Data Validation Error Rate by Year
Linear Adjusted Prediction (95% CI)
Error Rate (%)
0 1 2 3 4 5 6 7 8 9 10
8.0
5.8
5.2
5.5
4.3
5.0
3.8
3.5
3.2
'10 '11 '12 '13 '14 '15 '16 '17 '18
Year

MACS Timeline

- Intro - April 21
- Build - Sept 21
- Schedule - Dec 21
- Visits - Jan 22

Getting Started

Remote Access Agreement (RAA)

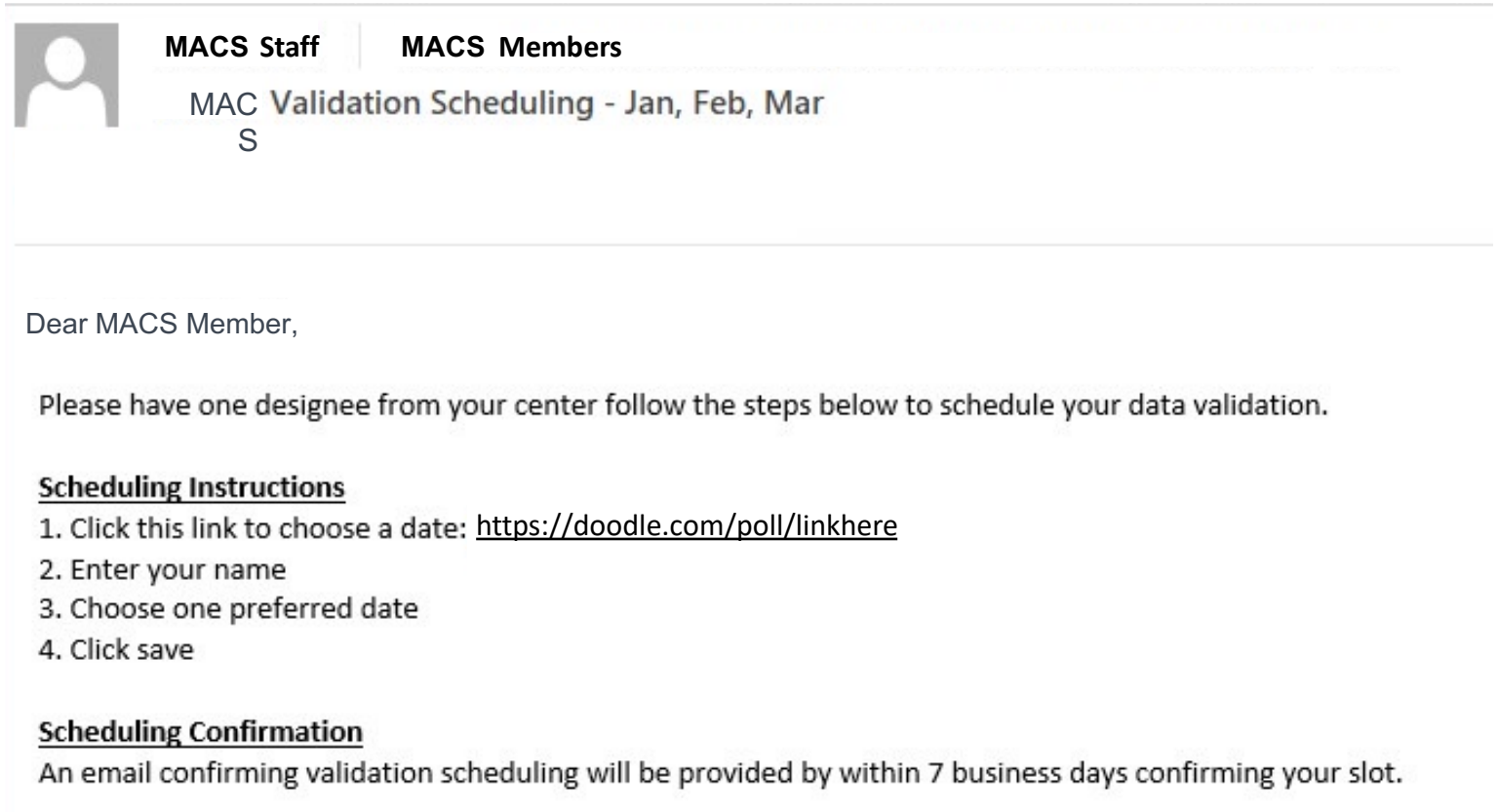
Business Associate Agreement (BAA)

https://www.mtqip.org/node/28/#agreements

Case Selection Criteria

- **Mortality**
- **Long LOS and no complications reported**
- **Age > 64 and no co-morbidities**
- **Mechanical ventilator days > 7 and no PNA**
- **Antibiotic days > 6 and no complications**

Scheduling



MACS Staff | **MACS Members**

MACS Validation Scheduling - Jan, Feb, Mar

Dear MACS Member,

Please have one designee from your center follow the steps below to schedule your data validation.

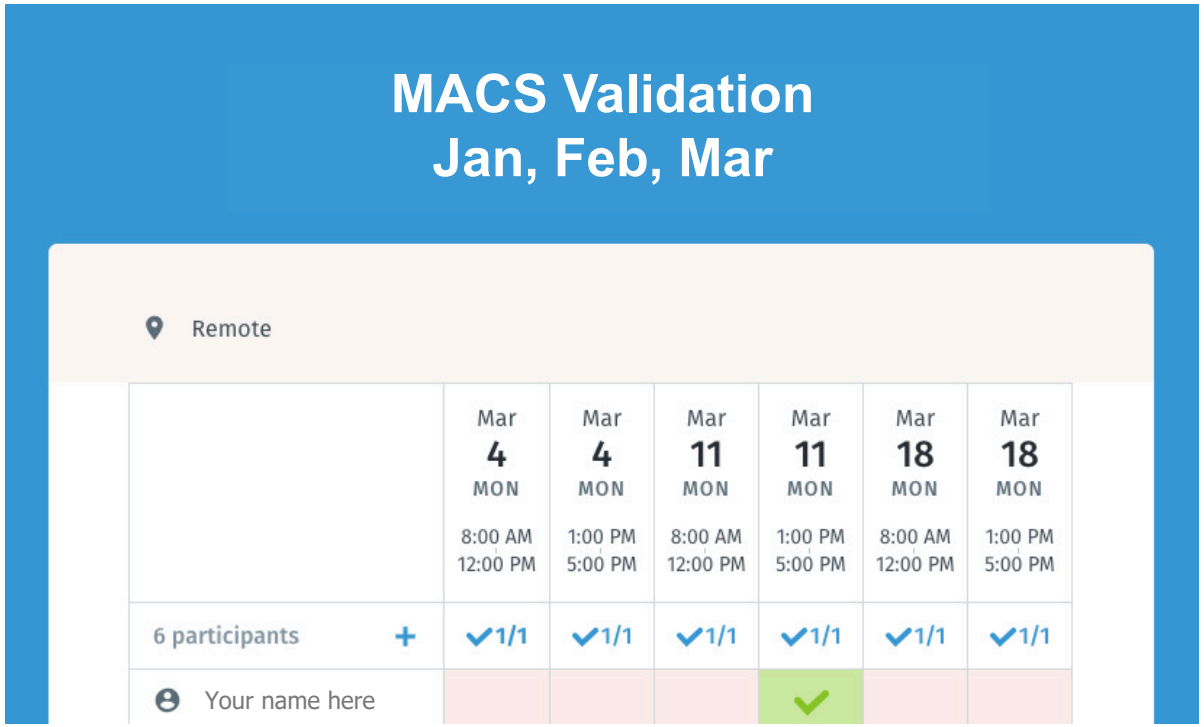
Scheduling Instructions

1. Click this link to choose a date: https://doodle.com/poll/linkhere
2. Enter your name
3. Choose one preferred date
4. Click save

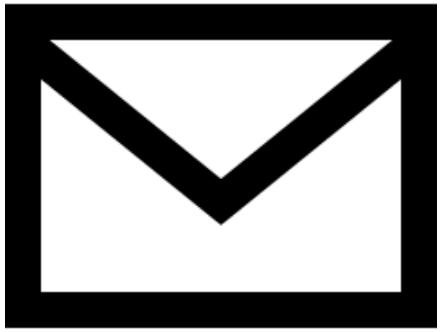
Scheduling Confirmation

An email confirming validation scheduling will be provided by within 7 business days confirming your slot.

Scheduling


MACS Validation
Jan, Feb, Mar
Remote
Mar 4 MON 8:00 AM 12:00 PM
Mar 4 MON 1:00 PM 5:00 PM
Mar 11 MON 8:00 AM 12:00 PM
Mar 11 MON 1:00 PM 5:00 PM
Mar 18 MON 8:00 AM 12:00 PM
Mar 18 MON 1:00 PM 5:00 PM
6 participants
1/1
1/1
1/1
1/1
1/1
1/1
Your name here

Scheduling Confirmation



Email Confirmation

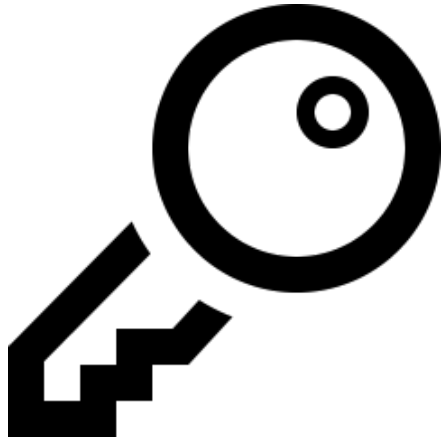
IT Letter

Validation Process

Validation Preparation

Case List

Remote Meeting Link

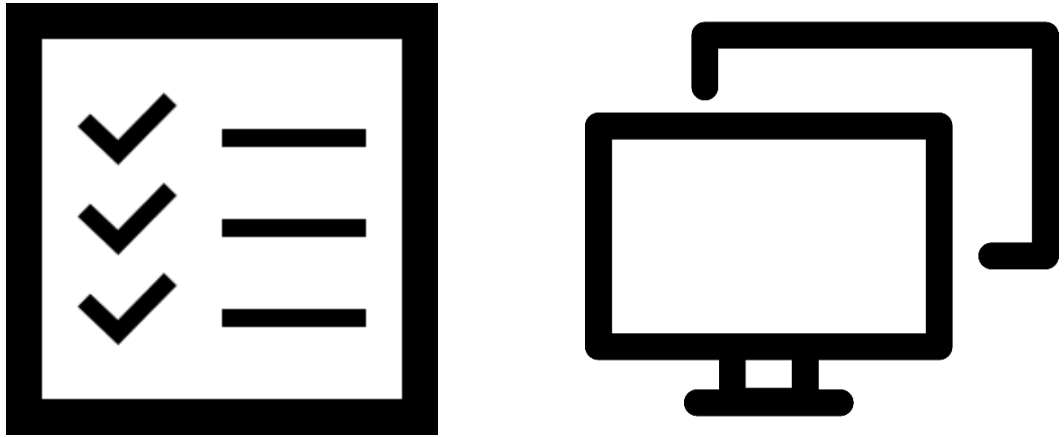


Access

Data Validation

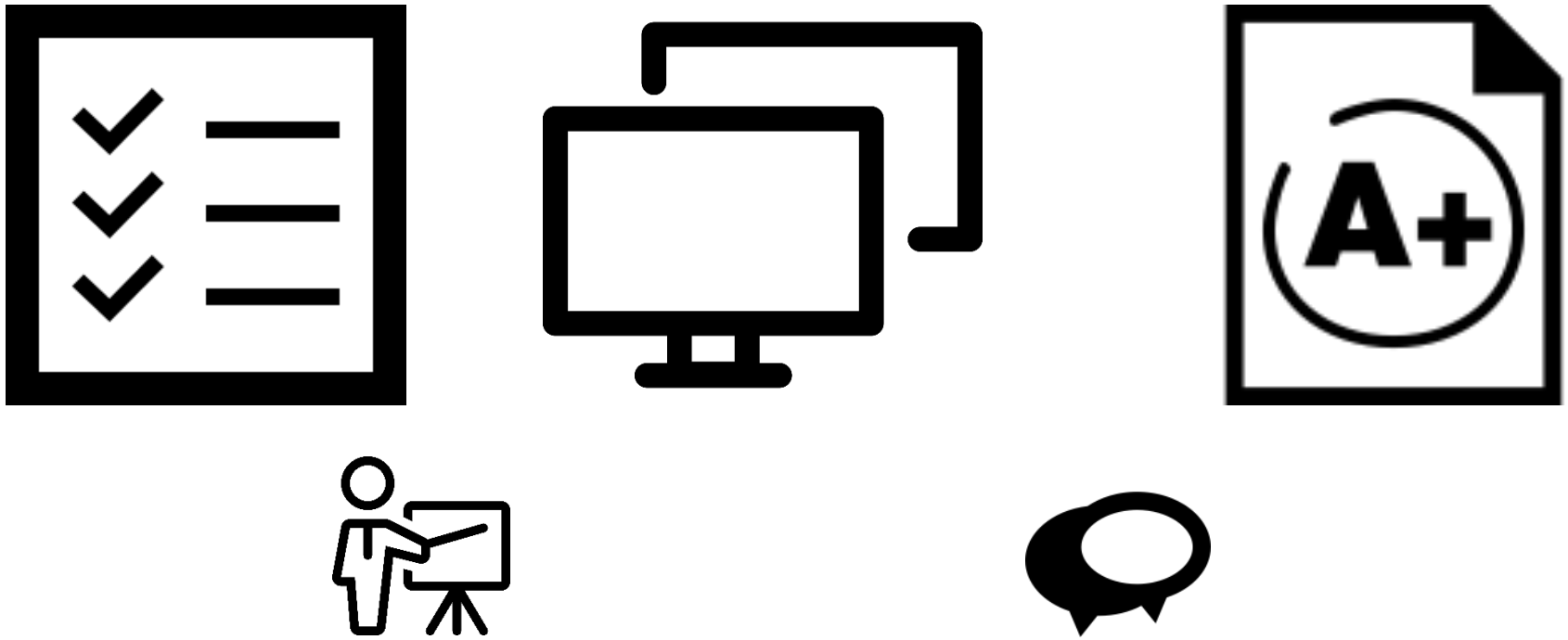
1 week prior

Data Validation



1 week prior | Validation day

Data Validation



1 week prior	Validation day	4 weeks post

Appeals

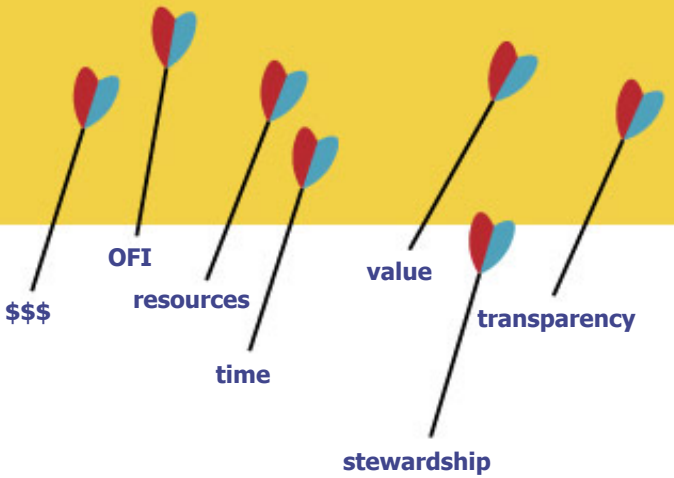
FAQ

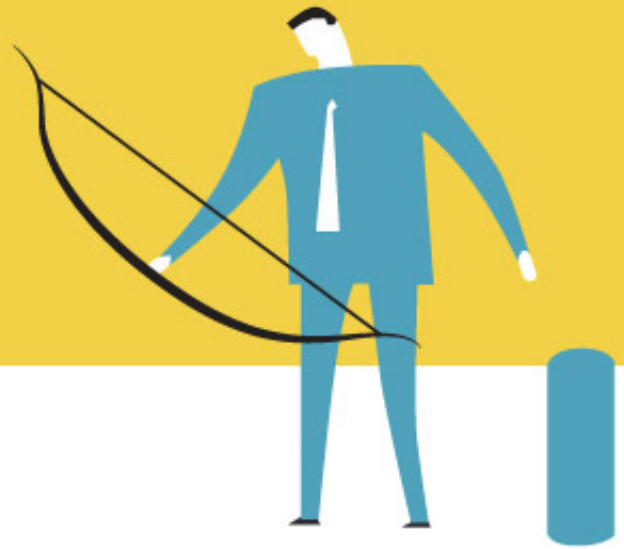
- **How long is validation?**
- **What variables are open to validation?**
- **Who has access to my score?**

New Online Analytics

New Online Analytics

Your feedback is needed to ensure meaningful targets





New Analytics

Why intuitive design matters
brought to you by your friends in. . . .

New Analytics

Intuitive Design Matters

New Analytics

Intuitive Design Matters

New Analytics

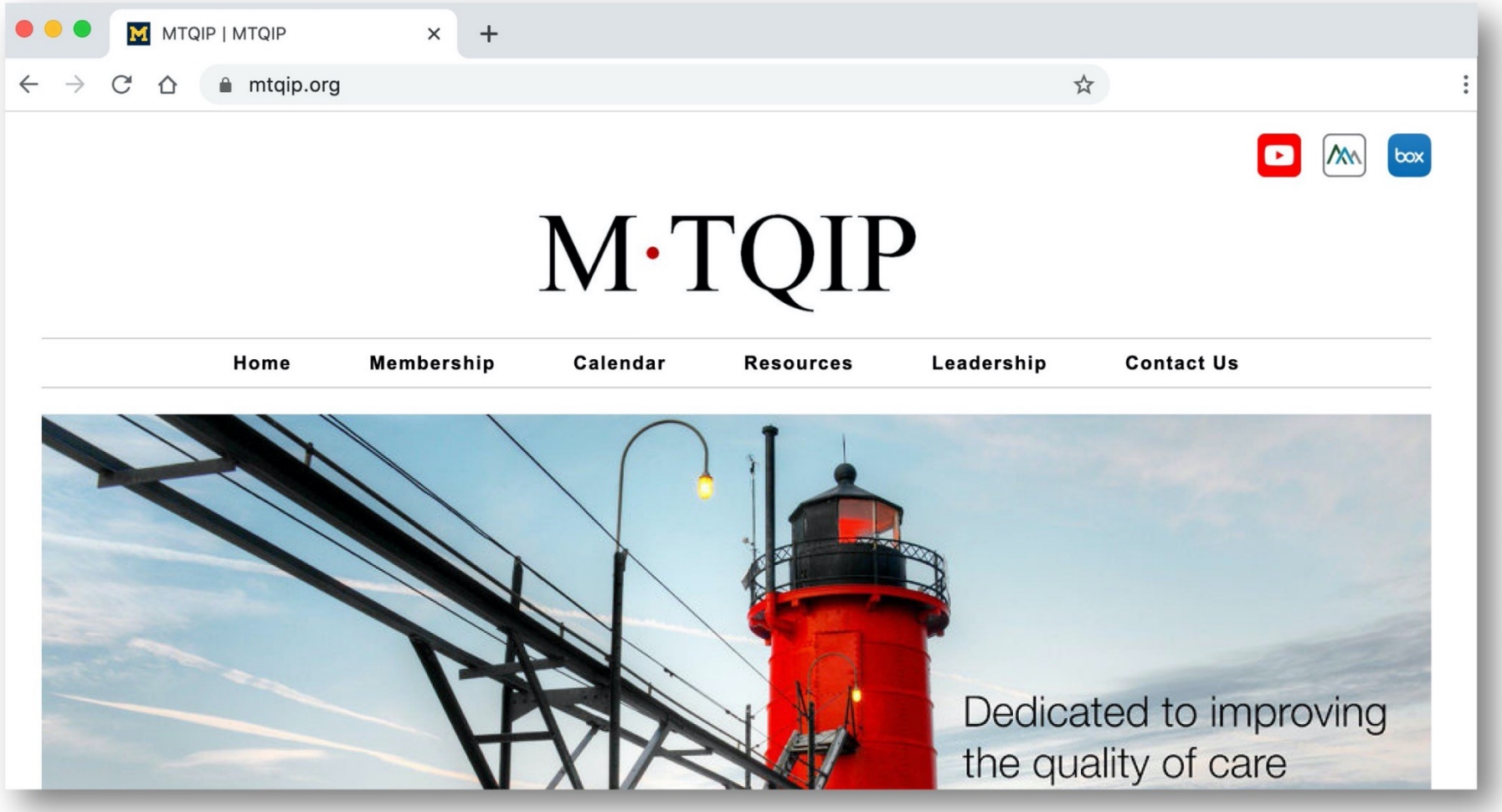
Intuitive Design Matters


Reports?
New Online Analytics

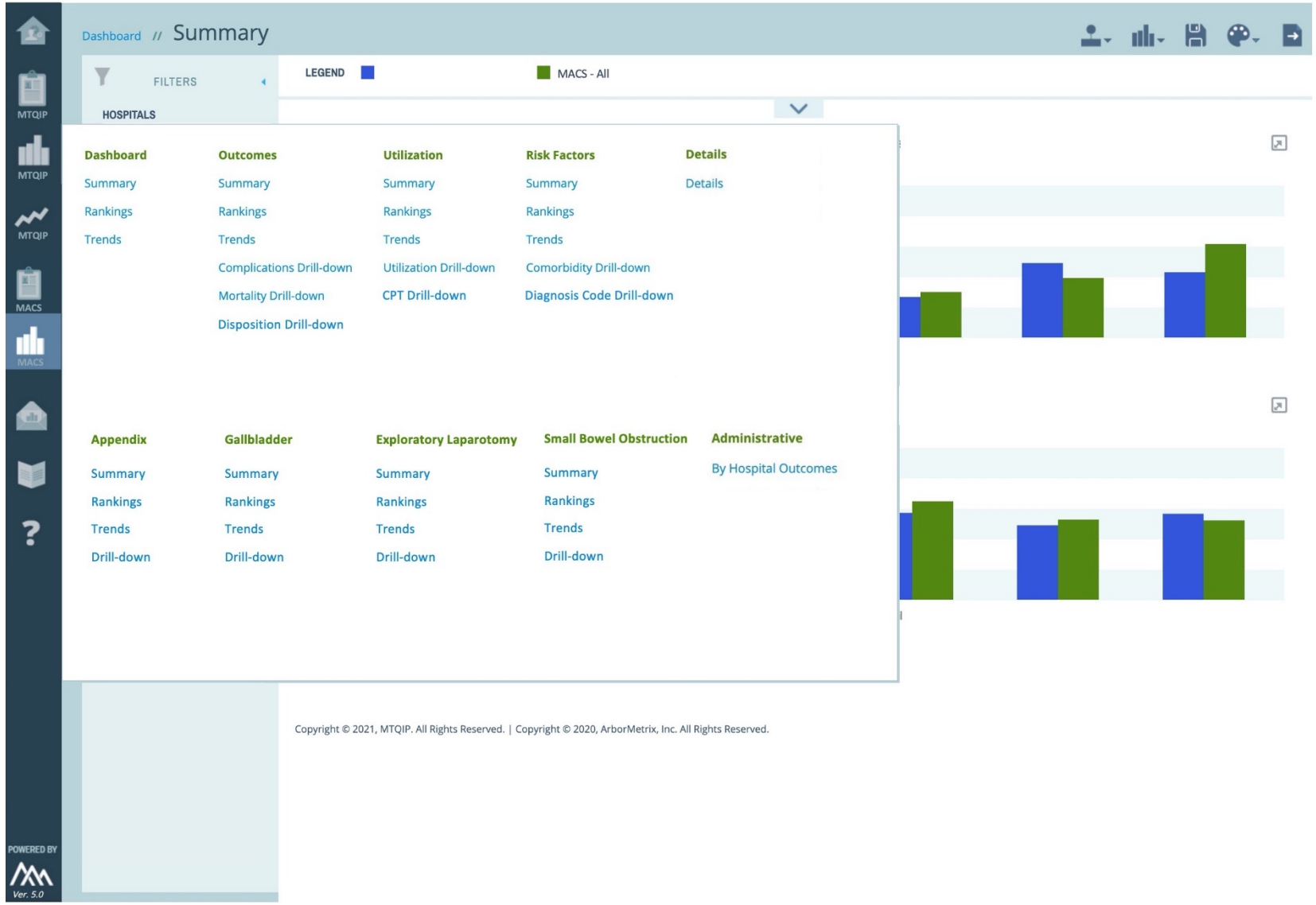

Improving?
New Online Analytics


Missing?
New Online Analytics

Access

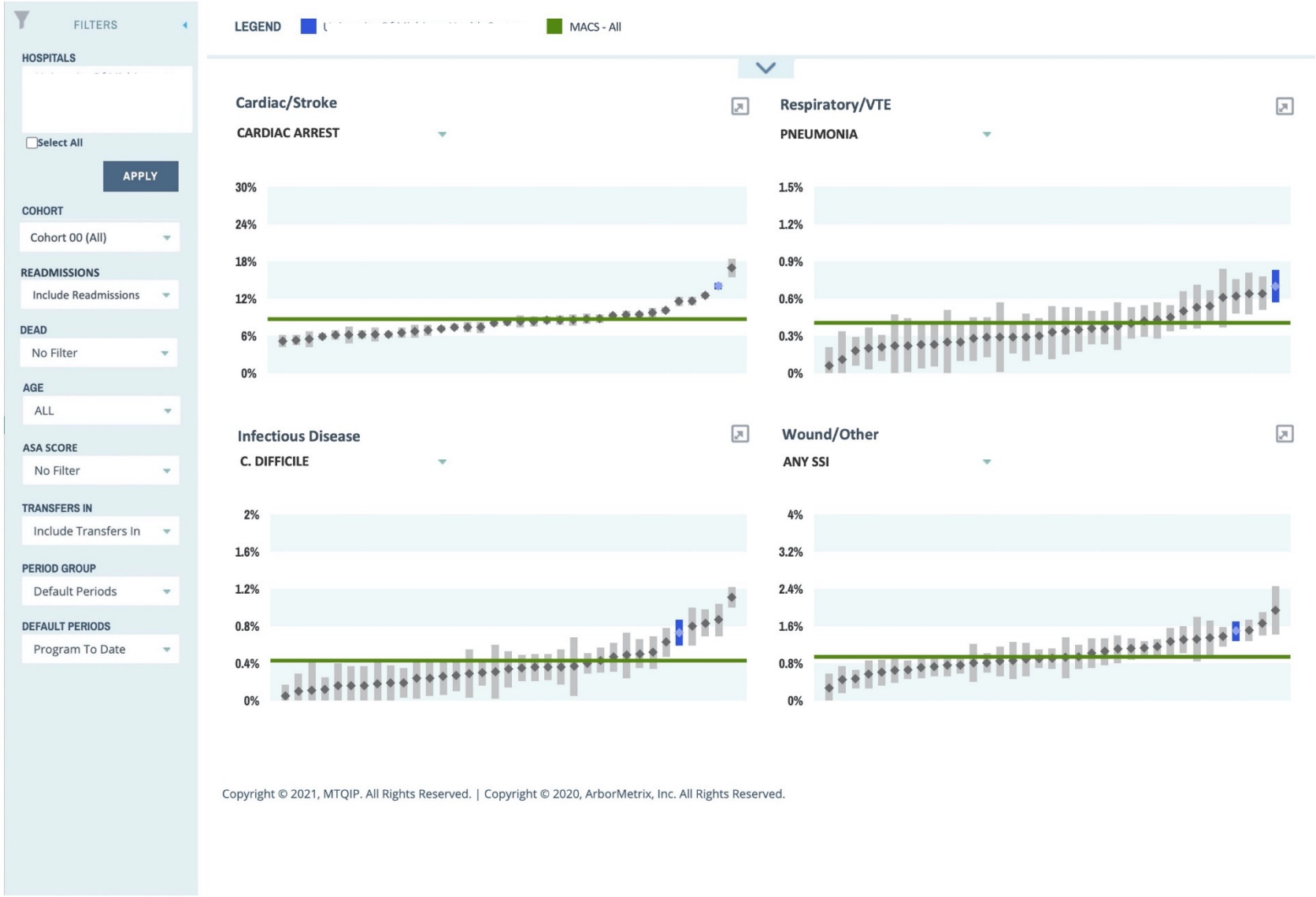

MTQIP | MTQIP
mtqip.org
box
M·TQIP
Home
Membership
Calendar
Resources
Leadership
Contact Us
Dedicated to improving
the quality of care

New Analytics



Summary

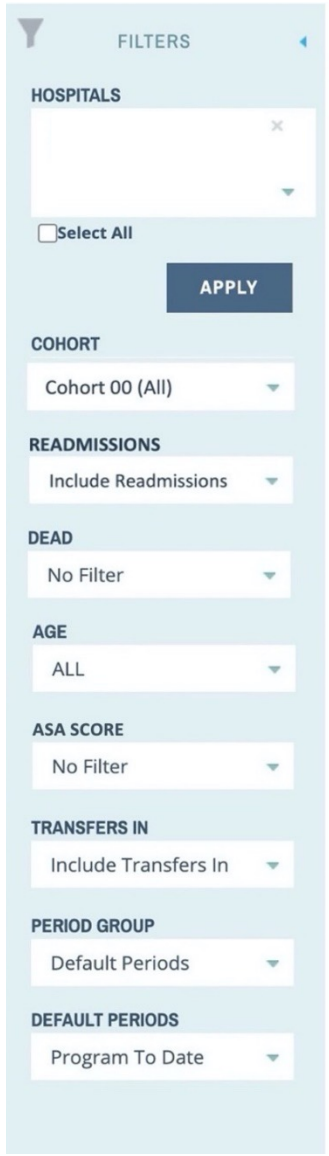
Rankings

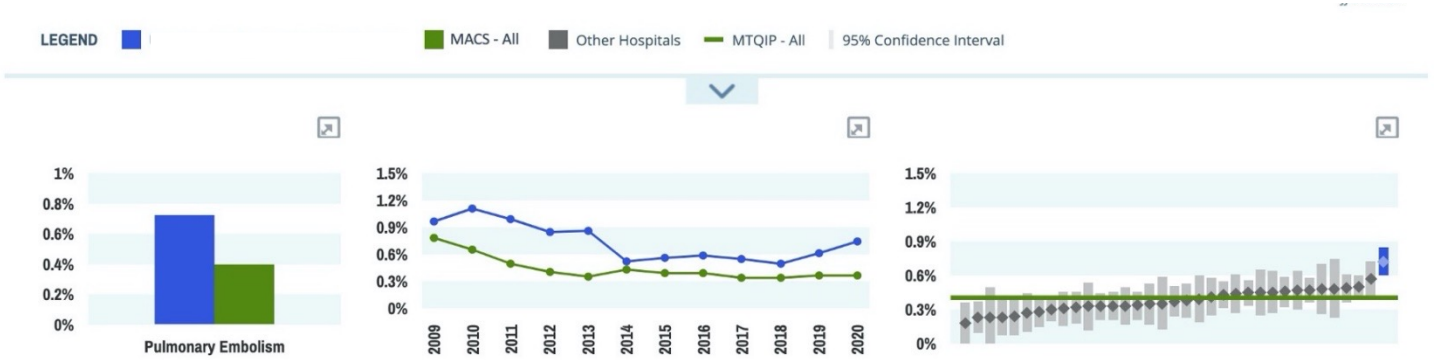


Trends


FILTERS
HOSPITALS
Select All
APPLY
COHORT
Cohort 00 (All)
READMISSIONS
Include Readmissions
DEAD
No Filter
AGE
ALL
ASA SCORE
No Filter
TRANSFERS IN
Include Transfers In
PERIOD GROUP
Default Periods
DEFAULT PERIODS
Program To Date
LEGEND
MACS - All
Hospital LOS
LOS (DAYS)
ICU Utilization
ICU LOS (DAYS)
Mechanical Ventilator Utilization
VENTILATOR DAYS
Intervention
INTERVENTIONAL RADIOLOGY
2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020
Copyright © 2021, MTQIP. All Rights Reserved. | Copyright © 2020, ArborMetrix, Inc. All Rights Reserved.

Drill Downs





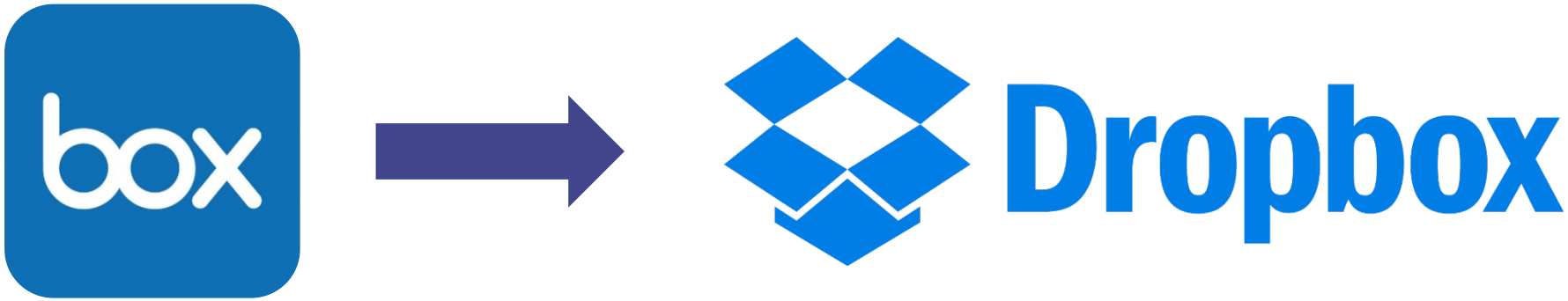
Complications Drill-Down	Cases Numerator	Cases Denominator	University Of Michigan Health System - Unadj	University Of Michigan Health System - Adj	MTQIP - All - Adj	P Value
Anastomotic Leak	496	9851	5.04	4.48	4.90	0.0098
C. Difficile	14	2361	0.59	0.46	0.4	0.56
Cardiac Arrest Requiring CPR	214	1209	17.7	16.4	18	0.044
Common Bile Duct Injury	22	8150	0.27	0.22	0.14	0.051
COVID-19	25	8150	0.31	0.22	0.13	0.03
Cystic Duct Leak	22	9851	0.22	0.24	0.14	0.0084
DVT Requiring Therapy	11	9851	0.11	0.086	0.054	0.062
Enterocutaneous Fistula	28	9597	0.29	0.28	0.25	0.4
Ileus Requiring NG Tube or NPO	101	9851	1.03	0.73	0.43	<0.001
Infected Pancreas	619	9851	6.28	4.65	2.46	<0.001
Myocardial Infarction	106	4837	2.19	1.42	0.83	<0.001
Necrotic Pancreas	206	9851	2.09	2.01	1.25	<0.001

Summary

- MACS data validation development in progress
- MACS online analytics being built
- Feedback welcome

Reminder

- Box secure file sharing being retired
- Drop Box new file sharing solution July
- Transfer any files you wish to retain June 1st



Michigan Acute Care Surgery

April 27, 2021 CQI Meeting

Kim Kramer PA-C

M·ACS

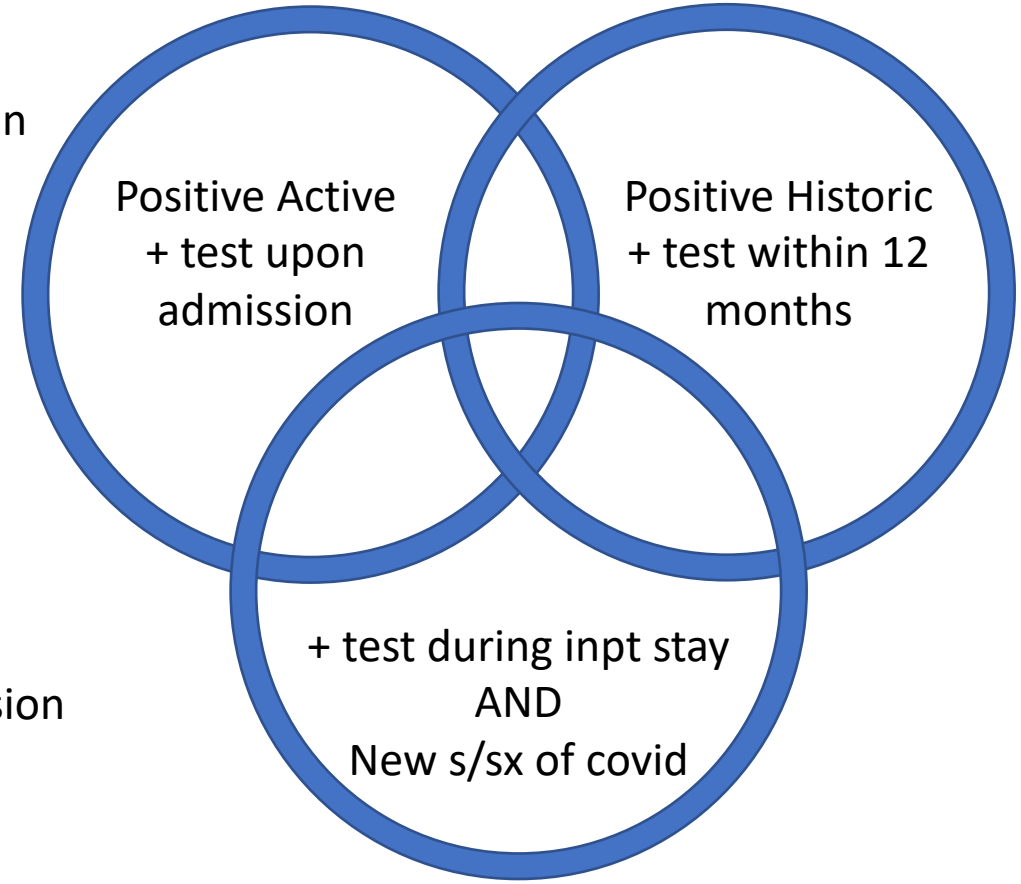
Current Positive COVID-19 Capture

COVID-19

Confirmed Positive Active	Confirmed Positive Historic	Suspected	Unlikely	Confirmed Negative

Risk Factor: Upon Admission

Occurrence: During Admission



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Cholecystectomy Occurrences

Cystic Duct Leak

- Post-operative bile leak found
- Treated with stent placement during ERCP
- Can potentially seal off without intervention

Common Bile Duct Injury

- Major complication during surgery
- Always treated with either unplanned surgery during case or subsequent biliary reconstructive surgery later (e.g. hepaticojejunostomy)
- Can temporize with PTC tube

***When in doubt, ask the surgeon.

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Acute gallbladder disease? Not a surgical candidate?

➡ Cholecystostomy Tube… then what? Only ~20% get cholecystectomy.

More options include:

Cystic Duct Stent

- Placed during ERCP
- Avoids C tube placement and dealing with:
  - bag drainage/tube flushes
  - clogging/dislodging
  - infection risk
  - tube check & changes in IR
- Improved QOL/PRO?

IR GB Ablation

- Definitive treatment after C tube placement
- Tube present 8 weeks/resolution of sepsis
- Cholangiogram to ensure cystic duct patent and remove stones
- Hydrodissection/Cryoablation
- Avoids high risk operation

IR Stone Extraction

Removal of C Tube

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AAST Grading System

Appendectomy	Cholecystectomy
I Acute Inflammation	I Acute Inflammation or gallstones
II Necrosis/Gangrene	II Necrosis/Gangrene, Pus, Hydrops (mucocele of GB)-> prolonged blockage of cystic duct creates an over distended GB filled with mucoid or clear and watery fluid.
III Perforation	III Perforation
IV Perforation + abscess/infection located in region NEAR the appendix	IV Perforation + abscess NEAR GB, also gallstone ileus or bilio-enteric fistula
V Perforation + pus located AWAY FROM appendix or generalized peritonitis	V Perforation + infection AWAY from GB or generalized peritonitis

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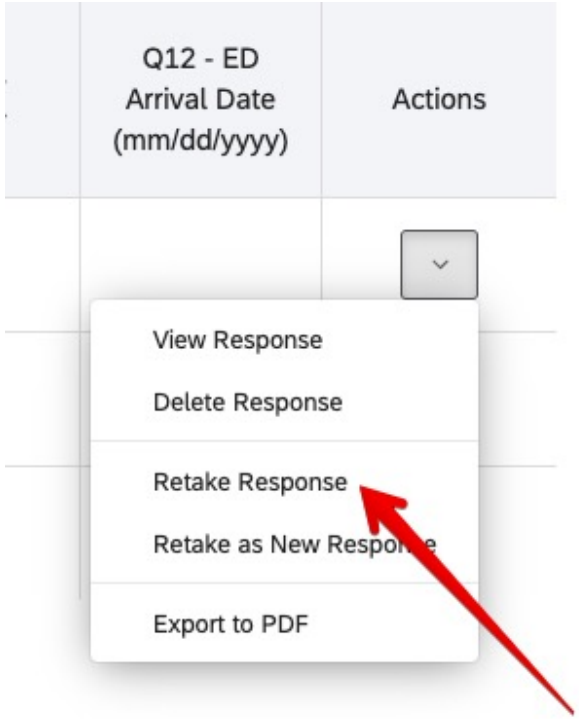
Editing Raw Data in Qualtrics

M·ACS

Caution: All edits done this way will be lost if you go back into the survey to “Retake Response” under the “Tools” button.



Recorded Responses 33

Responses in Progress 0

Page 1 of 2

Export & Import Edit Tools

Recorded Date	Q1 - MACS Case Number	Q3 - First Name	Q2 - Last Name	Q5 - Medical Record Number (MRN)	Q41 - Organ System	Q4 - Date of Birth (mm/dd/yyyy)	Q283 - Blood Gas Type	Q51 - IV Antibiotic #1 Class	Actions
Mar 3, 2021 10:56 AM				0	Appendix			Cephalosporin - Generation 2	
Feb 23, 2021 1:18 PM									
Feb 22, 2021 12:07 PM	34,234			42,342	Exploratory Laparotomy				
Jan 26, 2021 7:14 AM					Appendix				
Jan 25, 2021 11:32 AM									
Jan 25, 2021 7:06 AM									
Jan 22, 2021 11:36 AM					Small Bowel				
Jan 15, 2021 11:36 AM	123	Jane	Doe	123,456,789	Small Bowel	01/01/2021			

Recorded Responses 33

Responses in Progress 0

Edit Tools

Recorded Date	Q1 - MACS Case Number	Q3 - First Name	Q2 - Last Name	Q5 - Medical Record Number (MRN)	Q41 - Organ System	Q4 - Date of Birth (mm/dd/yyyy)	Q283 - Blood Gas Type	Q51 - IV Antibiotic #1 Class	Actions
Mar 3, 2021 10:56 AM				0	Appendix			Cephalosporin - Generation 2	
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Jan 26, 2021 7:14 AM					Appendix				
Jan 25, 2021 11:32 AM									
Jan 25, 2021 7:06 AM									
Jan 22, 2021 11:36 AM					Small Bowel				
Jan 15, 2021 11:36 AM	123	Jane	Doe	123,456,789	Small Bowel	01/01/2021			

Recorded Responses 33

Responses in Progress 0

Page 1 of 2

Export & Import Edit Tools

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Jan 15, 2021 11:36 AM	123	Jane	Doe	123,456,789	Small Bowel	01/01/2021			

Recorded Responses 33

Responses in Progress 0

Page 1 of 2

Export & Import Edit Tools

Recorded Date	Q1 - MACS Case Number	Q3 - First Name	Q2 - Last Name	Q5 - Medical Record Number (MRN)	Q41 - Organ System	Q4 - Date of Birth (mm/dd/yyyy)	Q283 - Blood Gas Type	Q51 - IV Antibiotic #1 Class	Actions
Mar 3, 2021 10:56 AM				0	Appendix			Cephalosporin - Generation 2	
Feb 23, 2021 1:18 PM									
Feb 22, 2021 12:07 PM	34,234			42,342	Exploratory Laparotomy				
Jan 26, 2021 7:14 AM					Appendix				
Jan 25, 2021 11:32 AM									
Jan 25, 2021 7:06 AM									
Jan 22, 2021 11:36 AM					Small Bowel				
Jan 15, 2021 11:36 AM	123	Jane	Doe	123,456,789	Small B				

Search...

- Aminoglycoside
- Carbapenem
- Cephalosporin - Generation 1
- ✓ Cephalosporin - Generation 2
- Cephalosporin - Generation 3
- Cephalosporin - Generation 4
- Lincosamide
- Marcolide
- Monobactam
- Penicillin
- Quinolone
- Sulfonamide
- Tetracycline
- Other
- None Selected

Recorded Responses 33

Responses in Progress 0

1 Request Pending

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Export & Import Edit Tools

Recorded Date	Q1 - MACS Case Number	Q3 - First Name	Q2 - Last Name	Q5 - Medical Record Number (MRN)	Q41 - Organ System	Q4 - Date of Birth (mm/dd/yyyy)	Q283 - Blood Gas Type	Q51 - IV Antibiotic #1 Class	Actions
Mar 3, 2021 10:56 AM				0	Appendix				
Feb 23, 2021 1:18 PM									
Feb 22, 2021 12:07 PM	34,234			42,342	Exploratory Laparotomy				
Jan 26, 2021 7:14 AM					Appendix				
Jan 25, 2021 11:32 AM									
Jan 25, 2021 7:06 AM									
Jan 22, 2021 11:36 AM					Small Bowel				
Jan 15, 2021 11:36 AM	123	Jane	Doe	123,456,789	Small Bowel	01/01/2021			

Recorded Responses 33

Responses in Progress 0

Requests Pending

Page 1 of 2

Export & Import | Edit | Tools

Recorded Date	Q1 - MACS Case Number	Q3 - First Name	Q2 - Last Name	Q5 - Medical Record Number (MRN)	Q41 - Organ System	Q4 - Date of Birth (mm/dd/yyyy)	Q283 - Blood Gas Type	Q51 - IV Antibiotic #1 Class	Actions
Mar 3, 2021 10:56 AM				0	Appendix				
Feb 23, 2021 1:18 PM									
Feb 22, 2021 12:07 PM	34,234			42,342	Exploratory Laparotomy		Venous		
Jan 26, 2021 7:14 AM					Appendix				
Jan 25, 2021 11:32 AM									
Jan 25, 2021 7:06 AM									
Jan 22, 2021 11:36 AM					Small Bowel				
Jan 15, 2021 11:36 AM	123	Jane	Doe	123,456,789	Small Bowel	01/01/2021			
Jan 15, 2021 11:31 AM	1	john	Doe	102,084,686	Appendix	01/01/2021			

Recorded Responses 33

Responses in Progress 0

5 Requests Pending

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Export & Import | Edit | Tools

Recorded Date	Q1 - MACS Case Number	Q3 - First Name	Q2 - Last Name	Q5 - Medical Record Number (MRN)	Q41 - Organ System	Q4 - Date of Birth (mm/dd/yyyy)	Q283 - Blood Gas Type	Q51 - IV Antibiotic #1 Class	Actions
Mar 3, 2021 10:56 AM				0	Appendix				
Feb 23, 2021 1:18 PM									
Feb 22, 2021 12:07 PM	34,234			42,342	Exploratory Laparotomy		Venous		
Jan 26, 2021 7:14 AM					Appendix				
Jan 25, 2021 11:32 AM									
Jan 25, 2021 7:06 AM									
Jan 22, 2021 11:36 AM					Small Bowel				
Jan 15, 2021 11:36 AM	123	Jane	Doe	123,456,789	Small Bowel	01/01/2021			
Jan 15, 2021 11:31 AM	1	john	Doe	102,084,686	Appendix	01/01/2021			

Search...

Arterial

Venous

None Selected

Recorded Responses 33

Responses in Progress 0

Requests Pending

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Export & Import | Edit | Tools

Recorded Date	Q1 - MACS Case Number	Q3 - First Name	Q2 - Last Name	Q5 - Medical Record Number (MRN)	Q41 - Organ System	Q4 - Date of Birth (mm/dd/yyyy)	Q283 - Blood Gas Type	Q51 - IV Antibiotic #1 Class	Actions
Mar 3, 2021 10:56 AM				0	Appendix		+	+	
Feb 23, 2021 1:18 PM					+		+	+	
Feb 22, 2021 12:07 PM	34,234			42,342	Exploratory Laparotomy		+	+	
Jan 26, 2021 7:14 AM					Appendix		+	+	
Jan 25, 2021 11:32 AM					+		+	+	
Jan 25, 2021 7:06 AM					+		+	+	
Jan 22, 2021 11:36 AM					Small Bowel		+	+	
Jan 15, 2021 11:36 AM	123	Jane	Doe	123,456,789	Small Bowel	01/01/2021	+	+	
Jan 15, 2021 11:31 AM	1	john	Doe	102,084,686	Appendix	01/01/2021	+	+	

M·ACS

Reminder:

With any subsequent “Retake Response” edits under the “Actions” button, all edits done this way will be lost.

M·ACS

MACS case lock out: 90 days post-op or post-discharge

M·ACS

MACS Communication and Education

- MACS Abstractor email forum

- MACS Abstractor zoom sessions
  - 1 hour every other month
  - First session in May or July? TBD
  - Attendance optional
  - Review a surgical topic, data dictionary definition, etc.
  - Needs survey