Measuring Quality in Ambulatory Anesthesiology: Challenges and Opportunities

Jaime B. Hyman, MD

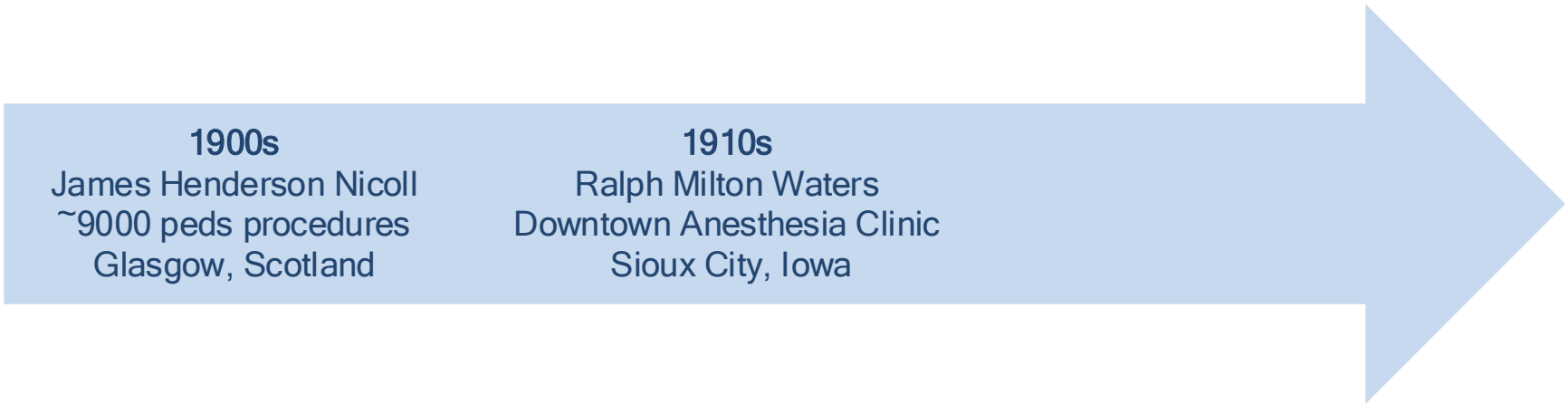
Yale SCHOOL OF MEDICINE

YALE
ANESTHESIOLOGY

Learning Objectives

1. Assess safety in current ambulatory anesthesiology practice
2. Apply recent consensus statements relevant to ambulatory anesthesiology into practice
3. Formulate a patient-centered approach to high-quality perioperative care of the ambulatory surgical patient

History of Ambulatory Anesthesiology



Yale SCHOOL OF MEDICINE

Hyman JB, Goren O, Wilson S, Philip BK. Ambulatory (Outpatient) Anesthesia. In Miller's Anesthesia, 10th edition. Gropper MA, Eriksson LI, Fleisher LA, Cohen NH, Leslie K, Johnson-Akeju O, editors. Elsevier, New York, NY. **2024**; 2149- 2184

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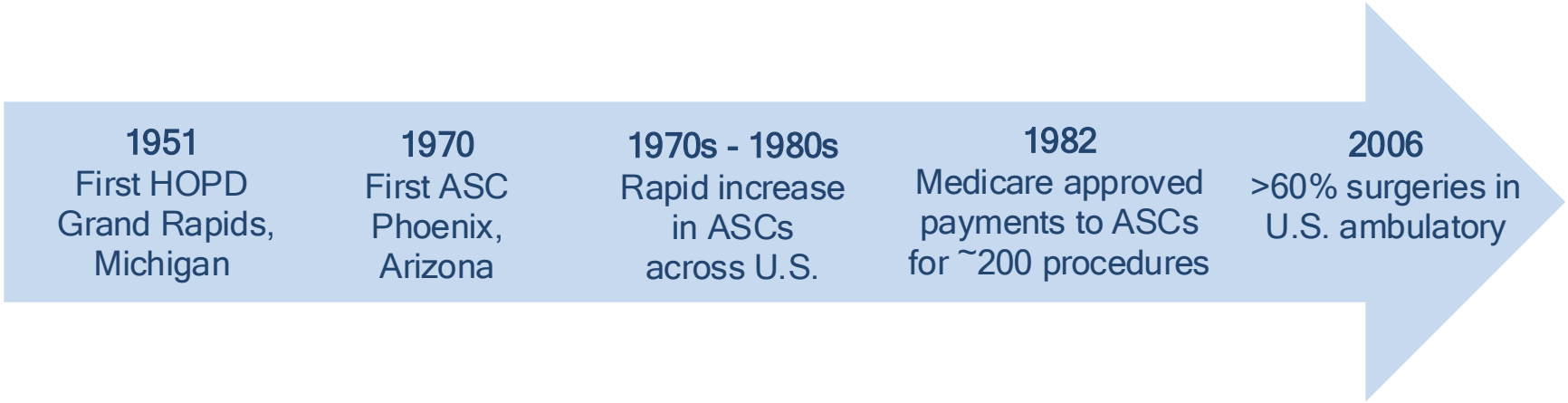

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Journal of Clinical Anesthesia 98 (2024) 111596

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

Original Contribution

Since the COVID-19 pandemic, approximately 90% of elective anesthetics have been ambulatory: A retrospective analysis of statewide data in Florida from 2010 through 2022☆

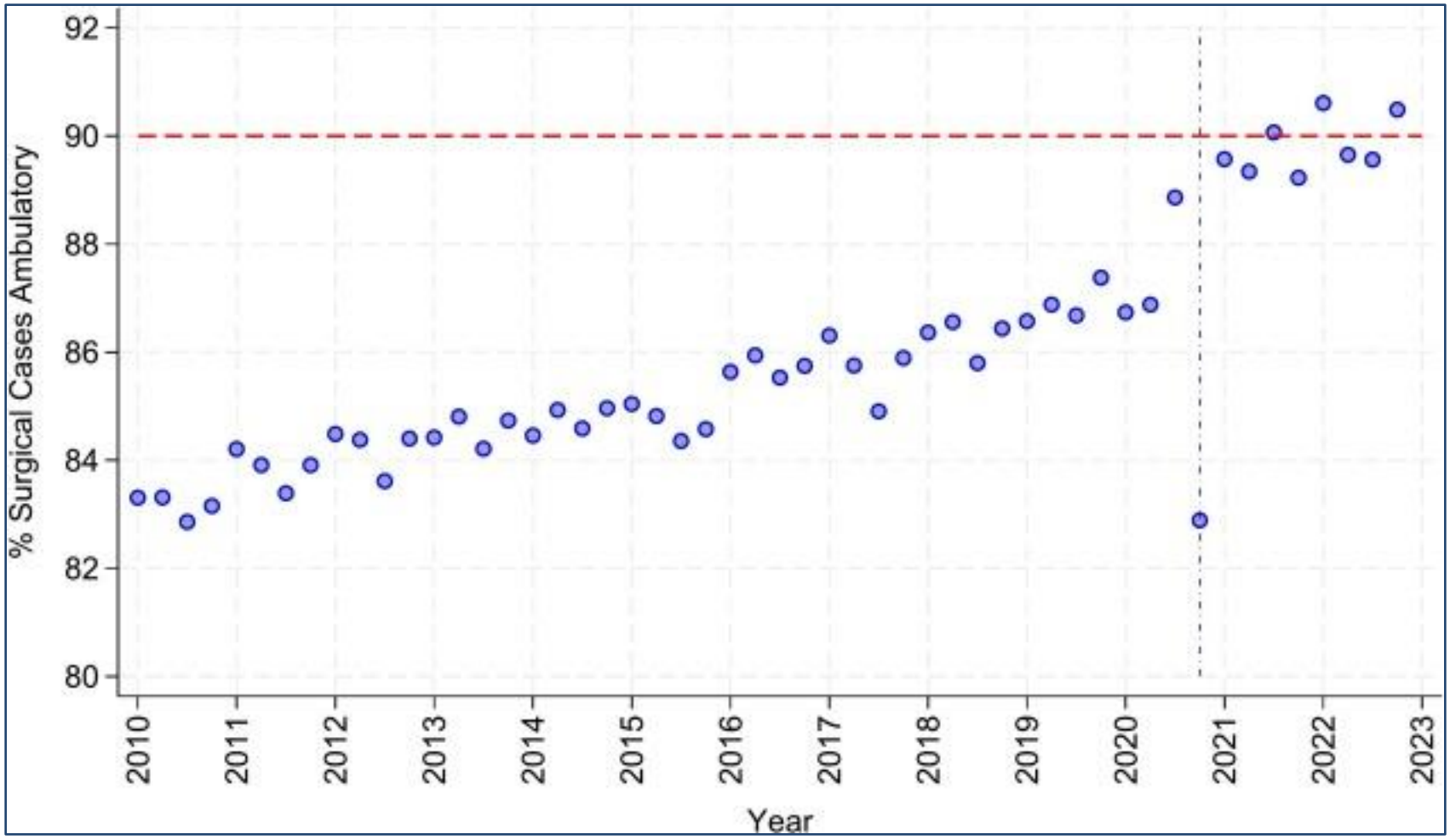
Richard H. Epstein, M.D. F.A.S.A [a], Franklin Dexter, M.D., Ph.D., F.A.S.A [b,*], Brenda G. Fahy, M.D. M.C.C.M., F.A.S.A [c]

[a] *Professor of Clinical Anesthesiology, Department of Anesthesiology, Perioperative Medicine & Pain Management, University of Miami, Miller School of Medicine, Miami, FL, USA*

[b] *Division of Management Consulting, Department of Anesthesia, University of Iowa, Iowa City, IA, USA*

[c] *Professor of Anesthesiology, Department of Anesthesiology, University of Florida, Gainesville, FL, USA*

Percentage of Ambulatory Cases



Yale SCHOOL OF MEDICINE

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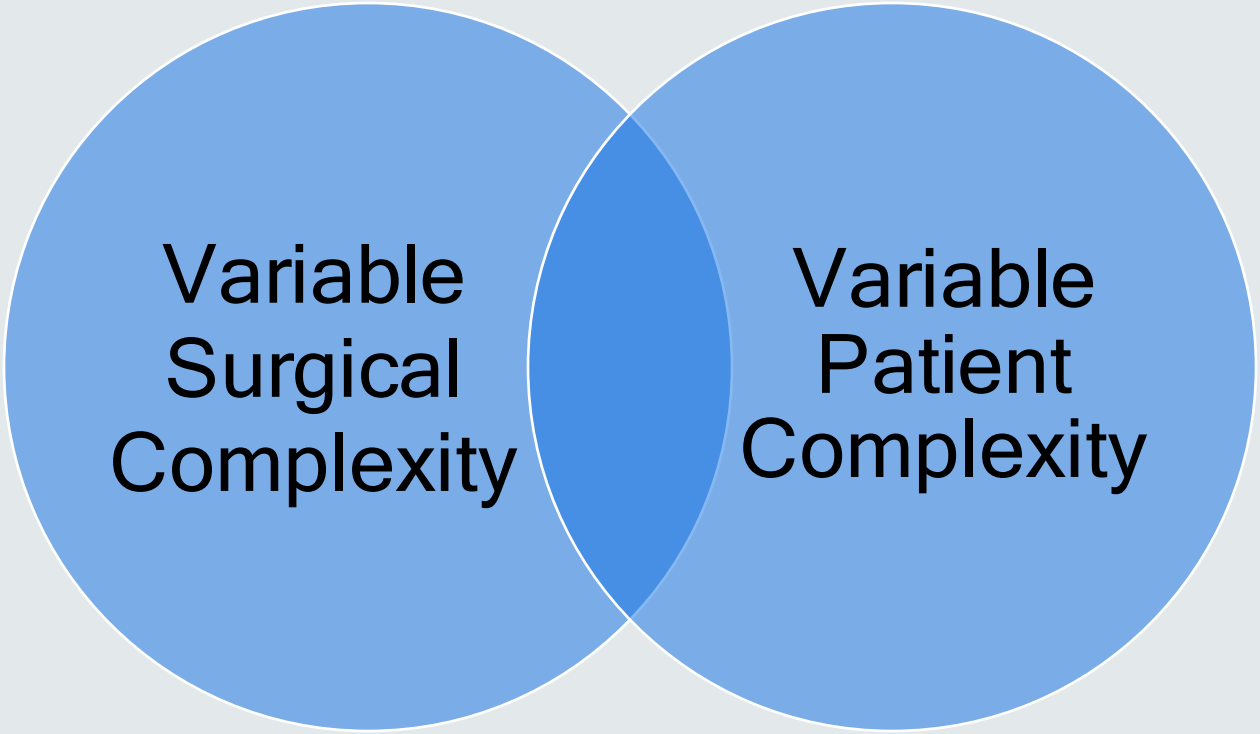
Ambulatory Anesthesiology in 2025:

- >4,000 CMS approved procedure codes for ASCs



https://www.cms.gov/medicare/payment/prospective-payment-systems/ambulatory-surgical-center-asc/asc-regulations-and-notices/cms-1809-fc

Remainder of Talk:

Reflect on safety

Consensus Statements

Beyond Morbidity…

Thoughts for the future

Patient Selection for Day Case-eligible Surgery

Identifying Those at High Risk for Major Complications

Michael R. Mathis, M.D.,* Norah N. Naughton, M.D., M.B.A.,† Amy M. Shanks, M.S.,‡ Robert E. Freundlich, M.D., M.S.,* Christopher J. Pannucci, M.D., M.S.,§ YiJia Chu, M.D.,* Jason Haus, M.D.,* Michelle Morris, M.S.,‡ Sachin Kheterpal, M.D., M.B.A.‖

- NSQIP database **2005-2010; N =** 244,397
- 100 most used CPT codes for outpatient surgery claims
- General or neuraxial anesthesia
- Primary outcome: 72h major morbidity/ mortality
- Occurred in 0.095%

Mathis MR, et al. Kheterpal S. Patient selection for day case-eligible surgery: identifying those at high risk for major complications. Anesthesiology. **2013**; 119(6):1310-21

Table 1. Most Commonly Performed (>1,000) Surgical Cases by CPT Code within Study Population

Primary CPT Code	Procedures Performed (% of Population)	Description	Frequency of Perioperative Mortality <72 h	Frequency of Perioperative Morbidity <72 h
47562	43,952 (18.0)	Laparoscopic cholecystectomy	5	67
49505	42,082 (17.2)	Inguinal hernia repair	4	26
19125	20,343 (8.3)	Excision of breast lesion	1	7
49585	20,063 (8.2)	Umbilical hernia repair	0	12
19301	17,811 (7.3)	Partial mastectomy	0	13
19120	17,692 (7.2)	Removal of breast lesion	0	7
49560	13,046 (5.3)	Abdominal wall hernia repair	3	21
49650	12,857 (5.3)	Femoral/inguinal hernia repair	0	14
47563	12,300 (5.0)	Laparoscopic cholecystectomy	1	11
43770	7,498 (3.1)	Laparoscopic gastric band placement	0	6
29881	5,422 (2.2)	Knee arthroscopy with meniscectomy	0	2
19302	4,051 (1.7)	Partial mastectomy with under-arm lymph node removal	0	2
57288	3,145 (1.3)	Repair of bladder defect	0	1
42826	2,691 (1.1)	Tonsillectomy over age 12	1	3
19318	2,222 (0.9)	Reduction of large breast	0	5
29826	2,137 (0.9)	Shoulder arthroscopy, bone shaving	1	1
29827	1,930 (0.8)	Shoulder arthroscopy, rotator cuff repair	0	0
29880	1,877 (0.8)	Knee arthroscopy with meniscectomy	0	0
29888	1,825 (0.7)	Knee arthroscopy with anterior cruciate ligament repair	0	0
63030	1,639 (0.7)	Low back disk repair	0	3
52648	1,451 (0.6)	Laser vaporization of prostate	0	3
52234	1,289 (0.5)	Cystoscopy, removal of small tumor	1	1
52235	1,163 (0.5)	Cystoscopy, removal of medium tumor	1	3

Mathis MR, et al. Kheterpal S. Patient selection for day case-eligible surgery: identifying those at high risk for major complications. Anesthesiology. **2013**; 119(6):1310-21

Invited Special Paper

INTERNATIONAL JOURNAL OF SURGERY

OPEN

Outpatient surgery benchmarks and practice variation patterns: case controlled study

Chi Zhang, MD[a,b], Omair Shariq, MBBS, MS[b,c], Katherine Bews, MS[b], Katherine Poruk, MD[f], Mary M. Mrdutt, MD, MS[e], Trenton Foster, MD[d], David A. Etzioni, MD[a], Elizabeth B. Habermann, PhD, MPH[b,c], Cornelius Thiels, DO, MBA[c,*]

- NSQIP database **2016 – 2020;** 14 procedure types
- N = 848,468
  - Inpatient 37%
  - Outpatient 63%
- 30d adverse events:
  - Outpatients: 2 - 9%
  - Inpatients: 3 - 13%
  - Outpatient vs inpatient:
    - aOR 0.38 (95% CI: 0.37-0.39)

Zhang C, et al. Outpatient surgery benchmarks and practice variation patterns: case controlled study. Int J Surg. **2024**; 110(10):6297-6305.

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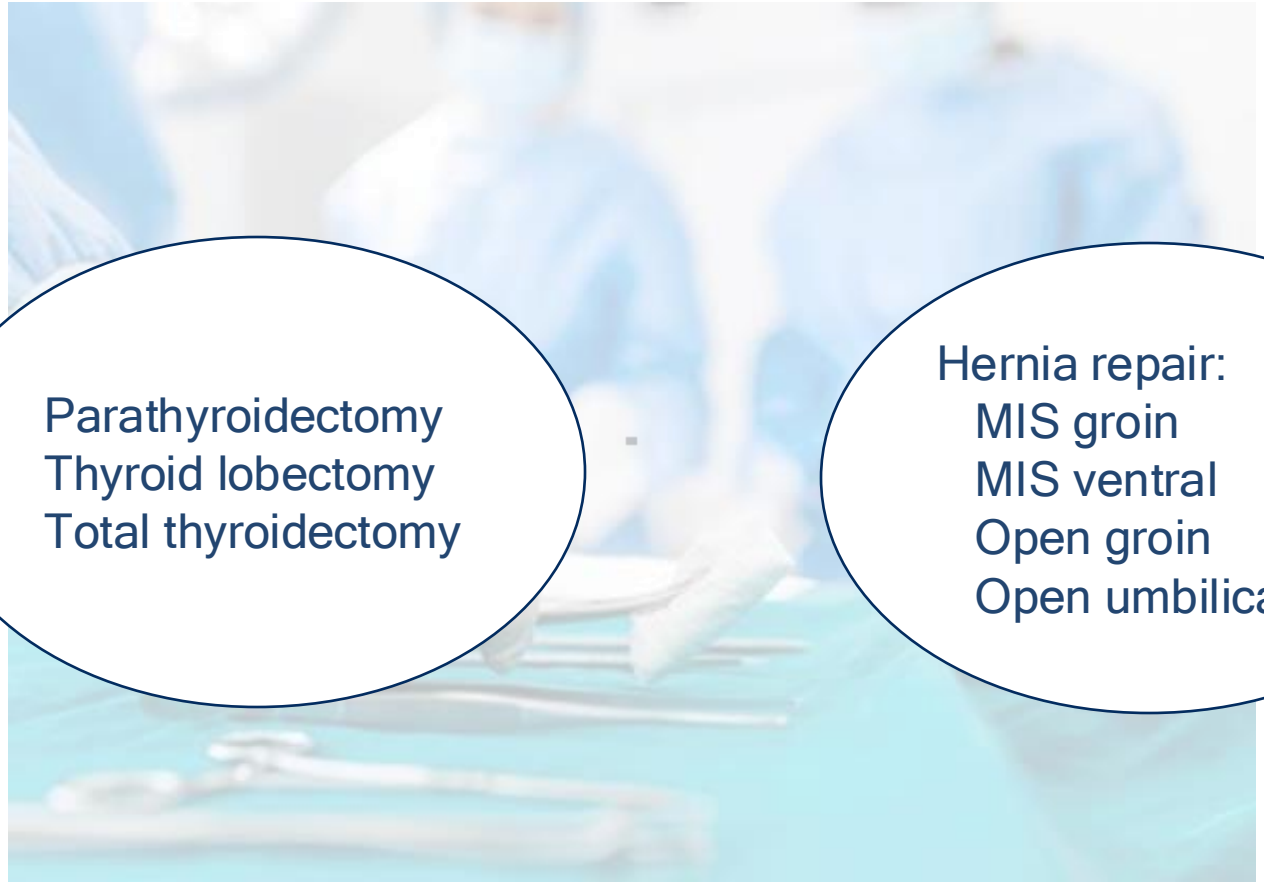
Same Day Discharge Surgeries



Parathyroidectomy
Thyroid lobectomy
Total thyroidectomy

Hernia repair:
- MIS groin
- MIS ventral
- Open groin
- Open umbilical

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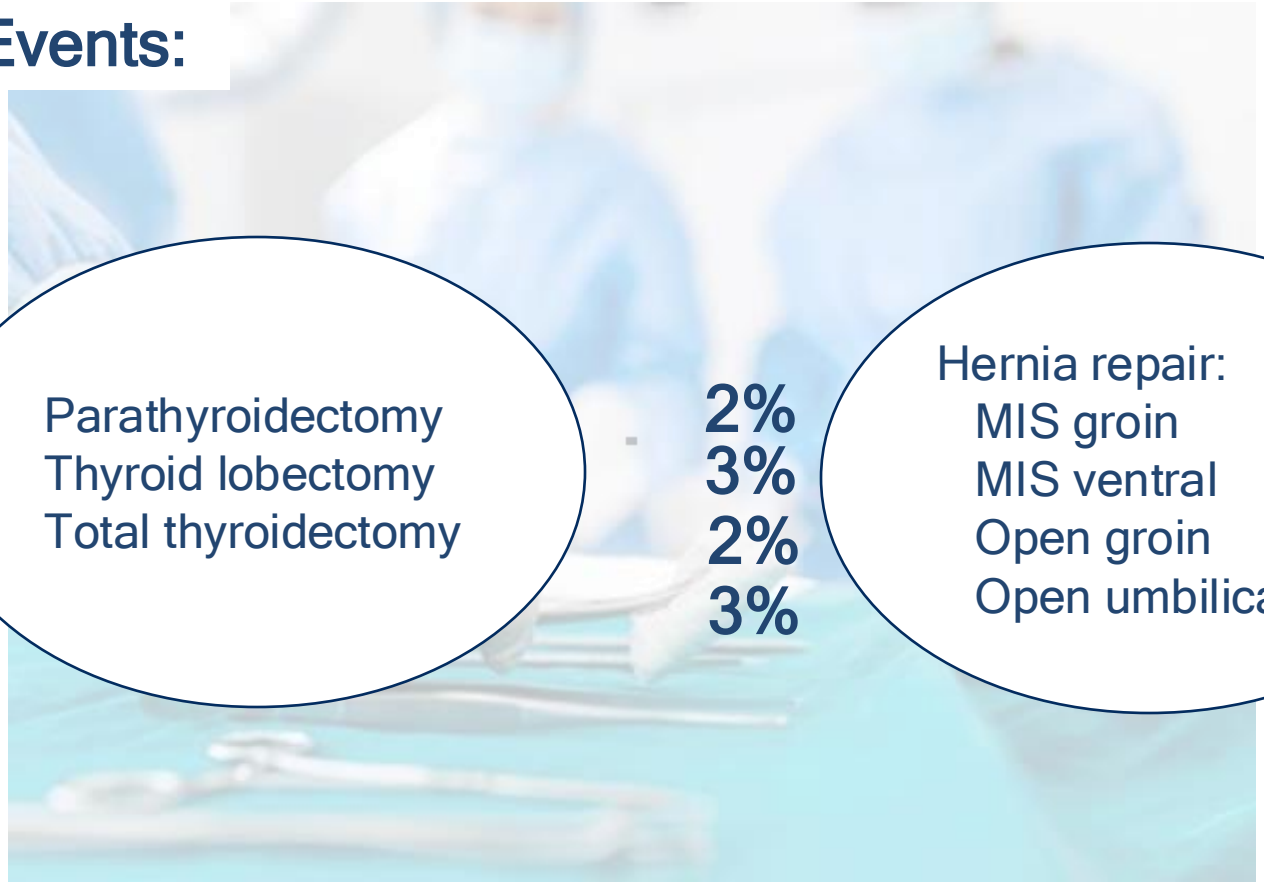
Same Day Discharge Surgeries

Adverse Events:



2% Parathyroidectomy
2% Thyroid lobectomy
2% Total thyroidectomy

Hernia repair:
2% MIS groin
3% MIS ventral
2% Open groin
3% Open umbilical

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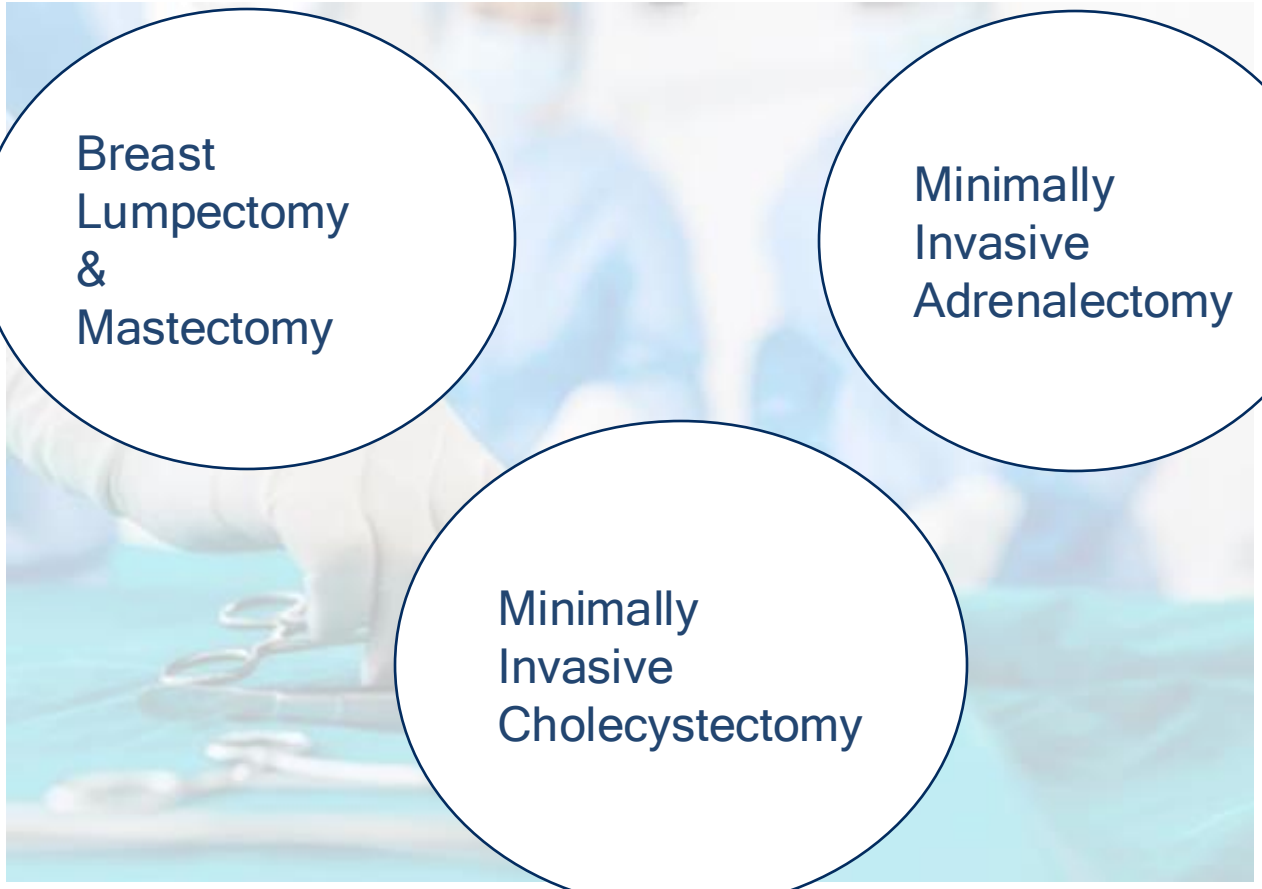

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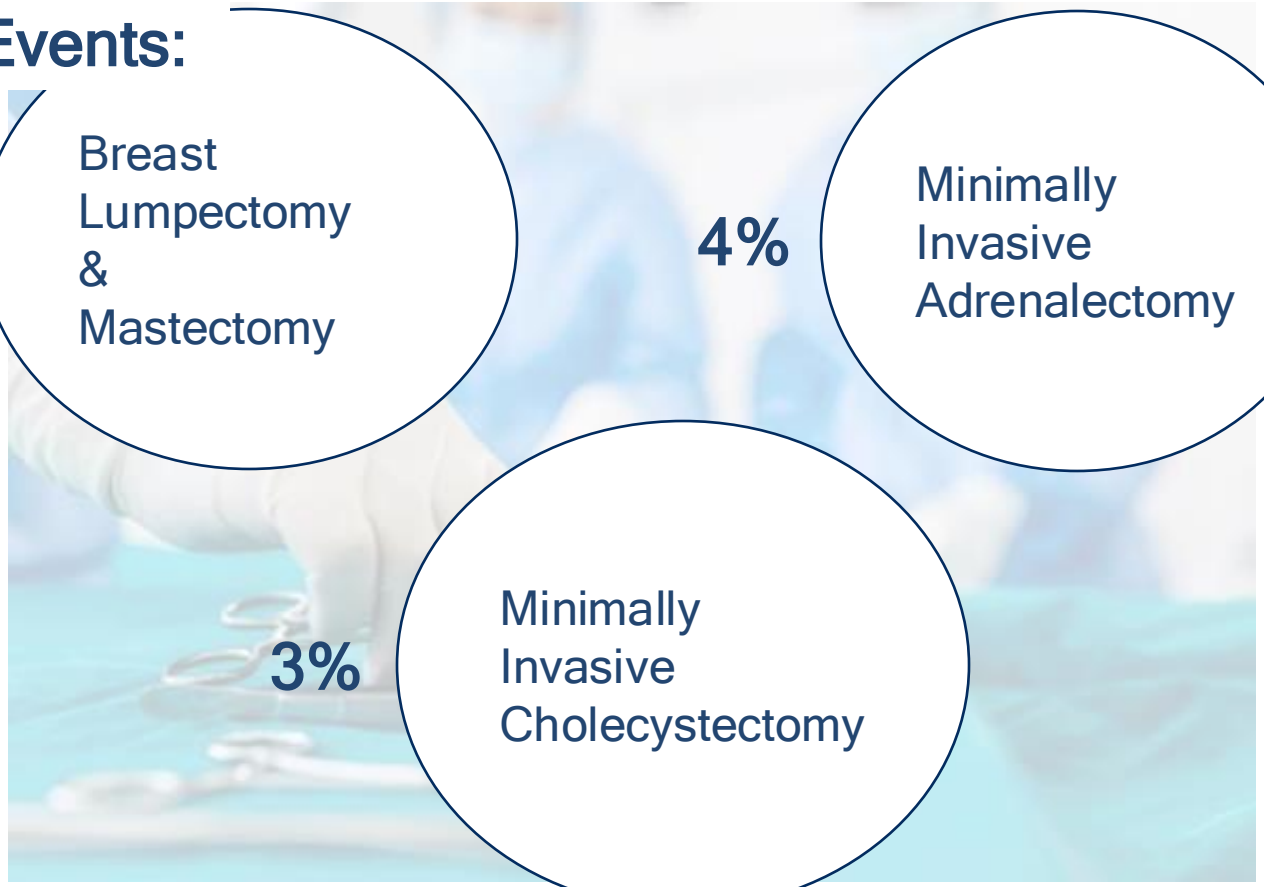

- 4% 6% Breast Lumpectomy & Mastectomy
- 4% Minimally Invasive Adrenalectomy
- 3% Minimally Invasive Cholecystectomy

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Next Day Discharge Surgeries

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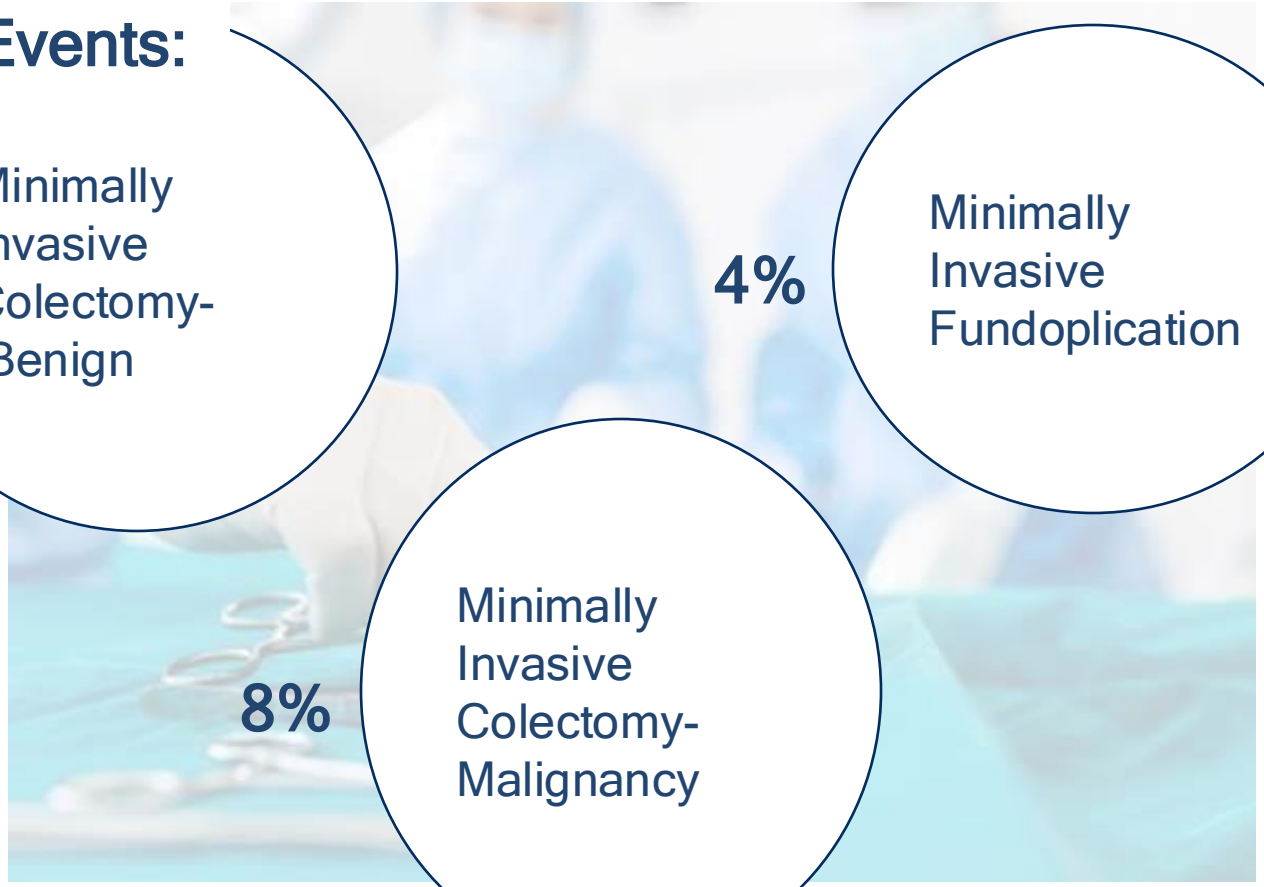

- 9% Minimally Invasive Colectomy- Benign
- 4% Minimally Invasive Fundoplication
- 8% Minimally Invasive Colectomy- Malignancy

Consensus Statements to support our Practice…

SPECIAL ARTICLE

Preoperative Care for Cataract Surgery: The Society for Ambulatory Anesthesia Position Statement

BobbieJean Sweitzer, MD, FACP, SAMBA-F, FASA,* Niraja Rajan, MD,† Dawn Schell, MD,‡ Steven Gayer, MD, MBA,§ Stan Eckert, MD,‖ and Girish P. Joshi, MBBS, MD, FFARCSI¶

Cataract surgeries are among the most common procedures requiring anesthesia care. Cataracts are a common cause of blindness. Surgery remains the only effective treatment of cataracts. Patients are often elderly with comorbidities. Most cataracts can be treated using topical or regional anesthesia with minimum or no sedation. There is minimal risk of adverse outcomes. There is general consensus that cataract surgery is extremely low risk, and the benefits of sight restoration and preservation are enormous. We present the Society for Ambulatory Anesthesia (SAMBA) position statement for preoperative care for cataract surgery. (Anesth Analg 2021;133:1431–6)

GLOSSARY

ACC/AHA = American College of Cardiology and American Heart Association; **ASA-PS** = American Society of Anesthesiologists physical status; **ASC** = ambulatory surgery center; **CIED** = cardiac implantable electronic device; **CMS** = Centers for Medicare and Medicaid Services; **DAPT** = dual antiplatelet therapy; **ICD** = implantable cardioverter defibrillator; **POQI** = Perioperative Quality Initiative; **SAMBA** = Society for Ambulatory Anesthesia; **TIA** = transient ischemic attacks

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SPECIAL ARTICLE

Preoperat … Society for Ambul… …nt

BobbieJean Sweitz… MD,‡
Steven Gayer, MD, …CSI¶

Catarac… …sia care. Catarac… …atment of cataract… …ted using topical … …f adverse outcom… …l the ben-efits of … …mbulatory Anesth… … (Anesth Analg 2…

GLOSSA…

ACC/AH… … = American Society … = cardiac implantal… **APT** = dual antiplate… …ive Quality Initiative; …s

Cataract surgery *should likely* be delayed to allow optimization:

- MI within previous 30-60 days
- Recent PCI (without stenting 14 days, with stents 30 days)
- Significant arrhythmias with hemodynamic compromise (VT, afib/RVR)
- Decompensated CHF
- Acute pulmonary conditions (active pneumonia, URI, PE in past 3 months)
- Acute neurologic conditions (AMS, CVA within 3 months, uncontrolled epilepsy, increased ICP)
- DKA or hyperosmolar hyperglycemic nonketotic syndrome
- Malignant hypertension with **acute end-organ damage in at least 3 target organs**

Sweitzer B, et al. Preoperative Care for Cataract Surgery: The Society for Ambulatory Anesthesia Position Statement. Anesth Analg. **2021**; 133(6):1431-1436.

SAMBA Consensus Statement on Perioperative Blood Glucose Management

Yale SCHOOL OF MEDICINE

Rajan N, et al. Society for Ambulatory Anesthesia Updated Consensus Statement on Perioperative Blood Glucose Management in Adult Patients With Diabetes Mellitus Undergoing Ambulatory Surgery. Anesth Analg. **2024**; 139(3):459-477.

SAMBA Consensus Statement on Perioperative Blood Glucose Management

Table 1. Summary Recommendations for Perioperative Blood Glucose Management in Adult Patients Undergoing Ambulatory Surgery

Recommendation	Strength	Grade of evidence	Change from 2010
We recommend procedure postponement in patients with hyperglycemia associated with symptoms suggestive of complications such as diabetic ketoacidosis or hyperglycemic hyperosmolar nonketotic syndrome	Strong	Moderate	Unchanged
We do not recommend postponing ambulatory procedure based on A1C levels	Strong	Moderate	New
We recommend proceeding with the planned procedure in patients presenting with hyperglycemia (BG >180 mg/dL, 10 mmol/L) in the absence of DKA or HHNS	Strong	Moderate	Unchanged
We recommend target blood glucose concentrations of 180–250 mg/dL, based on patient and procedure characteristics	Strong	Moderate	New
We recommend preprocedure hydration with water in lieu of carbohydrate loading in diabetes patients	Strong	Moderate	New
We recommend the use of subcutaneous insulin administration for treatment of hyperglycemia	Strong	Moderate	Unchanged
We recommend the use of point-of-care glucose meters to confirm accuracy of continuous glucose monitors and automated insulin dosing systems in periprocedure blood glucose management	Strong	Moderate	New
We suggest continuing a patient's continuous subcutaneous insulin infusion for procedures under 2 h if the device can be placed outside of the surgical field and can be easily visualized and accessed	Conditional	Low	New
We suggest that significant periprocedure hyperglycemia (blood glucose concentrations >250 mg/dL) in insulin naïve patients may be treated with insulin based on patient and procedure characteristics	Conditional	Low	New
We recommend the use of low-dose (4 mg) dexamethasone in patients with diabetes	Strong	Moderate	Unchanged
We recommend each facility develop and implement a blood glucose management protocol	Strong	Moderate	New

Rajan N, et al. Society for Ambulatory Anesthesia Updated Consensus Statement on Perioperative Blood Glucose Management in Adult Patients With Diabetes Mellitus Undergoing Ambulatory Surgery. Anesth Analg. **2024**; 139(3):459-477.

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Moving Beyond Morbidity…

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

Preoperative Medical Testing in Medicare Patients Undergoing Cataract Surgery

Catherine L. Chen, M.D., M.P.H., Grace A. Lin, M.D., M.A.S., Naomi S. Bardach, M.D., M.A.S., Theodore H. Clay, M.S., W. John Boscardin, Ph.D., Adrian W. Gelb, M.B., Ch.B., Mervyn Maze, M.B., Ch.B., Michael A. Gropper, M.D., Ph.D., and R. Adams Dudley, M.D., M.B.A.

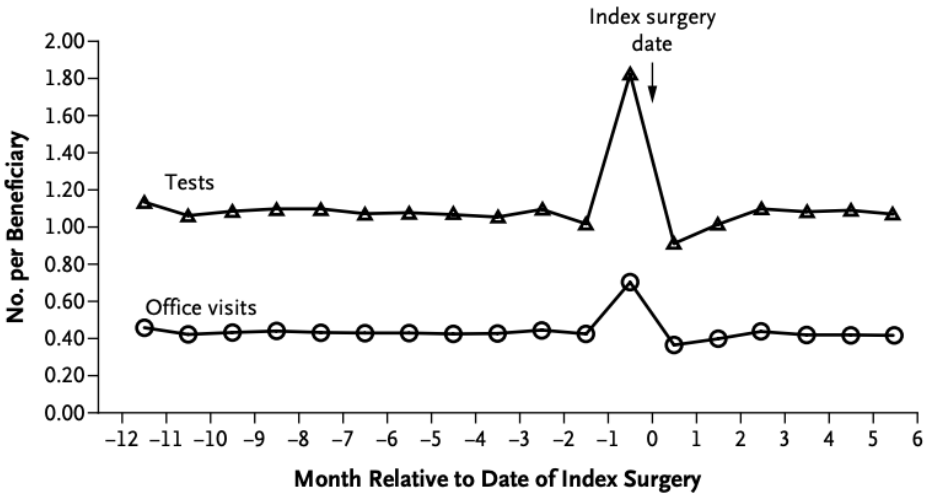
- Medicare beneficiaries undergoing cataract surgery in 2011 (N = 440,857)

Month before surgery:

- 53% had at least one preop test

Compared to preceding 11 months:

- Expenditures on testing $4.8m higher
- Expenditures on visits $12.4m higher



Yale SCHOOL OF MEDICINE

Chen CL, et al. Preoperative medical testing in Medicare patients undergoing cataract surgery. N Engl J Med. **2015**; 372(16):1530-8.

AMERICAN ACADEMY OF OPHTHALMOLOGY®

Preoperative Medical Testing and Falls in Medicare Beneficiaries Awaiting Cataract Surgery

Catherine L. Chen, MD, MPH,[1,2,3] Stephen D. McLeod, MD,[4,5] Thomas M. Lietman, MD,[4,5] Hui Shen, MS,[6,7] W. John Boscardin, PhD,[8,9] Han-Ying Peggy Chang, MD,[10] Mary A. Whooley, MD,[6,7,8,9] Adrian W. Gelb, MbChb,[3] Sei J. Lee, MD, MAS,[6,8] R. Adams Dudley, MD, MBA[11,12]

2006-2014 Medicare claims

Biometry

Cataract Surgery

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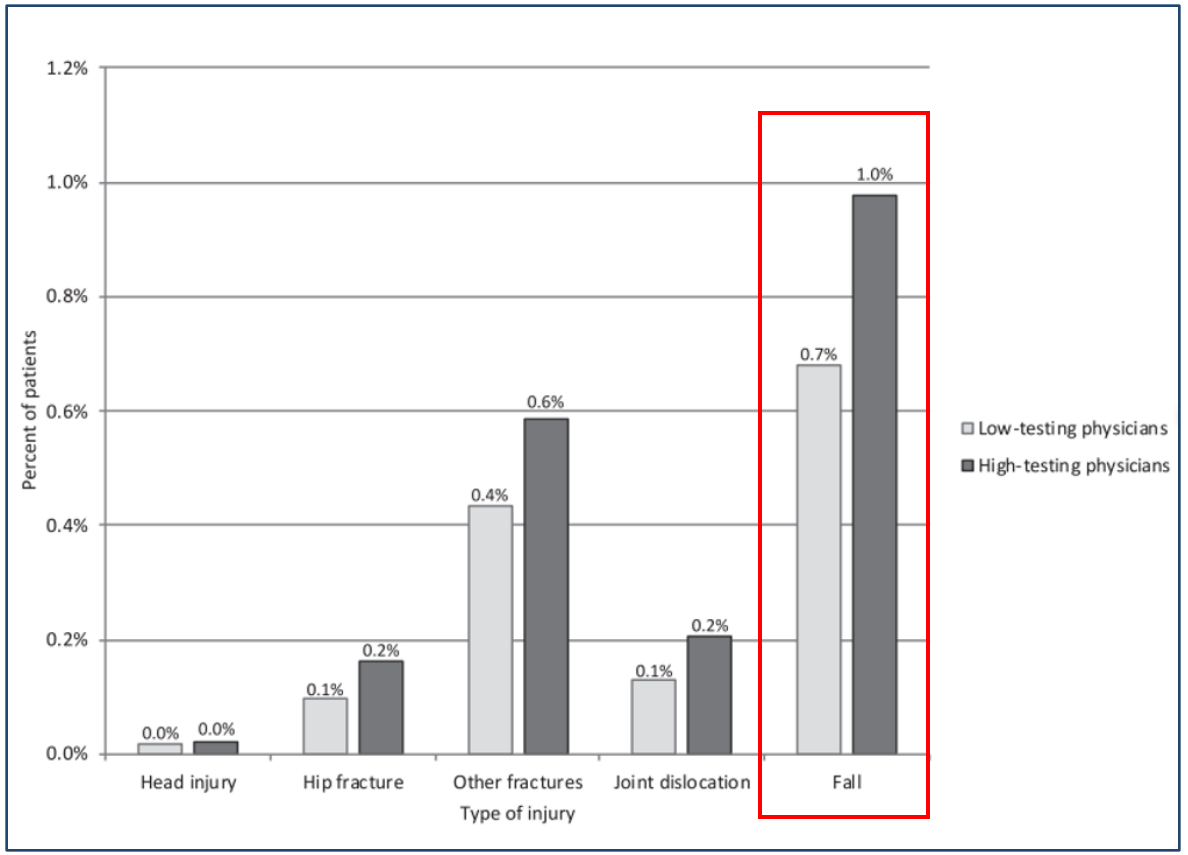

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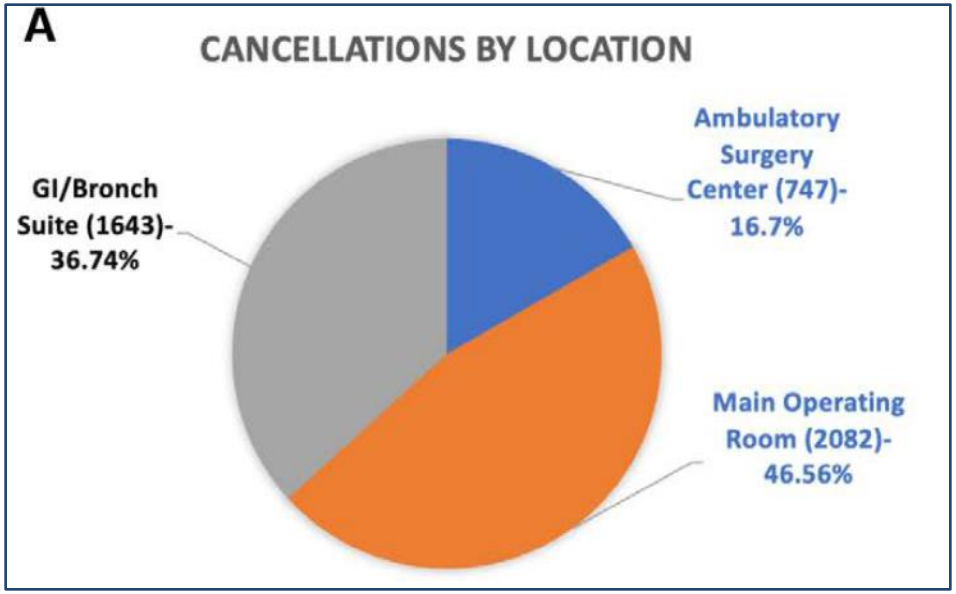
Perioperative Management/Medicine

ORIGINAL CLINICAL RESEARCH REPORT

Outcomes and Disposition of Patients After Case Cancellation on Day of Surgery for Reasons Attributed to Medical or Anesthetic Care: A Retrospective Cohort Analysis

George L. Tewfik, MD, Carlos Rodriguez-Aponte, MD, Kathy Zhang, BA, Bishoy Ezzat, BS, Pooja Suri, BS, and Faraz Chaudhry, MD

- Single-center retrospective review of cases cancelled on the day of surgery



Yale SCHOOL OF MEDICINE

Tewfik GL, et al. Outcomes and Disposition of Patients After Case Cancellation on Day of Surgery for Reasons Attributed to Medical or Anesthetic Care: A Retrospective Cohort Analysis. Anesth Analg. **2022**; 135(4):845-854

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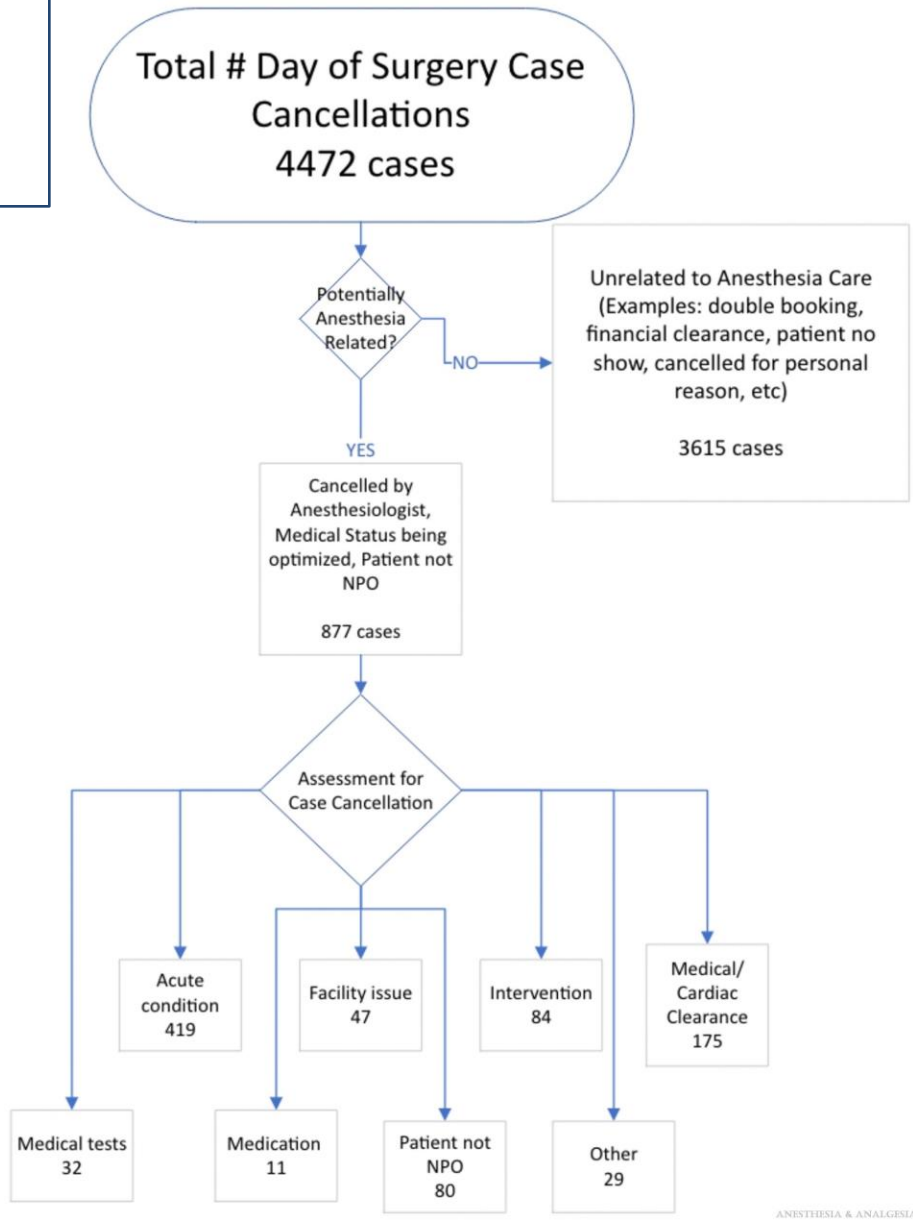

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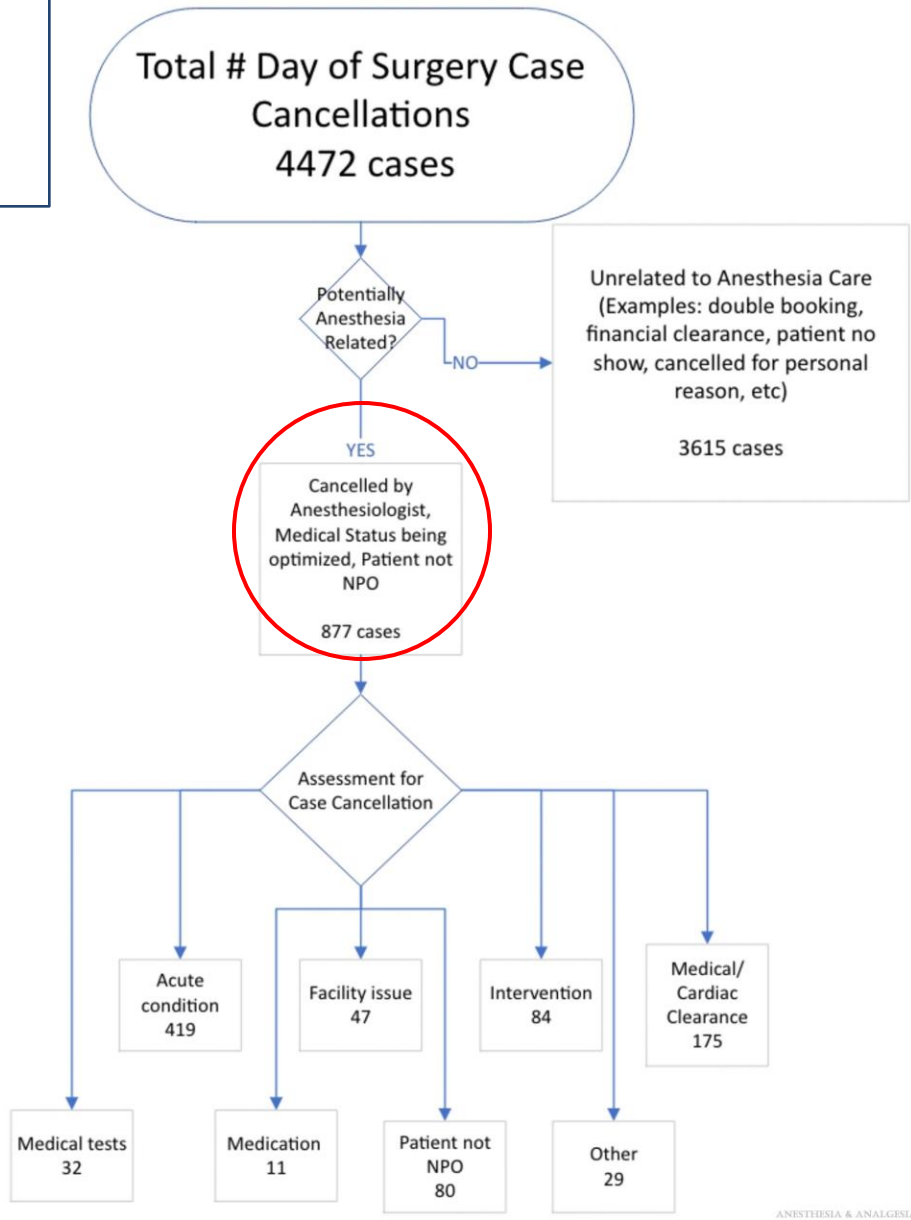
- Single-center retrospective review of cases cancelled on the day of surgery
- Cases cancelled for medical reasons (n = 877)



Perioperative Management/Medicine

ORIGINAL CLINICAL RESEARCH REPORT

Outcomes and Disposition of Patients After Case Cancellation on Day of Surgery for Reasons Attributed to Medical or Anesthetic Care: A Retrospective Cohort Analysis

George L. Tewfik, MD, Carlos Rodriguez-Aponte, MD, Kathy Zhang, BA, Bishoy Ezzat, BS, Pooja Suri, BS, and Faraz Chaudhry, MD

- Single-center retrospective review of cases cancelled on the day of surgery
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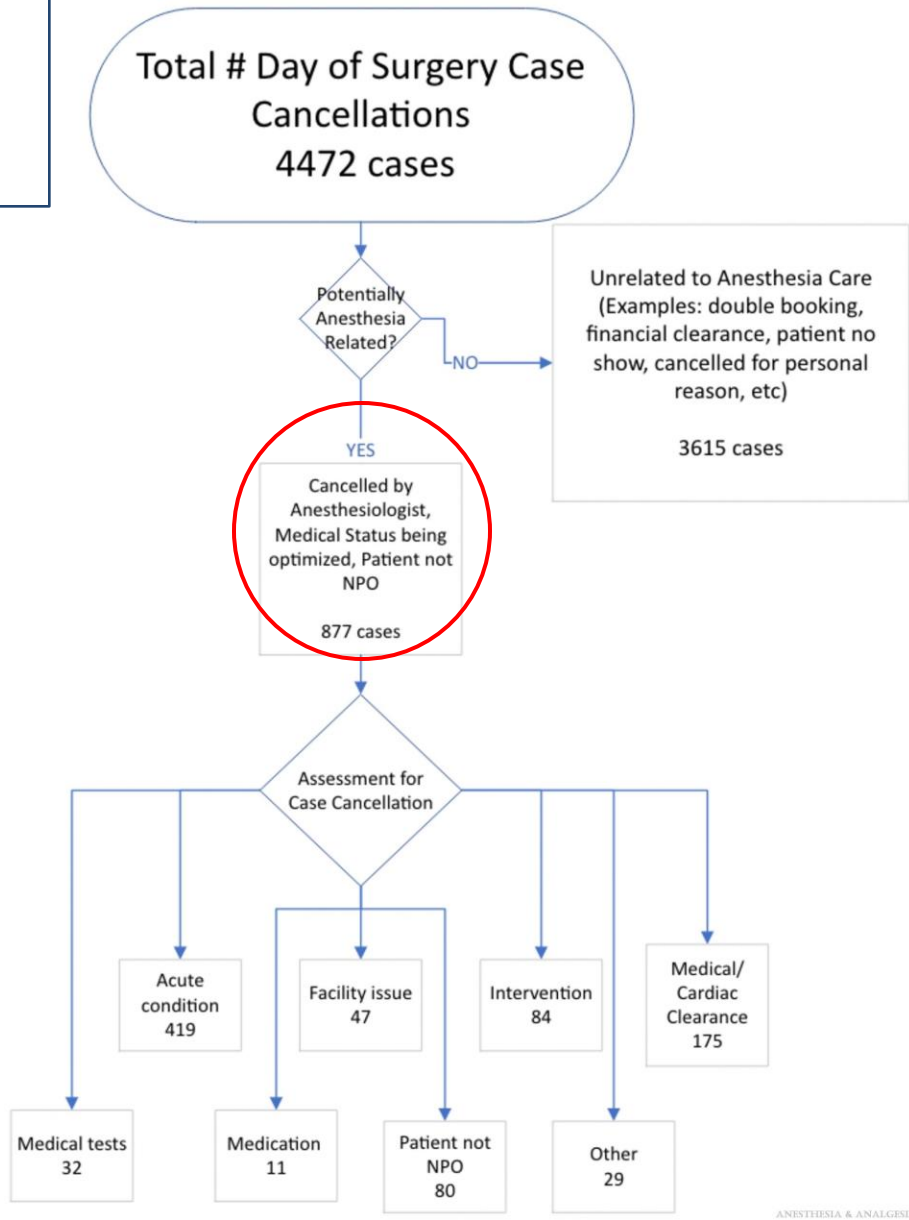
  - 72% rescheduled



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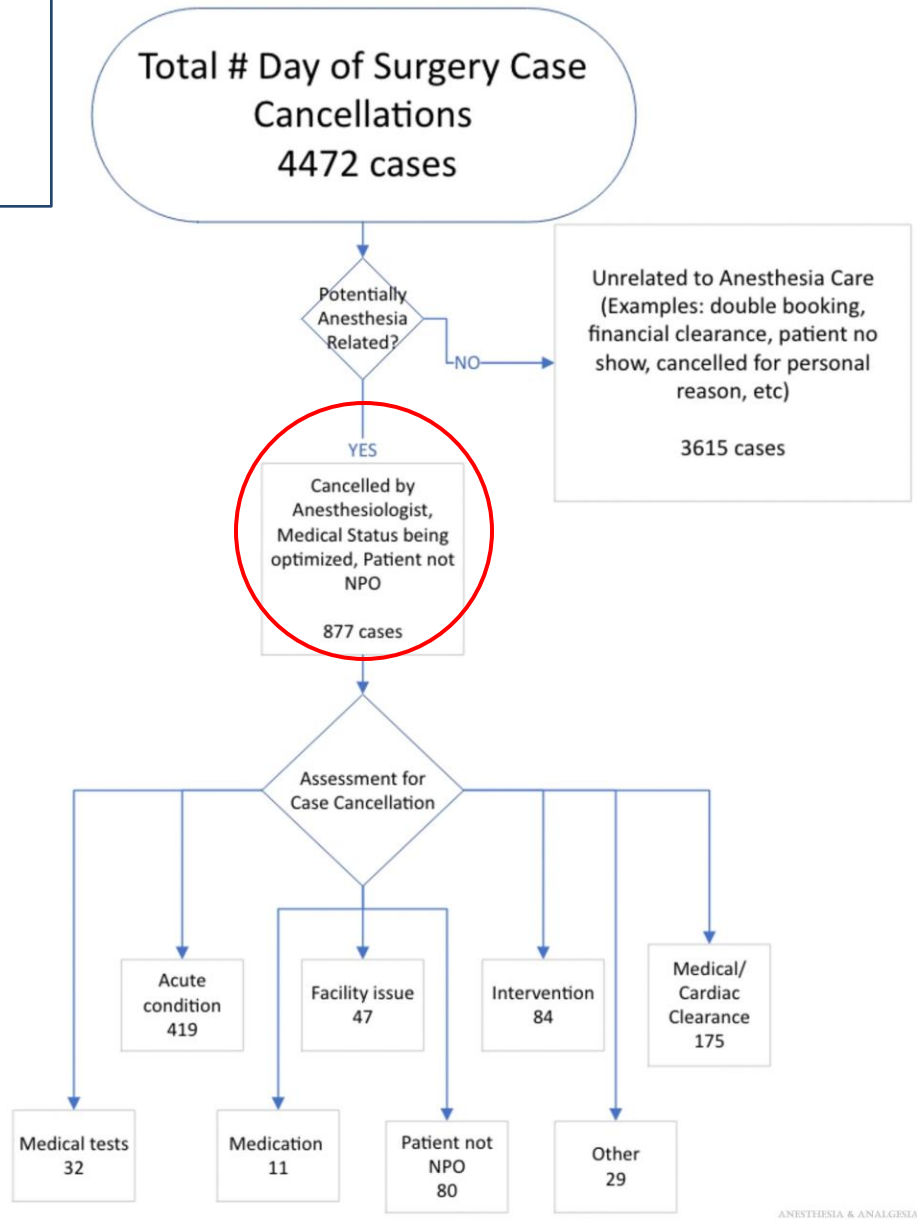
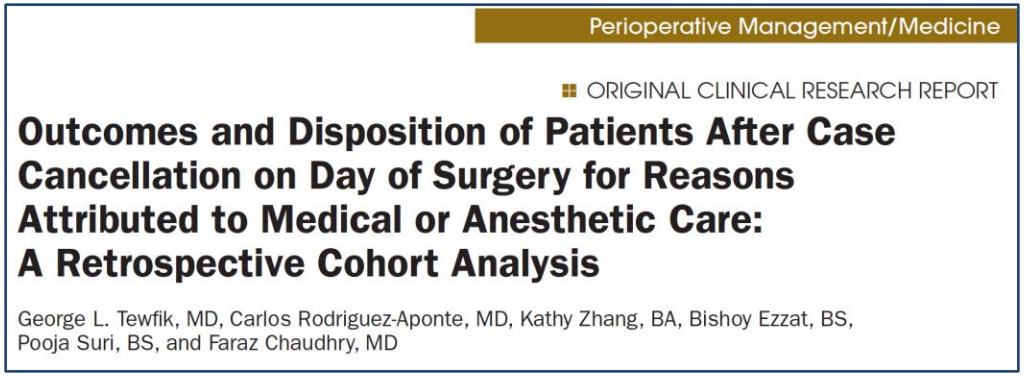
  - 72% rescheduled
  - 83% of these had underlying issue resolved





- Reason for cancellation ***not*** addressed in **102** rescheduled cases

Yale SCHOOL OF MEDICINE

Tewfik GL, et al. Outcomes and Disposition of Patients After Case Cancellation on Day of Surgery for Reasons Attributed to Medical or Anesthetic Care: A Retrospective Cohort Analysis. Anesth Analg. **2022**; 135(4):845-854

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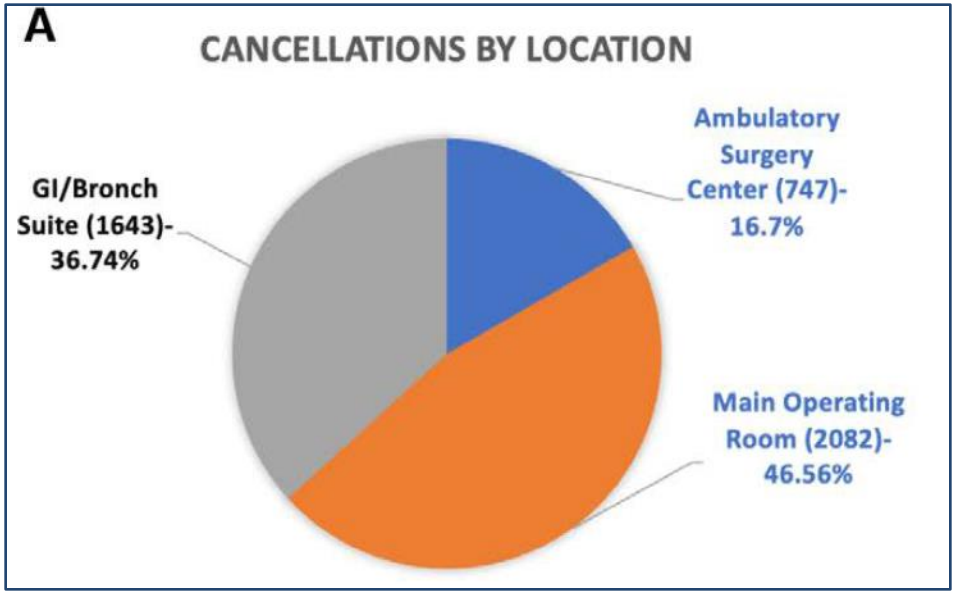
- Reason for cancellation ***not*** addressed in **102** rescheduled cases
- Several cases planned to be moved from ASC/GI suite to main OR ultimately performed at ASC/GI suite



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Case Presentation

Case Presentation

Acute Pain after Ambulatory Surgery

- Telephone survey 5,703 patients 24h after surgery

McGrath B, et al. Thirty percent of patients have moderate to severe pain 24 hr after ambulatory surgery: a survey of 5,703 patients. Can J Anaesth**. 2004**; 51(9):886-91.

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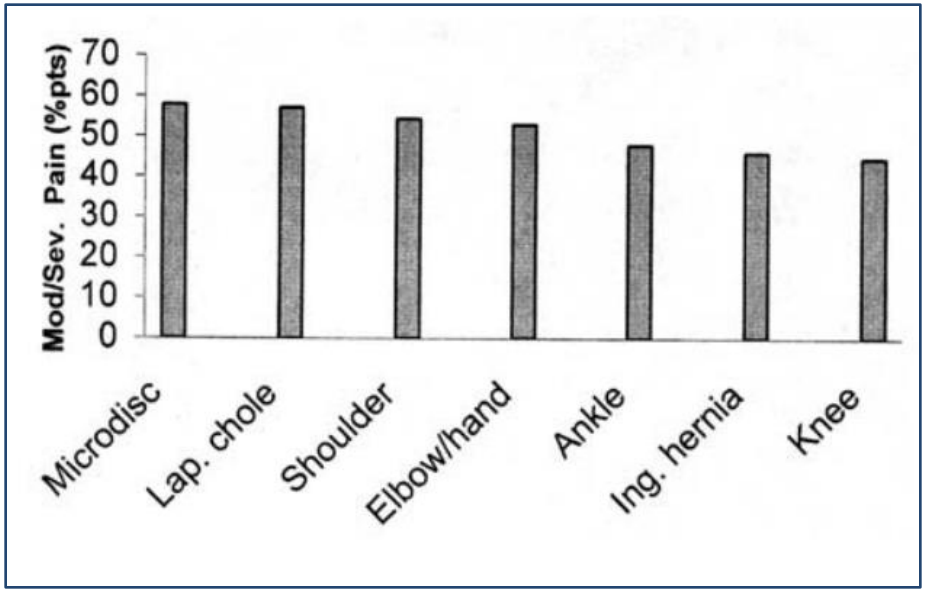

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- There were 105 patient-caregiver dyads:
  - 90 patients & 64 caregivers offered at least one response

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- *"The impact of physical disability on home life was vividly described"*
- *"Patients and caregivers ardently described real challenges during convalescence"*
- *"Paramount for participants was the need for clear communication and a commitment to ongoing support following discharge"*

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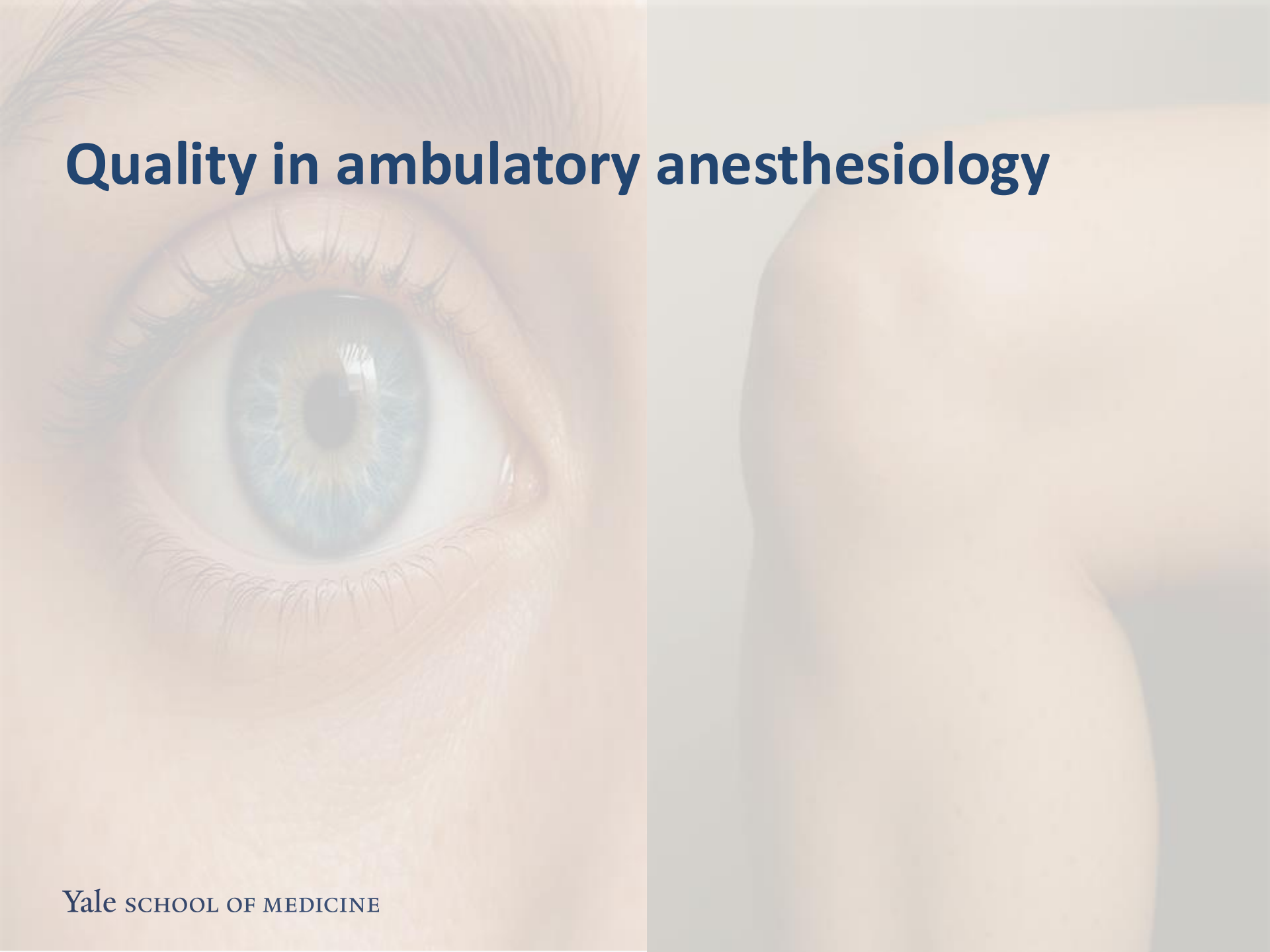
Quality in ambulatory anesthesiology



Yale SCHOOL OF MEDICINE

Quality in ambulatory anesthesiology

Reducing waste and cancellations in less complex procedures

Yale SCHOOL OF MEDICINE

Quality in ambulatory anesthesiology

Reducing waste and cancellations in less complex procedures

Reducing adverse events and improving post-discharge recovery in more complicated procedures

Ambulatory Surgical Center Quality Reporting (ASCQR) and Hospital Outpatient Quality Reporting Program (Hospital OQR)

- **ASC-21 and OP-42:** THA/TKA PRO-Based Performance Measures
- PRO data collected
  - HOOS, JR for THA recipients and KOOS, JR for TKA recipients
  - Success defined as improvement from pre-op
- Risk-adjustment:
  - PROMIS Global (mental health subscale items) or VR-12 (mental health subscale items)
  - Single Item Literacy Screener (SILS2) questionnaire
- Voluntary reporting started CY2025
- Mandatory reporting beginning CY2028

https://qualitynet.cms.gov/asc/ascqr

BJA

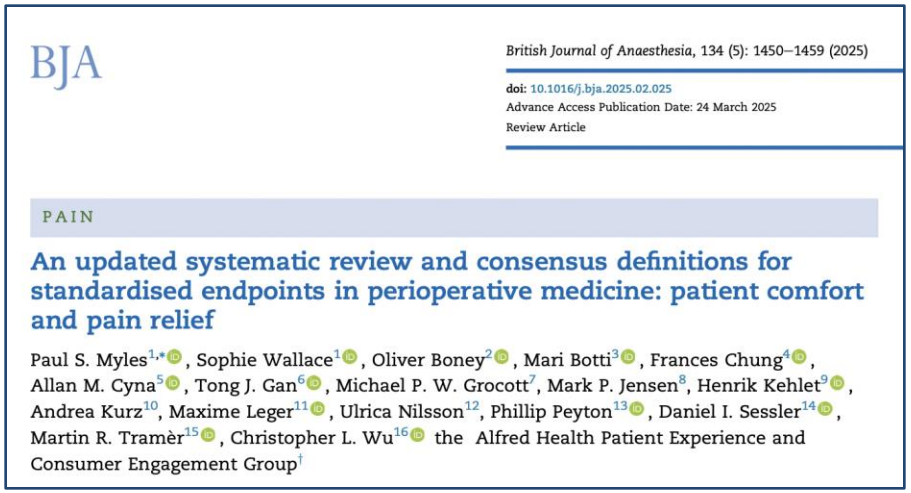
British Journal of Anaesthesia, 134 (5): 1450–1459 (2025)

doi: 10.1016/j.bja.2025.02.025
Advance Access Publication Date: 24 March 2025
Review Article

PAIN

An updated systematic review and consensus definitions for standardised endpoints in perioperative medicine: patient comfort and pain relief

Paul S. Myles[1,*], Sophie Wallace[1], Oliver Boney[2], Mari Botti[3], Frances Chung[4], Allan M. Cyna[5], Tong J. Gan[6], Michael P. W. Grocott[7], Mark P. Jensen[8], Henrik Kehlet[9], Andrea Kurz[10], Maxime Leger[11], Ulrica Nilsson[12], Phillip Peyton[13], Daniel I. Sessler[14], Martin R. Tramèr[15], Christopher L. Wu[16] the Alfred Health Patient Experience and Consumer Engagement Group[†]



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Endpoints:

- Supplementary analgesic use
- Subjective analgesic effectiveness
- Pain intensity (at rest, during movement, at 12, 24, 72 h)
- PONV at 0-6 h, 6-24 h, overall
- PDNV
- Severe PONV
- Time to mobilization
- Quality of Recovery (QoR-15)

BJA

British Journal of Anaesthesia, xxx (xxx): xxx (xxxx)

doi: 10.1016/j.bja.2025.05.032
Advance Access Publication Date: xxx
Clinical Investigation

CLINICAL INVESTIGATION

Quality of patient-centred recovery trajectories after different types of surgery: a prospective cohort study

Paul S. Myles[1,2,*], Belinda Phillips[3], Sarah Robertshaw[1], Hazel Haughney[1], Timothy T. Houle[4], Rebecca Rowland[1], Damian Johnson[1] and Sophie Wallace[1,2]

Upper endoscopy

Knee, hip, shoulder arthroplasty, single-level spine surgery, laparoscopic cholecystectomy

Cardiac surgery

Yale SCHOOL OF MEDICINE

Myles PS, et al. Quality of patient-centred recovery trajectories after different types of surgery: a prospective cohort study. Br J Anaesth. **2025**: S0007-0912(25)00346-0.

QoR-15

- Patient support, Comfort, Emotions, Physical Independence, and Pain

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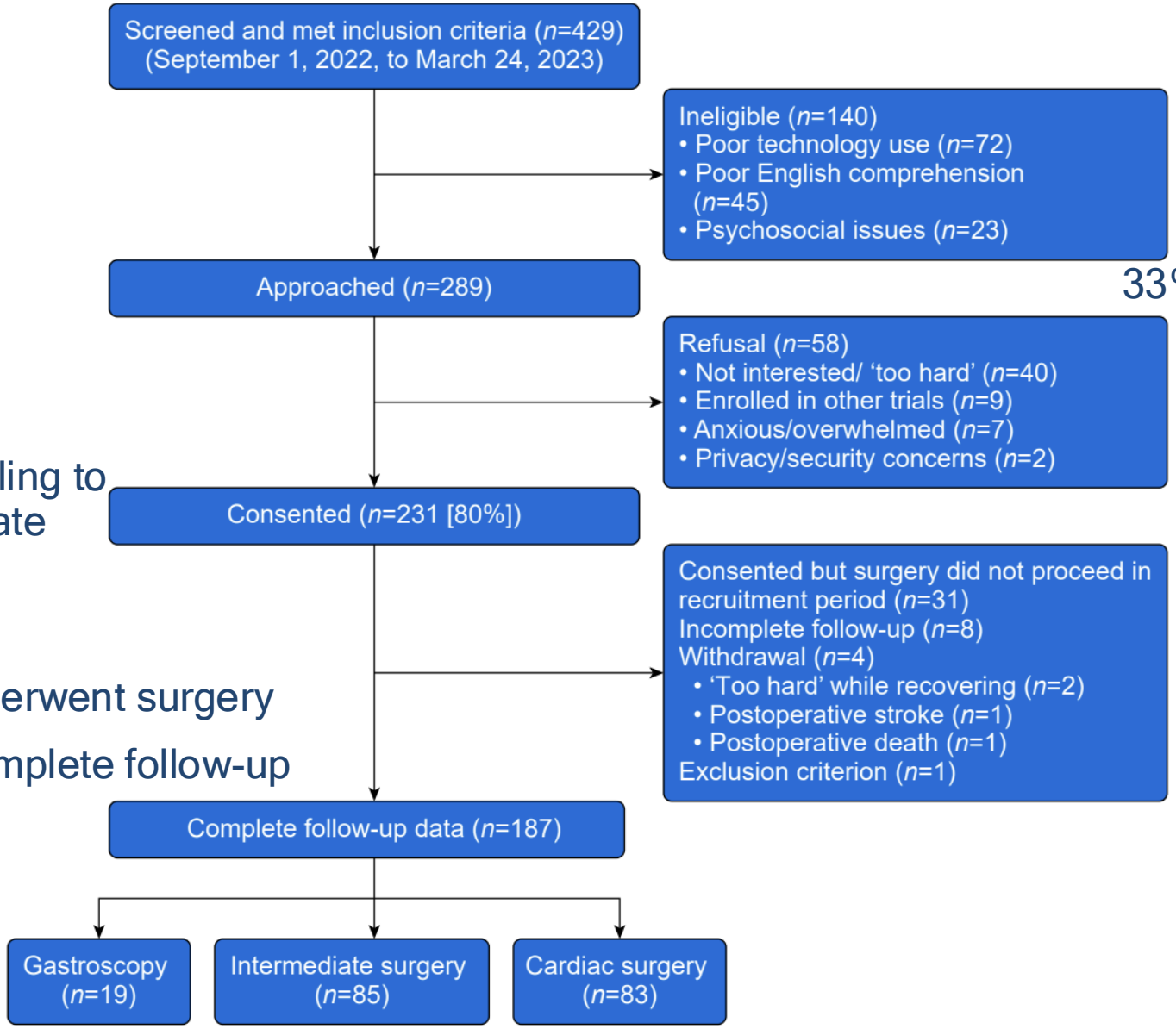

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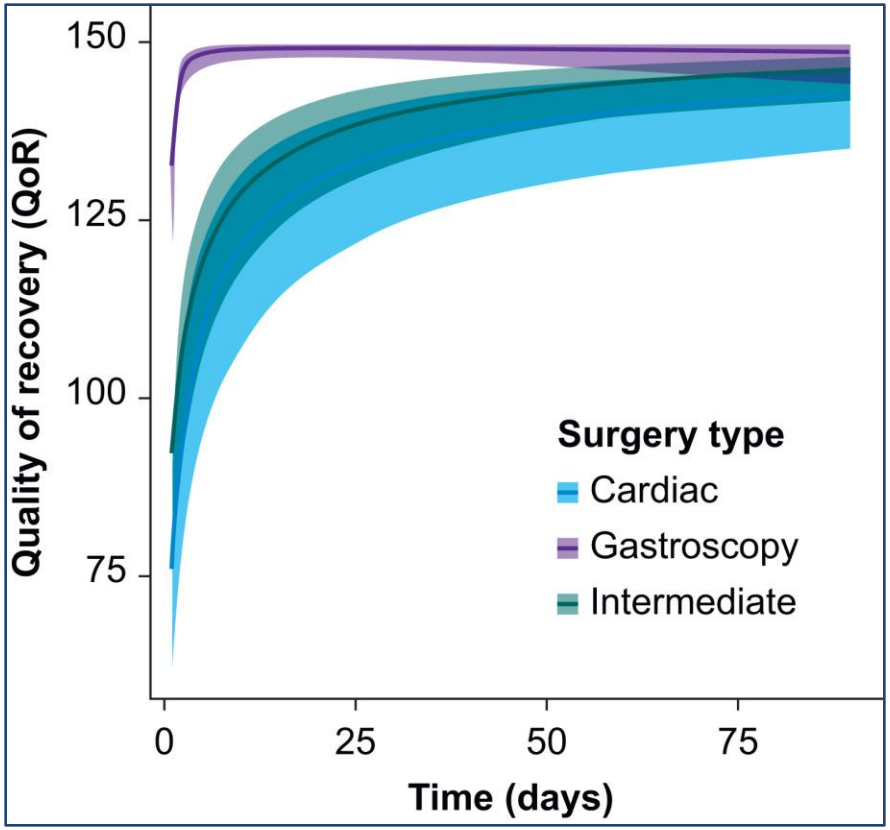
Myles PS, et al. Quality of patient-centred recovery trajectories after different types of surgery: a prospective cohort study. Br J Anaesth. **2025**: S0007-0912(25)00346-0.

Nadir QoR-15 median (IQR):

- EGD= 128 (93-145)
- Intermediate surgery= 87 (70-102)
- Cardiac surgery= 70 (60-81)



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2. Minimizing adverse events remains important for increasingly complex ambulatory surgery.

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1. A patient-centered approach to quality in ambulatory anesthesia includes reducing waste and delays for less complex procedures.
2. Minimizing adverse events remains important for increasingly complex ambulatory surgery.
3. Patient-reported recovery metrics represent the standard we should ideally aspire to in measuring quality improvement in ambulatory anesthesiology.

Thank you!

jaime.hyman@yale.edu