Medical Errors: Preventing Surgical Complications

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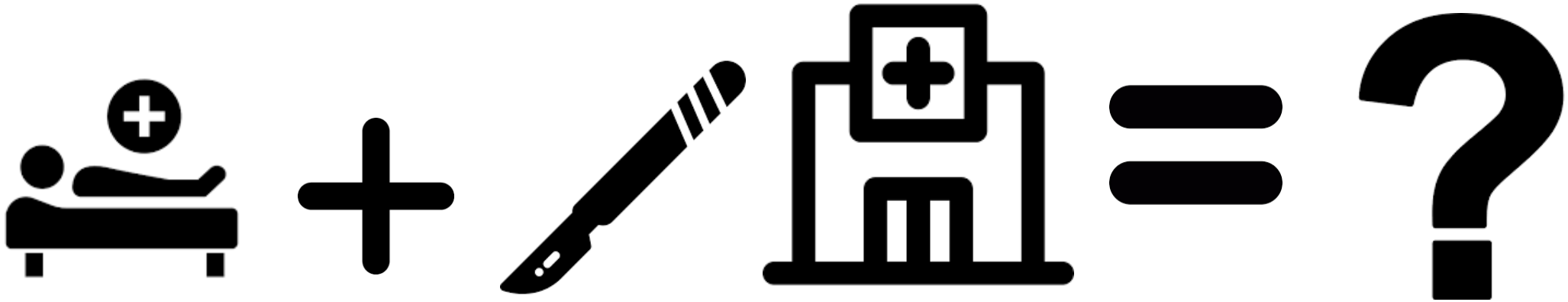
- I have no financial disclosures

Surgical Outcome Equation



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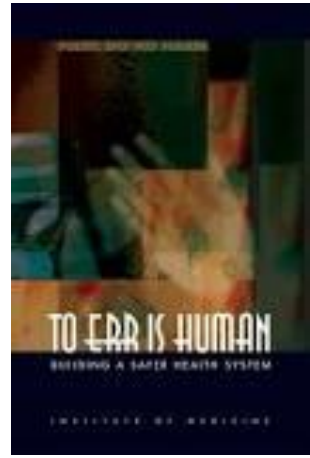
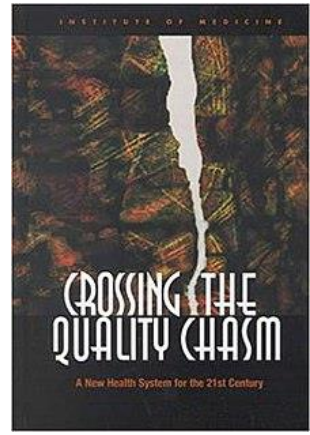
To Err is Human: Building a Safer Health System

- Report by IOM in 1999
- Estimated that 98,000/year die from medical errors in hospitals
- Highlights need for increased focus on patient safety
- Focuses on systems rather than individuals
- Follow up “Crossing the Quality Chasm” focuses on
  - patient safety, care effectiveness, patient-centeredness, timeliness, care efficiency, and equity





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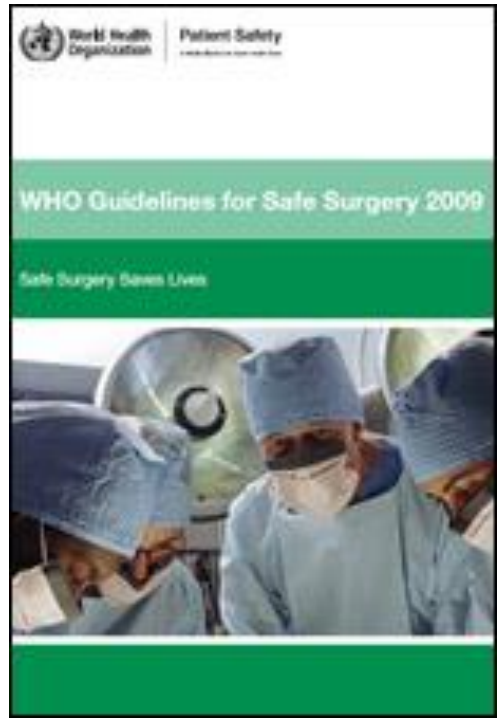
Institute of Medicine (US) Committee on Quality of Health Care in America; Kohn LT, Corrigan JM, Donaldson MS, editors. Washington (DC): National Academies Press (US); 2000
IOM (Institute of Medicine). Washington, D.C: National Academy Press; 2001. Crossing the Quality Chasm: A New Health System for the 21st Century.

WHO Guidelines for Safe Surgery

- Death and disability following surgery
- Lack of standardization in processes surrounding surgical care
- Collaboration between WHO and Harvard School of Public Health
- Safe Surgery Saves Lives program
- Recommendations published in 2009

https://apps.who.int/iris/bitstream/handle/10665/44185/9789241598552_eng.pdf



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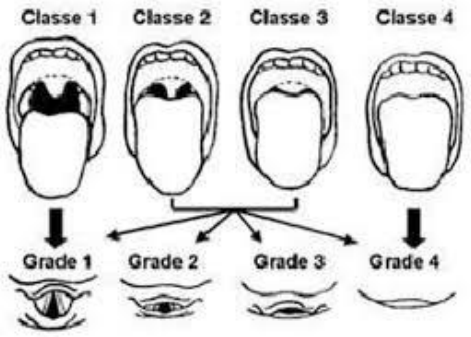
10 Essential Objectives for Safe Surgery

- 1. The team will operate on the correct patient at the correct site
  - 1,500-2,500 wrong-site or wrong-patient incidents/year in USA
  - Universal protocol: verify, marking, time out

https://apps.who.int/iris/bitstream/handle/10665/44185/9789241598552_eng.pdf

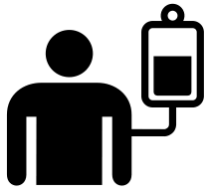
10 Essential Objectives for Safe Surgery

- 2. The team will use methods known to prevent harm from administration of anesthetics while protecting the patient from pain
  - Pulse oximetry and capnography
- 3. The team will recognize and effectively prepare for life-threatening loss of airway or respiratory function
  - Appropriate assessment (Mallampati) and equipment

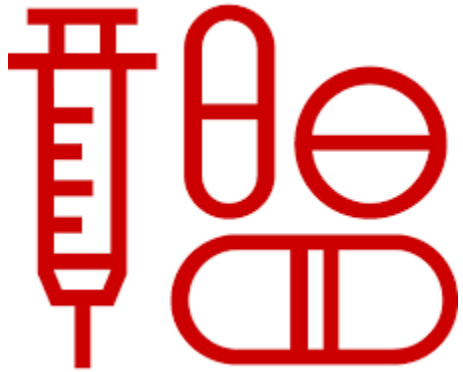


10 Essential Objectives for Safe Surgery

- 4. The team will recognize and effectively prepare for risk of high blood loss



- 5. The team will avoid inducing an allergic or adverse drug reaction for which the patient is known to be at significant risk
  - Errors in perioperative medications
  - Drug labelling

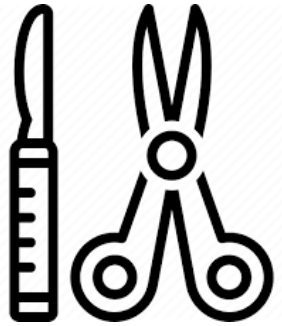


10 Essential Objectives for Safe Surgery

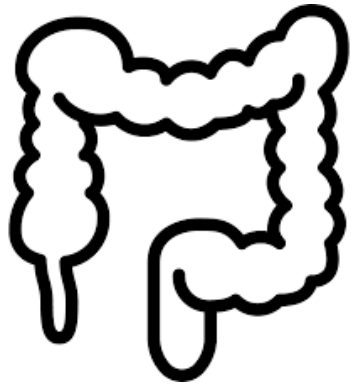
- 6. The team will consistently use methods known to minimize the risk for surgical site infection
  - Skin preparation
  - IV preoperative antibiotics
  - Sterile technique
  - Normothermia/ Oxygenation

10 Essential Objectives for Safe Surgery

- 7. The team will prevent inadvertent retention of instruments and sponges in surgical wounds
  - Counting and management of count discrepancies



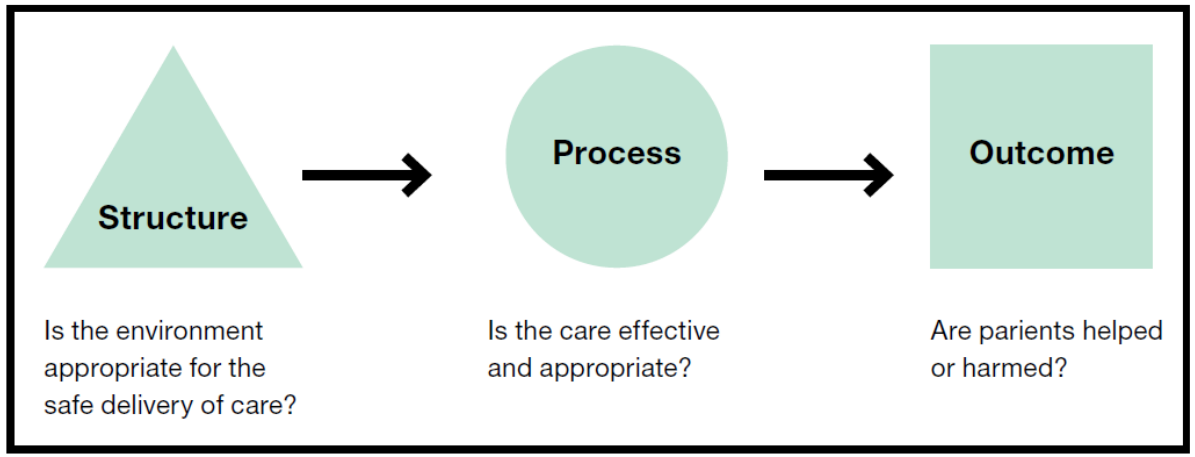
- 8. The team will secure and accurately identify all surgical specimens
  - Correct labelling confirmed



10 Essential Objectives for Safe Surgery

- 9. The team will effectively communicate and exchange critical information for the safe conduct of the operation
  - Culture of safety
- 10. Hospitals and public health systems will establish routine surveillance of surgical capacity, volume, and results

Figure 10.1 – The interaction of structure, process and outcome on health care



Surgical Safety Checklist

World Health Organization | Patient Safety
A World Alliance for Safer Health Care

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?
- ☐ Yes

Is the site marked?
- ☐ Yes
- ☐ Not applicable

Is the anaesthesia machine and medication check complete?
- ☐ Yes

Is the pulse oximeter on the patient and functioning?
- ☐ Yes

Does the patient have a:

Known allergy?
- ☐ No
- ☐ Yes

Difficult airway or aspiration risk?
- ☐ No
- ☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
- ☐ No
- ☐ Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

- ☐ **Confirm all team members have introduced themselves by name and role.**
- ☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?
- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:
- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:
- ☐ Are there any patient-specific concerns?

To Nursing Team:
- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?
- ☐ Yes
- ☐ Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:
- ☐ The name of the procedure
- ☐ Completion of instrument, sponge and needle counts
- ☐ Specimen labelling (read specimen labels aloud, including patient name)
- ☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:
- ☐ What are the key concerns for recovery and management of this patient?

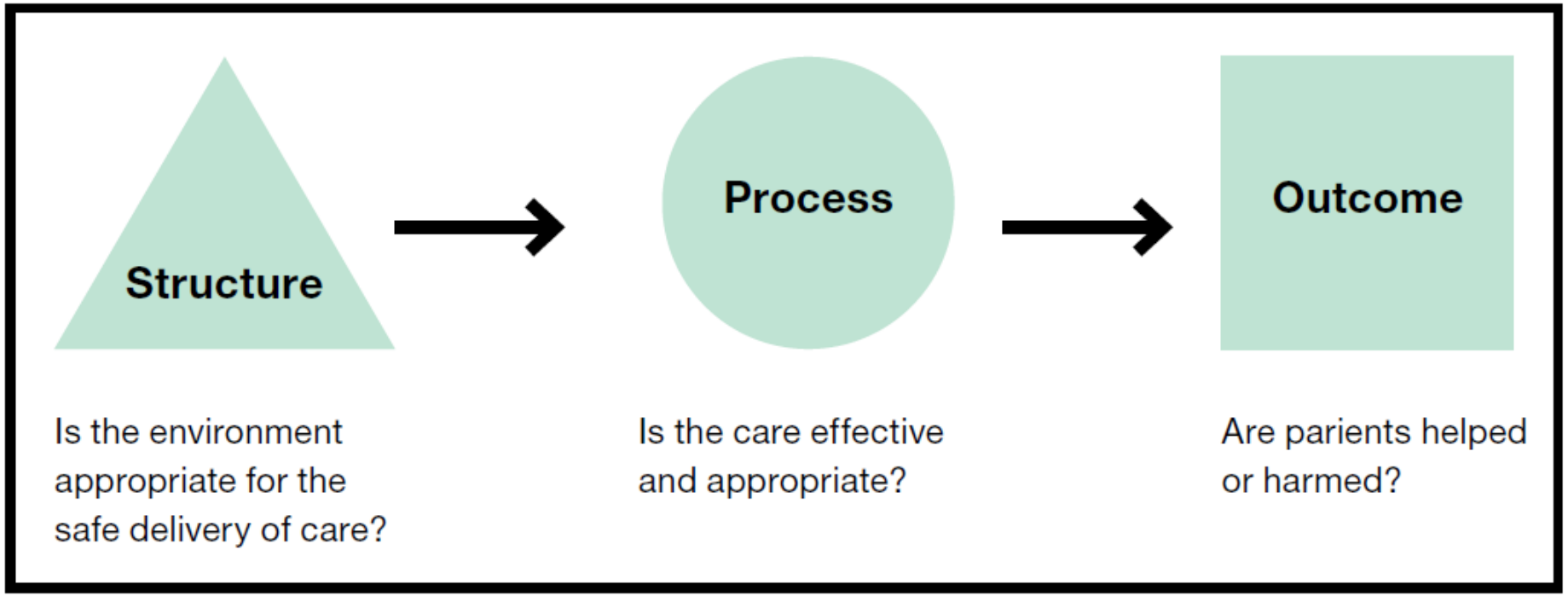
This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

https://www.who.int/patientsafety/safesurgery/checklist/en/

We Focused on Structure, Implemented a Process, Now What?

Figure 10.1 – The interaction of structure, process and outcome on health care



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Measuring Outcomes

Rating the Raters – Strengths and Weaknesses Assessment of the Four Public Hospital Quality Rating Systems

The comments in the table below reflect the discussion that the Rating-the-Raters group had about each rating system. These comments for each rating system were provided to the leaders of that rating system to solicit feedback.

Usability

(CMS) Hospital Compare Overall Star Ratings	Healthgrades Top Hospitals	USNWR (U.S. News & World Report) Best Hospitals	Leapfrog Hospital Safety Grade and Leapfrog Top Hospitals
Pro			
• User friendly • Easy to find a hospital • Allows for comparisons of multiple hospitals • Website indicates how current data are • Uses graphical displays	• Easy to find a hospital • Ratings searchable based on specific procedures and conditions • Video explaining what stars mean	• Patients can readily identify which procedure /specialty-specific ranking are most applicable to their clinical circumstance	• Easy to use • Color coding is helpful • Multiple ways to sort and compare hospitals • Grade is displayed prominently and is very apparent to user • Has a "how to use Leapfrog hospital Safety Grade" video tool posted to website • Top Hospitals ratings breaks up hospitals' rankings by hospital type
Con			
• None discussed	• Not easy to compare hospitals • Uses 3 options only on a 5-star scale (1, 3, 5) • Each measure category is displayed differently (e.g., Stars, percentage better/ average/worse, or overall "patient safety" score)	• No comparison tool; difficult to compare hospitals • A lot of information, many clicks needed • Underlying hospital data not shown in user-friendly format • Detailed display tables were helpful to understanding and were removed in recent iteration • Filled with distracting hospital advertisements • Only summary data ("Average," "Good," "Very High," "Best") provided on public website. Would prefer layering of information for those interested in more detail.	• No feature to navigate to detailed measure scores from list of Top Hospitals • Does not rank hospitals within state

Source: The Authors. Details of the rating process are available at www.RatingTheRaters.org

ACS NSQIP®

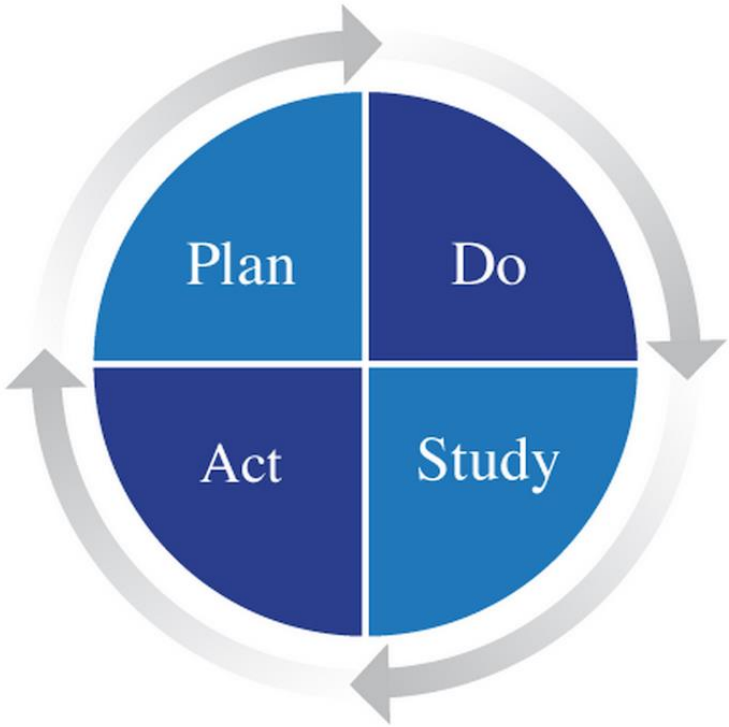
Currently 712 hospitals participate
UAB and Huntsville Hospital in AL

vizient.

Formerly, UHC

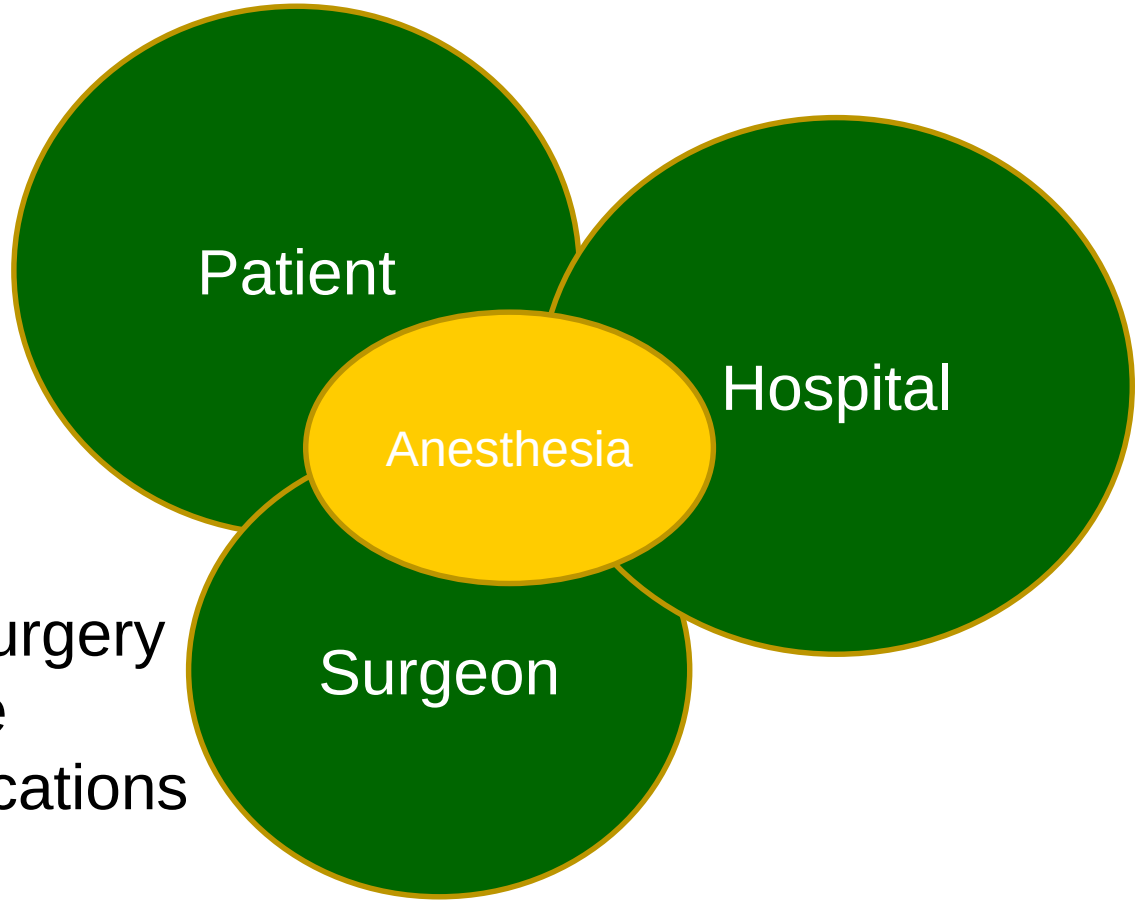
We are Measuring Outcomes, Now What?

- Quality Improvement Projects
  - PDSA cycles
  - 5 Why's
  - Fishbone diagrams
  - Root Cause Analyses



Goals of Care

Safe, effective surgery
Goals of care



Safe, efficient care
High value
Operational Efficiency

Safe, effective surgery
High quality care
Minimize complications

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Prehabilitation: Targets and Tools

- Strong for Surgery
- Enhanced Recovery Pathways
- Smoking Cessation
- Obesity
- Diabetes
- Malnutrition

UAB is the 3rd Largest Public Hospital in USA

UAB Hospital 1157 beds

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UAB Surgical Program

- 80 operating rooms
- Surgical volume
  - 2016 = 33,901 cases
  - 2017 = 34,560 cases
  - 2018 = 36,456 cases
  - 2019 = 37,529 cases
- One of the busiest trauma centers in the USA
- Largest academic robotic program in USA
- World's longest living donor kidney transplant chain

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UAB PACT RISK OPTIMIZATION FOR MODIFIABLE PREOPERATIVE CONDITONS

MODIFIABLE RISK	SCREENING TOOL/RISK ASSESSMENT	PATIENT RISK	TREATMENT PLAN	Completed
ERAS Candidate	Surgery identification	N/A	Counsel patient on ERAS	☐
Cigarette Use	Patient History	+ if current use	Smoking cessation counseling, referral to PCP for long-term follow-up • Recommend cessation for 4 weeks before surgery. • Prescribe Nicotine 21mg/24 hours transdermal film, extended release, 2 months • Prescribe Nicotine 4 mg transmucosal gum, 3 packs For total joint arthroplasty: obtain urine cotinine level in PACT. • If positive, report finding to surgeon office. • Follow PACT prescribing recommendations	☐
Obesity	Actual height and weight taken in PACT. BMI assessment for morbid obesity.	+ if BMI > 40	Weight loss counseling. Patient can be referred to *UAB Weight Loss Medicine*. Enrollment fees may apply.	☐
Diabetes	Measure HbA1C in PACT.	+ if A1C > 8%	Delay surgery until A1C ≤ 8%. Refer to PCP for management. This is a HARD STOP for patients scheduled for total joint arthroplasty. Message orthopedist and clinic nurse with A1c result.	☐
Hypertension	Actual measurement in PACT.	+ if SBP ≥ 180 and/or + if DBP ≥ 110	Referral to PCP or NP to address if patient already on hypertensive medications and/or they are not newly diagnosed. Newly-diagnosed patients with Stage I or II hypertension (≤ 180/110) may have hypertension treated after surgical procedure.	☐
Malnutrition	Measure serum albumin and assess BMI.	+ if Alb < 3 g/dL Or + if Prealbumin <15 Or MNA ≤ 7	Recommend high protein supplementation with BOOST Glucose Control drink up to date of surgery (2x per day for 3 weeks) Document Malnutrition in Cerner.	☐
			Referral to dentist for evaluation or extraction before surgery	

Pre-op Assessment Clinic
-Staffed by NPs + Anesthesiologist
-Protocol driven
-Service line agreements to treat

- Enhanced Recovery Pathways
  - Standardize all phases of care: pre-operative, intraoperative, postoperative
  - Decreases LOS and cost, no increase readmission
  - ISCR currently enrolling colorectal, orthopedic, gynecology, Emergency GS
  - Great platform to introduce pre-operative assessment and standardization

Smoking Cessation

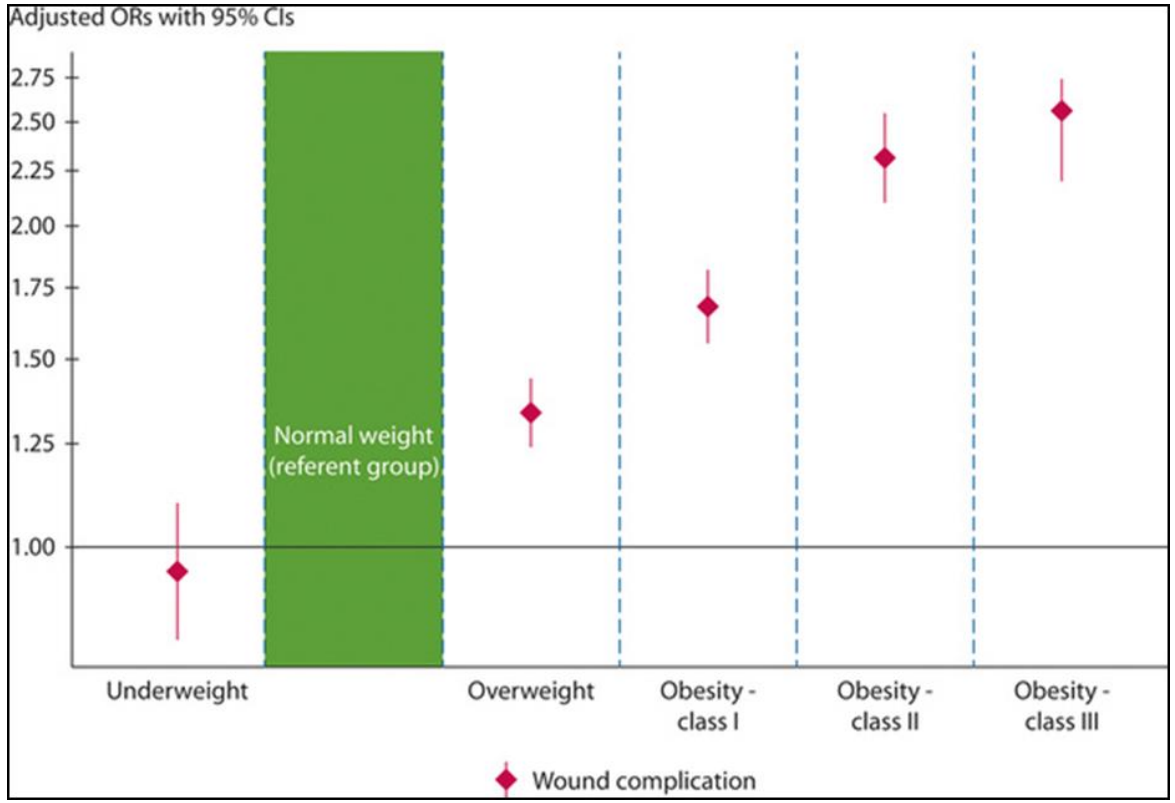
- Increasing number of guidelines stress smoking cessation prior to elective surgeries
  - hernia repair: Increases rates of reoperation, readmission and death
  - joint replacement: Increases risk infections
- Many resources to quit

AmJSurg, 2018 Vol 216(3): 471-474

J Arthroplasty. 2019 Feb;34(2):385-396.

Obesity

- BMI > 40
  - Counseling on weight loss
  - Managed by PCP or weight loss management center

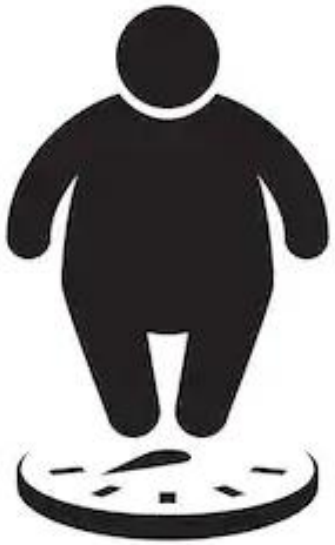


Wound infection risk increases with increasing BMI

Morris, et al. Dis Colon Rectum. 2018 Aug;61(8):938-945.

Diabetes

- HgA1C > 8
- Referral back to PCP for management
  - Problematic for patient with no PCP
- Day of surgery blood sugar management protocol
  - WHO guidelines recommend blood glucose levels <150 mg/dL

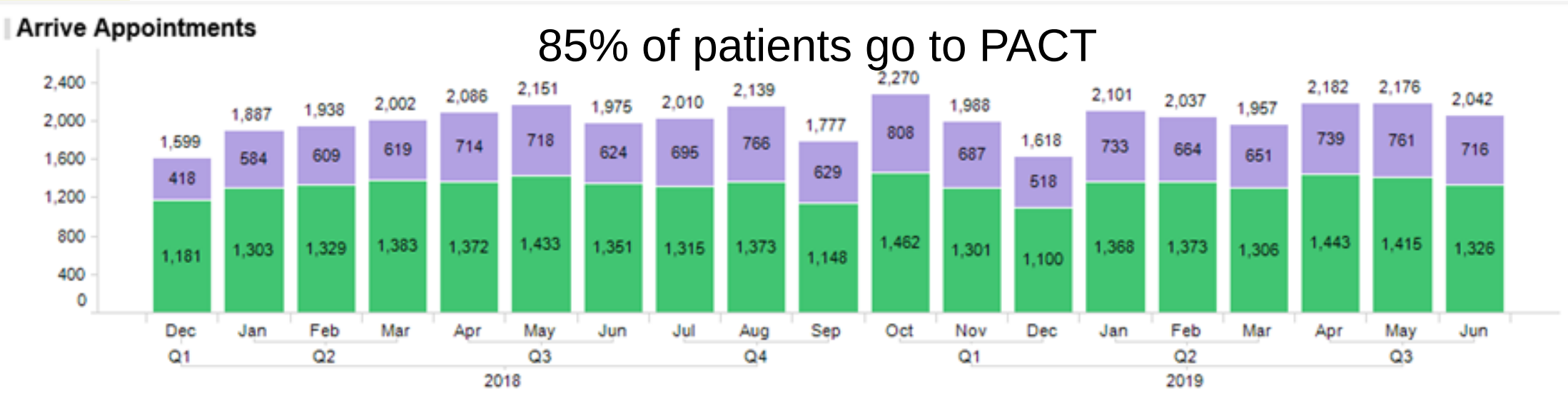


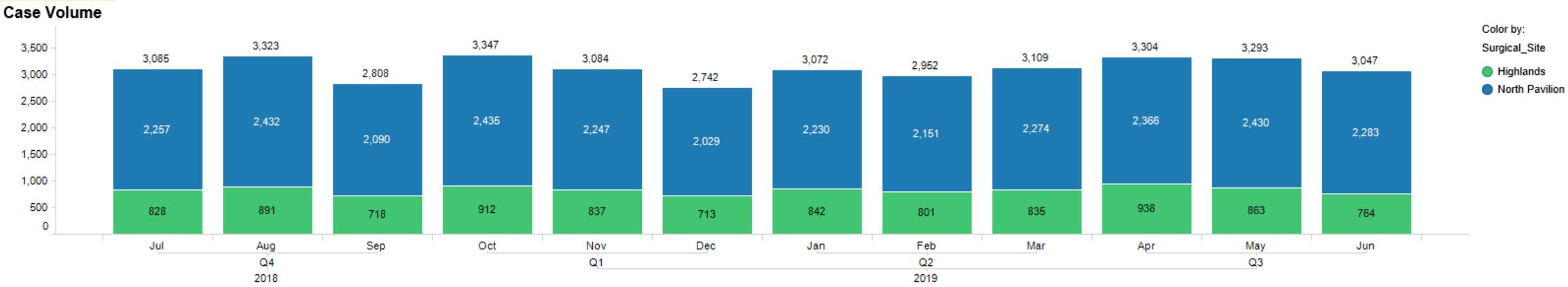
Malnutrition

- Albumin < 3
- Prealbumin < 15
- Mini-Nutritional Assessment ≤ 7
- Associated with poor outcomes, increased mortality
- High protein/calorie shakes
  - Can be expensive

UAB Pre-operative Clinic Evaluation

85% of patients go to PACT





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Monthly UAB same day cancellation rate 3-7%

UAB 1st case delay 1.7%

Barriers to Prehabilitation

- Reimbursement for perioperative optimization
- Delay in surgical therapy
- Who manages? Anesthesia, PCP, Surgeon
- Lack of high-quality data
- Standardization

The Coalition for Quality in Geriatric Surgery Project

We focus our efforts on **four** target areas that foster quality improvement in the older adult surgical population.

1. Goals of Care and Decision Making
2. Cognition Screening and Delirium
3. Maintenance of Function and Mobility
4. Nutrition and Hydration Optimization

Geriatric Surgery Verification
QUALITY IMPROVEMENT PROGRAM

The John A. Hartford Foundation
Dedicated to Improving the Care of Older Adults

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

Optimal Resources for Geriatric Surgery
2019 Standards

Coalition for Quality in Geriatric Surgery Project

THE Coalition for Quality in Geriatric Surgery PROJECT

Supported by The John A. Hartford Foundation and the American College of Surgeons

Beta Pilot Hospital Demographics

8 hospitals participated in CQGS Beta Pilot.
-Chosen to capture diversity of hospitals in the US healthcare system.

Institution:	Type of Center	# of beds	Region
NYU Winthrop Hospital	Academic/Community	575	Northeast
Johns Hopkins Bayview	Academic	442	Northeast
Kaiser Permanente - Fresno	Hospital System	169	West
Denver VA	VA	128	West
UAB	Academic	1,155	Southeast
Rochester Regional Health	Community	571	Northeast
UCONN Health	Academic	165	Northeast
University Hospital - Rutgers	Academic	368	Northeast

Geriatric Vulnerability Screens

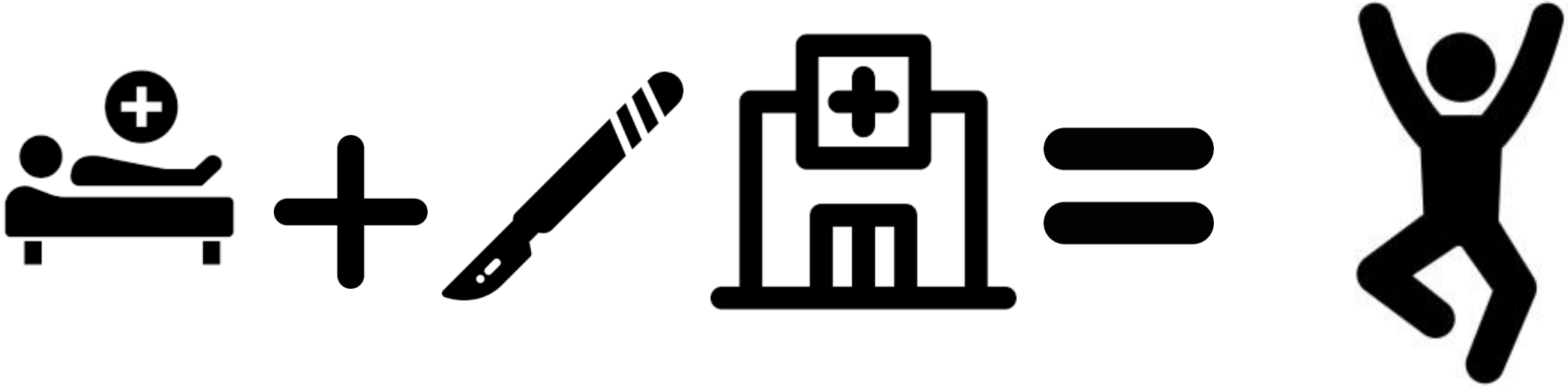
- Patients must be screened for the following high-risk characteristics to identify potential areas of vulnerability:
  - Age ≥ 85 years
  - Impaired cognition
  - Delirium risk
  - Impaired functional status
  - Impaired mobility
  - Malnutrition
  - Difficulty swallowing
  - Need for palliative care assessment

Geriatric Surgery Verification
QUALITY IMPROVEMENT PROGRAM

Take Home Points

- Patient safety matters
- Standardization of processes with best practices improves outcomes
- Quality improvement is a never ending cycle
- We can always improve and make healthcare safer for our patients

Conclusion



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Questions?

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