

Medical Optimization and Enhanced Recovery in Vascular Surgery

June 15, 2018

Rachel E Thompson, MD MPH SFHM
Chief, Section of Hospital Medicine
University of Nebraska Medical Center



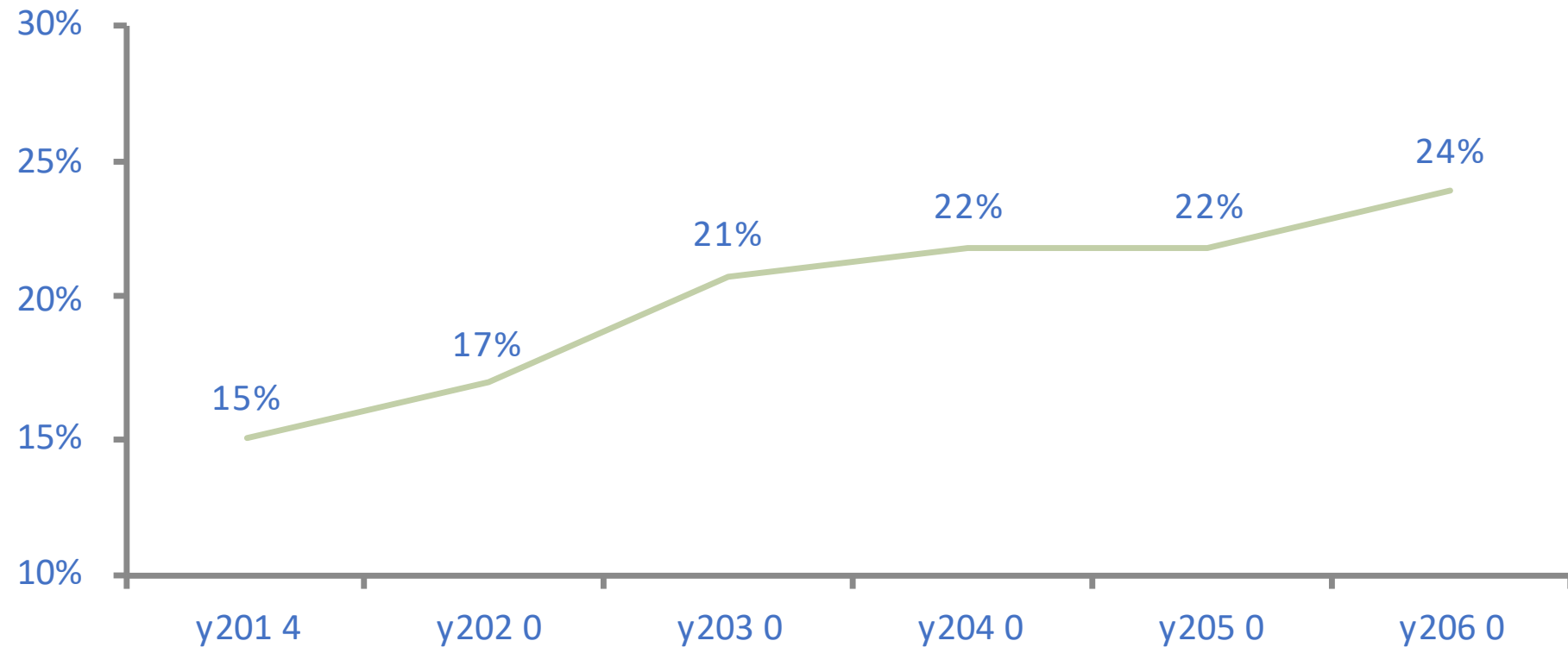
PNEC-SEATTLE.ORG

DISCLOSURE

**Rachel Thompson, MD, MPH,
SFHM, FACP**

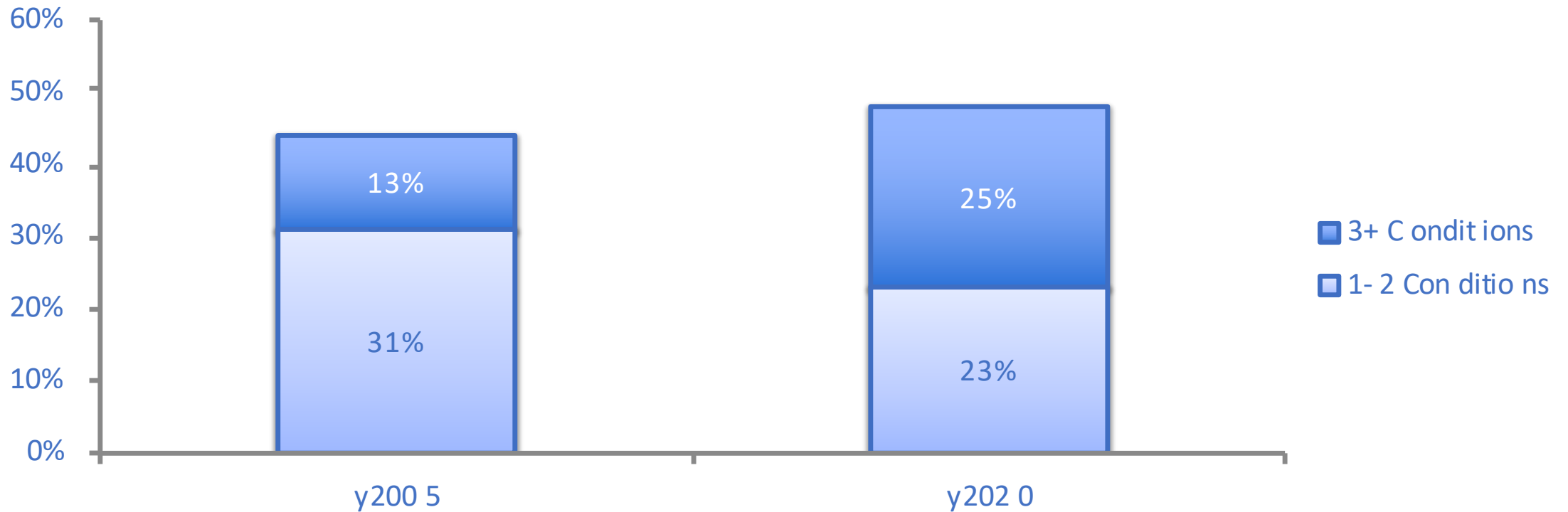
- **No relevant financial relationship reported**

Proportion \geq 65 Years-Old *US Population*



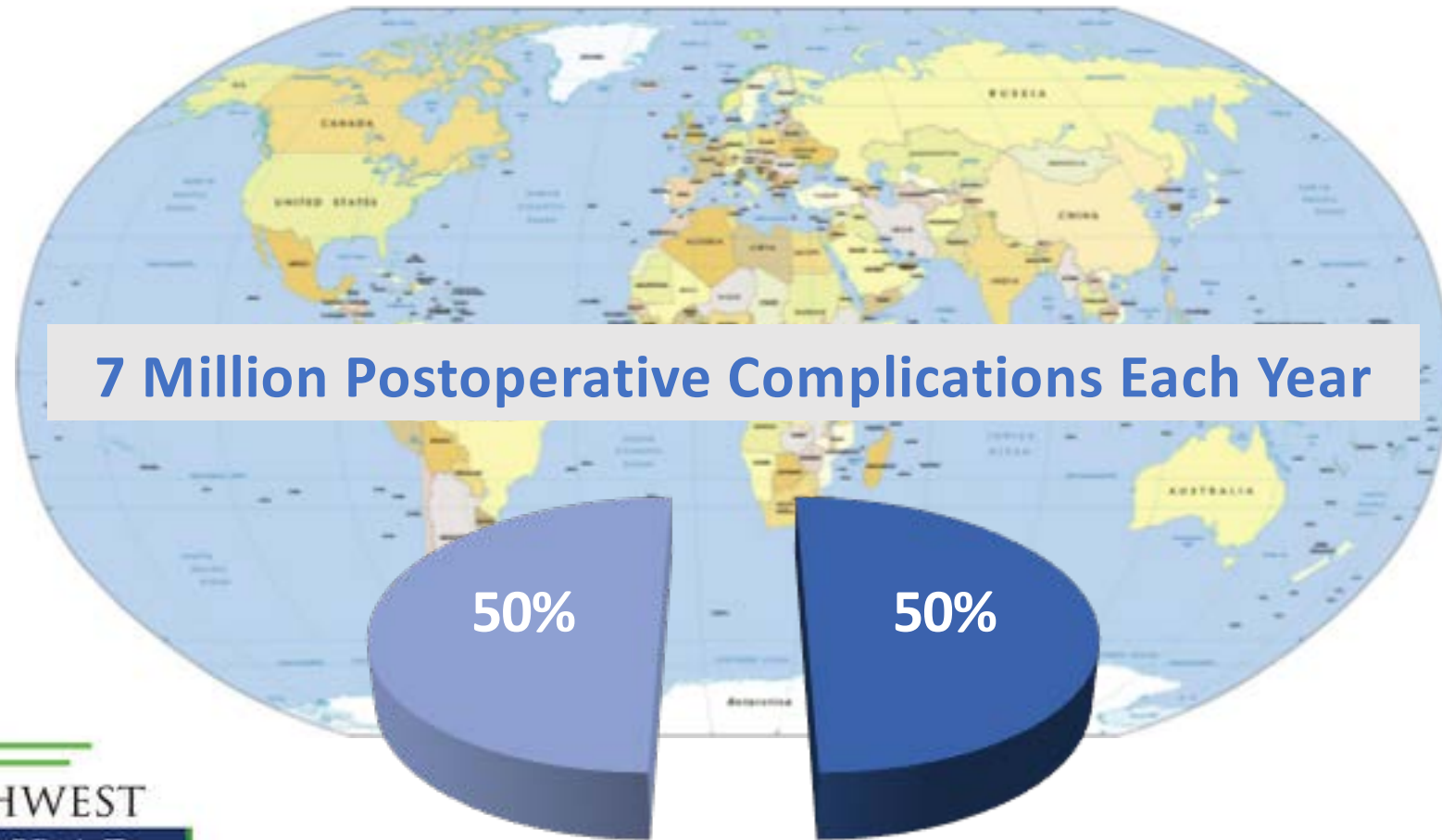
Increasing Chronic Illness

US Population



Postoperative Complications

Worldwide



7 Million Postoperative Complications Each Year

50%

50%

World Health Organization

Surgical Safety Checklist

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?

Surgical Safety Checklist

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

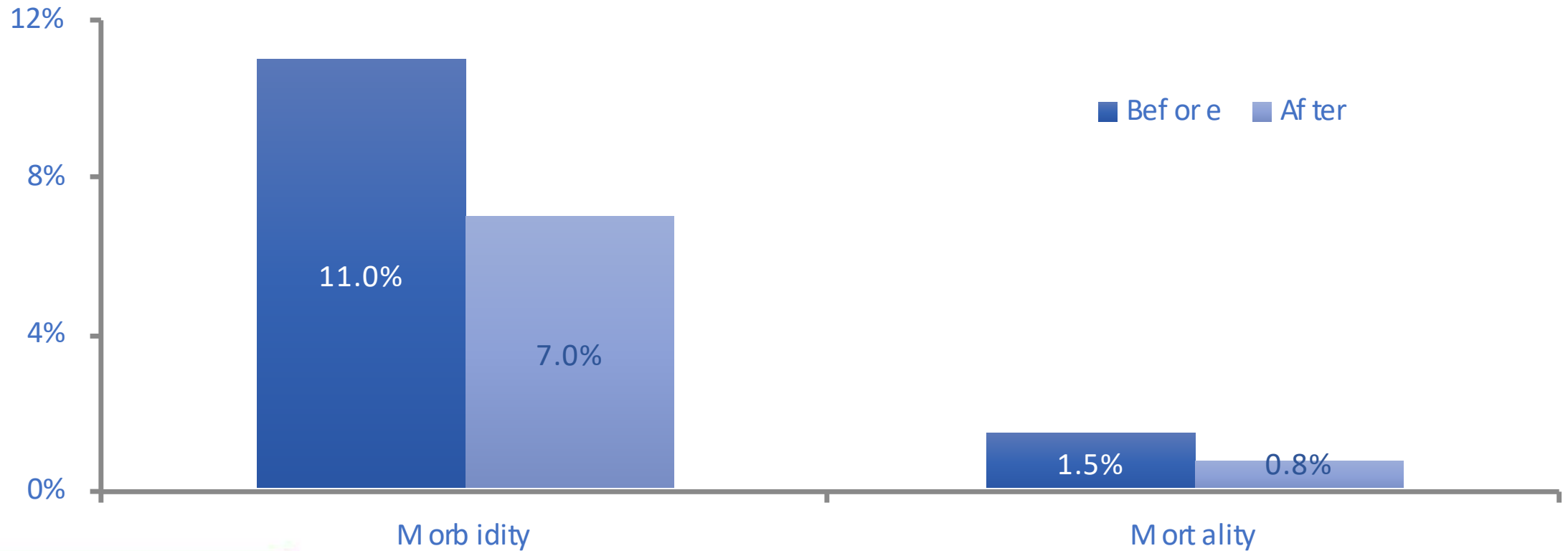
To Surgeon, Anaesthetist and Nurse:

- What are the key concerns for recovery and management of this patient?

Checklists

Culture Over Components

The 2 hospitals with greatest improvement had minimal change in checklist compliance



Enhanced Recovery Programs

Review of a Decade

- Multimodal, evidence based, pre- intra- and postoperative elements
- Aim to improve outcomes and accelerate recovery
- Systematic Review
 - 38 trials, 5099 participants
 - Relatively poor design quality
 - High heterogeneity

Enhanced Recovery Programs

Findings

- Reduced length of stay (-1.14 days)
- Reduced overall complication rates (30%)
 - *No specific element most effective*
 - *Overall “mind set” as driver*

Mass Implementation

Northern California

- Staggered Implementation across 20 Medical Centers
 - 3768 patients undergoing elective colorectal resection
 - 5002 patients having emergent hip surgery
- Process Measures
 - Early ambulation:
 - Colorectal: 22 to 57%
 - Hip: 3 to 21%
 - Morphine Equivalents
 - Colorectal: 52 to 31mg
 - Hip: 39 to 27mg

Mass Implementation

Outcome Measures

Significant Changes	Pre	Post
Length of Stay (days)	3.6	3.2
Discharge to Home	22%	27%
Postoperative Complications	31%	25%

Key Concepts in Perioperative Care

Risk
Assessment

Risk
Mitigation and
Prevention

Collaborative
Programs

Risk Assessment

✓ ACC/AHA guideline for perioperative cardiovascular evaluation & management before noncardiac surgery

✓ ASA consensus statement for perioperative management of sleep apnea

✓ SASM guideline for preoperative evaluation for sleep apnea

✓ ARISCAT & PERISCOPE risk indices for postoperative pulmonary complications

✓ Gupta & colleagues respiratory failure, pneumonia & PMICA calculators

✓ ACC guideline for perioperative management of anticoagulation in nonvalvular Afib

✓ ACCP guideline for VTE prophylaxis

✓ ACS Surgical Risk Calculator

✓ Risk Analysis Index

- Multiple risk calculators are available
- No single one is perfect
- These are tools to aid your clinical assessment

A few up close...

ACS Risk Calculator

<https://riskcalculator.facs.org/RiskCalculator/PatientInfo.jsp>



Frailty Risk Analysis Index

SEX, AGE AND CANCER

1. Sex _____ Female = 0/ Male = 5 _____
 2. Age _____ Score with Cancer _____
 Score without Cancer _____

Age (years)	Score with cancer	Score without cancer
<65	20	2
70-74	19	3
75-79	18	4
80-84	17	5
85-89	15	6
90-94	14	7
95-99	14	8
>100	13	9

MEDICAL CO-MORBIDITIES

3. Weight loss in past 3 months (>10 lbs) No = 0/ Yes = 5 _____
 4. Renal Failure No = 0/ Yes = 6 _____
 5. Congestive heart failure No = 0/ Yes = 4 _____
 6. Poor appetite No = 0/ Yes = 4 _____
 7. Shortness of breath at rest No = 0/ Yes = 8 _____

RESIDENCE, COGNITION AND ACTIVITIES OF DAILY LIVING

8. Residence other than independent living No = 0/ Yes = 8 _____
 If yes, circle location: Skilled Nursing Facility/Assisted Living/Nursing Home
 If yes, circle if admission was in last 30 days No/ Yes _____
 9. Deterioration of cognitive skills over the last 3 months No / Yes _____
 10. Activities of Daily Living _____
 Score with Cognitive Decline (-2 - 21) _____
 Score without Cognitive Decline (0 - 16) _____
TOTAL SCORE _____
PERCENT _____

[http://www.jvascsurg.org/article/S0741-5214\(14\)01872-2/pdf](http://www.jvascsurg.org/article/S0741-5214(14)01872-2/pdf)

When to test...

Rule of thumb

When the test would be indicated regardless of having surgery, or

If it will change management decisions or counseling regarding surgery

Think before you order!

A History of Preoperative Tests and Procedures Debunked Over Time...

Preoperative
Carotid
Endarterectomy



Preoperative
Coronary
Revascularization

Preoperative EKG

Preoperative labs

Examples of Risk Prevention

Intervention

- Optimizing health preoperatively
- Starting new medications
- Preoperative nutrition drinks
- Preoperative respiratory therapy

Monitor & Respond

- Intraoperative cardiac output
- Postoperative telemetry
- Glucose monitoring

Collaborative Programs

Journal of HOSPITAL MEDICINE

[Current Issue](#) [Past Issues](#) [Online First](#) [For Authors](#) [Submit An Article](#)

REVIEWS

Hospital medicine and perioperative care: A framework for high-quality, high-value collaborative care

J. Hosp. Med. 2017 April;12(4):277-282

By: Rachel E. Thompson, MD, MPH  Kurt Pfeifer, MD, Paul J. Grant, MD, Cornelia Taylor, MD, Barbara Slawski, MD, MS, Christopher Whinney, MD, Laurence Wellikson, MD, Amir K. Jaffer, MD, MBA

PACIFIC NORTHWEST
ENDOASCULAR
CONFERENCE

PNEC-SEATTLE.ORG

Preoperative

- Risk assessment
- Risk prediction
- Optimization

Day of Surgery

- Go/No Go
- Urgent (re) evaluation
- Seamless transitions

Perioperative Medicine

Post Discharge

- Transitions
- Planning
- Triaging

Postoperative Inpatient

- Monitoring
- Managing medical conditions
- Early identification and treatment of complications

The Future

- Patient Centric Approach
- Coordinated Care
- Systems that Ensure Best Practices
- Continuous Process Improvement