

# MEASURING THE QUALITY OF SURGICAL CARE: THE MAINE PROJECT

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IMMEDIATE PAST PRESIDENT  
MAINE CHAPTER, ACS





# MAINE QUALITY FORUM

Component of Dirigo Health Plan

# MQF Initiatives

- Set the goal of best care in the U.S.
- Act as a organizer for demonstration projects for micro-systems
- Act as a promoter for health care system integration
- Argue for health care environment that supports quality

# MQF tools

- Ad hoc micro-system study groups
- Process indicators that support our goals
- Outcome indicators that support our goals
- Utilization indicators that support our goals
- Public health indicators to show trends over longer periods of time

# WHO WANTS EVIDENCE OF QUALITY?

- Policy makers....Dirigo Health Plan
- Patients and their families....Healthgrades
- Private payers....Leapfrog Group
  - “value-based purchasing”, “Centers of Excellence”
- Public payers....CMS
- Health services researchers

## **ASSEMBLY FOR GENERAL SURGEONS—GS 01**

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Saturday, April 24..... 1:15–5:00 pm

### **A TOWN MEETING—FACING THE INEVITABLE: SURGICAL QUALITY AND OUTCOMES MADE PUBLIC**

*Cosponsored by the American Society of General  
Surgeons*

*Moderator: Shukri F. Khuri, MD, FACS, West  
Roxbury, MA*

Measuring quality and reporting outcomes are important and critical components for the practicing surgeon. Surgical outcome data are also becoming more openly available to the public, consumers, and payers, and legislators are urging wide public dissemination of outcome-based, provider-specific performance measures. This session is dedicated to surgeon involvement in the use of outcomes for the comparative assessment and improvement of the quality of surgical care.

**Maine Chapter of the American College of Surgeons**  
**2004 Practice Management Seminar and Annual Scientific Meeting**

**Friday June 4, 2004**

- 2:00 PM      **REGISTRATION**
- 4:00 PM      **The Dirigo Plan Medical Overview**  
**Bob McAfee MD**  
 Chair, Dirigo Board of Directors  
**The Dirigo Plan- Outcomes and Quality Data Applications**  
**Jim Harner**  
 President, Maine Health Information Center
- 6:00 PM      **Cocktail Party and Entertainment**  
*Accapellago Returns!*

**Saturday June 5, 2004**

- 7:30 AM      **Continental Breakfast**
- 8:00 AM      **Northern New England Cardiovascular Disease Study Group: How and Why We Did It**  
**Jerry Morton MD FACS - MMC**
- 8:30 AM      **Northern New England Vascular Surgery Study Group: How and Why We are Doing It**  
**Jeb Hallen MD FACS - EMMC**

**Saturday June 5, 2004 Continued**

- 4:30 PM      **ACS Panel on Advocacy and Political Action**
- Carl Brodenberg MD FACS- Moderator**  
 Surgeon-in-Chief, MMC  
**Tom Russell MD FACS**  
 Executive Director American College of Surgeons  
**Erin LaPlair**  
 Political Coordinator, ACS Professional Association Political Action Committee  
**Charles Mabey MD FACS**  
 ACS Board of Regents  
**Frank Opelka MD FACS**  
 Beth Israel Deaconess Medical Center  
**Gordon Smith Esq.**, Executive Vice-President  
 Maine Medical Association
- 6:00 PM      **Adjourn**
- 7:00 PM      **Dinner Banquet**  
 Keynote Speaker: **David Rockefeller, Jr.**  
**The Future of Our National Park System**

**Saturday June 5, 2004 Continued**

- 9:00 AM      **Bariatric Model for a Collaborative Study**  
**Northern New England General Surgical Study Group: A Proposal - How and Why to Do It**  
**Sam Flinayson MD MPH**  
 Dartmouth Hitchcock Medical Center
- 9:30 AM      **Colon Surgery Model for a General Surgery Collaborative Study: How to Do It**  
**Frank Opelka MD FACS**  
 Beth Israel Deaconess Medical Center
- 10:00 AM      **National Surgical Quality Improvement Program**  
**Tom Russell MD FACS**  
 Executive Director American College of Surgeons
- 10:30 AM      **Panel and Questions**  
**How to Make Your Practice the Best Practice**
- 11:15 AM      **Break for Afternoon Activities and Lunch on your own**

**Sunday June 6, 2004**

- 7:30 AM      **Continental Breakfast**
- 8:00 AM      **Annual Chapter Business Meeting**
- 8:30 AM      **Total Mesorectal Excision for Carcinoma- A Panel Discussion**  
**Frank Opelka MD FACS**  
**Tom Russell MD FACS**  
**Hani Baradi MD - EMMC**  
**Sara Mayo MD - MMC**
- 9:30 AM      **Where do we go from here - and how?**
- **Making Data Work for the Community - General Surgeon**
  - **Best Practices Project**
  - **Using the Resources of the State and National ACS**
- 10:30 AM      **Evaluations and Adjourn**



**MASTER AND COMMANDER  
TAKES THE HELM**



## PROPOSAL/DRAFT FOR GENERAL SURGERY STUDY GROUP

**“As Maine goes, so goes the Nation”**

NAME: Northern New England General Surgery Study Group

MISSION: NNEGSSG was created in concept at the annual meeting of the Maine chapter of the American College of Surgeons, June 4<sup>th</sup> to 6<sup>th</sup>, 2004. It exists to develop and exchange information concerning disease processes treated by general surgeons. Our goal is to improve continuously the quality, safety, effectiveness and cost of medical interventions.

GUIDING PRINCIPLES: Collaboration, inclusivity, scientific process, transparency, regionality, voluntary participation.

FOUNDING MEMBERS: Sara Mayo (Chair), Parker Roberts, Susan O'Connor, Hani Baradi, Michael Starks, Marsha O'Rourke, Edward Walworth, Joel LaFleur, William Horner, James Georgitis, Rod Lahren, Tom McHugh

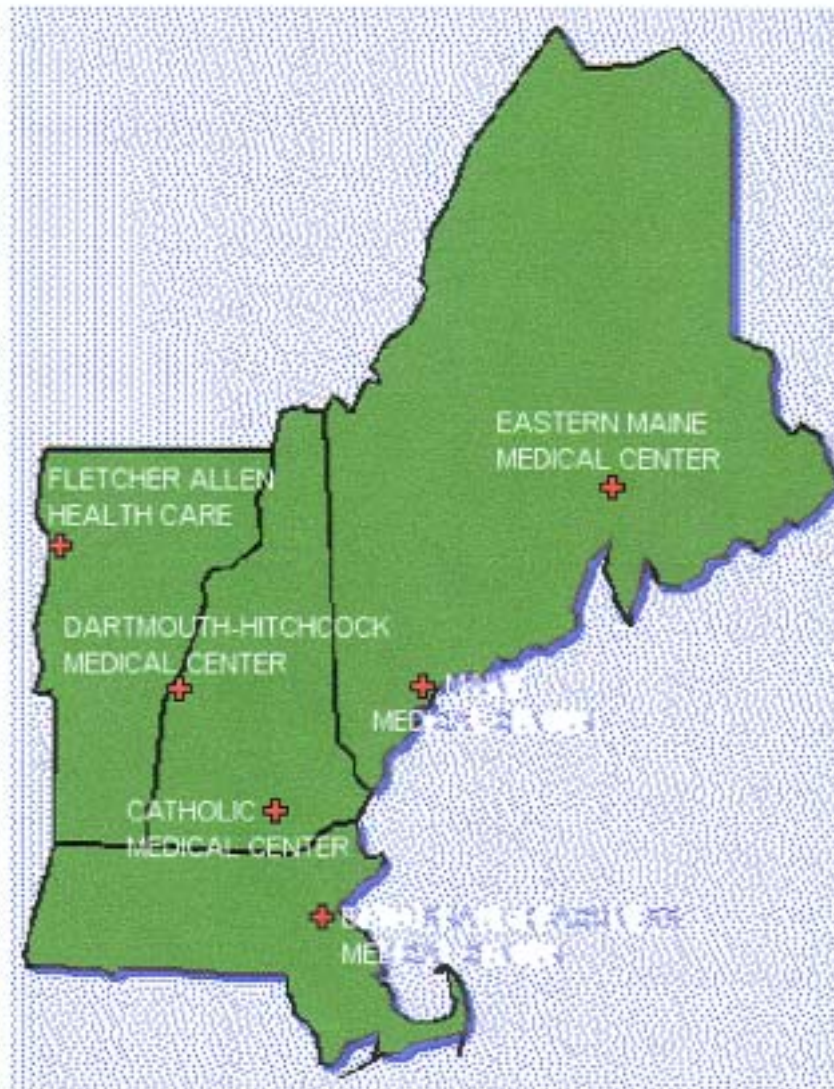
ADVISORY COMMITTEE: Jeremy Morton, Samuel Finlayson, Frank Opelka, Carl Bredenberg

INITIAL PROPOSAL: To develop a process-oriented study model involving a surgical procedure of sufficient frequency and potential morbidity to allow meaningful and statistically significant evaluation. Of several possibilities, **colon resection** offers the best fit with these criteria. While first efforts will focus primarily around the three largest Maine medical facilities, early planning input from smaller institutions will ensure inclusion in the final form of the project. As the process matures, we hope that the model developed around colon operations can be applied to other procedures. Lastly, we think that voluntary collaboration among a number of Northern New England hospitals by regional participation is critical to the goals of deriving meaningful data, assessing provider performance and improving patient care outcomes.

### ACTION:

1. Develop hypotheses
2. Establish questions to test the hypotheses
3. Define the data sets
4. Create a data collection tool and process
5. Collect the data
6. Analyze continuously
7. Report findings

# Northern New England Cardiovascular Disease Study Group



The Northern New England Cardiovascular Disease Study Group exists to develop and exchange information concerning the treatment of cardiovascular disease.

It is a regional, voluntary, multi-disciplinary group of clinicians, hospital administrators, and health care research personnel who seek to improve continuously the quality, safety, effectiveness, and cost of medical interventions in cardiovascular disease.

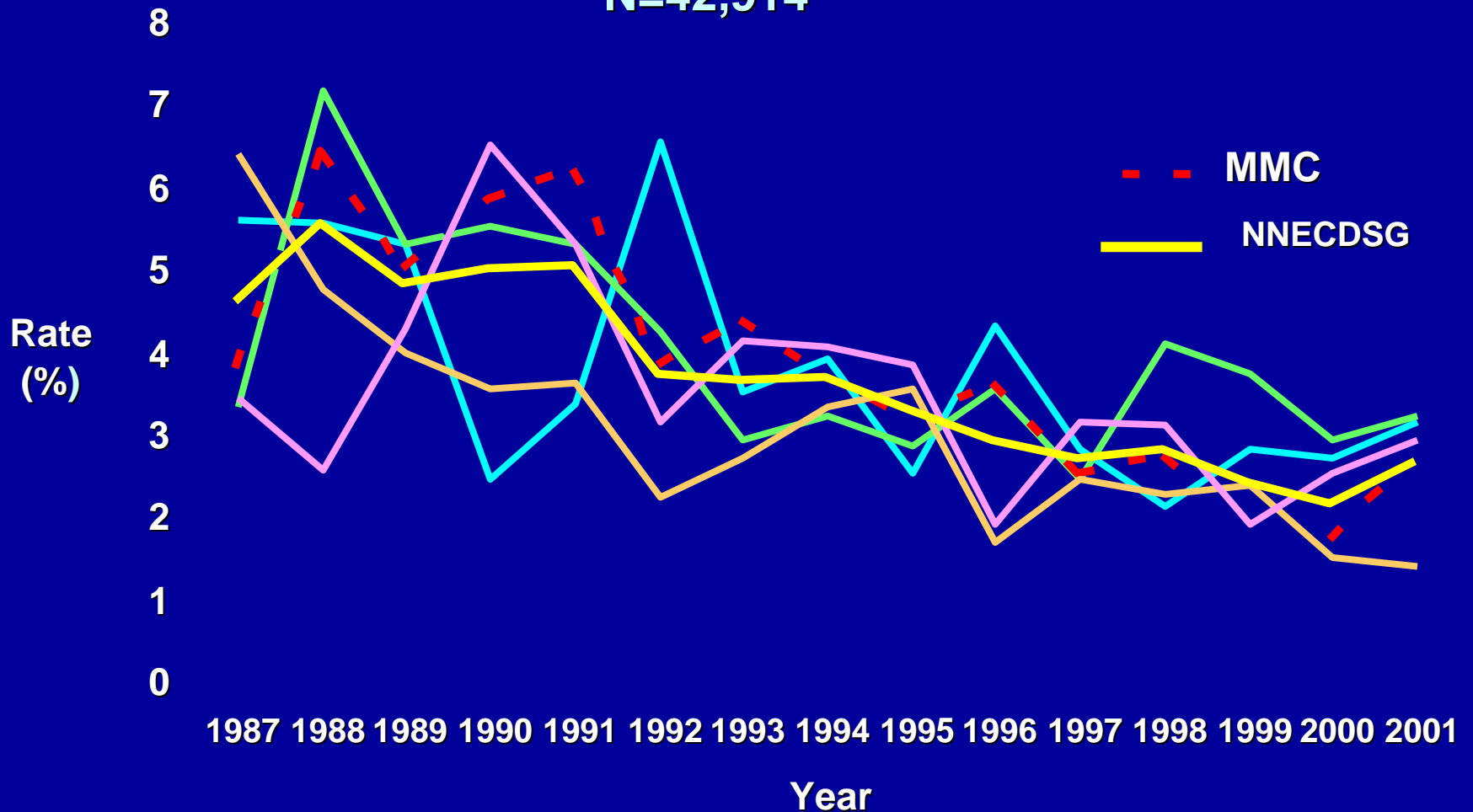
The NNECDSG maintains registries for all patients receiving coronary artery bypass grafting (CABG), percutaneous transluminal coronary angioplasty (PTCA), and heart valve replacement surgery.

During the last ten years, data on approximately 70,000 procedures were collected and analyzed. The group meets three times per year to review data reports and to plan studies.

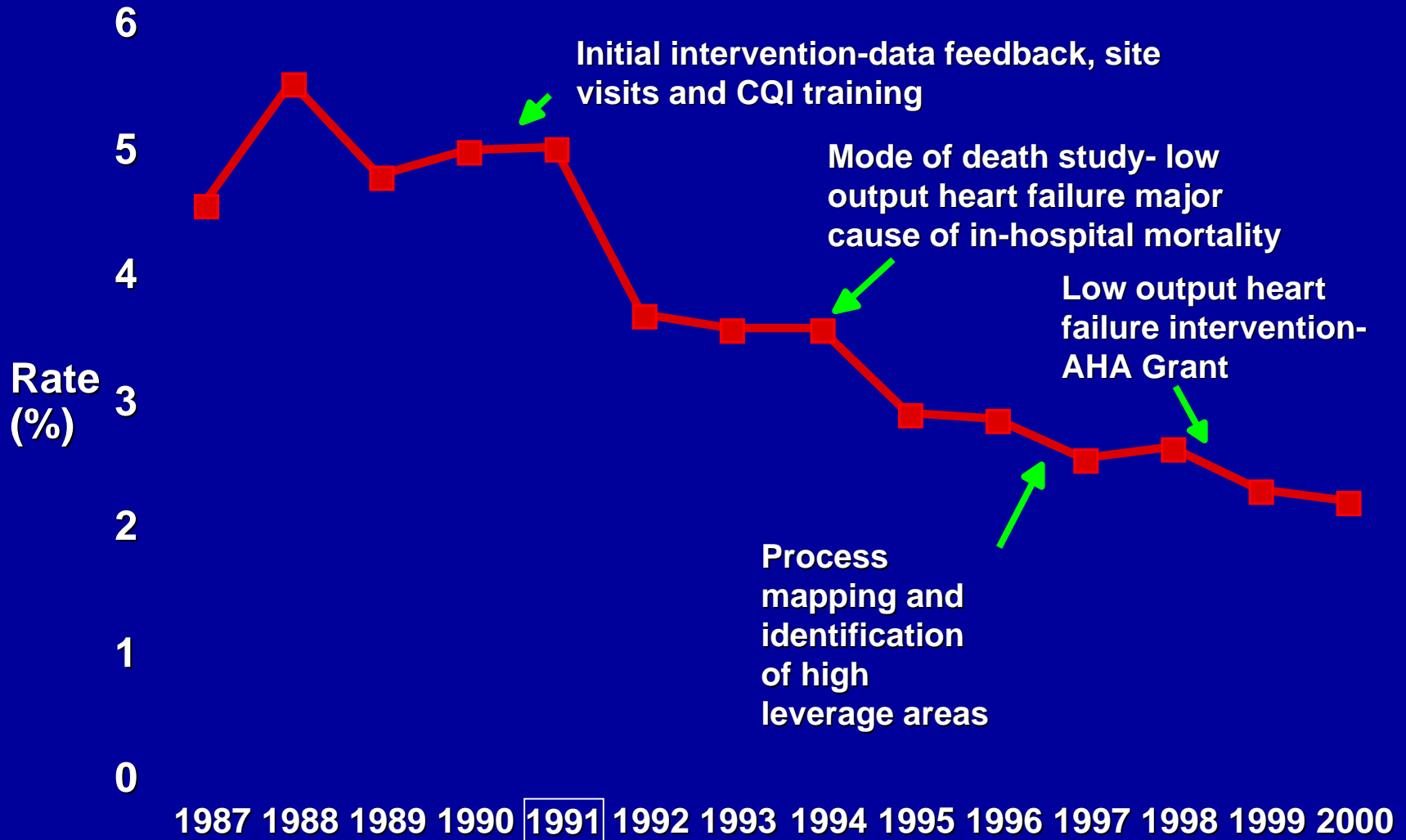
An executive committee composed of cardiologist, surgeon, and administrator from each institution and the data center director constitutes the administrative structure for the group.

# Adjusted In-hospital CABG Mortality Rates by Center

1987-2001  
N=42,914



# Adjusted In-hospital Mortality Rate for All Centers 1987-2000



# Attributes of NNECVDSG

- Prospective clinical registry; multi institutional
- Identified many processes of care measures linked to lower mortality outcomes
- Made efforts to increase the use of best practices
- Timely feedback of data to clinicians
- Large numbers
- Significant potential morbidity/mortality

**COULD GENERAL SURGEONS EMULATE THIS RESULT?**

# Measuring the Quality of Surgical Care: Structure, Process, or Outcomes?

John D Birkmeyer, MD, FACS, Justin B Dimick, MD, Nancy JO Birkmeyer, PhD

Journal of American College of Surgeons, vol 198, number 4; April, 2004

**Table 1.** Using Structure, Process, and Outcomes to Measure Surgical Quality, with Examples, Advantages, and Disadvantages of Each

	Structure	Process	Outcomes
Examples	Procedure volume	Perioperative $\beta$ -blockers in high-risk surgical patients	Morbidity and mortality rates
	Fellowship-trained surgeons	Use of internal mammary graft during coronary artery bypass graft	Functional health status
	"Closed" intensive care units		Patient satisfaction Cost
Primary advantage(s)	Expedient, inexpensive proxies of surgical outcomes	Reflect care that patients actually receive—may seem "fairer" to providers Actionable from provider perspective, clear link to quality improvement activities	Buy-in from surgeons—the "bottom line" of what they do Outcomes measurement alone may improve outcomes
Disadvantages	Most variables not actionable from provider perspective	Little information about which processes are important for specific procedures	Numbers too small to measure with adequate precision procedure-specific outcomes for most hospitals and procedures
	Imperfect proxies for outcomes—reflect average results for large groups of providers, not individuals		Outcomes measures that are not procedure-specific less useful for purposes of quality improvement

# Measuring Outcomes

- Problem with surgeon- or hospital-based outcomes assessment is

**STATISTICAL POWER**

# The Problem of Power

When rates of *adverse outcomes are low*, or *few procedures* are performed ...

*... statistical power is often insufficient* to show any difference between your own outcome rate and the “benchmark” rate.

# The Problem of Power

	Survived	Died	
The Nation (benchmark)	48,500	1500	3%
You	46	4	8%

*difference in mortality is NOT statistically significant!*

# The Problem of Power

At the hospital or surgeon level ...

*focusing on the most reliably measured outcome (mortality) is of limited usefulness for most operations*

# Proxies for Quality

- Useful to have *alternatives* to direct outcomes measurement
  - Structure
  - Process
- Factors associated with good outcomes

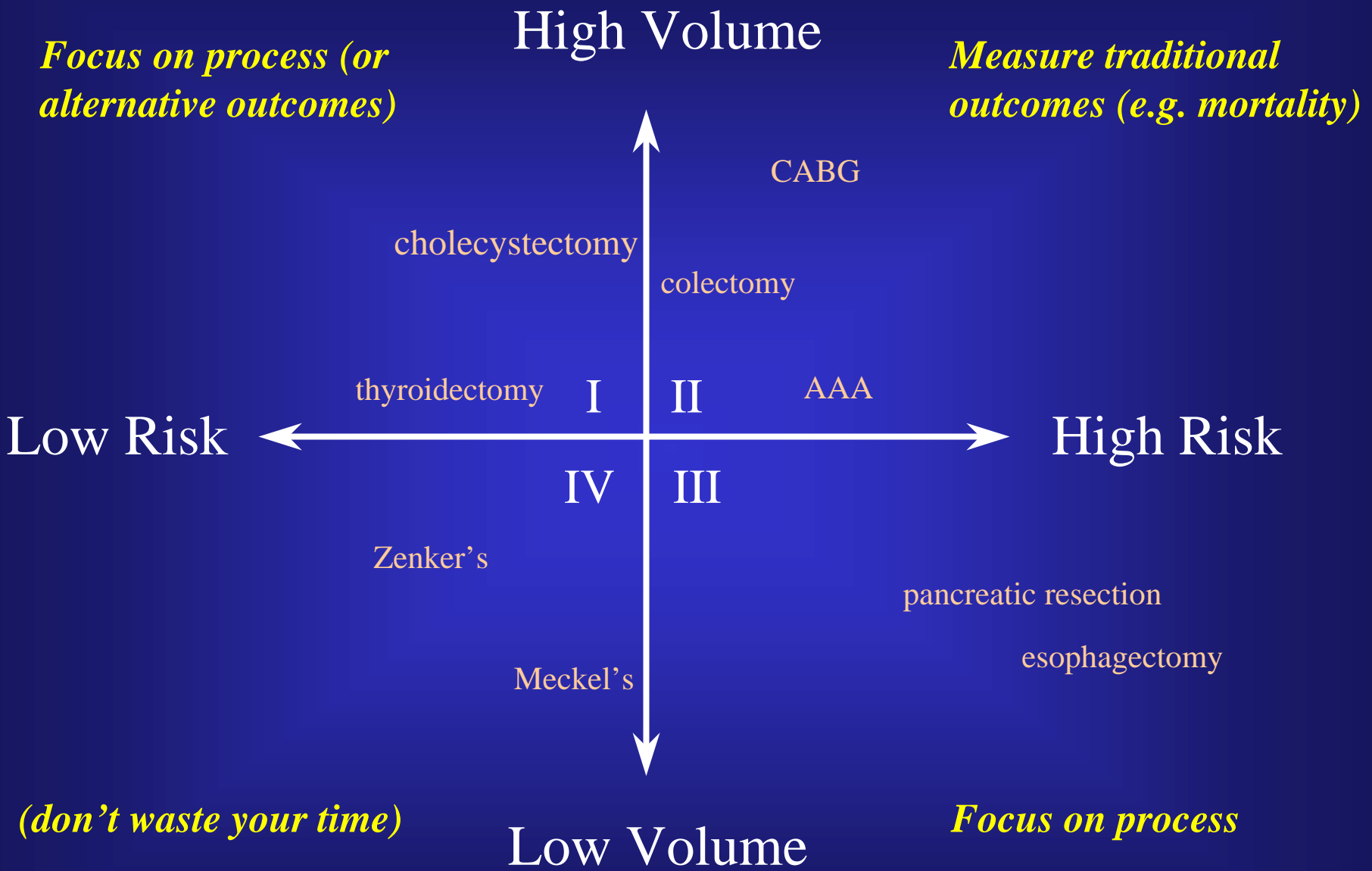
# 11 practices endorsed by the American College of Surgeons

- DVT prophylaxis
- perioperative beta-blockers
- abx wound prophylaxis
- pressure-reducing beds to avoid decub ulcers
- sterile barriers for central venous lines
- U/S for central line insertion
- Abx-impregnated central line
- early enteral nutrition for critically ill patients
- aspiration of secretions to prevent ventilator-associated pneumonia
- warfarin self-management
- improvements in informed consent process

**Table 2.** Examples of Process Measures Associated with Surgical Outcomes, According to Strength of Scientific Evidence Supporting Them and the Cost and Complexity of Implementing Them

Implementation cost/complexity	Strength of the evidence/magnitude of potential benefit				
	Greatest	High	Medium	Lower	Lowest
Low	Appropriate venous thromboembolism prophylaxis	Use of supplemental perioperative oxygen	H <sub>2</sub> antagonists for stress ulcer prophylaxis	Early analgesics in patients with acute abdomen (without compromising diagnostic accuracy)	Use of pre-anesthesia checklists
	Use of perioperative $\beta$ -blockers in patients at risk for cardiac events	Selective decontamination of digestive tract	Protocols for intravenous heparin titration	Intraoperative monitoring of vital signs/oxygenation	Counting sharps, instruments, and sponges
	Appropriate use of antibiotic wound prophylaxis Antibiotic-impregnated central venous catheters	Use of silver alloy-coated urinary catheters	Maintenance of perioperative normothermia		Sucralfate for stress ulcer prophylaxis
Medium or high	Early nutritional support in critically ill patients		Barrier precautions (via gowns and gloves; dedicated equipment and personnel)	Tunneling short-term central venous catheters	"Sign your site" protocols
	Use of real-time ultrasound guidance during central line insertion		Perioperative glucose control		Catheter changes as prophylaxis against central line infections

Based on literature review and conclusions contained in "Making Health Care Safer: A Critical Analysis of Patient Safety Procedures," from the Agency for Healthcare Quality and Research.<sup>18</sup>



# MEASURING THE QUALITY OF SURGICAL CARE: THE MAINE PROJECT

- Colon resection best fit for frequency and morbidity/mortality criteria
- Primary study methodology will be by necessity process-oriented
- Will include some outcomes for “buy in”, realizing will have little statistical power
- Once model developed, will expand to regional, collaborative effort

# Collaborative Study Groups

- Aggregated volume may allow meaningful analysis of outcomes
- Improve Outcomes for Patients
  - Actively (identifying quality, implementing changes)
  - Passively (observation alone is potent)
- Promote cooperation regionally
- Intangibles of collaboration

**ACTION!!!**

**WHAT IS THE HYPOTHESIS?**

**MAINE SURGEONS PROSPECTIVELY  
MEASURED PROCESSES OF CARE,  
IMPLEMENTED QUALITY  
IMPROVEMENT INITIATIVES, AND  
(PERHAPS) DISCOVERED  
MEASURABLE IMPROVEMENTS IN  
OUTCOME**

## THE MAINE PROJECT: WORK PLAN

- Choose process variables for colon resection of proven effectiveness, based on prospective randomized trials
  - Preoperative
  - Intraoperative
  - Postoperative
- Develop Web-based data collection, analysis and reporting methodology