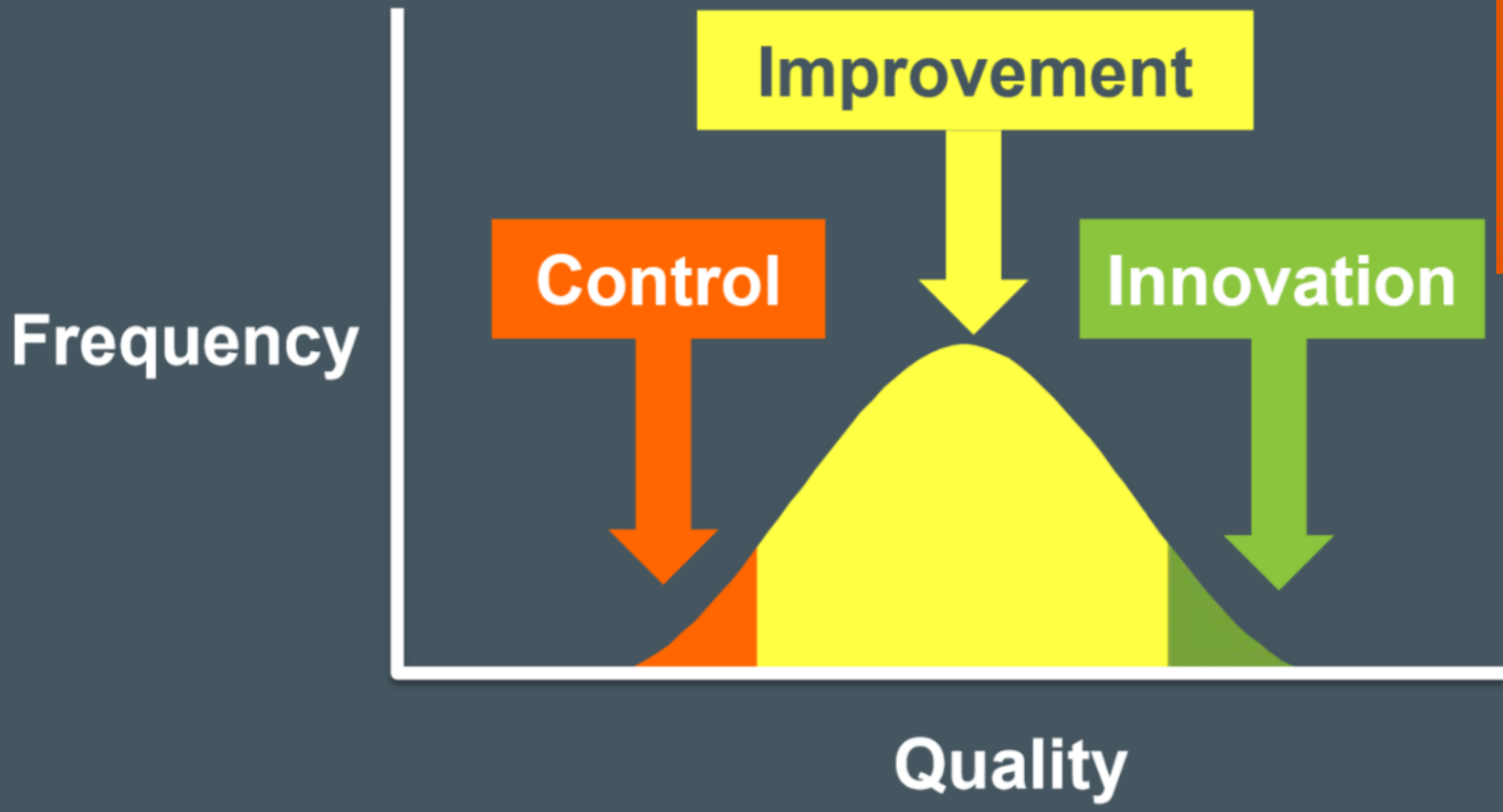




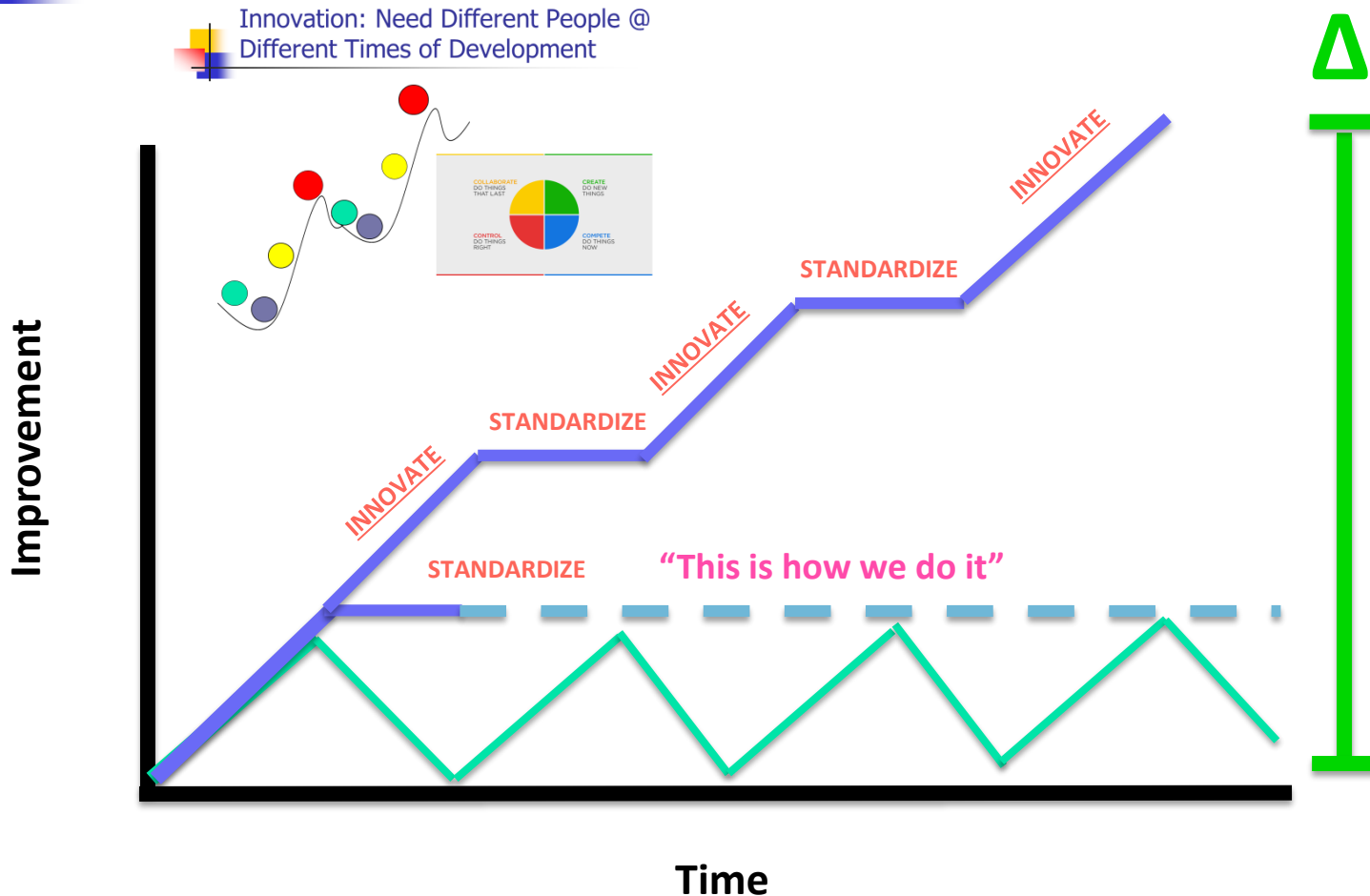
# American College of Surgeons Registries & Quality Programs

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David B. Hoyt, MD FACS  
Executive Director  
American College of Surgeons  
Chicago, IL



# Dedicated to improving the care of the surgical patient and to safeguarding standards of care in an optimal and ethical practice environment





- 1. Standards**
- Individualized by patient
  - Backed by research

- 3. Rigorous Data**
- From medical charts
  - Backed by research
  - Post-discharge tracking
  - Continuously updated

- 2. Right Infrastructure**
- Staffing levels
  - Specialists
  - Equipment
  - Checklists

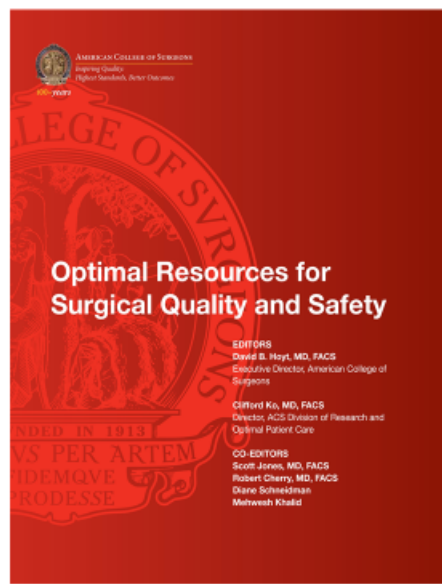
- 4. Verification**
- External peer-review
  - Creates public assurance

**Goal: High Reliability**



## Chapters

- (Personnel and Committees)**
  - How a surgical quality program works, Surgical quality and patient safety committee, Chief quality officer
  - Domains and phases of care
- (Quality Improvement Process)**
  - Peer Review; Culture
- (Disease Management)**
  - Multidisciplinary (Gen surg, Surg onc, Trauma, Acute care, Burns, Transplant, Vascular, Bariatric, Complex GI, Peds, Rural; Ortho, Plastic, Neurosurg, Urology, ENT, Ophtho, Gyne
- (Regulatory)**
  - Credentialing; External regulation; Safety and Reliability
- (Data)**
  - Data Analytics
- (Learning and Sharing)**
  - Education; Training; Guidelines; Consortia
- (The Individual Surgeon)**
  - Surgeon Improvement; Disruptive behavior; Mentoring/Coaching; Individual Surgeon Responsibility



You have the passion  
You have the drive  
**We have the road map**

*Optimal Resources for Surgical Quality and Safety*

*"It's all here. It covers every piece we need to institute a culture of quality in our hospitals—the five phases of care and what you need to do in each of them, how to run an M&M conference, credentialing and privileging, mentoring and coaching—and it tells me how to do it in a way I can understand."*

—James W. Fleshman, MD, FACS, FASCRS

It begins here  
[facs.org/redbook](https://facs.org/redbook)

## ACS Registry Facts

Iqvia Platform : 7 registries and growing –

current builds:  
Data from EMR  
Financial Data  
PRO data

Registry Use:

2800 Hospitals

Millions of Patients

Thousands of Surgeons

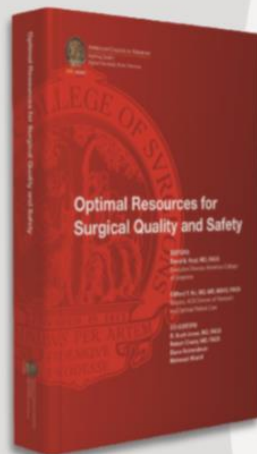
Other Society  
collaboration



ACS  
**NSQIP**

Other Hospital

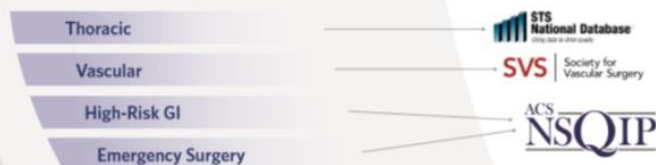
### Disease-Specific Programs



### Population-Specific Programs



### Emerging Programs



### Phases of Care Programs





# Data Use – Peer Review

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- NCDB - 20 years 566 PRP
- NTDB,TQIP - 20 years 789 PRP
- NSQIP - 15 years 910 PRP
- **2,265 Peer Reviewed Publications**
  - >100 year
  - About one every three days
- Access – open files easily available  
1000's requested

## A Comparison of **Clinical Registry Versus Administrative Claims** Data for Reporting of 30-Day Surgical Complications

*Elise H. Lawson, MD, MSHS,\* Rachel Louie, MS,\* David S. Zingmond, MD, PhD,\* Robert H. Brook, MD, ScD,\*†‡  
Bruce L. Hall, MD, PhD, MBA,§|| Lein Han, PhD,¶ Michael Rapp, MD, JD,¶# and Clifford Y. Ko, MD, MSHS\*§\*\**

	<b><u>Sensitivity of admin data for detecting patients with a complication in clinical registry</u></b>	<b><u>% of complications recorded in admin data that are <u>false positives</u></u></b>
Surgical site infection	<b>27%</b>	<b>71%</b>
Urinary tract infection	60%	81%
Pneumonia	68%	70%
Deep venous thrombosis	82%	76%
Myocardial infarction	87%	88%

# Risk Adjustment Critical



## Improving American College of Surgeons National Surgical Quality Improvement Program Risk

### **Adjustment: Incorporation of a Novel Procedure Risk Score**

Mehul V Raval, MD, MS, Mark E Cohen, PhD, Angela M Ingraham, MD, MS, Justin B Dimick, MD, MPH, FACS, Nicholas H Osborne, MD, MS, Barton H Hamilton, PhD, Clifford Y Ko, MD, MS, MSHS, FACS, Bruce L Hall, MD, PhD, MBA, FACS

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#### ORIGINAL SCIENTIFIC ARTICLES

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## Risk Adjustment in the American College of Surgeons National Surgical Quality Improvement Program: A Comparison of Logistic Versus Hierarchical Modeling

Mark E Cohen, PhD, Justin B Dimick, MD, MPH, Karl Y Bilimoria, MD, MS, Clifford Y Ko, MD, MS, MSHS, FACS, Karen Richards, Bruce Lee Hall, MD, PhD, MBA, FACS

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Evaluating parsimonious risk-adjustment models for comparing hospital outcomes with vascular surgery

Nicholas H. Osborne, MD, MS,<sup>a</sup> Clifford Y. Ko, MD, MS, MSHS,<sup>b,c</sup> Gilbert R. Upchurch Jr, MD,<sup>a</sup> and



# Profiling Individual Surgeon Performance Using Information from a High-Quality Clinical Registry: Opportunities and Limitations



Bruce Lee Hall, MD, PhD, MBA, FACS, Kristopher M Huffman, MS, Barton H Hamilton, PhD, Jennifer L Paruch, MD, Lynn Zhou, PhD, Karen E Richards, BA, Mark E Cohen, PhD, Clifford Y Ko, MD, MS, MSHS, FACS

	SSI	Mortality
Rate of occurrence	6.1%	2.2%
Sample size needed to achieve good statistical reliability (0.7)	254 (118-381)	1985 (109-3772)
% of surgeons achieving reliable statistics	35.5%	12.2%

# Demonstrable Improvement



The NEW ENGLAND  
JOURNAL of MEDICINE

SPECIAL ARTICLE

## A National Evaluation of the Effect of Trauma-Center Care on Mortality

Ellen J. MacKenzie, Ph.D., Frederick P. Rivara, M.D., M.P.H., Gregory J. Jurkovich, M.D., Avery B. Nathens, M.D., Ph.D., Katherine P. Frey, M.P.H., Brian L. Egleston, M.P.P., David S. Salkever, Ph.D., and Daniel O. Scharfstein, Sc.D.



Figure 3a. Mixed Effects Modeling for Likelihood of Compliance with Each Quality Measure, a) Patient Level Outcome at NAPBC vs. non-NAPBC Centers; b) Facility Level Outcome at NAPBC vs. non-NAPBC Centers<sup>b</sup>

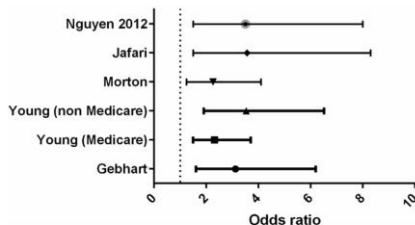
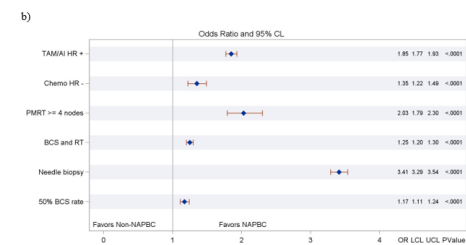
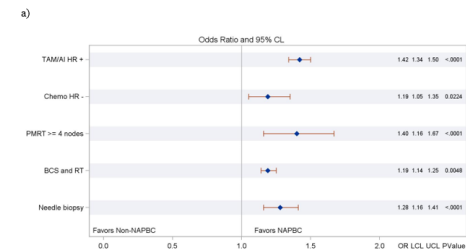


Figure 2. Odds ratio of increased mortality in non-Centers of Excellence (COE) when compared with COE.



ORIGINAL ARTICLES

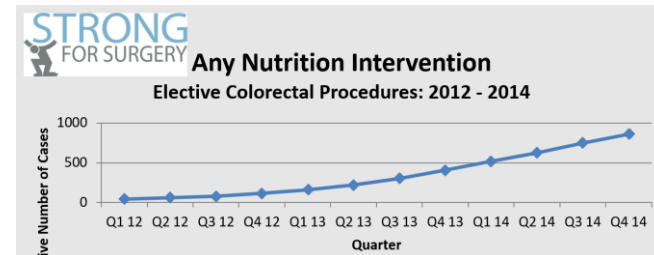
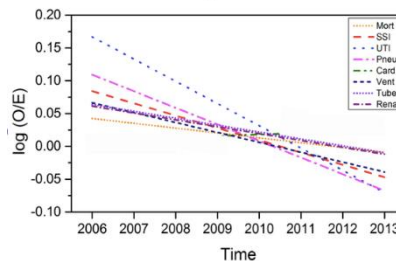
Does Surgical Quality Improve in the American College of Surgeons National Surgical Quality Improvement Program  
An Evaluation of All Participating Hospitals

Bruce L. Hall, MD, PhD, MBA, FACS,\*†‡§ Barton H. Hamilton, PhD,§ Karen Richards, BS,§ Karl Y. Bittorus, MD, MS,§ Mark E. Cohen, PhD,§ and Clifford Y. Ko, MD, MS, MSHS, FACS\*\*¶

	Complication	Mortality
Mean Change in O/E	-0.1137	-0.1740
P-value (mean not zero)	<0.000001	<0.0001
Volume weighted mean	-0.1126	-0.1631
<b>% Institutions Improved</b>	<b>82%</b>	<b>66%</b>

TABLE 4. In-Hospital Outcomes by Accreditation Status, 2010

	Unaccredited	Accredited	P
Total charges, mean, \$	51,189	42,212	<0.0001
Any complication, %	12.3	11.3	0.001
Mortality, %	0.13	0.07	0.019
FTR, %	0.97	0.55	0.046



Does the number of compliant processes matter?

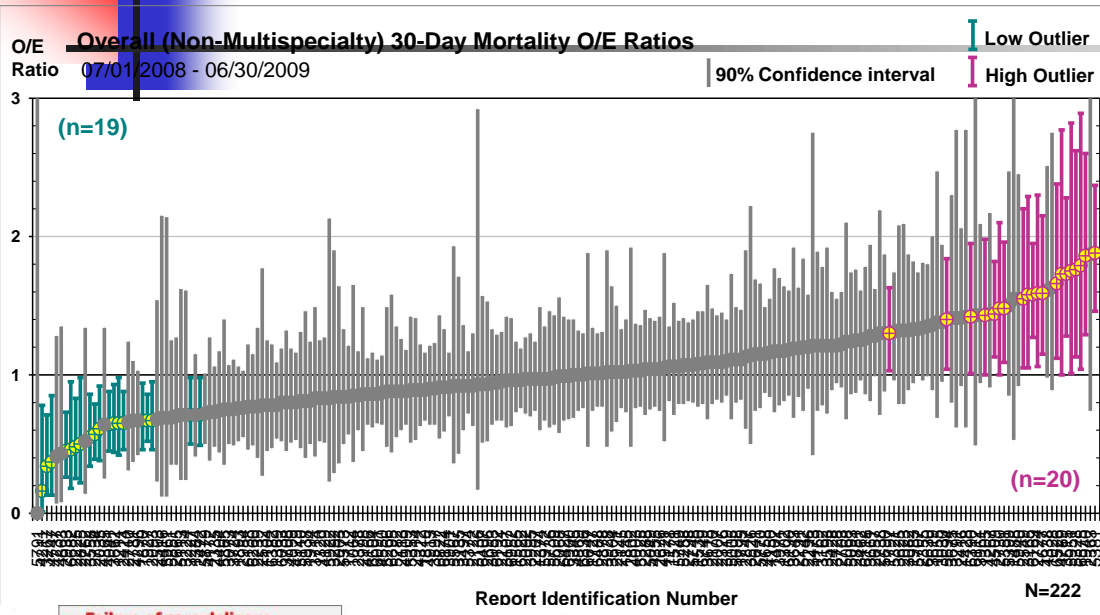
Compliance with	Length of Stay
• any 0-5 items	<b>6.14 days</b>
• 6-9 items:	<b>5.13 days</b>
• 10-13 items:	<b>4.08 days</b>

IMPROVING SURGICAL CARE and RECOVERY



# Failure of Care Delivery

## Reducing Complications and Cost

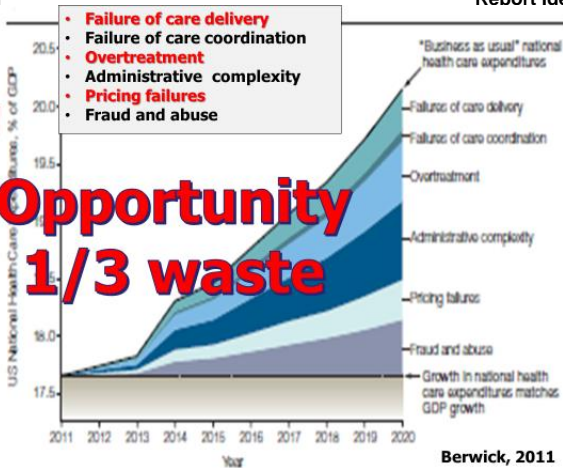


**82%**

OF HOSPITALS DECREASED COMPLICATIONS

**66%**

OF HOSPITALS DECREASED MORTALITY



**Potential savings 4,500 hospitals: \$13 - \$26 billion/year**

**250-500**

COMPLICATIONS PREVENTED ANNUALLY PER HOSPITAL

Measuring Risk-Adjusted Value Using Medicare and ACS-NSQIP

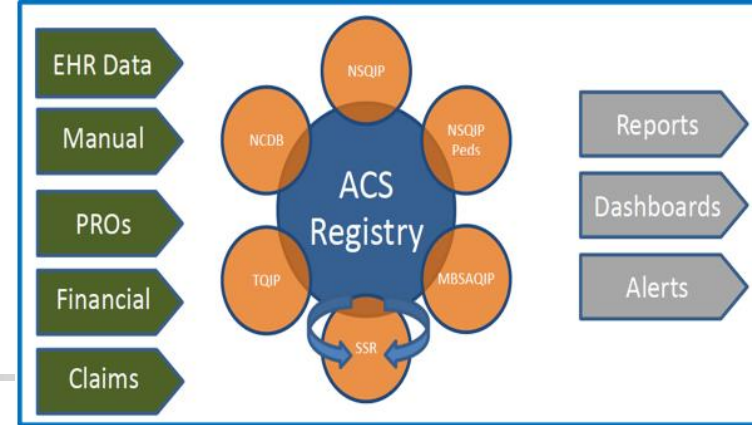
*Is High-Quality, Low-Cost Surgical Care Achievable Everywhere?*

*Elise H. Lawson, MD, MSHS,\*†‡ David S. Zingmond, MD, PhD,§ Anne M. Stey, MD, MSc,¶  
Bruce L. Hall, MD, PhD, MBA,‡||\*\*†† and Clifford Y. Ko, MD, MSHS\*†‡*

## Quality a measured by NSQIP

	<b>Good Quality</b>
<b>Higher Than Expected Cost</b>	<b>14%</b>
<b>As Expected cost</b>	<b>33%</b>
<b>Lower Than Expected Cost</b>	<b>52%</b>

# Uses & Challenges



## ■ Uses

- Regulatory compliance
  - MIPS, Payment
- MOC and ongoing assessment
- Individual surgeon self improvement, peer review and credentialing

## ■ Challenges

- Accepting use of measurement
- Data extraction, costs , interoperability, shared clouds
- Financial models for comparative cost, value, pricing
- Relevant outcomes from patients
- Implementation burden