New Approaches to Improving the Quality of Care: Becoming a Learning Health System

Karl Bilimoria MD MS
Surgical Outcomes and Quality Improvement Center (SOQIC)
Department of Surgery and Center for Healthcare Studies
Feinberg School of Medicine, Northwestern University
@kbilimoria
Disclosures

- No financial disclosures

- Supported by NIH, AHRQ, HCSC, ACS, NCCN, ACoS, ABS, ACGME, CHCF, NU
Your Center’s Acronym Is Important

Not “Surgical Outcomes and Quality Improvement Research Center”

SOQuIR
Surgical Outcomes and Quality Improvement Center

• Better **measures**
  – Hospital quality comparisons
  – Quality measurement development/testing

• Better **levers**
  – Public reporting
  – Pay for performance
  – Health policy evaluations

• Better **evidence**
  – Effectiveness of quality improvement initiatives

http://www.SOQIC.org
The Team

• Surgeons
  – 6 surgeons
  – ENT, GI, Anesthesia, Orthopedics, Plastics, Gynecology, Oncology

• Health Services Researchers
  – 3 PhDs

• 15 staff
  – Statisticians, analysts, programmers, project coordinators, grants
Training Residents to Be Health Services Researchers

• Surgical resident research fellows
  – 10 prior
  – 7 current

• Funding: T32, F32, other grants

• Ongoing national recruitment
Co-location

- 250 health services researchers and staff on 3 floors
ACS Collaboration

• Statewide quality collaborative

• FIRST Trial

• Special projects
  – Risk calculator
  – Measure development: PQRS, CoC, NQF

• Clinical Scholars (research fellows)

• 5 grants together
Prospective Cluster-Randomized Trials of QI and Policy Interventions

25 Hospitals

vs.

25 Hospitals

QI Intervention/Policy:
- Checklist
- Implement bundle of best practices
- Financial motivation
- Public reporting

No Intervention

or

Other intervention
How does the quality of care compare?

Industries by Size, Productivity, and Efficiency

Source: Advisory Board Company, 2005
• 439 indicators of quality
• 30 acute and chronic conditions
• Considerable variability in care
HOSPITAL VOLUME AND SURGICAL MORTALITY IN THE UNITED STATES

Evil or Genius
End Results Registry

Honors, except those I have thrust upon myself, are conspicuously absent..., but I am able to enjoy the hypothesis that I may receive some more from a more receptive generation.
100 Years of Improving Quality

- Minimum Standard for Hospitals
- Commission on Cancer
- Committee on Trauma
- ACS NSQIP
- SSR
- NAPBC
- ACOSOG
- MBSAQIP
- TQIP
- Alliance for Clinical Trials in Oncology
ACS Approach to Improving Quality

- Accreditation
- Research / trials
- Education
- Quality measurement and feedback
The ACS NSQIP empowers surgeons and medical centers to reliably collect, analyze and act on their outcomes data . . .

To improve care.

ACS NSQIP® Delivering Value
The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) is a risk-adjusted data collection mechanism that collects and analyzes clinical outcomes data. Participating hospitals use their collected data to develop quality initiatives that improve surgical care. ACS NSQIP is dedicated to offering hospitals the right tools to assist in measuring relevant clinical data that helps deliver the highest quality of care for their patients. ACS NSQIP now offers data collection options to accommodate hospitals of various sizes and resources. Click here to read about the ACS NSQIP data collection options.

2011 ACS NSQIP® National Conference
Developing a Learning Health System

Cook County Hospitals
- Advocate Christ Medical Center
- Advocate Illinois Masonic Medical Center
- Advocate South Suburban Hospital
- Ann and Robert H. Lurie Children’s Hospital of Chicago
- John H. Stroger Jr. Hospital of Cook County
- Loyola University Health System
- MacNeal Hospital
- Mercy Hospital and Medical Center
- Mount Sinai Hospital
- NorthShore University HealthSystem (Evanston)
- Northwest Community Hospital
- Northwestern Memorial Hospital
- Presence Resurrection Medical Center
- Presence Saint Francis Hospital
- Presence Saint Joseph Hospital
- Presence Saint Mary and Elizabeth Medical Center
- Rush Oak Park Hospital
- Rush University Medical Center
- Swedish Covenant Hospital
- University of Chicago Medical Center
- The University of Chicago medicine-Comey Children’s Hospital
- University of IL Hospital and Health Sciences System

DuPage County Hospitals
- Advocate Good Samaritan Hospital
- Cadence Health - Central DuPage Hospital
- Edward Hospital
- Elmhurst Memorial Hospital

ACS NSQIP

Surgical Outcomes & Quality Improvement Center
Northwestern University
American College of Surgeons
National Surgical Quality Improvement Program

• Surgical quality measurement and improvement tool
• 500+ hospitals
• All surgical subspecialties
• Short-term outcomes
• Endorsed by CMS, Joint Commission, CDC, AMA, AHA, and many others
Hospital ACS NSQIP Team

• Surgeon Champion

• Surgical Clinical Reviewer
  – Data abstractor
  – QI/PI project manager

• Hospital QI / PI staff
Quality Improvement Process

High-Quality Surgical Care

Capture/Analyze the Data

Act on Data, Best Practices

Data Feedback
Performance Relative to Other Hospitals

Observed Rate: 6.41%
Expected Rate: 3.91%
O/E Ratio: 1.64
Status: Needs Improvement
27% decline in post-operative mortality
45% drop in post-operative morbidity
Median post-operative length of stay 9 to 4 days
Patient satisfaction improved
Participating Hospitals: 600 and increasing
ASC NSQIP Key Features

• Rigorous Clinical Data Abstraction
  – Standardized data definitions
  – Trained data abstractor-Surgical Clinical Reviewer (SCR)
  – Comprehensive set of >70 risk factors
  – Intraoperative data
  – Externally audited data
  – Allows for rigorous risk adjustment

• All surgical subspecialties

• Risk-Adjusted Outcomes
  – 30-day morbidity, mortality, readmission & LOS
  – 30+ Outcomes
Quality Improvement Process

Capture/Analyze the Data

High-Quality Surgical Care

Data Feedback

Act on Data, Best Practices

Capture/Analyze the Data
ACS NSQIP Surgical Specialties

- General Surgery
- Vascular
- Gynecologic
- Urologic
- Plastic & Reconstructive Surgery
- Otolaryngology
- Orthopedic Surgery
- Neurosurgery
- Thoracic Surgery
Data Collected

**Preoperative data:** 70+
- Demographics
- Comorbidities
- Preop labs:

**Intraoperative data:** 20+
- Procedure (CPT) and Indication (ICD-9)
- Intraoperative complications and events

**Postoperative data:** 25+
- Death
- DVT/PE, MI, SSI, UTI, pneumonia, renal failure
- Length of stay, reoperation, readmission
Types of Data Used in QI Programs

• Administrative
  – Medicare
  – “Cheap” but often inaccurate

• Clinical / Registry
  – ACS NSQIP, STS
  – Expensive and more reliable
# Administrative vs. Clinical Data

<table>
<thead>
<tr>
<th>Condition</th>
<th>Missed in Administrative Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superficial SSI</td>
<td>73%</td>
</tr>
<tr>
<td>Organ-space SSI</td>
<td>66%</td>
</tr>
<tr>
<td>UTI</td>
<td>55%</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>50%</td>
</tr>
<tr>
<td>Sepsis</td>
<td>54%</td>
</tr>
<tr>
<td>VTE</td>
<td>47%</td>
</tr>
<tr>
<td>MI</td>
<td>22%</td>
</tr>
</tbody>
</table>

*Lawson et al, Ann Surg 2012*
Validation with Audits

• Audit procedure: highly reliable data
  – Overall 1.6% disagreement rate

• Quality of data improves each year

Shiloach et al, JACS 2009
Do we need post-discharge data?

- Shorter LOS
- Emphasis on readmissions

- SCRs obtain post-discharge data
  - Outpatient charts
  - Call patients
ACS NSQIP Captures Post-Discharge Events

- 40% had only post-discharge complications
- 33% of all complications were after discharge
- 25% of deaths occurred after discharge

Bilimoria et al, Ann Surg 2010
Quality Improvement Process

Capture/Analyze the Data

High-Quality Surgical Care

Data Feedback

Act on Data, Best Practices

Capture/Analyze the Data
Patient Comorbidity and Casemix Adjustment Does Matter

Rank by unadjusted Outcomes

Rank by risk-adjusted Outcomes
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
Effect of Subjective Preoperative Variables on Risk-Adjusted Assessment of Hospital Morbidity and Mortality

Mark E. Cohen, PhD,* Karl Y. Bilimoria, MD, MS,*† Clifford Y. Ko, MD, MS, MSHS,*‡ Karen Richards,* and Bruce Lee Hall, MD, PhD, MBAS*§**††

ASA Class and Functional Status

A  MORBIDITY  

\[
\text{Z-scores for Differences in O/E (Full - ASA & FHS Excluded) - Morbidity}
\]

B  MORTALITY  

\[
\text{Z-scores for Differences in O/E (Full - ASA & FHS Excluded) - Mortality}
\]
Risk Adjustment with Fewer Variables

Risk-adjusted morbidity (%) (5 variables)

Correlation coefficient = 0.99

Risk-adjusted morbidity (%) (20 variables)
Quality Improvement Process

High-Quality Surgical Care

Capture/Analyze the Data

Act on Data, Best Practices

Data Feedback

Capture/Analyze the Data
Data Feedback

“We lose a little dexterity, but we gain a lot of confidence.”
Risk-Adjusted Outcome Report

Observed Rate: 6.41%
Expected Rate: 3.91%
O/E Ratio: 1.64
Status: Needs Improvement
Colorectal Surgery Outcomes

HOSPITAL O/E
1.30 1.36 1.58 1.00 1.35 1.30 1.30 1.67 1.16 1.51

O/E Ratio

Mortality  Morbidity  Cardiac  Pneumonia  Unplanned Intubation  Ventilator >48 Hours  DVT/PE  Renal Failure  UTI  SSI
Quality Improvement Process

High-Quality Surgical Care

Capture/Analyze the Data

Act on Data, Best Practices

Data Feedback

ACS NSQIP
Acting on the data

I think you should be more explicit here in Step 2.
Effector Mechanisms

• Identify and implement best practices

• Targeted QI projects

• Engage clinicians

• Learn from other hospitals
Best Practices Clinical/QI Topics

- SSI, VTE, UTI, pulmonary
- Catheter-Related Blood Stream Infection
- Many more

SSI Best Practices Guidelines
- Preop
- Intraop
- Postop
- Things NOT to do!
Case Studies describing real improvement

**Volume 1**
- Postop Stroke
  - Cuyuna
- O/E Ratio
  - Danbury
- UTI
  - Decatur
- DVT
  - Henry Ford
- Pulmonary
  - St John

**Volume 2**
- FMEA Process
  - Advocate Good Samaritan
- Glucose/Temp Control
  - Kaiser Sunnyside
- Safety/SSI
  - Morristown Memorial (non-contraceptive)
- SSI (Vascular)
  - Scripps
- SSI (Breast)
  - Surrey Memorial
Welcome to the ACS NSQIP Surgical Risk Calculator

With this tool you can enter preoperative information about your patient to provide estimates regarding your patient’s risk of postoperative complications.

☐ I have read the disclaimer below

Continue

Disclaimer: The ACS Surgical Risk Calculator estimates the chance of an unfavorable outcome (such as a complication or death) after surgery. The risk is estimated based upon information the patient gives to the healthcare provider about prior health history. The estimates are calculated using data from a large number of patients who had a surgical procedure similar to the one the patient may have.

Please note the risk percentages provided to you by the Surgical Risk Calculator are only estimates. The risk estimate only takes certain information into account. There may be other factors that are not included in the estimate which may increase or decrease the risk of a complication or death. These estimates are not a guarantee of results. A complication after surgery may happen even if the risk is low. This information is not intended to replace the advice of a doctor or healthcare provider about the diagnosis, treatment, or potential outcomes. ACS is not responsible for medical decisions that may be made based on the risk calculator estimates, since these estimates are provided for informational purposes. Patients should always consult their doctor or other health care provider before deciding on a treatment plan.
### Enter Patient and Surgical Information

**Procedure**: Colectomy; partial; with anastomosis

Please enter as much of the following information as you can to receive the best risk estimates. A rough estimate will still be generated if you cannot provide all of the information below.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>65-74 years</th>
<th>Diabetes</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional status</td>
<td>Independent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency case</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASA class</td>
<td>III - Severe systemic disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wound class</td>
<td>Clean/Contaminated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steroid use for chronic condition</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ascites within 30 days prior to surgery</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systemic sepsis within 48 hours prior to surgery</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ventilator dependent</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disseminated cancer</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension requiring medication</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Previous cardiac event</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congestive heart failure in 30 days prior to surgery</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current smoker within 1 year</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of severe COPD</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dialysis</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Renal Failure</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI Calculation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height (in)</td>
<td>66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>285</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Note**: This is a screenshot of a surgical risk calculator tool. The image includes a form for entering patient and surgical information, along with a table showing various health parameters and their possible selections. The calculator is designed to help estimate the risk of complications for patients undergoing surgery.
Surgical Risk Calculator

Procedure: Colectomy, partial; with anastomosis
Risk Factors: Age: 65-74, Female, Clean/Contaminated wound, Smoker, Obese (Class3)

Outcomes:
- Death: <1% Below Average
- Any Complication: 21% Average
- Pneumonia: 1% Below Average
- Cardiac Complication: <1% Below Average
- Surgical Site Infection: 17% Above Average
- Urinary Tract Infection: 3% Average
- Venous thromboembolism: 2% Below Average
- Renal Failure: 1% Below Average
- Serious Complication: 37% Average
- Serious Complication: 15% Below Average

Average Length of Hospital Stay: 6 days
Does ACS NSQIP Work??
ACS NSQIP: Data Matters

82% of hospitals decreased complications

66% of hospitals decreased mortality

250-500 complications prevented annually per hospital
Potential Cost Savings if U.S. Hospitals Adopt ACS NSQIP

- Reduction in complications: 250-500
- Average cost per complication: $11,626
- Average savings per hospital: $2,906,500 - $5,813,000
- Potential yearly savings across 4,500 hospitals: $13 - $26 billion/year
St. Francis Hospital in Connecticut

Instituted ACS NSQIP Best Practice Guidelines in late 2008 to reduce the incidence of postoperative catheter-associated UTIs

62% reduction

UTI reduction of 1% resulted in >$1 million saved
h. Data Submission Requirements for Structural Measures

Structural measures assess the characteristics and capacity of the provider to deliver quality healthcare. In the FY 2012 IPPS/LTCH PPS proposed rule, we proposed to add one additional structural measure for the FY 2014 payment determination. Participation in a Systematic Clinical Database Registry for General Surgery. Beginning with FY 2013, we proposed to align the submission deadline for all structural measures with the submission deadline for the fourth calendar quarter of the chart-abstracted measures. 34 We
Hospital Compare

Find a Hospital

Location - ZIP Code or City, State (required)
Example: 21244 or Baltimore, MD

Hospital Name - Full or Partial (optional)

Search Hospital

Hospital Spotlight

- Hospital Compare now includes new surgical outcomes measures submitted on a voluntary basis by hospitals participating in the American College of Surgeon’s National Surgical Quality Improvement Program database (ACS NSQIP®).

Compare Other Providers and Plans

In addition to Hospital Compare, you may find the following sites helpful:
- Nursing Home Compare
- Physician Compare
- Home Health Compare
- Dialysis Facility Compare
- Medicare Plan Finder

Additional Information

- Linking Quality to Payment
- Visit Medicare’s Hospital Value Based Purchasing Program page and learn more about future measures.
SAINT FRANCIS MEDICAL CENTER
530 NE GLEN OAK AVE
PEORIA, IL 61637
(309) 655-2000

General information

- Hospital type: Acute Care Hospitals
- Provides emergency services: Yes
- Participates in: Cardiac Surgery Registry, Stroke Care Registry, Nursing Care Registry, General Surgery Registry
- Able to receive lab results electronically: Yes
- Able to track patients' lab results, tests, and referrals electronically between visits: Yes
- Uses a safe surgery checklist: Yes
<table>
<thead>
<tr>
<th>CCN</th>
<th>Hospital Name</th>
<th>Surg65</th>
<th>Surg65_FN</th>
<th>Colon</th>
<th>Colon_FN</th>
<th>LowExtBypass</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>Massachusetts General Hospital</td>
<td>Not Available</td>
<td>21</td>
<td>Average</td>
<td>Average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Mayo Clinic Florida</td>
<td>Better than Average</td>
<td>Not Available</td>
<td>21</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>Medical Center of Central Georgia</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Medical Park Hospital</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Memorial Health University Medical Center</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Memorial Medical Center</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Mercy Hospital and Medical Center</td>
<td>Worse than Average</td>
<td>Average</td>
<td></td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Meriter Hospital</td>
<td>Worse than Average</td>
<td>Average</td>
<td></td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>Peninsula Medical Center</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>The Nebraska Methodist Hospital</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Newton-Wellesley Hospital</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>North Shore Medical Center</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Northwestern Memorial Hospital</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>OHSU Hospital</td>
<td>Not Available</td>
<td>21</td>
<td>Not Available</td>
<td>21</td>
<td>Not Available</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>Pali Momi Medical Center</td>
<td>Average</td>
<td></td>
<td>Average</td>
<td>Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Parrish Medical Center</td>
<td>Average</td>
<td></td>
<td>Not Available</td>
<td>21</td>
<td>Not Available</td>
<td></td>
</tr>
</tbody>
</table>
Registry Participation to be Tied to CMS Reimbursement

• Taxpayer Relief Act of 2013
  – Government Accountability Office (GAO) to develop strategies to link clinical registry participation to payment incentives
Underlying Reasons Associated With Hospital Readmission Following Surgery in the United States

Ryan P. Merkow, MD, MS; Mila H. Ju, MD, MS; Jeanette W. Chung, PhD; Bruce L. Hall, MD, PhD, MBA; Mark E. Cohen, PhD; Mark V. Williams, MD; Thomas C. Tsai, MD, MPH; Clifford Y. Ko, MD, MS, MSHS; Karl Y. Bilimoria, MD, MS
Original Investigation

Association of Hospital Participation in a Quality Reporting Program With Surgical Outcomes and Expenditures for Medicare Beneficiaries

Nicholas H. Osborne, MD, MS; Lauren H. Nicholas, PhD; Andrew M. Ryan, PhD; Jyothi R. Thumma, MPH; Justin B. Dimick, MD, MPH

Original Investigation

Association of Hospital Participation in a Surgical Outcomes Monitoring Program With Inpatient Complications and Mortality

David A. Etzioni, MD, MSHS; Nabil Wasif, MD, MPH; Amylou C. Dueck, PhD; Robert R. Cima, MD; Samuel F. Hohmann, PhD; James M. Naessens, ScD; Amit K. Mathur, MD, MS; Elizabeth B. Habermann, PhD, MPH
NSQIP Not Associated with Improved Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Difference-in-Differences Analysis, RR (95% CI)</th>
<th>Pre-Post Analysis Compared With Control Hospitals(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(n = 1,226,497)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 1                  Year 2                  Year 3</td>
</tr>
<tr>
<td>Mortality</td>
<td>0.96 (0.90-1.02)</td>
<td>0.94 (0.88-1.00)</td>
</tr>
<tr>
<td>Serious complications</td>
<td>1.00 (0.96-1.03)</td>
<td>0.96 (0.93-1.00)</td>
</tr>
<tr>
<td>Reoperations</td>
<td>1.14 (0.98-1.31)</td>
<td>1.06 (0.90-1.22)</td>
</tr>
<tr>
<td>Readmissions</td>
<td>1.04 (1.01-1.07)</td>
<td>1.00 (0.97-1.03)</td>
</tr>
</tbody>
</table>
Measuring Surgical Outcomes for Improvement
Was Codman Wrong?

Donald M. Berwick, MD, MPP

Hospital Readmissions Following Surgery
Turning Complications Into "Treasures"

Lucian L. Leape, MD
The Illinois Surgical Quality Improvement Collaborative (ISQIC) is a recently initiated collaborative partnership of nearly 50 Illinois hospitals, the Illinois and Metropolitan Chicago Chapters of the American College of Surgeons, the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP), the Surgical Outcomes and Quality Improvement Center (SOQC), and Blue Cross Blue Shield of Illinois.

Our mission is to work together to improve the quality of surgical care in Illinois. Hospitals will be provided with detailed data regarding their performance compared to other Illinois hospitals, along with the tools to enact meaningful improvements when they identify problem areas.

Announcements
ACS NSQIP Conference:
July 26-29, 2014
New York, NY
For conference information please visit:
http://www.acsnsqipconference.org/

ISQIC Surgical Mentorship Training:
Sunday, July 27th 11:30-1:00 p.m.
Gibson Room, New York Hilton Midtown

ISQIC Meeting:
Monday, July 28th 12:00-1:30 p.m.
Gibson Room, New York Hilton Midtown

© 2013-2014 Illinois Surgical Quality Improvement Collaborative www.isqic.org
676 N. St. Clair Street, Suite 650 Chicago, IL 60611, 312-694-7742 info@isqic.org

---

The Tennessee Surgical Quality Collaborative (TSQC) is a pilot project of 10 hospitals seeking to improve the quality of surgical care for patients throughout the state.

The TSQC is collaboration between the Tennessee Chapter of the American College of Surgeons, the Tennessee Hospital Association’s Center for Patient Safety and participating hospitals. The TSQC was funded through a generous three year grant from Blue Cross Blue Shield of Tennessee’s Health Foundation. The funding significantly reduced barriers for Tennessee surgeons and hospitals wishing to participate in — and benefit from — the program.

Welcome to the TSQC Website designed to provide information and resources to the members of the Tennessee Surgical Quality Collaborative (TSQC). For more information on this project, please visit our website at www.tsqc.org.
ACS NSQIP Collaboratives

• More than 20 currently

• Benefits
  – Customized benchmarking
  – Share experiences / best practices
  – Perform collaborative studies
Statewide Collaboratives

- Michigan
- Florida
- Tennessee

- Hospitals in collaboratives improve more than hospitals working alone.
- Tremendous cost savings that far outweigh costs of the program.
- Hospitals already in NSQIP also improve.
## Improvement in Michigan

### Michigan Surgical Quality Collaborative (MSQC)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sepsis</td>
<td>↓34%</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>↓29%</td>
</tr>
<tr>
<td>Vent &gt;48h</td>
<td>↓22%</td>
</tr>
<tr>
<td>SSI</td>
<td>↓13%</td>
</tr>
<tr>
<td>Cardiac arrest</td>
<td>↓33%</td>
</tr>
</tbody>
</table>

- Reduced postoperative VAP rate by 70%
- $14 million in savings for the state in 1 year
# Early Improvement in Tennessee

- Estimated $8 million in savings per year

<table>
<thead>
<tr>
<th>Condition</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute renal failure</td>
<td>↓25%</td>
</tr>
<tr>
<td>Sepsis</td>
<td>↓10%</td>
</tr>
<tr>
<td>Vent &gt;48h</td>
<td>↓15%</td>
</tr>
<tr>
<td>SSI</td>
<td>↓19%</td>
</tr>
</tbody>
</table>
ACS NSQIP in Illinois

- 20 hospitals in 2013
- 75+ hospitals not participating
- Many had shown some interest
- Interviews with current, interested, and other hospitals to identify barriers to participation and improvement
Comments from Hospitals

• Unsure if worth the startup costs
• Unsure how to act on the data
• Surgeon Champion unsure of what to do
• SCRs wanted community to discuss issues
• Little opportunity to learn from other hospitals
Mission

- To facilitate hospitals working together to improve the quality of surgical care in Illinois
- To create a novel research platform
Collaborative Effort Between

- ACS NSQIP
- ACS Metro Chicago and Illinois Chapters
- Blue Cross Blue Shield of Illinois (BCBSIL)
- Northwestern SOQIC
Advisory Committee

- ACS Chapter representatives
- ACS NSQIP staff
- Coordinating center
- BCBS-IL representative

- New hospitals
  - Surgeon Champions
  - SCRs
  - Administrators

- Current hospitals
  - Surgeon Champions
  - SCRs
  - Administrators
Illinois Surgical Quality Improvement Collaborative (ISQIC)

- ACS NSQIP data collection/reporting infrastructure
- Model other successful statewide collaborations
- Recruit new hospitals and current ACS NSQIP hospitals in Illinois
- Novel approaches to facilitate improvement
55 ISQIC Hospitals

Cook County Hospitals
- Advocate Christ Medical Center
- Advocate Illinois Masonic Medical Center
- Advocate South Suburban Hospital
- Ann and Robert H. Lurie Children’s Hospital of Chicago
- John H. Stroger Jr. Hospital of Cook County
- Loyola University Health System
- MacNeal Hospital
- Mercy Hospital and Medical Center
- Mount Sinai Hospital
- NorthShore University Health System (Evanston)
- Northwest Community Hospital
- Northwestern Memorial Hospital
- Presence Resurrection Medical Center
- Presence Saint Francis Hospital
- Presence Saint Joseph Hospital
- Presence Saint Mary and Elizabeth Medical Center
- Rush Oak Park Hospital
- Rush University Medical Center
- Swedish Covenant Hospital
- University of Chicago Medical Center
- The University of Chicago Medicine Comer Children’s Hospital
- University of IL Hospital and Health Sciences System

DuPage County Hospitals
- Advocate Good Samaritan Hospital
- Cadence Health-Central DuPage Hospital
- Edward Hospital
- Elmhurst Memorial Hospital
ISQIC Baseline Assessment

- Assesses ISQIC Team’s familiarity with QI/PI
- Comparative data will be provided

**Average scores**
- Overall: 66%
- New hospitals: 64%
- Old hospitals: 69%

**Areas of Strength:**
- Creating a problem statement
- Identifying key stakeholders
- Creating project team

**Areas of Weakness:**
- Identifying drivers of poor performance
- Implementing a strong change to improve quality
Novel Approaches to Facilitate Using Your Data Effectively

• Mentor

• Coach

• Formal QI/PI curriculum

• Site visits
  – Culture and quality assessments
The ISQIC Team
ISQIC Curriculum: Online Modules

• YEAR 1
  – Introduction to NSQIP and ISQIC
  – Define (What are we trying to accomplish?)
  – Measure (How will we know that a change is an improvement)
  – Analyze (What change can we make that will result in an improvement)
  – Improve (Executing/testing the change)
  – Control (How do we ensure sustained performance?)

• YEAR 2
  – How to use and interpret ACS NSQIP reports
  – Key Features of Quality and Stakeholder Interests
  – Organizational Knowledge and Leadership Skills
  – Patient Safety Principles
  – Teamwork and Communication
  – Change Management
ISQIC Curriculum: In-Person Training

• Brief talks to synthesize modules

• Half day of practical exercises

• Work through a project with coaches
Novel Approaches to Facilitate Using Your Data Effectively

• Customized, Illinois-Specific benchmark reports

• Surgeon-specific reports

• Over time improvement reports for your hospital and for the state

• Focus on process measures
Quality Improvement Projects

• 1 local project per year

• 1 statewide project per year

• Pilot grants
Semi-Annual Collaborative Meetings
Platform for Research

• Impact of our interventions
• Barriers to improvement
• Collaborative Quality Improvement Projects
Impact of Our Interventions

• QI/PI Curriculum

• Mentor / coach

• Projects

• All interventions
Do these interventions result in better improvement?

Overall Risk-Adjusted Morbidity Rate

Year of ACS NSQIP Participation

Early NSQIP Hospitals (n=20)

ISQIC Enrolled (n=26)
Who is more likely to improve?

• Baseline assessments of
  – QI/PI capabilities
  – Quality/Safety Culture
  – Processes
  – Outcomes
  – Surgeon Champion
    • Skills, respect, social network
Changes with ISQIC Participation

• QI capabilities

• Culture

• Postoperative outcomes
  – Individual hospitals
  – State

• Other available surgery-related measures
  – Process, outcomes, HCAPHS
Barriers to Improvement

• Study current NSQIP hospitals that have not improved
  – Site visits
  – Key informant interviews
  – Design interventions for new hospitals

• Identify barriers to improvement in advance for new hospitals
Collaborative Quality Improvement Projects

• One per year

• Study of QI initiative or policy

• Platform for QI trials
Prospective Cluster-Randomized Trials of QI and Policy Interventions

**INTERVENTION ARM:**
25 Hospitals

**QI Intervention:**
- Checklist
- Implement bundle of best practices
- Policy change
- Financial motivation
- Public reporting

**USUAL CARE ARM:**
25 Hospitals

**USUAL CARE ARM:**

**No Intervention**

or

**Alternate Intervention**
Stepped Wedge
Potential Interventions

• OR Briefings
• Emergency Manuals Checklist
• Enhanced Recovery After Surgery (ERAS)
• Strong for Surgery
• UTI or VTE prevention bundle
• Surgeon 360 reviews
• What else?
VTE Rate by Imaging Frequency

Mean Risk-Adjusted VTE Rate per 1,000 Discharges

Quartile 1  Quartile 2  Quartile 3  Quartile 4

VTE Surveillance Imaging Quartile (N=2,786 Hospitals)

Bilimoria et al, JAMA 2013
Ideal VTE Prophylaxis

- Early ambulation
- Mechanical prophylaxis
- Chemoprophylaxis
  - All doses
  - Correct dose
  - Correct frequency
Northwestern Performance on New VTE Measure

- **SCIP VTE-2**: 100%
- **Chemoprophylaxis & Ambulation & SCDs**: 40%
- **Chemoprophylaxis & (Ambulation or SCDs)**: 55%
- **Chemoprophylaxis**: 100%

**Source:** Illinois Surgical Quality Improvement Collaborative (ISQIC)
ISQIC Offers Tremendous Opportunity

• True Learning Health System

• Statewide quality improvement

• Cost reduction

• Novel research platform
Timing, Connections, and Mentorship

Mark Williams, MD
New Approaches to Improving the Quality of Care: Becoming a Learning Health System

Karl Bilimoria MD MS
Surgical Outcomes and Quality Improvement Center (SOQIC)
Department of Surgery and Center for Healthcare Studies
Feinberg School of Medicine, Northwestern University

@kbilimoria
Illinois Surgical Quality Improvement Collaborative

Karl Bilimoria MD MS
Vice Chair for Quality, Department of Surgery
Director, Surgical Outcomes and Quality Improvement Center
Feinberg School of Medicine, Northwestern University

Lurie Children’s Hospital Surgical Grand Rounds
Illinois Surgical Quality Improvement Collaborative

Karl Bilimoria MD MS
Vice Chair for Quality, Department of Surgery
Director, Surgical Outcomes and Quality Improvement Center
Feinberg School of Medicine, Northwestern University

Lurie Children’s Hospital Surgical Grand Rounds