American College of Surgeons
National Surgical Quality Improvement Project

Trusted metrics, better understanding, improvement of care, better value!

- Patrick Colquhoun MD, MSc, FRSCSC
- Associate Professor
- Chair/Chief Surgical Oncology Dept of Oncology
- Surgical Champion ACS NSQIP - UH
- London Health Sciences Center
Canadian Hospital Culture

• Do things with less but keep doing better!
When cost is the central principle...

• Creates division
  – Payer vs Provider vs Patient
Controlling cost

• Surgery Unit is easy target
  – 27% of inpatient hospital care involves surgical treatment
    • Etzioni et al JAMA 2015

• Control of this expenditures in surgery
  – Volume of work
  – Cost of procedures
Institute of Medicine

• Domains of Quality
  – Effective
  – Timely
  – Patient Centered
  – Safe
  – Efficient
  – Equitable

• Cuts to Surgical Volume
  – Challenge EVERY DOMAIN
Definition of Insanity

Doing the same thing over and over again and expecting different results

Albert Einstein
What if quality was the objective and cost reduction the by product?

• Each surgical complication in USA is estimated to add on:
  – Average $11,000 to hospital stay
  – Increase in costs to hospital stay by 54%
When quality is the central principle...

• Unifies all parties
  – Patient, provider and payer
    • All put patient at the forefront
Payer - General Public Desires More from Us

• Excellent Care for All Act (ECFAA) June of 2010
  – Health care sector **must**
    • Deliver high quality care
    • Demonstrate governance, oversight and accountability regarding the quality of care provided
    • Make their commitment to quality publicly available
Mantra

• How can we diminish complications and provide better quality of care and in the process save money?
• IE How can we create more value?
“Measurement is the first step that leads to control and eventually to improvement. If you can’t measure something, you can’t understand it. If you can’t understand it, you can’t control it. If you can’t control it, you can’t improve it.”

James Harrington

Led Quality and Performance Improvement for IBM for over 40 Years
MEASUREMENT IS THE FOUNDATION OF BUILDING IMPROVEMENT.

www.caricatures-ireland.com/blog
Metrics

• Do you know any of the metrics that you consider of primary importance for you to know that you are offering quality care?

• Simple Examples
  – SSI rates
  – VTE rates
  – UTI rates

  • If yes do you have comparative data that allows you perspective on local performance compared to provincial data or national data
Metrics

• If you could trust the metrics and your counterparts measuring the same metrics demonstrated better clinical outcomes would you be interested in trying to duplicate their results?
THE BIGGEST ROOM IN THE WORLD....

...THE ROOM FOR IMPROVEMENT!!!
Why is this so important now?

- Case based funding mechanism creates accountability of provider and payer
- This accountability is internal but external forces will eventually demand it
- We need to be out ahead of this pending tsunami
Ideal world for metrics

• Data would
  – Include hospital stay and post operative non hospital stay (at least 45 days)
  – Be accrued by a dedicated reviewer who answered to the medical staff
  – Offer comparative data (provincial and national) that allowed for benchmarking of results
  – Be risk adjusted and take random variation into account
Risk Adjusted is Key

• Clinical outcomes are dependent on three variables
  – Risk factors
  – Random variation
  – Quality of care provided by the system

• Control of the first two means
  – Outcomes should reflect quality of care provided
Veteran Affairs hospitals 1990’s

• Complication rate too high
• Suggested that all surgery should be moved to private care providers
  – Congress mandates risk adjusted data that can be compared to national standard
Veteran Affairs hospitals 1990’s

• Risk adjusted data demonstrated comparable performance
• Subsequent tracking of outcomes has allowed for a system based approach to decreasing complications
  – Since 1991:
    • 30 day mortality has decreased by 27%
    • 30 day morbidity has decreased by 45%
American College of Surgeons National Surgery Quality Improvement Project

• Prospective uniform data collected by a dedicated surgical reviewer trained and supported by the American College of Surgeons
• Preoperative, intraoperative and postoperative data collection
• Each patients data is limited to a 45 day window
• Data is then sent to a central system to create uniformity and validity
NSQIP then reports data

- Risk adjusted outcomes for morbidity and mortality
- Reflected in a ratio of observed events over expected with a 90% confidence interval
- Hospital data is provided comparative hospitals for benchmarking

- American College of Surgeons provides support for
  - Data Capture
  - Interpretation
  - Quality Improvement
NSQIP

• QUALITY IMPROVEMENT (QI) PROGRAM
  – Not a punitive program to identify “poor providers”
  – Intent is system based
  – Provide data to allow for identification of deficiencies that might otherwise go unnoticed
NSQIP

- Why not provide data down to single surgeon?
  - Power of data lost by small number
  - Outcomes achieved by individual surgeons cannot be separated from the quality of care provided by their individual surgeons
  - NSQIP is a measurement of the quality of care provided by the systems currently in place
NSQIP

• Risk adjusted data reported every 6 months with benchmarking from across North America but specifically ONTARIO

• Areas where we identify poor performance will get a system based focus
Ontario Surgical Quality Improvement Network

- Quality improvement collaborative
- Uses NSQIP data for benchmarking of performance
- Allows for local, regional and provincial initiatives to improve the quality of care provided to surgical patients
Is the data reliable?

• Process
  – Dedicated reviewer for data collection
  – Initial reviewer training
  – Ongoing online reviewer training and examination
  – Continuous reviewer support system
  – Creation and continual review of rigorous data definitions
  – Dilemma resolution
  – Checks for data integrity
  – Inter-rater reliability audits

• Shiloach et al
  • J Am Coll Surg 2010; 210:6-16
    – Audited Variables 2005
      • 62 hospitals
      • 38,978
      • Inter observer disagreement between site reviewer clinical reviewer
        – 3.15%
    – Audited Variables 2010
      • 140,132
      • 208 hospitals
      • Inter observer disagreement between site reviewer and clinical reviewers 1.56% in 2008
Improvement in care?

• Hall et al Ann Surg 2009;250:363-376
  – 66% percent of participating improved their mortality rates
    • Observed/Expected ratios improved: 0.114 (mean)
  – 82% of participating hospitals improved their morbidity rates
    • Observed/Expected ratios improved: 0.174 (mean)
  – In 2007 it was estimated that 183 hospitals avoided 9598 complications
    • 58 complications per hospital
Improvement in care?

  – Similar observations 8 years later with continued improvement demonstrated
    • Annual reductions in:
      – Mortality 0.8%
      – Morbidity 3.1%
      – Surgical site infections 2.6%
Impact on cost?

• Unclear
  – Most publications based on estimates
    • Eg: Lawson et al Ann Surg 2013
      – Reduction in rate of complications of 5% in the 20 operations which have the highest readmission rates would:
        » Prevent 2092 complications
        » Save $31,000,000

• Osborne et al JAMA 2015
  – Comparison of NSQIP vs no NSQIP hospitals
    • No difference in medicare expenditures
    • Methodology questioned
Current Participation

• North America
  – 3,872 general medical and surgical hospitals performing inpatient surgery
    • 475 (12.3%) participate in NSQIP
    • Participating hospitals performed 29.0% of all operations in the United States.
  – Sheils et al Surgery 2016

• Ontario
  – 33 Hospitals
    • Notables
      – St Michaels
      – UHN
      – Sunnybrook
      – Ottawa
      – Hamilton Health Sciences
      – Collingwood
      – Sioux Lookout
  – 43,609 cases entered
Monitoring vs QI

• Montroy et al PloSONe 2016;11:
  – QI is key
  – Systematic review
    • Comparison of complications between sites that had NSQIP only to those who had NSQIP plus dedicated QI
      – Substantial improvement in hospitals that practiced NSQIP plus QI
Current approach

We are doing small amounts of QI but its disjointed:

– General Surgery institutes Enhanced Recovery After Surgery Program
– Gynecology wants to look at this but starts from scratch
– Duplication, inefficient = LESS VALUE
NSQIP allows for QI

• Quality Improvement projects
  • Areas identified will be brought to relevant stakeholders involved in peri operative care
  • Areas for potential change will be identified based data and evidence based approach
  • Changes will be made
  • Data will collected to determine impact
Better Approach - Collaborative

- Take advantage of experts across departments to provide perspective on evidence based approach
- Arrive at consensus
- Get feedback regarding practical application of changes
  - Pilot Approach
- Institute bundled decisions and make **UNIFORM** changes using electronic ordering system
- Measurement
  - Process first – are changes happening
  - If yes, quality measurement next – are changes making a difference
- Share successes and failures to improve care across groups avoid repetition of mistakes
Western’s Approach to QI

- **Quality Council**
  - Representation
    - All divisions of Department of Surgery
    - Neurosurgery
    - ENT
    - Obstetrics and Gynecology
    - Perioperative Medicine
    - Anesthesia
    - Nursing
    - Director of Patient Safety LHSC
  - Chaired by Surgical Quality Officer
Quality Council

• Meet Quarterly
• Review Semi Annual Reviews in January and July
• Representatives would be expected to reported relevant data back to divisions for discussion
• Review divisional Surgical Quality Improvement Projects (SQIP)
• Initiate one major SQIP project per year across Department of Surgery per year
Academic productivity

Publications using NSQIP data
ACS NSQIP ANNUAL MEETING

• New York July 2017
• Abstract Deadline January 13, 2017
“Great... Just what we need: another quality-improvement campaign!”
THIS REPORT SAYS MEDICAL ERRORS SUCH AS INDECIPHERABLE PRESCRIPTIONS CAUSE THE DEATHS OF 98 PATIENTS A YEAR, OR IS THAT 98,000? IT'S HARD TO READ THIS. IN ANY CASE, WE'RE SUPPOSED TO REPORT THEM, OR IS THAT REPEAT THEM?

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Data reliability

• Garbage in, Garbage out
  – Be aware data is driven by data extraction
    • Everything should be done possible to insure documentation is accurate and timely!
# Evolving data – SSI (raw)

<table>
<thead>
<tr>
<th>Wound Classification</th>
<th>LHSC - UH</th>
<th>Ontario Collaborative</th>
<th>NSQIP *</th>
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<tbody>
<tr>
<td>Clean</td>
<td>2.3%</td>
<td>2.1%</td>
<td>0.9%</td>
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<tr>
<td>Clean Contaminated</td>
<td>12%</td>
<td>3.6%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Contaminated</td>
<td>14.3%</td>
<td>4.2%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Dirty</td>
<td>0%</td>
<td>5.8%</td>
<td>2.1%</td>
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*NSQIP = Academic hospitals of comparable size*
Evolving data – SSI (raw)

<table>
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<th>Pulmonary Embolism</th>
<th>LHSC - UH</th>
<th>Ontario Collaborative</th>
<th>NSQIP*</th>
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<tbody>
<tr>
<td>All cases</td>
<td>1.2%</td>
<td>0.5%</td>
<td>0.4%</td>
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</table>

<table>
<thead>
<tr>
<th>C Diff</th>
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<th>Ontario Collaborative</th>
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<tr>
<td>All cases</td>
<td>4.0%</td>
<td>1.6%</td>
<td>1.2%</td>
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</tbody>
</table>
Are you too busy to improve?

No thanks!
We are too busy

Håkan Forss @hakanforss http://hakanforss.wordpress.com
This illustration is inspired by and in part derived from the work by Scott Simmerman, “The Square Wheels Guy” http://www.performancemanagementcompany.com/
Thank you!

• Questions?