DATA VALIDATION

North Campus Research Complex
February 8, 2011
Objectives

- Review multi-center validation analysis
- Outline proposal to improve validation feedback
- Discuss data definition updates
Multi-Center Validation Analysis

Overview

- 5 centers
- March 30, 2010 - November 16, 2010
- 4841 Variables

Criteria
- ISS > 24 and no complications and hospital days > 1
- Length of stay > 14 days and no complication or mortality
- Age > 64 and no comorbidities
- Mechanical ventilator days > 7 and no pneumonia
- Motor GCS = 1 and no complications and hospital days > 1
- ISS <16 and mortality
## Types of Disagreement

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<th>Error Type</th>
<th>Definition</th>
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<td>Validator identified variable, registrar did not</td>
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<tr>
<td>2</td>
<td>Validator and registrar identified variable, but disagreed with answer</td>
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<tr>
<td>3</td>
<td>Registrar identified variable, validator did not</td>
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## Overall Variable Error Breakdown

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<thead>
<tr>
<th>Variable</th>
<th>Rate %</th>
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<th>Type 2</th>
<th>Type 3</th>
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<td>0</td>
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<td>ISS</td>
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<td>Units FFP Total</td>
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<td>1</td>
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<td>Units RBC 0-24 hrs</td>
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<td>1</td>
<td>0</td>
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<tr>
<td>Units FFP 0-24 hrs</td>
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<td>6</td>
<td>2</td>
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## Overall Variable Error Breakdown Excluding Custom Data Points

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<tr>
<td>ICU Days</td>
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<td>Max Chest AIS</td>
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<td>5</td>
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<td>Disposition</td>
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<td>Max Extremity AIS</td>
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<td>0</td>
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<tr>
<td>Max External AIS</td>
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<td>1</td>
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<td>Max Head/Neck AIS</td>
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<td>First ED SBP</td>
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## Complication Error Breakdown

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<td>C. Difficile Colitis</td>
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<td>UTI</td>
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<td>MI</td>
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<td>Systemic Sepsis</td>
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Feedback Improvement Goals

- Growth in areas of common weakness for all centers
- Education in areas specific to each center
- Confirmation of accordance with process measures
- Increase sampling of areas of low incidence
Focus Variables

- Multicenter analysis
  - Intubation location
  - Ventilator days
- Center Specific
  - UTI
  - Sepsis
  - ARF
- Process Measures
  - DVT
  - IVC filter
  - ICP monitor
  - OR
- Low Sample Size
  - PNA
  - PE
DEFINITION UPDATES
Deleted Variables

- **Comorbidities**
  - Atrial fibrillation
  - Pregnancy
  - Seizure disorder

- **Laboratory Data**
  - Platelet count
  - PTT
  - INR

- **Complications**
  - Wound disruption
  - Abdominal fascia left open
  - Abdominal compartment syndrome
  - Enterocutaneous fistula
  - C. diff colitis
New Variables

- Comorbidities
  - Current smoker
  - Functionally dependent health status
  - Obesity
  - Angina w/in 1 month
  - Revascularization / Amputation for PVD
  - Congenital anomalies
  - Prematurity

- Procedures / OR

- Outcomes / Complications
  - Primary method of payment
  - Drug / EtOh withdrawal syndrome
  - Graft / prosthesis / flap failure
  - Catheter-related blood stream infection
  - Osteomyelitis
  - Unplanned return to OR
  - Unplanned return to ICU
  - Other
New Variable Clarifications

- Functionally dependent health status
  - The patient requires some assistance from another person for activities of daily living. ADLs include: bathing, feeding, dressing, toileting, and mobility.
- Obesity
  - Body Mass Index of 40 or greater
- Not applicable vs. other complications
  - Not applicable: no complications at all
  - Other: post-injury complications that required treatment, but not on NTDS list
Changed Variable Highlights

- GCS Assessment Qualifiers
- ED Discharge Disposition
- Signs of Life
- AIS 2005
- Diabetes Mellitus
- Respiratory Disease
- MI
- Ascites
QUESTIONS?

Reminder reports due February 14, 2011
Administrative Duties

**DUA**
- Status

**IRB**
- Exempt status - IRB not required for MTQIP
- May still be required by individual hospital IRB
TQIP

**Enrollment**
- MTQIP enrollees

**Training**
- Feb 9\textsuperscript{th}
- 8am-2pm
- Intended Audience:
  - TPM
  - Registrars
## CQI Index Measures

<table>
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<th>Points Earned</th>
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<td>Timeliness of data</td>
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<td></td>
<td></td>
<td>• On time 3 of 3 times</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• On time 2 or 3 times</td>
<td>10</td>
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<td></td>
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<td>#2</td>
<td>15</td>
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<td></td>
<td></td>
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<tr>
<td>---------</td>
<td>--------</td>
<td>---------------------</td>
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| #3      | 15     | Timely completion of data use agreement & TQIP enrollment  
- By 1/1/11  
- By 2/1/11  
- By 3/1/11  
- After 3/1/11 | 15  
10  
5  
0 |
## CQI Measures

<table>
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<td>Meeting Participation - clinician lead&lt;br&gt;• All Meetings&lt;br&gt;• 2 of 3 Meetings&lt;br&gt;• 1 of 3 Meetings&lt;br&gt;• Did not participate</td>
<td>25&lt;br&gt;10&lt;br&gt;5&lt;br&gt;0</td>
</tr>
<tr>
<td>#5</td>
<td>25</td>
<td>Meeting Participation – program manager and registrar (average)&lt;br&gt;• All Meetings&lt;br&gt;• 2 of 3 Meetings&lt;br&gt;• 1 of 3 Meetings&lt;br&gt;• Did not participate</td>
<td>25&lt;br&gt;10&lt;br&gt;5&lt;br&gt;0</td>
</tr>
</tbody>
</table>
Site QI Projects

• Share Best Practices
• Everybody does something great
• Share it
Innovation in Performance Improvement:
*Use of External Benchmarks to Improve Performance*

Jeff Young, MD, FACS
Senior Associate Chief Medical Officer for Quality
Director, Trauma Center
Professor of Surgery
University of Virginia Health System
What is PI?

- Many view it as a burden
  - An exercise they carry out to satisfy site visitors
  - Paperwork and meetings
  - Chasing down people to attend
  - Making sure minutes look good
  - Making sure sign-in sheets don’t get lost
  - Boring
Much of this is our fault

- We never really engaged people in what PI really should be or what it could be
- Good PI is much more like engineering than medicine
  - Figuring out how things work
  - Looking for the key factors that affect performance
  - Discovering how to put the right part in the right place to make things work better
Mechanics of PI

- **Leadership**
  - Can and should be collective, not just one person

- **Finding problems**
  - People should feel comfortable to report problems
    - Need a mechanism to do this efficiently
  - Filters to look at frequent processes
  - Looking at potential system failures
    - Mortality is important but near misses could be more important

- **Fixing problems and making sure they stay fixed**
Mechanics of PI

1. Find Problem
2. Brainstorm Solution
3. Engineer New Process
4. Make New Process Routine
5. Educate
6. See if you fixed anything
Typical PI System

- Review your deaths
- Look at things when things blow up
  - Bad outcome
  - Near miss
  - Angry service
  - Angry TMD
Deaths and Preventability

- The way we have demanded that deaths be characterized may actually be harmful to PI
  - If there are people to be blamed then go ahead and blame them, but don’t let that get in the way of learning lessons from cases
- Many programs spend time arguing about the preventability of a death, when it is usually irrelevant
Preventability

- Also our ability to determine preventability is VERY inexact
  - Usually a WAG
  - If its so inexact why make it such an essential part of the process?

- Much easier for people to accept opportunities for improvement
  - Though this can still be inexact
Preventability and Opportunities for Improvement

- Either a case has OFI’s or it doesn’t
  - It is often easier to accept that there is an OFI than it is to classify something as a preventable death

- Just saying something is preventable or non-preventable doesn’t increase or decrease the burden of finding problems and fixing them
Examples

- 79 year old admitted to ED after fall, has large SDH with 1 cm midline shift, GCS 3, left pupil blown
  - Patient seen by neurosurgery, felt to be hopeless and care withdrawn
  - Simple, non-preventable death
Example

- But patient waited 55 minutes for initial CT
- FFP was ordered but not administered for 75 minutes
- Patient not intubated on arrival despite meeting indications for intubation
  - Intubated in scanner following sat drop
- ALL ARE OFI’s, all could be glossed over if you only look at preventability
Example

- If this was a 20 year old with a smaller subdural would we have lost the patient?
- Unless everyone was dragging their feet from the beginning (which they shouldn’t have been) the care was sub-par
- If this was your mother or father would you have been happy with the way their treatment unfolded?
Example

- Should use every case as an opportunity to find problems in your system
- This is why on site visits the first cases I look at are the non-preventable death file
  - It tells you how robust their PI system is
  - Tells you about their focus and desire to find problems
Fixing Problems: Do you have a system?
PI System and Ability to Fix Problems

- A lot at this point depends on the organization of your system
  - If your care delivery is mostly random (EM attendings, surgery attendings, and residents do not handle the same situation similarly) you will spend a great deal of time looking at cases, because each case will be different
    - No two patients with splenic injury will be handled the same
      - Fixing the system in this situation is hard but not impossible
Typical PI Process

- **Next level**
  - Control of routine processes of your system
  - *A guideline is just a tool to measure variation*
    - *Brent James, MD*
  - So creation of guidelines helps you measure variation
    - Without that tool, you will have difficulty fixing things (since if you fix one type of case, you won't fix the next)
    - Only if cases are being handled in a consistent manner, can you carry out change that will affect groups of patients
Guidelines

- “If three professors sitting in a room with coffee at 2pm can’t figure out how to take care of a type of patient, how can a resident figure it out in the middle of the night?”

- Does not mean you regiment every aspect of care
  - You control variation of those things that really don’t need to vary (likely over 90% of decisions)
  - Leave *controlled* judgment for the other 10%

- People can improvise within set parameters of escalation and good practice
NON-OPERATIVE MANAGEMENT OF SPLEEN AND HEPATIC TRAUMA
AND HEPATIC TRAUMA
PRACTICE GUIDELINE

Day 1
- CBC 0 h to 24 h
- Hold LMWH

Day 2
- CBC 0 h to 24 h
- Start LMWH if stable

Day 3
- CBC 0 h to 24 h
- Hold LMWH

Day 4
- CBC 0 h to 24 h
- Hold LMWH

Day 5
- CBC 0 h to 24 h
- Hold LMWH

See next page for footnotes 1-5
Controlling Variation

- Create guidelines that people accept
  - Consensus not unanimity
  - Sometimes you have to dictate, especially if no one will engage in the process
- Get it out and educate
  - Single email is useless
- Reinforce the guidelines every day
  - “When did the lactate clear?”
  - “Was the neck CTA normal?”
  - “Is Optho on board?”
  - “What did spine say?”
Coaching the Guidelines

- Rex Ryan vs. Mike Shanahan
  - Is it better to be loved or feared?
    - Little of both
  - Is perfect care the goal?
    - Maybe
    - But you need to choose those things you think are ABSOLUTELY ESSENTIAL to safe care and have zero tolerance for missing those
    - As far as the others, I think you need to encourage and teach, but not everything has equal importance
Variation

- Until you control your variation, don’t even look at outside benchmarks
  - Other than to tell you your care is sub-par
  - If its shows your care is great, you are one lucky program

- If you can’t deal with things in a consistent manner, you can’t make changes
  - Must control variation first
  - It’s just common sense
The Beauty of External Benchmarking

- Lots of people and programs think they are awesome
  - For no tangible reason other than that is what they think
- When you get to the bottom of a lot of quality problems, you find an inflated sense of performance at the center
  - That’s why people don’t listen to criticism
  - It's why they don’t take a hard look at what they do
  - It's why they say all external data is “wrong”
Starting with Probability of Survival

- It introduces your program to the concept of *expected* outcomes
  - How are they derived?
  - What factors contribute to the metric?
  - Where do we stack up?

- Provides a useful entry into much more robust external benchmarking
External Benchmarking

Where can you start?
  - NTDB
    - Not yet providing enough specific risk adjusted outcomes to benchmark
  - TQIP
  - The Literature
SMARTTT

- The Survival Measurement and Reporting Trial for Trauma
  - Uses NTDB data
  - Includes 125 centers and provides annual report on risk-adjusted mortality
  - Results blinded
  - Excellent trauma mortality probability model
    - Developed by Turner Osler
    - Uses 5 most severe injuries augmented with age, gender, mechanism, motor GCS, SBP, and transfer status
SMARTT

- Provides data on
  - Overall trauma center quality
  - Blunt trauma
  - GSW trauma
  - MVC trauma
  - Pedestrian trauma
  - Very low risk patients
  - Very high risk patients
Figure 1. Hospital Odds Ratio based on all Trauma Cases.

Vertical bars represent the 95% confidence interval. Hospitals whose quality is below the line are in red. Your facility is
Figure 1. Hospital Odds Ratio based on all Trauma Cases.

Trauma Center Quality 2007

Vertical bars represent the 95% confidence interval.
External Benchmark - SMARTT

Happy initially, grew less happy

Changes in program over time period

- 2006 – Program had been under one surgeon’s direction and 95% of all trauma critical care provided by same person for 12 years
- July, 2007
  • Second trauma surgeon joins program
University Health System Consortium

- Group of teaching hospitals associated with medical schools
- Robust risk adjustment system based on the patients in their database
- Robust query system
- Can see what other places are doing and can drill down to individual physician and patient
We examined nationally benchmarked outcomes from the 24 months elapsed since the arrival of the second surgeon and compared trauma registry data from June, 1999 - June, 2007 (time period #1) to data from July, 2007- June, 2009 (time period #2). Our hypothesis was that outcomes in time period #2 would improve compared to time period #1.
What Happened

Figure 1: Mortality Rate and Mortality Index
How We Figured Things Out

- Used the registry, TQIP, and chart review
- Looked at all factors
  - Presence in ED for resuscitations
  - Age of deaths, overall age of population
  - Average ISS, ICU days, hospital days
  - ISS > 25
  - Age > 65
  - Spleen and Liver injuries
  - Thoracic AIS >= 3
  - Head AIS 4 or 5
  - Emergency abdominal or chest procedures
  - Penetrating and blunt
What we found

Figure 2: Average Mortality Rates

- ISS > 25
- AIS Head > 4
- AIS Thorax > 3
- Liver
- Spleen
- Ex-lap

p = 0.0136

Time Period 1
Time Period 2
Analysis

Figure 3: Withdrawal of Care Comparison Between Time Period 1 and Time Period 2

- Overall: Time Period 1 - 8.6%, Time Period 2 - 36.8%
- ISS > 25: Time Period 1 - 10.42%, Time Period 2 - 31.82%
- AIS Head ≥ 3: Time Period 1 - 10.99%, Time Period 2 - 37.62%

All p < 0.001
What we found

- In the 8 years prior to 2007, 22 trauma service patients had care withdrawn, in 2007 and 2008 – 27 patients had care withdrawn
- No change in protocols or guidelines
- New surgeon handled family meetings himself, Surgeon #1 allowed residents to do it
  - Residents are less comfortable asking for withdrawal of care
  - More families chose to withdraw care after family meetings with Surgeon #2
- No other real changes found
Withdrawal of Care

Figure 4: Percent Mortality and Trauma Service W-Score During 11 Years From 1999 to 2010
Meaning

- Cause of increase in MI complex
  - Which process is more appropriate?
  - Not associated with bad care or bad decision making
  - Without external benchmarking, could have over-reacted and made changes that would have had additional consequences
  - Just by bringing this cause to programs attention, MI returned to previous values (0.6-0.8)
We are part of the initial TQIP group of institutions

Received a yearly report benchmarking our performance against the group of top US level 1 trauma centers

Also requested several specific queries
Risk Adjusted Mortality All Patients Admitted 2007
Blunt Multisystem Injury 2007
Blunt Single System Injuries
ISS > 25
Isolated TBI
Hypotension
Analysis

- Felt pretty good about things
- Opportunities for improvement in TBI
- Didn’t know what to make about lower rank in blunt single system injuries, but did not make any changes based on this.
Next TQIP Report
2008 Patients
Overall Mortality

![Graph showing overall mortality with 90% CI]
Blunt Multisystem Injuries
Blunt Single System Injuries

Not where we want to be
Had maintained ranking in most areas EXCEPT blunt single system injuries

Undertook massive PI in investigation
  - Asked TQIP to help us identify which patients were in this group
  - Reviewed all of these patients charts
  - Presented at service PI meetings
What We Found

● Who are they?
  - Elderly patients with head and facial injuries from ground level falls or low speed MVC’s
  - Not usually trauma alerted
  - Often admitted without trauma surgery involvement
    ● Seen by neurosurgery and either admitted to neurosurgery or medicine
  - Care often withdrawn in first 72 hours
Even though there were patients with severe intracranial injuries that were unsurvivable from the beginning, there was a fair percentage of patients with initially reasonable CCT, that went on to decompensate over 48 hours.

Often classified as non-preventable death on review:
- 80 year old patient on Coumadin with large SDH who goes on to withdrawal of care.
Examination

These patients often had opportunities for improvement
- Slow workup
  - Not activations, 3 hours to get head CT, etc.
- Inadequate resuscitation
- Delayed intubation
- Delayed administration of blood products and correction of coagulopathy
- Unaggressive neurosurgical response

Conclusion was the 15-20% of these deaths were potentially preventable with aggressive focus
Actions

- Need to activate these patients to get system involved
- Need to get trauma service involved early
  - Neurosurgery and medicine were not terribly interested in this population
- Need to do what we can in first 24-48 hours, if after that neuro exam does not improve, then withdrawal can be broached with family
Actions

- “Gamma” alert
  - ED response with trauma chief resident
  - Alert moniker insures they will be pushed through radiology
  - Trauma service involved from beginning
  - Includes these patients, and patients with severe mechanism but no physiologic derangement
2008 vs. 2009 Overall Mortality

The image shows two scatter plots. The top plot compares the O/E ratio with 90% CI across different facilities. The bottom plot shows the same comparison for different TQIP Report IDs. The plots indicate a trend in the mortality rates across facilities and report IDs.
2008 vs. 2009 Blunt Single Injury
2008 vs. 2009 Blunt Multisystem
Moral of the Story

- You can't reliably make positive change without control of the variability in your practice.
- Once you've controlled variability, how do you know you're performing at a high level? – Using external benchmarking.
  - But even without external benchmarking, you can compare yourself to yourself over time.
Moral of the Story

- Once you’ve identified an opportunity for improvement, you need to understand data well enough to know what factors you need to look at.

- Once you’ve found a problem, and cleared the noise from the signal, you can really begin performance improvement, and know that you’ve done something that will positively impact outcomes.
External Benchmarking

- Few of these changes would have been possible with only internal examination
  - You just can't know where the state of the art is moving without looking outside
- External benchmarking is essential, once your house is for the most part in order
- These were very interesting PI projects that engaged our entire program
Data Driven Surgical Quality Improvement: Beyond M&M

J.H. Patton
MTQIP
February 8, 2011
What is Surgical QI?

§ Quality/Safety/Regulatory
- Sentinel Events
  § When a sentinel event occurs, the accredited organization is expected to conduct a timely, thorough and credible root cause analysis; develop an action plan designed to implement improvements to reduce risk; implement the improvements; and monitor the effectiveness of those improvements.
- RCA
  § Root Cause Analysis: A structured process for identifying the causal or contributing factors underlying adverse events, adverse outcomes, or other critical events
- Creating/Amending Policies & Procedure
  § Match current practice- Joint Commission and CMS hold hospital’s accountable for their own policy/procedure
  § New policies/procedures are not always a cure for process improvement it may be as simple as a need for re-education
What is Surgical QI?

§ Departmental
  – Surgical M&M
    § Educational sessions
    § More focused on personal rather than system improvement
  – Grand Rounds
    § More education
    § May occasionally be dedicated to Quality Improvement and outcomes data
  – NSQIP
What is Trauma QI?

§ Trauma Registry
  – Data, Data analysis?

§ Trauma Program Manager
  – Project Management, Planning

§ Multi-specialty Peer Review Committee
  – Error Analysis: Deaths, Audit Filters

§ Institutional Trauma Committee
  – Change Agent? Communication Mechanism?

§ NTDB
  – Benchmarks
Basic Elements of QI

- Data Collection
- Data Analysis
- Error Analysis
- Process Improvement
## Basic Elements of QI

<table>
<thead>
<tr>
<th></th>
<th>Registries</th>
<th>Peer Review</th>
<th>Quality Improvement</th>
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<tbody>
<tr>
<td>Data Collection</td>
<td>+</td>
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<tr>
<td>Data Analysis</td>
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<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Error Analysis</td>
<td>-</td>
<td>+</td>
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</tr>
<tr>
<td>Process Improvement</td>
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# Basic Elements of QI

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TQIP

PIPS
## Basic Elements of QI

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<td>Process Improvement</td>
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</tbody>
</table>

*Who* is emphasized in the Peer Review column for Data Collection.
## Basic Elements of QI

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<tr>
<td><strong>Data Analysis</strong></td>
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<td>What</td>
<td>+</td>
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<td><strong>Error Analysis</strong></td>
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<td>+</td>
<td>+</td>
</tr>
<tr>
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<td>-</td>
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<tr>
<td>Data Analysis</td>
<td>+/-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Error Analysis</td>
<td>-</td>
<td>Why</td>
<td>+</td>
</tr>
<tr>
<td>Process Improvement</td>
<td>-</td>
<td>+/-</td>
<td>+</td>
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</table>
### Basic Elements of QI

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<td>+</td>
</tr>
<tr>
<td>Error Analysis</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Process Improvement</td>
<td>-</td>
<td>How</td>
<td>+</td>
</tr>
</tbody>
</table>
QI: Data Collection

- Who are the patients?
  - Registries
    - Chart Abstraction
    - Specific Elements
  - Self Reporting
    - M&M
  - Administrative Data
    - Delayed, Poor Quality
Identification of Surgical Complications and Deaths: An Assessment of the Traditional Surgical Morbidity and Mortality Conference Compared with the American College of Surgeons-National Surgical Quality Improvement Program

Matthew M Hutter, MD, MPH, Katherine S Rowell, MS, MHA, Lynn A Devaney, RN, Suzanne M Sokal, MSPH, Andrew L Warshaw, MD, FACS, William M Abbott, MD, FACS, Richard A Hodin, MD, FACS

Table 1. Postoperative Morbidity and Mortality Rates from the General Surgical Services at the Massachusetts General Hospital (July 1, 2002, to June 30, 2003)

<table>
<thead>
<tr>
<th></th>
<th>M&amp;M conference</th>
<th>NSQIP</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Total major cases</td>
<td>5,905</td>
<td></td>
<td>1,439</td>
</tr>
<tr>
<td>Morbidity (% with morbidity)</td>
<td>380</td>
<td>6.4</td>
<td>416</td>
</tr>
<tr>
<td>Mortality (% with mortality)</td>
<td>53</td>
<td>0.9</td>
<td>28</td>
</tr>
</tbody>
</table>

Rates are presented as determined either in traditional morbidity and mortality (M&M) conference, or by a National Surgical Quality Improvement Program (NSQIP) nurse-reviewer.
Identification of Surgical Complications and Deaths: An Assessment of the Traditional Surgical Morbidity and Mortality Conference Compared with the American College of Surgeons-National Surgical Quality Improvement Program

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<table>
<thead>
<tr>
<th>Occurrences, complication group</th>
<th>M&amp;I conference (n = 5,905)</th>
<th>NSQIP (n = 1,439)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Wound</td>
<td>71</td>
<td>1.2</td>
<td>104</td>
</tr>
<tr>
<td>Respiratory</td>
<td>58</td>
<td>1.0</td>
<td>120</td>
</tr>
<tr>
<td>Urinary</td>
<td>34</td>
<td>0.6</td>
<td>70</td>
</tr>
<tr>
<td>Central nervous system</td>
<td>4</td>
<td>0.1</td>
<td>11</td>
</tr>
<tr>
<td>Cardiac</td>
<td>32</td>
<td>0.5</td>
<td>24</td>
</tr>
<tr>
<td>Other</td>
<td>181</td>
<td>3.1</td>
<td>87</td>
</tr>
<tr>
<td>Total</td>
<td>380</td>
<td>6.4</td>
<td>416</td>
</tr>
</tbody>
</table>

Rates are presented as determined either in traditional Morbidity and Mortality (M&M) conference, or by a National Surgical Quality Improvement Program (NSQIP) nurse-reviewer.
QI: Data Analysis

- What is the problem?
  - Standard Reports
  - Ad Hoc Reports
  - Data Tracking (Run Charts)
  - Risk Adjustment
  - Benchmarking
Health Care Reform at Trauma Centers—Mortality, Complications, and Length of Stay

Shahid Shafi, MD, MPH, Sunni Barnes, PhD, David Nicewander, PhD, David Ballard, MD, PhD, MSPH, Avery B. Nathens, MD, PhD, Angela M. Ingraham, MD, Mark Hemmila, MD, Sandra Goble, MS, Melanie Neal, MS, Michael Pasquale, MD, John J. Fildes, MD, and Larry M. Gentilello, MD

Figure 3. Predictors of length of stay. SBP, systolic blood pressure; ISS, Injury Severity Score; GCS, Glasgow Coma Scale. Figure 4. Relative impact of specific complications on LOS. ARDS, acute respiratory distress syndrome, intensive care unit.
Detection of adverse events in surgical patients using the Trigger Tool approach

F A Griffin,¹ D C Classen²

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Triggers for Surgical Trigger Tool (initial testing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Unplanned return to surgery</td>
</tr>
<tr>
<td>T2</td>
<td>Unexpected change in procedure</td>
</tr>
<tr>
<td>T3</td>
<td>Unplanned intensive care unit admission</td>
</tr>
<tr>
<td>T4</td>
<td>Body mass index (BMI) &gt; 28</td>
</tr>
<tr>
<td>T5</td>
<td>Intubation or reintubation in PACU</td>
</tr>
<tr>
<td>T6</td>
<td>Unplanned x ray</td>
</tr>
<tr>
<td>T7</td>
<td>Transfusion of red blood cells or blood first intraoperative or first 24 h postoperatively</td>
</tr>
<tr>
<td>T8</td>
<td>Overnight stay of ambulatory patient</td>
</tr>
<tr>
<td>T9</td>
<td>Cardiac/pulmonary arrest</td>
</tr>
<tr>
<td>T10</td>
<td>Intraoperative or postoperative death</td>
</tr>
<tr>
<td>T11</td>
<td>Mechanical ventilation &gt; 24 h</td>
</tr>
<tr>
<td>T12</td>
<td>Intraoperative medications</td>
</tr>
<tr>
<td>T13</td>
<td>Positive blood culture</td>
</tr>
<tr>
<td>T14</td>
<td>Deep vein thrombosis/pulmonary embolism</td>
</tr>
<tr>
<td>T15</td>
<td>Increased troponin level</td>
</tr>
<tr>
<td>T16</td>
<td>Readmission within 30 days</td>
</tr>
<tr>
<td>T17</td>
<td>Change of anaesthesia</td>
</tr>
<tr>
<td>T18</td>
<td>Consult in PACU</td>
</tr>
<tr>
<td>T19</td>
<td>Complication (any)</td>
</tr>
<tr>
<td>T20</td>
<td>Pathology report normal or unrelated to diagnosis</td>
</tr>
<tr>
<td>T21</td>
<td>Insertion of central or a-line mid-procedure or in PACU</td>
</tr>
<tr>
<td>T22</td>
<td>Intraoperative time &gt; 8 h</td>
</tr>
<tr>
<td>T23</td>
<td>Unplanned organ removal, injury, repair</td>
</tr>
<tr>
<td>T24</td>
<td>Other (for adverse events uncovered that do not “fit” a trigger. Any adverse event can be placed under this “Other” trigger.)</td>
</tr>
</tbody>
</table>

PACU, postanaesthesia care unit.
QI: Error Analysis

- Why is there a problem?
  - Need Standardized Taxonomy and Tracking
  - Provides focus for where to start
ASSOCIATION FOR ACADEMIC SURGERY, 2008

A Report Card System Using Error Profile Analysis and Concurrent Morbidity and Mortality Review: Surgical Outcome Analysis, Part II

Anthony C. Antonacci, M.D., S.M., F.A.C.S.,*†‡§¹ Steven Lam, B.S., P.A.-C.,† Valentina Lavarias, R.N.,† Peter Homel, Ph.D.,§ and Roland A. Eavey, M.D., S.M., F.A.C.S.§

*Weill Medical College of Cornell University, New York, New York, †Christ Hospital, Jersey City, New Jersey, ‡Lenox Hill Hospital, New York, New York, §Beth Israel Medical Center, New York, New York, and ¶Pediatric Otolaryngology Service, Department of Otolaryngology, Massachusetts Eye and Ear Infirmary, Department of Otolaryngology and Laryngology, Harvard Medical School, Boston, Massachusetts

Submitted for publication January 5, 2008

TABLE 3

Delineation of Error, 2005

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>2005 Study grp</th>
<th>2005 Deaths</th>
<th>2005 Communication/Supervision Study grp</th>
<th>2005 Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error Dx</td>
<td>53.8%</td>
<td>50.00%</td>
<td>Error communication</td>
<td>100.0%</td>
</tr>
<tr>
<td>Delay in Dx</td>
<td>7.7%</td>
<td>37.50%</td>
<td>Error signout</td>
<td>0.0%</td>
</tr>
<tr>
<td>Inappropriate test</td>
<td>0.0%</td>
<td>0.00%</td>
<td>Error consent</td>
<td>0.0%</td>
</tr>
<tr>
<td>Failure to act on test</td>
<td>23.1%</td>
<td>0.00%</td>
<td>Lack supervision</td>
<td>0.0%</td>
</tr>
<tr>
<td>Inadequate preop W/U</td>
<td>15.4%</td>
<td>12.50%</td>
<td>Interpersonal conflict</td>
<td>0.0%</td>
</tr>
<tr>
<td>Judgment</td>
<td></td>
<td></td>
<td>Miscellaneous</td>
<td></td>
</tr>
<tr>
<td>Error judgment</td>
<td>50.0%</td>
<td>42.86%</td>
<td>Equipment failure</td>
<td>25.0%</td>
</tr>
<tr>
<td>Inappropriate indication</td>
<td>7.1%</td>
<td>28.57%</td>
<td>Inadequate supplies</td>
<td>75.0%</td>
</tr>
<tr>
<td>Failure prophylaxis</td>
<td>7.1%</td>
<td>0.00%</td>
<td>Near miss</td>
<td>0.0%</td>
</tr>
<tr>
<td>Failure monitoring</td>
<td>7.1%</td>
<td>0.00%</td>
<td>Medication error</td>
<td>0.0%</td>
</tr>
<tr>
<td>Failure follow/up</td>
<td>28.6%</td>
<td>28.57%</td>
<td>Inadequate credentials</td>
<td>0.0%</td>
</tr>
<tr>
<td>Technique</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error Rx/performace</td>
<td>63.0%</td>
<td>100.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect procedure</td>
<td>7.4%</td>
<td>0.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate technique</td>
<td>11.1%</td>
<td>0.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidable delay</td>
<td>11.1%</td>
<td>0.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Omission of care</td>
<td>7.4%</td>
<td>0.00%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Development of an Online Morbidity, Mortality, and Near-Miss Reporting System to Identify Patterns of Adverse Events in Surgical Patients

Karl Y. Bilimoria, MD, MS; Thomas E. Kniecik, PhD; Debra A. DaRosa, PhD; Amy Halverson, MD; Mark K. Eskandari, MD; Richard H. Bell Jr, MD; Nathaniel J. Soper, MD; Jeffrey D. Wayne, MD

Table 2. Error Grade and Class by Primary Category of Adverse Event

<table>
<thead>
<tr>
<th>Error class</th>
<th>Anesthesia</th>
<th>Biliary</th>
<th>Cardiac</th>
<th>Endocrine</th>
<th>GI</th>
<th>GU</th>
<th>Hematologic</th>
<th>Infectious</th>
<th>Miscellaneous</th>
<th>Neurologic</th>
<th>Pulmonary</th>
<th>Trauma</th>
<th>Vascular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error in diagnosis</td>
<td>0</td>
<td>0</td>
<td>3 (3.9)</td>
<td>0</td>
<td>15 (6.0)</td>
<td>2 (6.3)</td>
<td>3 (1.7)</td>
<td>2 (1.3)</td>
<td>1 (8.1)</td>
<td>2 (6.6)</td>
<td>2 (2.3)</td>
<td>4 (17.4)</td>
<td>2 (2.1)</td>
</tr>
<tr>
<td>Error in judgment</td>
<td>2 (20.0)</td>
<td>0</td>
<td>9 (11.8)</td>
<td>0</td>
<td>14 (14.5)</td>
<td>6 (15.8)</td>
<td>8 (8.6)</td>
<td>9 (8.6)</td>
<td>2 (15.6)</td>
<td>2 (6.6)</td>
<td>1 (6.6)</td>
<td>10 (17.5)</td>
<td>2 (8.7)</td>
</tr>
<tr>
<td>Error in technique</td>
<td>4 (40.0)</td>
<td>2 (22.7)</td>
<td>1 (1.3)</td>
<td>2 (60.0)</td>
<td>60 (61.5)</td>
<td>7 (21.9)</td>
<td>86 (54.0)</td>
<td>4 (28.6)</td>
<td>4 (28.6)</td>
<td>16 (60.0)</td>
<td>16 (60.0)</td>
<td>12 (20.3)</td>
<td>29 (28.1)</td>
</tr>
<tr>
<td>Nature of disease</td>
<td>3 (30.0)</td>
<td>1 (11.1)</td>
<td>61 (68.3)</td>
<td>2 (60.0)</td>
<td>66 (58.2)</td>
<td>16 (50.0)</td>
<td>86 (53.9)</td>
<td>4 (66.7)</td>
<td>100 (88.2)</td>
<td>9 (28.1)</td>
<td>19 (62.8)</td>
<td>50 (56.8)</td>
<td>12 (22.2)</td>
</tr>
<tr>
<td>Systems error</td>
<td>1 (10.0)</td>
<td>0</td>
<td>2 (26.6)</td>
<td>0</td>
<td>0</td>
<td>1 (3.1)</td>
<td>0</td>
<td>1 (6.6)</td>
<td>2 (6.6)</td>
<td>0</td>
<td>2 (2.3)</td>
<td>4 (17.4)</td>
<td>2 (2.1)</td>
</tr>
</tbody>
</table>

Error grade:
I. Non-life-threatening noninvasive treatment
II. Potentially life-threatening noninvasive treatment
III. Any complication with invasive treatment
IV. Permanent disability
V. Death

Table 3. Error Class According to Error Grade

<table>
<thead>
<tr>
<th>Error in diagnosis</th>
<th>I: Non-Life-Threatening Noninvasive Treatment</th>
<th>II: Potentially Life-Threatening Noninvasive Treatment</th>
<th>III: Any Complication With Invasive Treatment</th>
<th>IV: Permanent Disability</th>
<th>V: Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error in diagnosis</td>
<td>3 (1.4)</td>
<td>4 (2.7)</td>
<td>25 (5.1)</td>
<td>1 (8.3)</td>
<td>3 (3.4)</td>
</tr>
<tr>
<td>Error in judgment</td>
<td>13 (6.0)</td>
<td>19 (12.0)</td>
<td>31 (6.3)</td>
<td>1 (8.3)</td>
<td>7 (7.9)</td>
</tr>
<tr>
<td>Error in technique</td>
<td>60 (27.5)</td>
<td>39 (26.2)</td>
<td>252 (51.5)</td>
<td>1 (8.3)</td>
<td>8 (9.0)</td>
</tr>
<tr>
<td>Nature of disease</td>
<td>138 (53.3)</td>
<td>86 (57.7)</td>
<td>175 (35.8)</td>
<td>8 (66.7)</td>
<td>58 (54.7)</td>
</tr>
<tr>
<td>Systems error</td>
<td>4 (1.8)</td>
<td>1 (0.7)</td>
<td>6 (1.2)</td>
<td>1 (8.3)</td>
<td>3 (3.4)</td>
</tr>
</tbody>
</table>

Abbreviations: GI, Gastrointestinal; GU, genitourinary.
Transforming the Morbidity and Mortality Conference into an Instrument for Systemwide Improvement

Jamie N. Deis, MD; Keegan M. Smith, MD; Michael D. Warren, MD; Patricia G. Throop, BSN, CPHQ; Gerald B. Hickson, MD; Barbara J. Joers, MHSA, CHE; Jayant K Deshpande, MD, MPH

Table 3. Factors contributing to adverse outcome

<table>
<thead>
<tr>
<th>Factor</th>
<th>% Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication:</td>
<td>64</td>
</tr>
<tr>
<td>e.g., inadequate handoffs; incomplete clinical information</td>
<td></td>
</tr>
<tr>
<td>Coordination of care:</td>
<td>36</td>
</tr>
<tr>
<td>e.g., involving multiple services and/or care sites</td>
<td></td>
</tr>
<tr>
<td>Volume of activity/workload:</td>
<td>18</td>
</tr>
<tr>
<td>e.g., increased clinical volume and/or perception of workload</td>
<td></td>
</tr>
<tr>
<td>Escalation of care:</td>
<td>14</td>
</tr>
<tr>
<td>e.g., delay or failure to involve more senior physician or nurse</td>
<td></td>
</tr>
<tr>
<td>Recognition of change in clinical status:</td>
<td>14</td>
</tr>
<tr>
<td>e.g., delay or failure to recognize changing clinical signs and/or symptoms</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Ichikawa ("fishbone") cause-and-effect diagram.
Patient Safety in Trauma: Maximal Impact Management Errors at a Level I Trauma Center

Rao R. Ivatury, MD, FACS, Kelly Guilford, BS, RN, Ajai K. Malhotra, MD, FACS, Therese Duane, MD, FACS, Michel Aboutanos, MD, FACS, and Nancy Martin, MS, RN

Table 2: Patient Safety Net Event Taxonomy in Trauma With Maximal Impact (Mortality): Type

<table>
<thead>
<tr>
<th>Communication</th>
<th>Patient Management</th>
<th>Clinical Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionable 3</td>
<td>Resuscitation</td>
<td>Questionable: 35</td>
</tr>
<tr>
<td></td>
<td>Questionable: 35</td>
<td>Diagnosis: 11</td>
</tr>
<tr>
<td></td>
<td>(airway 11,</td>
<td>Treatment: 31</td>
</tr>
<tr>
<td></td>
<td>breathing 1,</td>
<td>Both: 34</td>
</tr>
<tr>
<td></td>
<td>circulation 23)</td>
<td></td>
</tr>
<tr>
<td>Questionable 3</td>
<td>Questionable OR/</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICU care 32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Missed injuries: 9</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Patient Safety Net Event Taxonomy in Trauma With Maximal Impact (Mortality): Domain

<table>
<thead>
<tr>
<th>Setting</th>
<th>Phase</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside hospital: 1</td>
<td>Prehospital: 7</td>
<td>EMS: 6</td>
</tr>
<tr>
<td>Prehospital: 6</td>
<td>Initial assessment and resuscitation: 30</td>
<td></td>
</tr>
<tr>
<td>Emergency department: 23</td>
<td>Secondary survey and tests: 10</td>
<td>Physicians: 78</td>
</tr>
<tr>
<td>Operating room: 11</td>
<td>ICU care: 24</td>
<td>Nursing: 2</td>
</tr>
<tr>
<td>PACU: 2</td>
<td>Post ICU phase: 5</td>
<td></td>
</tr>
<tr>
<td>Intensive care unit: 24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing floor: 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others: 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Patient Safety Net Event Taxonomy in Trauma With Maximal Impact (Mortality): Cause

<table>
<thead>
<tr>
<th>System</th>
<th>Human</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Skill based 6</td>
</tr>
<tr>
<td></td>
<td>Rule based 65</td>
</tr>
<tr>
<td></td>
<td>Both 3</td>
</tr>
</tbody>
</table>
QI: Process Improvement

- How are we going to fix the problem?
  - Loop Closure
    - Counseling
    - Policies
    - Guidelines
    - Forms
QI: Process Improvement

- How are we going to fix the problem?
  - Loop Closure
    - Counseling
    - Policies
    - Guidelines
    - Forms

• Not PI
Patterns of Errors Contributing to Trauma Mortality

Lessons Learned From 2594 Deaths

Russell L. Gruen, MD, PhD, Gregory J. Jurkovich, MD, Lisa K. McIntyre, MD, Hugh M. Foy, MD, and Ronald V. Maier, MD

<table>
<thead>
<tr>
<th>Error Patterns</th>
<th>Cases (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemorrhage control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delayed control of abdominal/pelvic hemorrhage</td>
<td>10</td>
<td>15.6</td>
</tr>
<tr>
<td>Delayed control of intrathoracic hemorrhage</td>
<td>6</td>
<td>9.4</td>
</tr>
<tr>
<td>Failure to warm and/or correct coagulopathy</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Airway management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsuccessful intubation and delayed surgical airway</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>Failure to secure or protect airway</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>Management of unstable patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unduly long initial operative procedure in unstable patient</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>Inappropriate interhospital transfer of unstable patient</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Unstable patient sent to CT scanner</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complication of intravascular lines</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>Complication of feeding tubes</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>Retained intraoperative foreign body</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Prophylaxis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inadequate DVT/PE prophylaxis</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>Inadequate GI ulcer prophylaxis</td>
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<td>3.1</td>
</tr>
<tr>
<td>Inadequate physical restraint</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Missed or delayed diagnoses</td>
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<tr>
<td>Intracranial hemorrhage</td>
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<td>3.1</td>
</tr>
<tr>
<td>Intraabdominal injury</td>
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<tr>
<td>Pericardial tamponade</td>
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<tr>
<td>Septicemia</td>
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<td>1.6</td>
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<tr>
<td>Hyperkalemia</td>
<td>1</td>
<td>1.6</td>
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<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overresuscitation with fluids</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>Other poor management decisions</td>
<td>2</td>
<td>3.1</td>
</tr>
</tbody>
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<tbody>
<tr>
<td>Uncontrolled thoracic hemorrhage</td>
<td>⊗</td>
<td>⊗</td>
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<td>⊗</td>
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<tr>
<td>Interhospital transfer of unstable pt</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
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<tr>
<td>Complications of feeding tubes</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
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<tr>
<td>Retained foreign body in OR</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
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</thead>
<tbody>
<tr>
<td>Delayed ORangiography</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
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<td>⊗</td>
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</tr>
<tr>
<td>Failure to warm +/- correct coagulopathy</td>
<td>⊗</td>
<td>⊗</td>
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<td>⊗</td>
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</tr>
<tr>
<td>Airway loss during oro-tracheal intubation</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
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</tr>
<tr>
<td>Unprotected airway in vulnerable patient</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
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<td>⊗</td>
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<tr>
<td>Lengthy operation in unstable patient</td>
<td>⊗</td>
<td>⊗</td>
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<td>⊗</td>
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</tr>
<tr>
<td>Unstable patient to CT scanner</td>
<td>⊗</td>
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<td>⊗</td>
<td>⊗</td>
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<td>⊗</td>
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<tr>
<td>Complications of procedures</td>
<td>⊗</td>
<td>⊗</td>
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<td>⊗</td>
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</tr>
<tr>
<td>Inadequate VTE prophylaxis</td>
<td>⊗</td>
<td>⊗</td>
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<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
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<tr>
<td>Inadequate GI prophylaxis</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
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<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Over-resuscitation with fluid</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
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</tr>
</tbody>
</table>
QI Needs Assessment

What we need:

- Reliable data, Data Analysis (TQIP)
- Error Analysis, Tracking
- Data Sharing
- Strategic Improvement Plan (Change)
- Multidisciplinary Project Management
- Communication
Is this your Data?
Organizing Your Data Mess

First Rule of Data to Monitor Processes
- Track data over time!
- If it is not a run chart then ask to see it as a run chart!
Systematic Review of Information

- Outside agency required measures
- Dashboards (regularly updated measures related to key projects and day to day operation)
- Deep dives into topics. Where results are not what are desired take the time to understand process and drivers of the outcomes.
- Listen to Gripes
Three Nolan Questions

- What are you trying to accomplish?
- What ideas do you have that might lead to an improvement?
- How will you know the change is an improvement?
Process

- Deep dive into the data
  - Identify opportunities
- Share the data
  - Explain what it means, where it comes from, why its important
    - Surgical Grand Rounds
      - Quarterly session devoted to Quality Improvement
    - Surgical Services/Anesthesia/ED
      - Promote “team”
    - Hospital Administration
- Identified interested stakeholders/champions
  - Bring everyone to the table
  - Collaborative Process Improvement
Goals of Surgical QI

- Define objectives for a quality plan
- Define stakeholders in surgical quality and their roles
- Apply strategies for engagement, for improvement and for sustaining quality efforts
- Identify best practices
Team goals

- Establish transparency
  - Data dissemination
    - Successes and “opportunities”
- Develop process improvement plan for opportunities
- Increase communication
  - Safety Checklists
  - Meetings, Newsletters
Project Leadership

- Process Design
  - Suggest methods for PI (PDSA, Six Sigma, Lean, Homemade)
  - Identify which method will be used
  - Determine measurable goals
    - Let the team come up with the improvement effort based on your data (even though you know what it should be coach toward your pre-determined goal) this will help to create “buy-in”
  - Identify resources to be utilized
    - External: ACS, IHI, IOM, AHA, NPSF, AORN, ANA etc.
    - Internal resources: quality dept, risk management, nursing councils, education depts, pharmacy, anesthesia quality, data analysts etc.
Project Leadership

- Process Design (Con’t)
  - Assign tasks to all team members (homework)
  - Meet often in the beginning of the process to ensure project is progressing
  - Track progress
  - Summarize and provide feedback to the team
Methods to Improve 1

- Understand Your Current Process
  - Apply tools to understand your current process and identify opportunities
    - Flow diagrams, value stream map, define
    - Gemba walk, observation
    - Process measures
  - Develop possible changes and test.
  - Trial on a small scale if possible
Methods to Get Started

- Fix the Issues
  - Start small one project at a time “low hanging fruit” - pilot a project
  - Copy best practice
    - Don’t waste time reinventing the wheel
    - Almost always has to be customized for local issues
  - Find out what works - utilize resources

- Give The Team Faith
  - Emphasize success
  - Communicate results
How to Implement Surgical QI

Pre-work (preparation phase)

- Organize your data in a clear concise fashion
  - Display charts/graphs that are understandable to the audience
  - Present “good” and “not so good data”

- Identify the improvement effort ahead of time
How to Implement Surgical QI

Pre-work (preparation phase)

- Perform a total assessment of your hospital’s or health systems resources
  - Clinical performance specialists roles
  - Quality improvement specialists
  - Pharmacy
  - Infection Control
  - Nursing
  - Committees that have approval authority
    - Identify what processes have to go where and who has to sign off on them
How to Implement Surgical QI

Pre-work (preparation phase)

- Identify Stakeholders
  - Who needs to be at the table (leadership, MDs, Admin, Nursing etc)
  - Who is accountable
  - Determine the champion of the project
    - May need more than one
How to Implement Surgical QI

Work Phase

- You need a facilitator
  - Invite the stakeholders to a meeting
    - It is important to have the support of administration
  - Run the meeting with the assistance of the champion of the project
    - Set the agenda have a mission and goal for the initial meeting
How to Implement Surgical QI

Work Phase

- Identify a liaison to multiple departments
  - Dept of Surgery and Sub-specialties, Anesthesia, Nursing, Pharmacy, Quality etc.
  - Break down the silos
Team Building

- Right People
- Right Time
- Responsibility with Authority
Communicate, Communicate and Communicate Some More

- Identify what are we trying to communicate
  - Message - factual, short, concrete and simple for all audiences to achieve a basic understanding of PI
  - Use a variety of methods to communicate
  - Keep everyone on the same page
  - Do not send mixed messages
  - Know your project
Staying Focused in a World of Organized Chaos

- Create a vision
  - Review organizational mission, vision and values to ensure consistency
  - Engage others to validate or modify
  - Publish the vision, post the vision, review the vision regularly
  - Ensure leadership team is on board
  - Share with physician leaders
Staying Focused Continued

- Use the strategic plan to guide your daily work
  - Review regularly to monitor progress
  - Revise - situations change and the strategic plan needs to evolve as the department does
  - Publish and engage frontline staff in accomplishing the goals
  - Document your progress and share the information!
  - Celebrate the accomplishments!
Strategic Improvement: Change

- The Institute for Healthcare Improvement (IHI) uses a simple mantra to describe the essential elements for strategic improvement: Will, Ideas, and Execution.
- You have to have the *will* to improve, you have to have *ideas* about alternatives to the status quo, and then you have to make it real — *execution*. 
10 Reasons Execution Fails

- Poor communication
- Impact of change underestimated
- Lack of leadership
- Lack of executive sponsor
- Project management lacking
- Insufficient planning
- Inadequate resources allocated
- Technical knowledge insufficient
- Lack of rationale for need to change
- Consultants not managed closely
Strategies to Success

- Build the case for change
- Secure executive buy-in and support
- Develop a road map
- Communicate the plan (map)
- Empower others to act
- Start small, deliver early and frequently
- Spread and add value
- Monitor / evaluate progress
- Share the story
“...better is not a number, soon is not a time; trying is having granted yourself permission to fail...”