

MTQIP Journey

Mark Hemmila, MD



Objectives

- Where we have been
- Where we are
- Where we are going

It is a marathon, not a sprint

- Small wins
- Long game



Background

- Prospective randomized clinical trials are very effective and important to assessing the effects of a **specific** treatment.
 - Exclusion criteria
 - Extrapolation to other populations or disease situations?
- Most of what is known about actual clinical care comes from observational studies.
 - Mechanical ventilator
 - Renal replacement therapy
 - Trauma (Damage control laparotomy, Intravascular shunts, PRBC to Plasma ratio)

Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials

Gordon C S Smith, Jill P Pell



Parachutes reduce the risk of injury after gravitational challenge, but their effectiveness has not been proved with randomised controlled trials

Abstract

Objectives To determine whether parachutes are effective in preventing major trauma related to gravitational challenge.

Design Systematic review of randomised controlled trials.

Data sources: Medline, Web of Science, Embase, and the Cochrane Library databases; appropriate internet sites and citation lists.

Study selection: Studies showing the effects of using a parachute during free fall.

Main outcome measure Death or major trauma, defined as an injury severity score > 15 .

Results We were unable to identify any randomised controlled trials of parachute intervention.

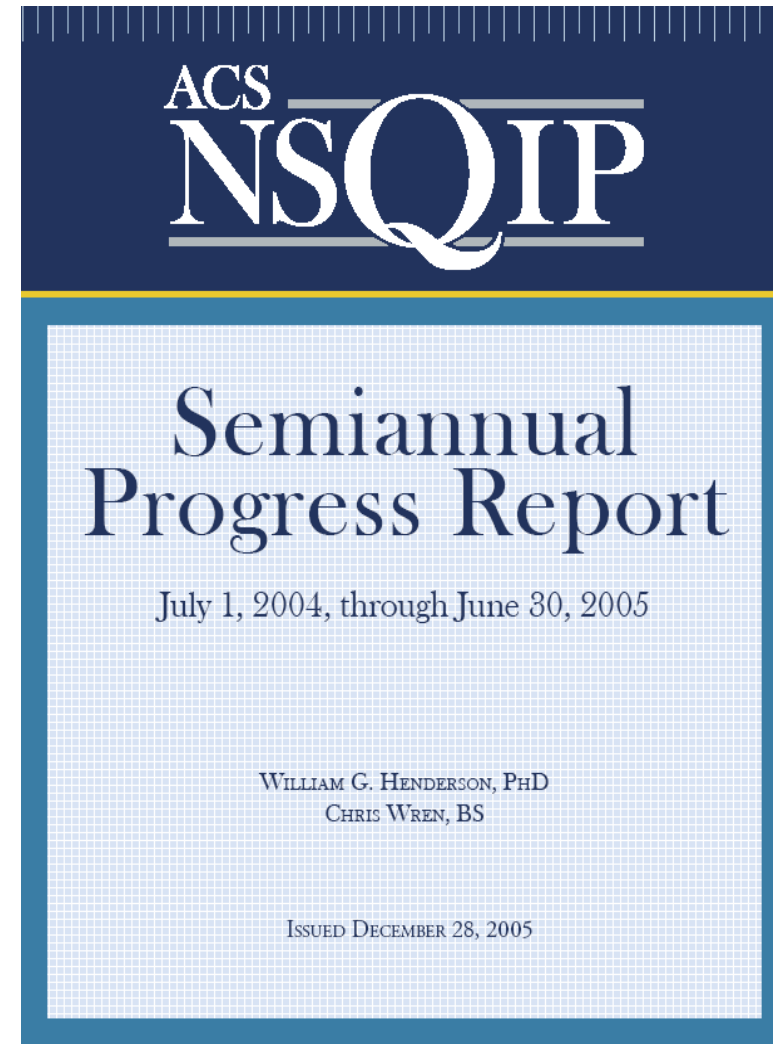
Conclusions As with many interventions intended to prevent ill health, the effectiveness of parachutes has not been subjected to rigorous evaluation by using randomised controlled trials. Advocates of evidence based medicine have criticised the adoption of interventions evaluated by using only observational data. We think that everyone might benefit if the most radical protagonists of evidence based medicine organised and participated in a double blind, randomised, placebo controlled, crossover trial of the parachute.

Variability

- Look for it
 - Must be real
 - Sign of differences in care
- Use it
 - Stimulus for quality improvement
 - Identify contributing variables
 - Best practices
 - Interventions
 - Answer the important questions



- University of Michigan Surgery Grand Rounds
- 1st Private Sector NSQIP report (Fall 2003)



The Story

2004



2007



2008



2011



2015



**Data
opportunities**

**Cost and quality
opportunities**

**Cost and quality
evidence**

Data quality pilot



Surgery: NSQIP methodology as a means of tracking and reducing adverse outcomes

Surgery: Potential for cost reductions with improved quality of care

MTQIP created as a pilot with 6 centers

MTQIP becomes a formal Blue Cross Blue Shield of Michigan Collaborative Quality Initiative

J Trauma ACS: Regional CQI improves outcomes and reduces cost

The Data

Outcomes	UM Trauma N=525		UM NSQIP General Surgery N=1,327			NTDB (2003) N=45,655		
	%	N	%	N	p-value	%	N	p-value
Deaths within 30 Days	8.2	43	1.5	20	<0.001	6.0	2731	0.03
Wound Occurrences								
Superficial Incisional SSI	1.9	10	4.5	60	0.01	0.4	194	<0.0001
Wound Disruption	0.6	3	0.8	10	0.9	0.08	37	0.0001
Respiratory Occurrences								
Pneumonia	14.1	74	1.6	21	<0.001	3.0	1383	<0.0001
Pulmonary Embolism	1.0	5	0.5	6	0.4	0.3	120	0.003
Empyema	0.6	3				0.09	40	0.004
Urinary Tract Occurrences								
Acute Renal Failure	1.0	5	0.4	5	0.2	0.4	187	0.05
Urinary Tract Infection	12.6	66	3.5	47	<0.001	1.2	559	<0.0001
Cardiac Occurrences								
Cardiac Arrest Requiring CPR	1.1	6	0.4	5	0.1	0.5	241	0.05
Myocardial Infarction	0.6	3	0.2	2	0.3	0.9	421	0.4
Other Surgical Occurrences								
Bleeding/Transfusions	5.0	26	0.2	2	<0.001			
DVT/Thrombophlebitis	6.5	34	0.8	11	<0.001	0.7	299	<0.0001
Sepsis	4.8	25	3.1	41	0.1	0.2	89	<0.0001
Extremity Compartment Syndrome	2.3	12				0.5	212	<0.001

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Detecting the blind spot: Complications in the trauma registry and trauma quality improvement

Mark R. Hemmila, MD,^a Jill L. Jakubus, PA-C,^a Wendy L. Wahl, MD,^a Saman Arbabi, MD, MPH,^b
William G. Henderson, PhD,^d Shukri F. Khuri, MD,^c Paul A. Taheri, MD, MBA,^a and
Darrell A. Campbell, Jr., MD,^a Ann Arbor, Mich, Seattle, Wash, Boston, Mass, and Aurora, Col

Background. *The National Surgical Quality Improvement Program (NSQIP) has reduced complications for surgery patients in the Department of Veterans Affairs Healthcare System. The American College of Surgeons Committee on Trauma maintains the National Trauma Data Bank (NTDB) to track injured patient comorbidities, complications, and mortality. We sought to apply the NSQIP methodology to collect comorbidity and outcome data for trauma patients. Data were compared to the NTDB to determine the benefit and validity of using the NSQIP methodology for trauma.*

Study Design. *Utilizing the NSQIP methodology, data were collected from August 1, 2004 to July 31, 2005 on all adult patients admitted to the trauma service at a level 1 trauma center. NSQIP data were collected for general surgery patients during the same time period from the same institution. Data were also extracted from v5.0 of the NTDB for patients ≥ 18 years old admitted to level 1 trauma centers. Comparisons between University of Michigan (UM) NSQIP Trauma and UM NSQIP General Surgery patients and between UM NSQIP Trauma and NTDB (2004) patients were performed using univariate and multivariate analysis.*

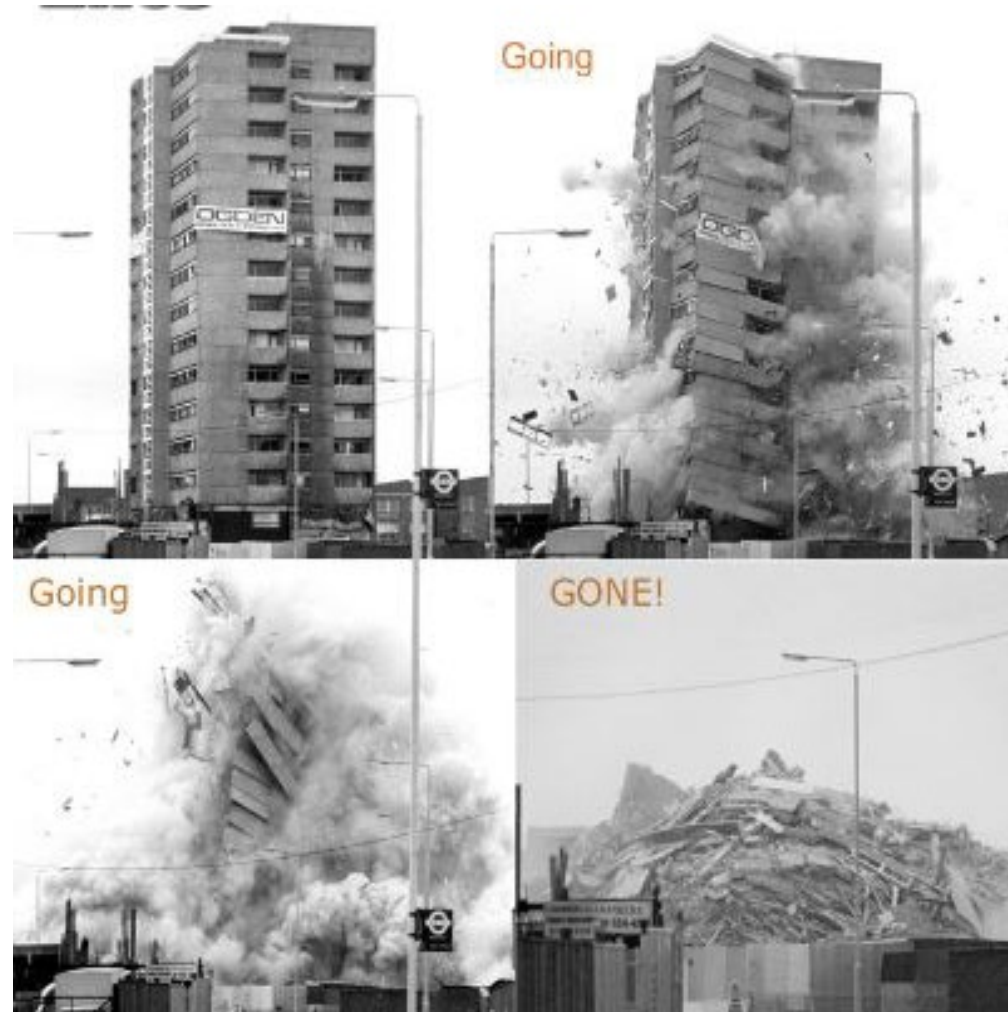
Results. *Before risk adjustment, there was a difference in mortality between the UM NSQIP Trauma and NTDB (2004) groups with univariate analysis (8.4% vs 5.7%; odds ratio [OR], 0.7; 95% confidence interval [CI] 0.5-0.9; $P = .01$). This survival advantage reversed to favor the UM NSQIP Trauma patient group when risk adjustment was performed (OR, 2.3; 95% CI, 1.6-3.4; $P < .001$). The UM NSQIP Trauma group had more complications than the UM NSQIP general surgery patients. Despite having a lower risk-adjusted rate of mortality, the UM NSQIP Trauma patients had significantly higher rates of complications (wound infection, wound disruption, pneumonia, urinary tract infection, deep vein thrombosis, and sepsis) than the NTDB (2004) patients in both univariate and multivariate analyses.*

Conclusion. *Complications occurred more frequently in trauma patients than general surgery patients. The UM NSQIP Trauma patients had higher rates of complications than reported in the NTDB. The NTDB data potentially underreport important comorbidity and outcome data. Application of the NSQIP methodology to trauma may present an improved means of effectively tracking and reducing adverse outcomes in a risk-adjusted manner. (Surgery 2007;142:439-49.)*

- December 2005
 - ACS - COT
 - ACS - NSQIP
- O'Hare Hilton
- The Players
 - David Hoyt
 - Everyone else

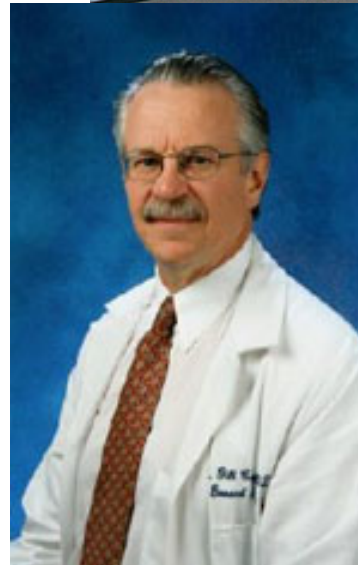


- December 2005
 - ACS - COT
 - ACS - NSQIP
- The Players
 - David Hoyt
 - Everyone else
- Ouch!
- Every defeat is an opportunity
 - John Fildes



- COT Outcomes Committee
 - Michael Pasquale
 - March 2006
 - Avery Nathens, David Clark, Gil Cryer
- ACS-COT
 - John Fildes, Chair ACS Committee on Trauma
 - October 2006
 - Ad hoc Committee
 - TQIP

- Chair – Gil Cryer
- Members
 - Forrest Calland
 - David Clark
 - John Fildes
 - Sandra Goble
 - Mark Hemmila
 - Wayne Meredith
 - Avery Nathens
 - Melanie Neal
 - Michael Pasquale
 - Michelle Pomphrey
 - Shahid Shafi





ACS TQIP Mandate

Design, test, and implement a quality improvement program for trauma that is:

- Validated
- Risk-adjusted
- Outcomes based

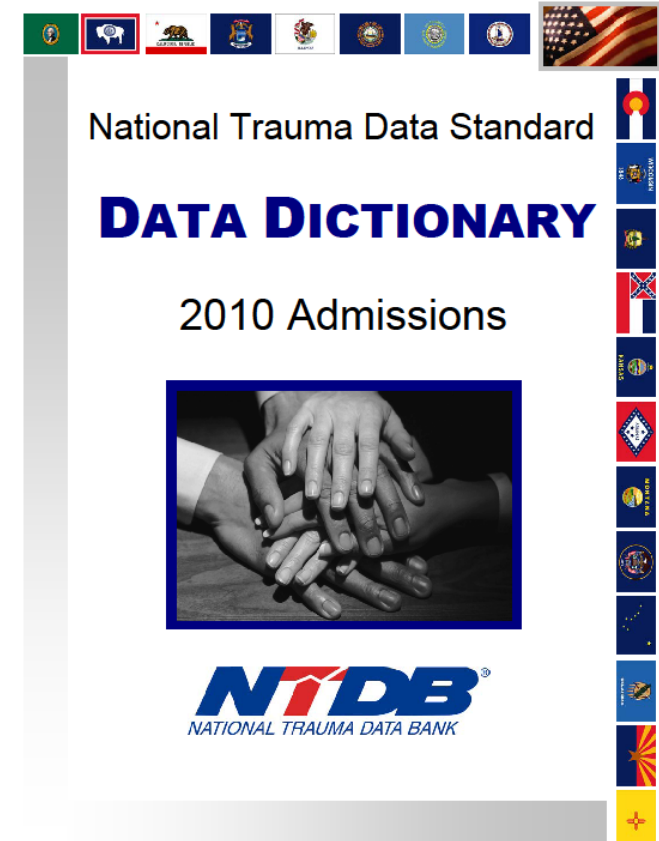
To measure and continually improve the quality of trauma care.

ACS TQIP Task Force Questions

- Have we already picked the low hanging fruit?
 - Is there variation in trauma center outcomes?
- Is the NSQIP methodology workable in trauma?
- Is the NTDB data accurate enough?
- What modifications may be required?
 - Data standardization
 - Training
 - Validation

ACS TQIP Framework

- Draw on existing mechanisms
 - Trauma registry infrastructure
 - NTDB
 - National Trauma Data Standard
- Trauma registrar training
- Pilot study of feasibility
 - 3 years (2007, 2008, 2009)
 - 1st year of data prior to registrar training





Participating Trauma Centers

Name	Level
Cedars-Sinai Medical Center, Los Angeles, California	I
Christiana Hospital, Newark, Delaware	I
Genesys Regional Medical Center, Grand Blanc, Michigan	II
John Muir Medical Center, Walnut Creek, California	II
Lahey Clinic, Burlington, Massachusetts	II
Lehigh Valley Hospital, Allentown, Pennsylvania	I
Maine Medical Center, Portland, Maine	I
Massachusetts General Hospital, Boston, Massachusetts	I
Oklahoma University Medical Center, Oklahoma City, Oklahoma	I
Parkland Health and Hospital System, Dallas, Texas	I
Regional Medical Center at Memphis, Memphis, Tennessee	I
Ronald Reagan UCLA Medical Center, Los Angeles, California	I



Participating Trauma Centers

Name	Level
Saint Mary's Health Care, Grand Rapids, Michigan	II
Sharp Memorial Hospital, San Diego, California	II
St. John Medical Center, Tulsa, Oklahoma	II
St. Michael's Hospital, Toronto, Ontario, Canada	I
St. Vincent Mercy Medical Center, Toledo, Ohio	I
Truman Medical Center, Kansas City, Missouri	I
University Medical Center, Las Vegas, Nevada	I
University of California, San Diego Medical Center, San Diego, California	I
University of Michigan, Ann Arbor, Michigan	I
University of Virginia, Charlottesville, Virginia	I
Wake Forest University Baptist Medical Center, Winston-Salem, North Carolina	I

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Real money: Complications and hospital costs in trauma patients

Mark R. Hemmila, MD,^a Jill L. Jakubus, PA-C,^a Paul M. Maggio, MD, MBA,^b Wendy L. Wahl, MD,^a Justin B. Dimick, MD, MPH,^a Darrell A. Campbell Jr, MD,^a and Paul A. Taheri, MD, MBA,^c Ann Arbor, Mich, Stanford, Calif, and Burlington, Vt

Background. Major postoperative complications are associated with a substantial increase in hospital costs. Trauma patients are known to have a higher rate of complications than the general surgery population. We used the National Surgical Quality Improvement Program (NSQIP) methodology to evaluate hospital costs, duration of stay, and payment associated with complications in trauma patients.

Methods. Using NSQIP principles, patient data were collected for 512 adult patients admitted to the trauma service for > 24 hours at a Level 1 trauma center (2004–2005). Patients were placed in 1 of 3 groups: no complications (none), ≥ 1 minor complication (minor, eg, urinary tract infection), or ≥ 1 major complication (major, eg, pneumonia). Total hospital charges, costs, payment, and duration of stay associated with each complication group were determined from a cost-accounting database. Multiple regression was used to determine the costs of each type of complication after adjusting for differences in age, sex, new injury severity score, Glasgow coma scale score, maximum head abbreviated injury scale, and first emergency department systolic blood pressure.

Results. A total of 330 (64%) patients had no complications, 53 (10%) had ≥ 1 minor complication, and 129 (25%) had ≥ 1 major complication. Median hospital charges increased from \$33,833 (none) to \$81,936 (minor) and \$150,885 (major). The mean contribution to margin per day was similar for the no complication and minor complication groups (\$994 vs \$1,115, $P = .7$). Despite higher costs, the patients in the major complication group generated a higher mean contribution to margin per day compared to the no complication group (\$2,168, $P < .001$). The attributable increase in median total hospital costs when adjusted for confounding variables was \$19,915 for the minor complication group ($P < .001$), and \$40,555 for the major complication group ($P < .001$).

Conclusion. Understanding the costs associated with traumatic injury provides a window for assessing the potential cost reductions associated with improved quality care. To optimize system benefits, payers and providers should develop integrated reimbursement methodologies that align incentives to provide quality care. (Surgery 2008;144:307-16.)

Blue Cross Blue Shield of Michigan – Value Partnerships

- Cardiovascular Consortium (BMC²)
- Michigan Surgical Quality Collaborative (MSQC)
- Michigan Bariatric Surgery Collaborative (MBSC)
- Michigan Society of Thoracic and Cardiovascular Surgeons (MSTCVS)
- Advanced Cardiac Imaging Consortium
- Michigan Breast Oncology Quality Initiative



Simultaneous - MTQIP

- American Association for the Surgery of Trauma
 - 2006-2009
 - 6 trauma centers
- Blue Cross Blue Shield Foundation
 - 2008-2011
 - 12 trauma centers
- Blue Cross Blue Shield of Michigan
 - 2011-Present
 - Formalized program
 - 23 trauma centers
 - All in MTQIP and ACS TQIP



MTQIP Caveats

- There is no “perfect” model.
- We will strive to be credible and reliable.
- Collect only essential data.
- Feedback does not always correlate with performance.
 - Warning light.
 - Delve into data.



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The Trauma Quality Improvement Program: Pilot Study and Initial Demonstration of Feasibility

Mark R. Hemmila, MD, Avery B. Nathens, MD, PhD, Shahid Shafi, MD, MPH, J. Forrest Calland, MD, David E. Clark, MD, MPH, H. Gill Cryer, MD, PhD, Sandra Goble, MS, Christopher J. Hoefl, BS, J. Wayne Meredith, MD, Melanie L. Neal, MS, Michael D. Pasquale, MD, Michelle D. Pomphrey, RN, and John J. Fildes, MD

Objective: The American College of Surgeons Committee on Trauma has created a “Trauma Quality Improvement Program” (TQIP) that uses the existing infrastructure of Committee on Trauma programs. As the first step toward full implementation of TQIP, a pilot study was conducted in 23 American College of Surgeons verified or state designated Level I and II trauma centers. This study details the feasibility and acceptance of TQIP among the participating centers.

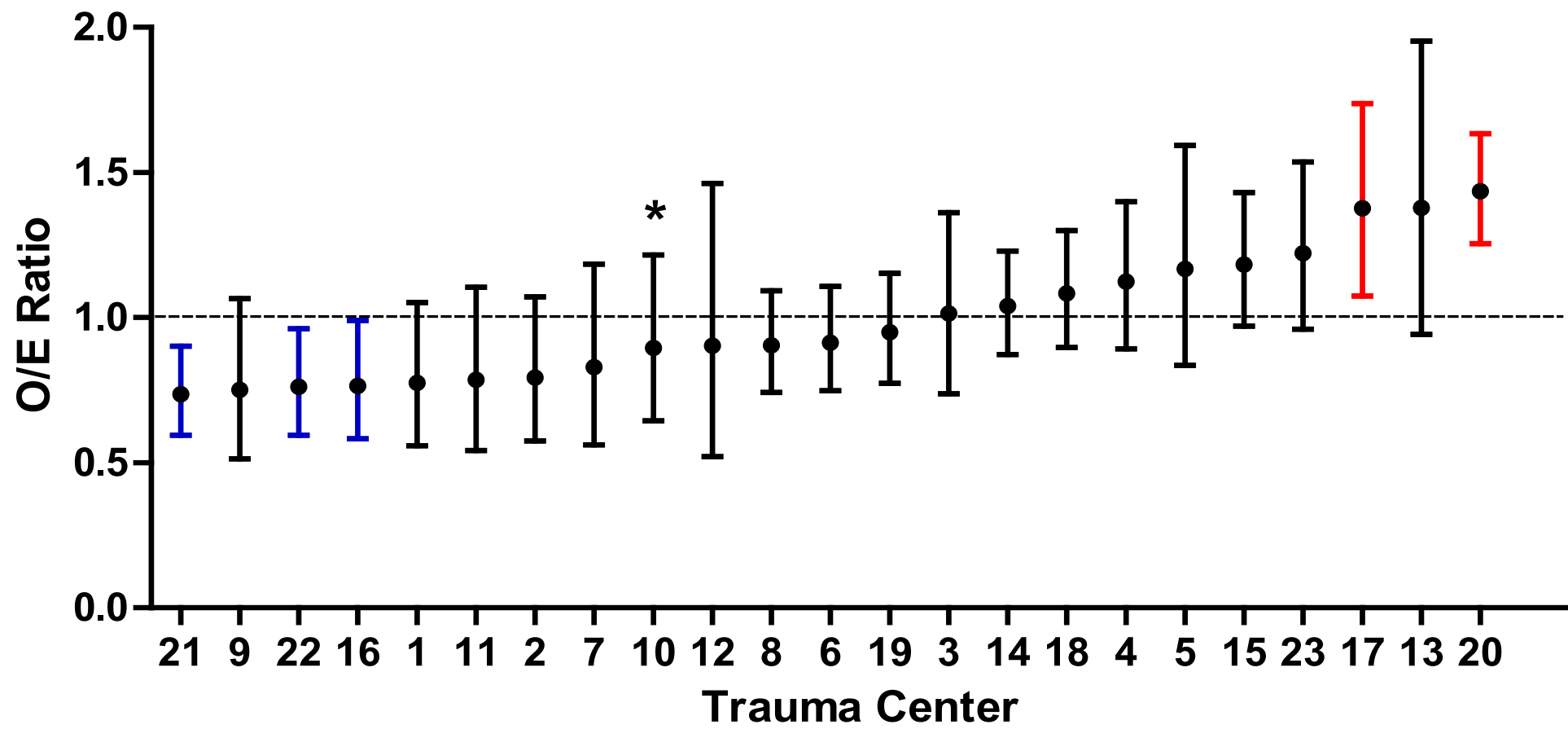
Methods: Data from the National Trauma Data Bank for patients admitted to pilot study hospitals during 2007 were used (15,801 patients). A multi-variable logistic regression model was developed to estimate risk-adjusted mortality in aggregate and on three prespecified subgroups (1: blunt multi-system, 2: penetrating truncal, and 3: blunt single-system injury). Benchmark

mortality after penetrating injury due to small sample size and in the limited capture of complications. Ninety-two percent of survey respondents found the report clear and understandable, and 90% thought that the report was useful. Sixty-three percent of respondents will be taking action based on the report.

Conclusions: Using the National Trauma Data Bank infrastructure to provide risk-adjusted benchmarking of trauma center mortality is feasible and perceived as useful. There are differences in O/E ratios across similarly verified or designated centers. Substantial work is required to allow for morbidity benchmarking.

Key Words: Trauma outcomes, NTDB, TQIP, Quality improvement.

(*J Trauma.* 2010;68: 253–262)

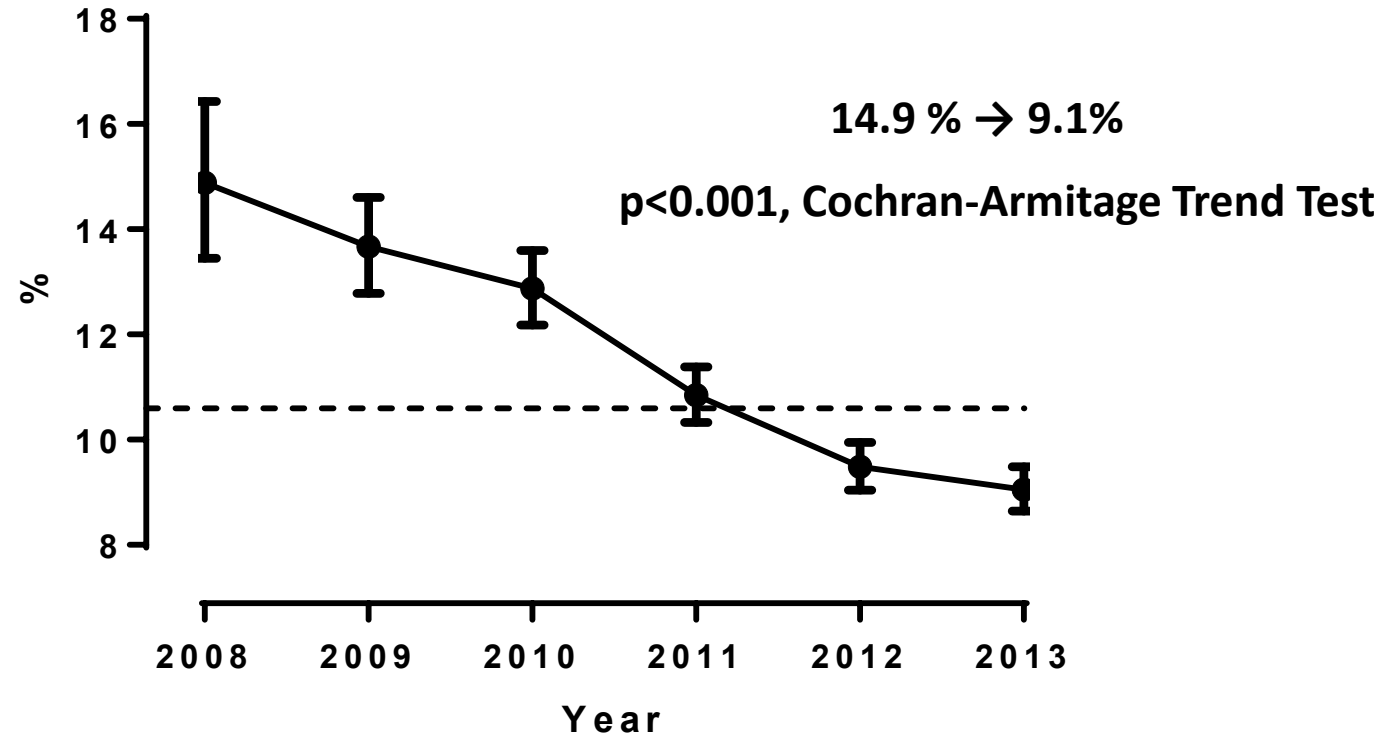


Regional collaborative quality improvement for trauma reduces complications and costs

Mark R. Hemmila, MD, Anne H. Cain-Nielsen, MS, Wendy L. Wahl, MD, Wayne E. Vander Kolk, MD, Jill L. Jakubus, PA-C, Judy N. Mikhail, MSN, MBA, and Nancy J. Birkmeyer, PhD, *Ann Arbor, Michigan*

BACKGROUND:	Although evidence suggests that quality improvement to reduce complications for trauma patients should decrease costs, studies have not addressed this question directly. In Michigan, trauma centers and a private payer have created a regional collaborative quality initiative (CQI). This CQI program began as a pilot in 2008 and expanded to a formal statewide program in 2010. We examined the relationship between outcomes and expenditures for trauma patients treated in collaborative participant and nonparticipant hospitals.
METHODS:	Payer claims and collaborative registry data were analyzed for 30-day episode payments and serious complications in patients admitted with trauma diagnoses. Patients were categorized as treated in hospitals that had different CQI status: (1) never participated (Never-CQI); (2) collaborative participant, but patient treated before CQI initiation (Pre-CQI); or (3) active collaborative participant (Post-CQI). DRG International Classification of Diseases—9th Rev. codes were crosswalked to Abbreviated Injury Scale (AIS) 2005 codes. Episode payment data were risk adjusted (age, sex, comorbidities, type/severity of injury, and year of treatment), and price was standardized. Outcome data were risk adjusted. A serious complication consisted of one or more of the following occurrences: acute lung injury/adult respiratory distress syndrome, acute kidney injury, cardiac arrest with cardiopulmonary resuscitation, decubitus ulcer, deep vein thrombosis, enterocutaneous fistula, extremity compartment syndrome, mortality, myocardial infarction, pneumonia, pulmonary embolism, severe sepsis, stroke/cerebral vascular accident, unplanned intubation, or unplanned return to operating room.
RESULTS:	The risk-adjusted rate of serious complications declined from 14.9% to 9.1% ($p < 0.001$) in participating hospitals (Post-CQI, $n = 26$). Average episode payments decreased by \$2,720 (from \$36,043 to \$33,323, $p = 0.08$) among patients treated in Post-CQI centers, whereas patients treated at Never-CQI institutions had a significant year-to-year increase in payments (from \$23,547 to \$28,446, $p < 0.001$). A savings of \$6.5 million in total episode payments from 2010 to 2011 was achieved for payer-covered Post-CQI treated patients.
CONCLUSION:	This study confirms our hypothesis that participation in a regional CQI program improves outcomes and reduces costs for trauma patients. Support of a regional CQI for trauma represents an effective investment to achieve health care value. (<i>J Trauma Acute Care Surg.</i> 2015;78: 78–87. Copyright © 2015 Wolters Kluwer Health, Inc. All rights reserved.)

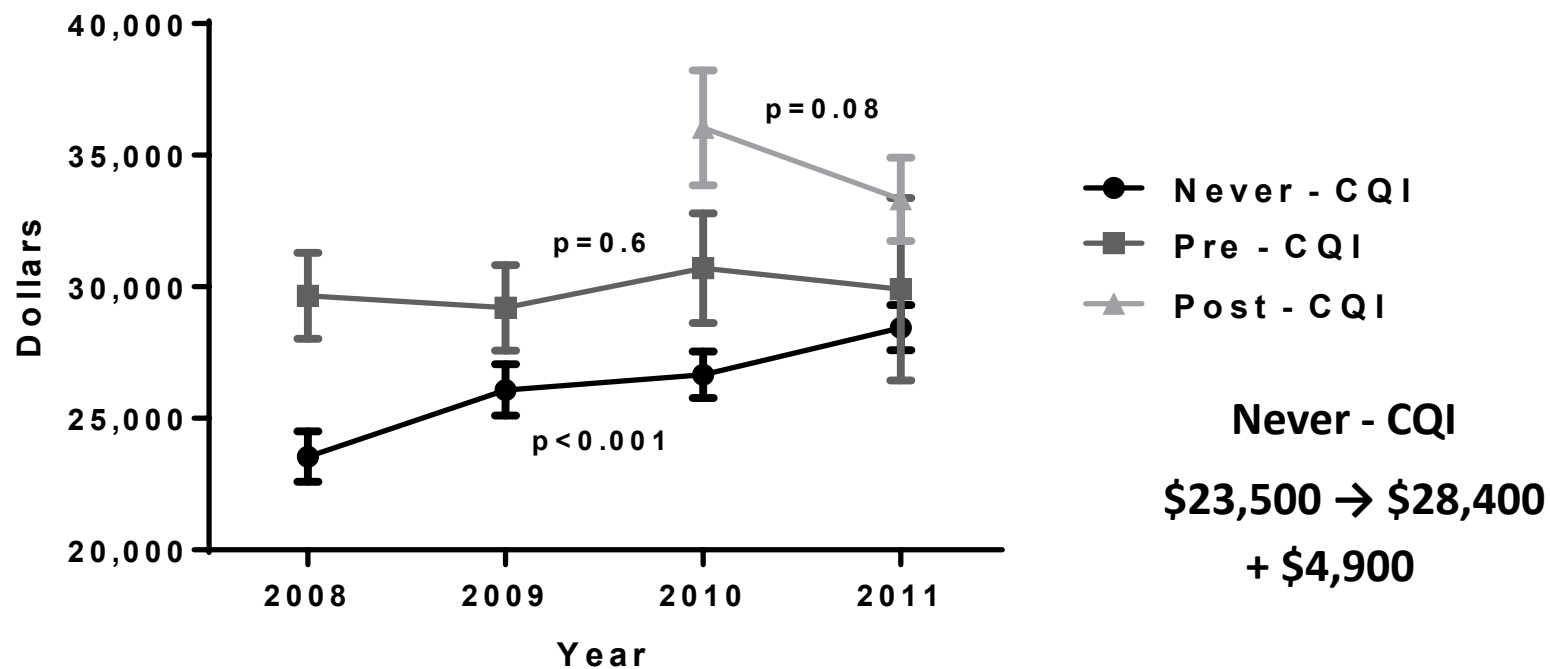
Serious Complication Rate (Adjusted)



Mortality 5.2 % → 4.2 %

p<0.001, Cochran-Armitage Trend Test

30-Day Episode Payment



Cohort	2008	2009	2010	2011
Never CQI, N	6,639	6,226	7,567	8,241
Pre - CQI, N	2,247	2,280	1,381	526
Post - CQI, N	0	0	1,246	2,384
Total, N	8,886	8,506	10,194	11,151

The Impact

2015

2015

2016

2017

2017

**Decreased
resource utilization**

**Improved
outcomes**

**Improved outcomes &
decreased resource
utilization**

**Identification of
best practice**

**Identification of
variability**

Ann Surg:
Prophylactic
IVC filter
placement had
no effect on
mortality and
increased DVT
events

J Am Coll Surg:
Collaborative
structure allowed
for center-
identification and
improvement of
VTE events

J Trauma ACS:
CQI participation
improves
outcomes,
decreases
resource use

J Trauma ACS:
LMWH superior to
UHF in reducing
mortality and VTE
events

J Trauma ACS:
Level II trauma
centers with
increased hospital
mortality and less
likely to use angio
or ICU admission
in liver injury

The Impact

2018

2018

2019

2020

Results

Identification of
variability

Identification of
variability

Identification of
variability

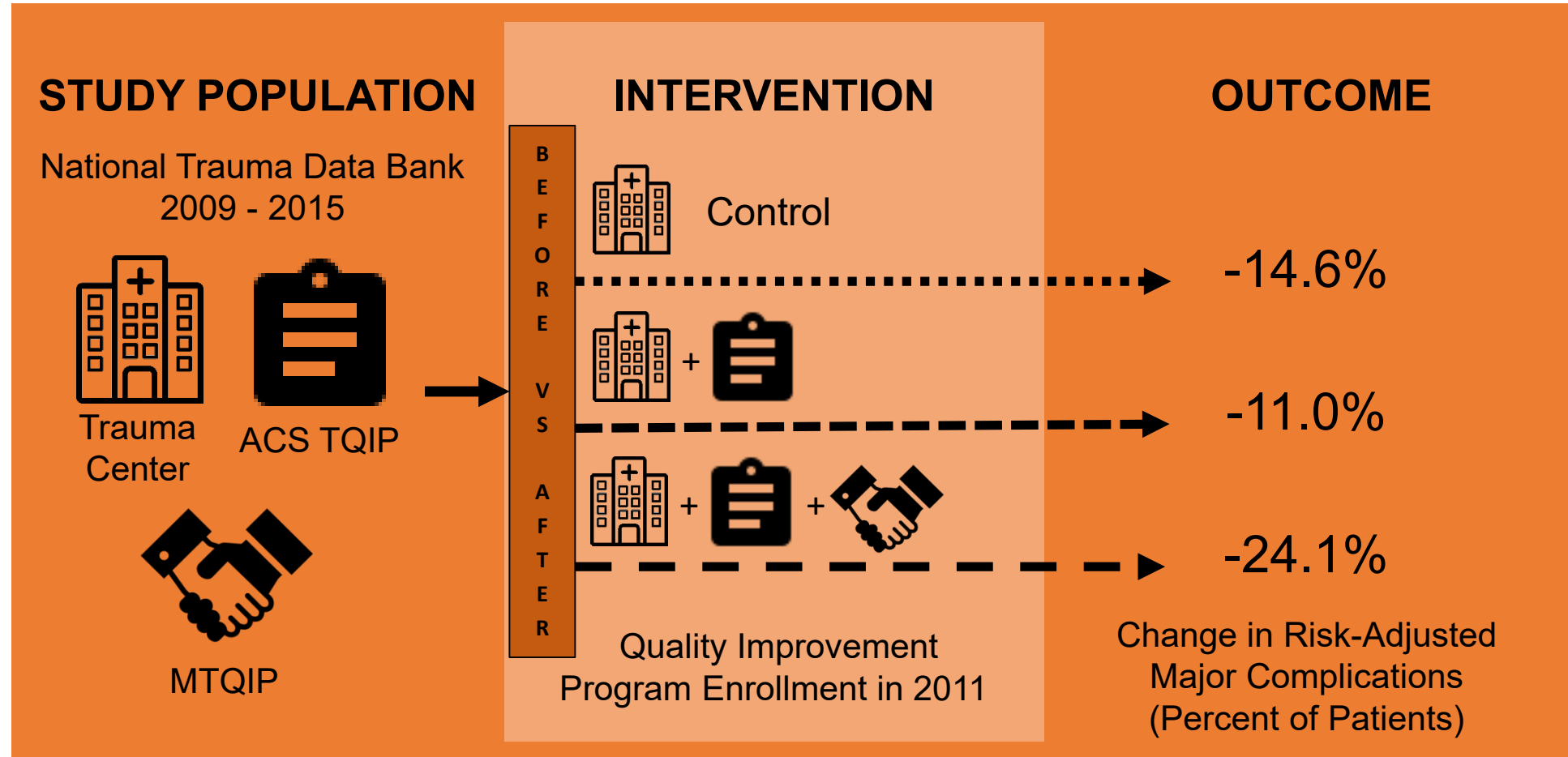
JAMA Surg:
Collaborative
quality
improvement
program
participation
improves patient
outcomes

J Trauma ACS:
Level I trauma
centers decreased
mortality - increased
angio, ORIF, and
ICU admission in
partially stable and
unstable pelvic
fracture

Surgery: Association
of mortality among
trauma patients
taking pre-injury
direct oral
anticoagulants vs.
vitamin K
antagonists

J Trauma ACS:
External data
validation is an
essential element of
quality improvement
benchmark reporting

Collaborative Quality Improvement Program Participation Improves Patient Outcomes



Hemmila et al. *JAMA Surg.* May 2018.

JAMA Surgery

You need access to the raw data

- Trouble shooting
- Insights
- Interesting
- Fun



- You will pull your hair out and waste everyone's time without it

Trust, but verify

- Data validation
- Time consuming
- Painful
- Essential
 - Evens the playing field
 - Educates data abstractors
 - Transparent
 - Credibility



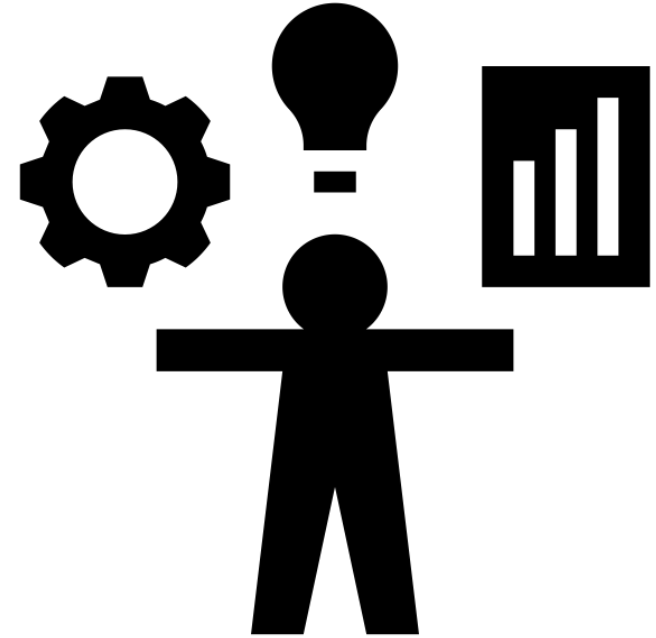
People are giving up their time, return the value



- Convenience
- Be cordial
- Give participants something to take home

Choosing projects

- Impact, impact, impact
- Anticipate data needs
- 80/20 sweet spot
- Failure is okay
- Need information on what you do
- Relate information to what others do
- Talk to peers



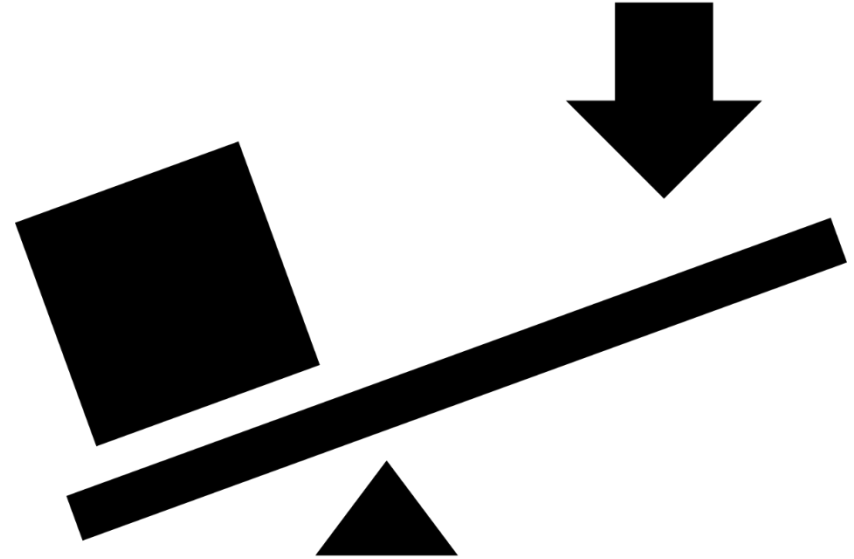
Measure and record what you do, Not what you wish you had done

- Meaningful
- Real
- When in doubt record and study what actually happens
- VAP



Psychological levers

- Motivate
- Try not to discourage
- Type A's
- Unblinding
- Report cards



Competition is good



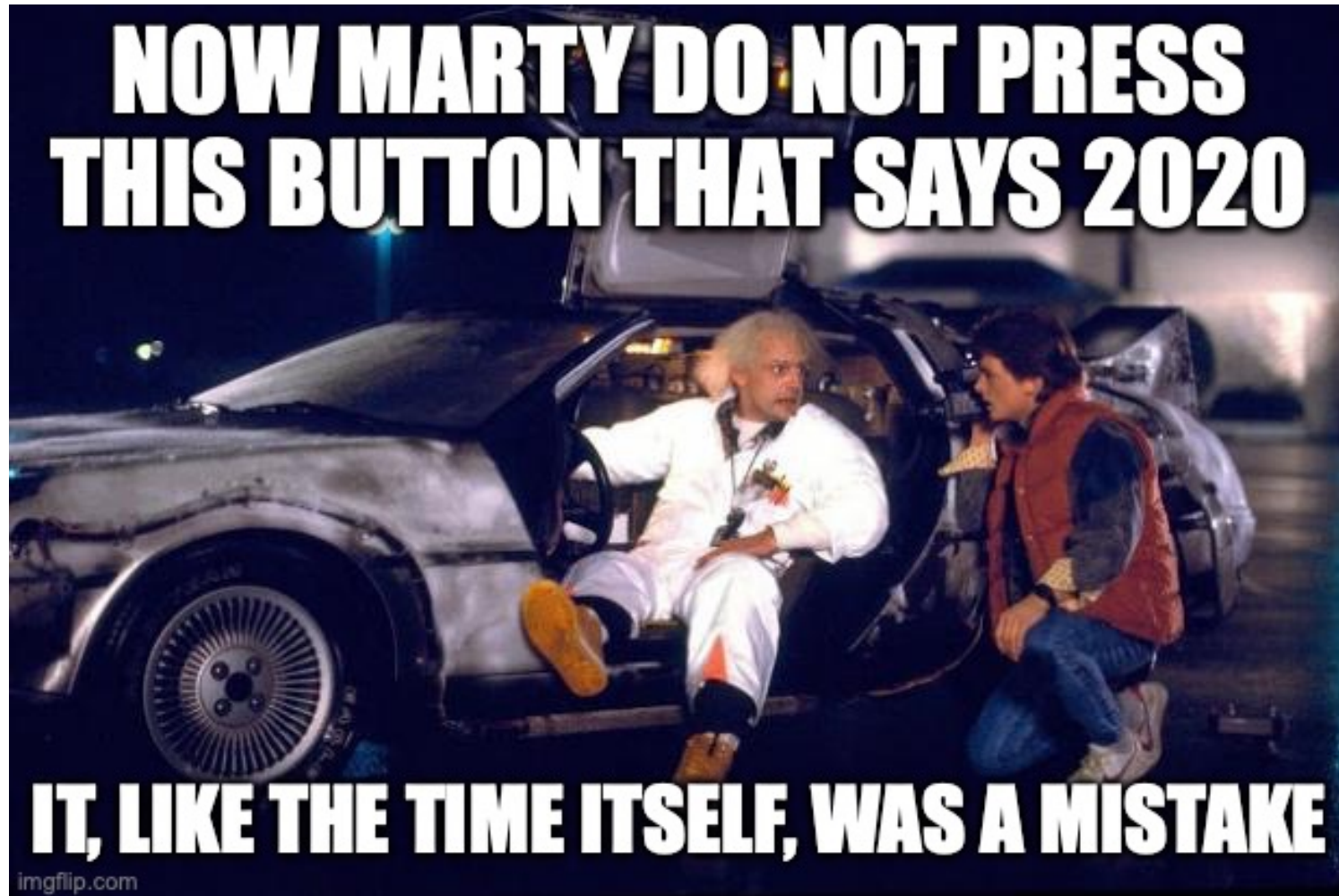
Share willingly and borrow shamelessly

- Why not?
- We all own quality
- It is for Patients



None of us were trained to
do this, but we can all
learn how

The Future



MTQIP - Participants

- 2018, 250 Surgeons
- 2012 Survey, 153 Surgeons
- Trauma and EGS call
 - 18/23 centers 100% combined
 - 4 centers 25-75% combined
 - 1 center not combined
- Critical Care
 - 58 Surgeons boarded in critical care
 - Likely increased since then

Acute Care Surgery – Economic Footprint

The Economic Footprint of Acute Care Surgery in the United States Implications for Systems Development

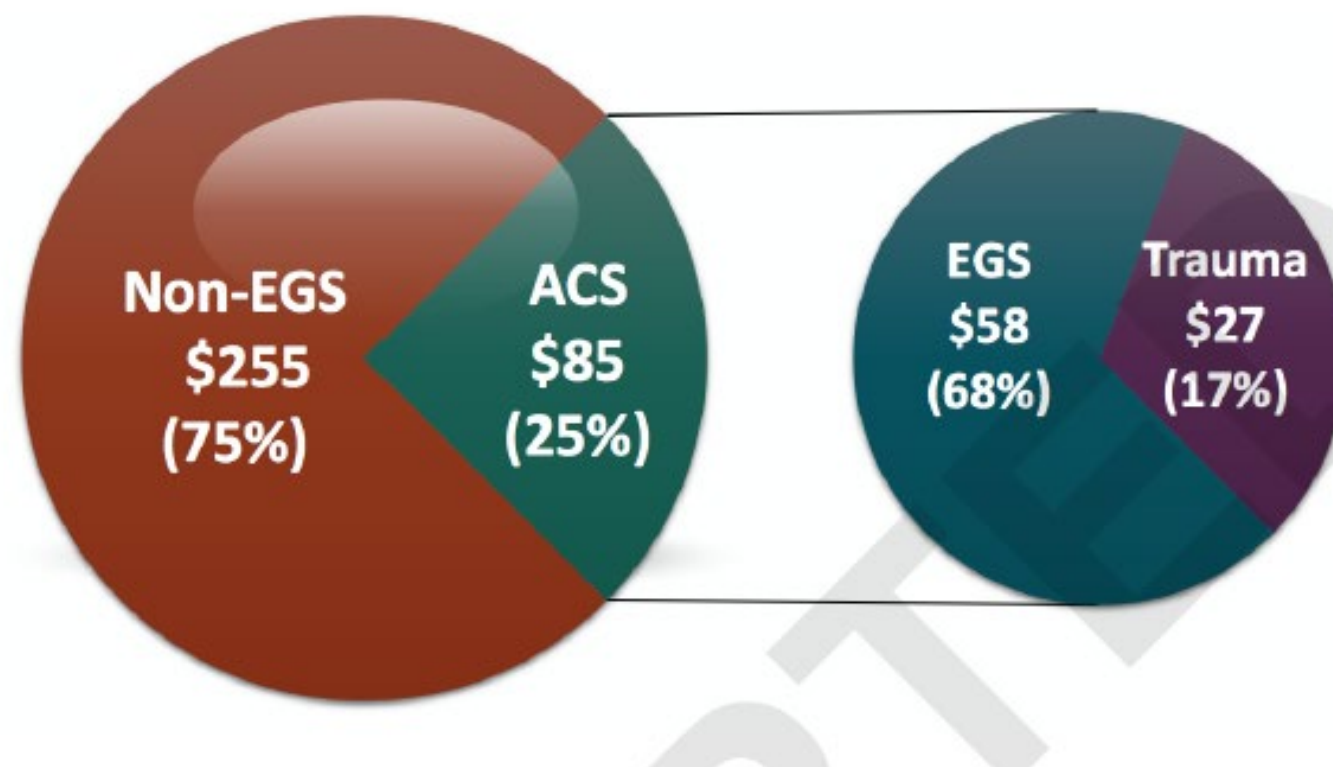
Knowlton, Lisa Marie, M.D., M.P.H.¹; Minei, Joseph, M.D., M.B.A.²; Tennakoon, Lakshika, M.D.¹; Davis, Kimberly A., M.D., M.B.A.³; Doucet, Jay, M.D.⁴; Bernard, Andrew, M.D.⁵; Haider, Adil, M.D., M.P.H.⁶; Tres Scherer, L.R. III, M.D., M.B.A.⁷; Spain, David A., M.D.¹; Staudenmayer, Kristan L., M.D., M.S.¹

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doi: 10.1097/TA.0000000000002181
AAST 2018 Podium: PDF Only

Acute Care Surgery – Economic Footprint

- National Inpatient Sample
- ICD-9
 - Trauma
 - 16 Emergent General Surgery Conditions
- 29 million patients
 - 20% ACS diagnosis
 - 25% of US inpatient costs
 - \$86 Billion
- Inpatient operative procedure
 - 27% have an ACS diagnosis

Acute Care Surgery – Economic Footprint



Takeaway

- Prevalence - high
 - Expense - high
 - Problems - many
-
- Small iterative savings/improvements have potential for large impact overall

MACS - Michigan Acute Care Surgery

- ◆ 2019
 - 7/1/2019
 - 4 Hospitals
- ◆ 2020
 - Approval for 2 additional hospitals
 - All Qualtrics data entry
 - Acute Care Surgery Model
- ◆ Support
 - Abstractor

Projects

- MACS
 - Funded
 - 6 Hospitals
 - 2 Meetings
- Sharing Data Across CQI's
 - ASPIRE
 - MSQC
 - MVC
- Patient Reported Outcomes
 - M-Open
 - Phone surveys
 - Web App
- Collaboration
 - Orthopedics
 - Neurosurgery
 - Minnesota, Ohio



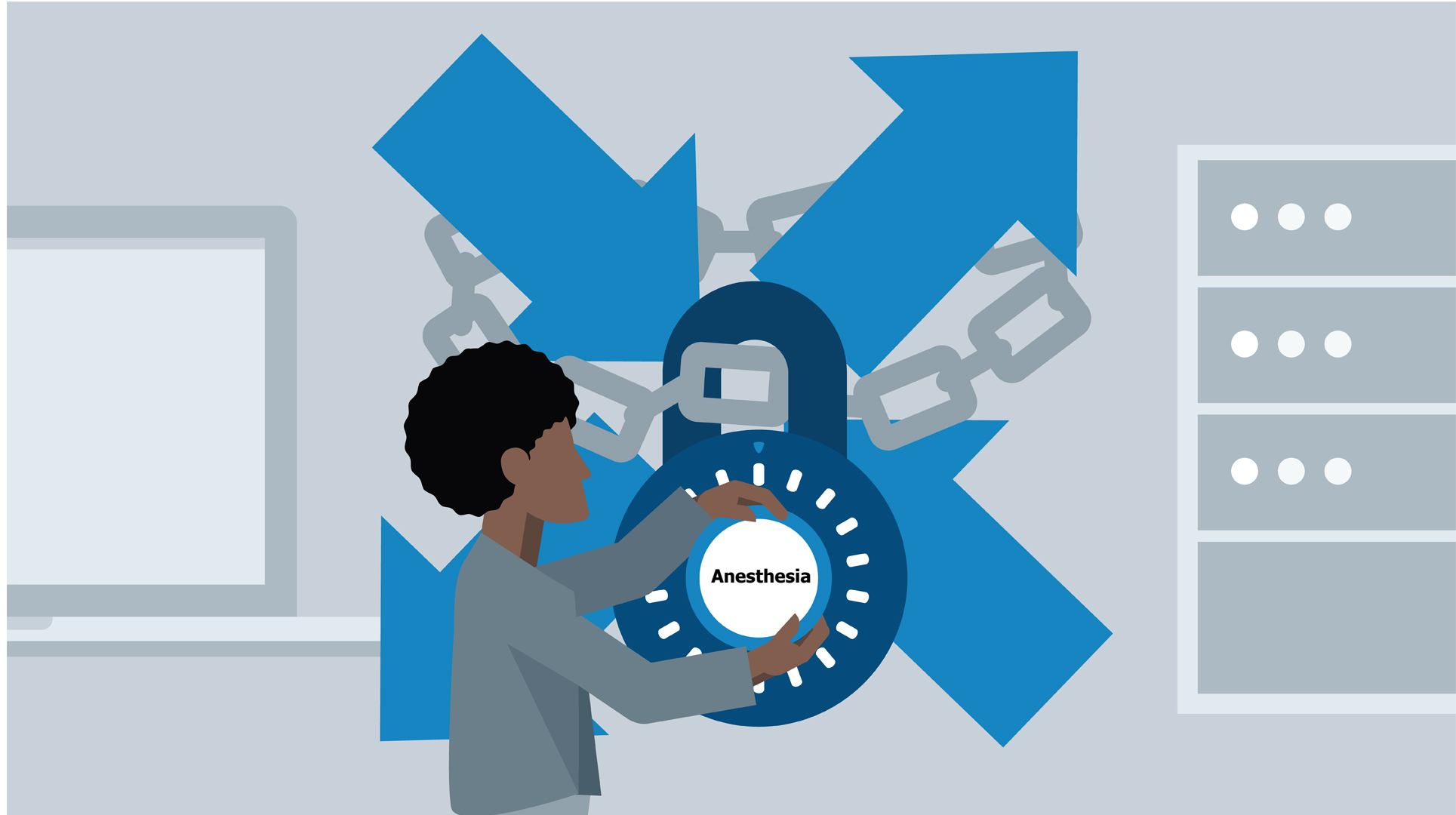
Sharing of CQI Data Project (ASPIRE)



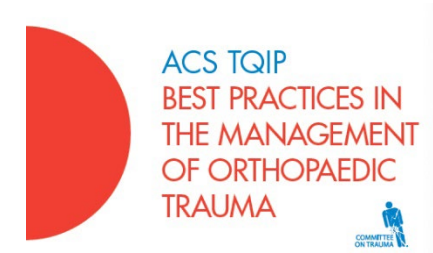
Greater Returns, Less Burden



Capture Missing Variables



Guidelines – ACS Geriatric Hip Fractures



- Peri-operative regional anesthesia reduces pain and **might reduce delirium and cardiac events** in the postoperative period (pg. 21).

Peri-Operative Anesthetic

AAOS Recommendations Geriatric Hip Fractures



PREOPERATIVE REGIONAL ANALGESIA

Strong evidence supports regional analgesia to improve preoperative pain control in patients with hip fracture.

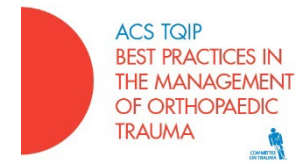
Strength of Recommendation: Strong

RATIONALE

Six high strength studies (Fletcher et al ¹⁰, Foss et al ¹¹, Haddad et al ¹², Monzon et al ¹³, Mouzopoulos et al ¹⁴, and Yun et al ¹⁵) and one moderate strength study (Matot, 2003 ¹⁶)

Peri-Operative Care

ACS



- The best evidence currently available suggests similar clinical outcomes for patients undergoing general or spinal anesthesia for hip fracture surgery. As a result, one modality is not recommended over the other and patient-specific factors and preferences should be considered. [It may be beneficial for individual hospitals to standardize the approach to anesthesia for geriatric hip fractures in order to streamline care \(pg. 23\).](#)

AAOS



- The work group recognizes that anesthetic techniques described in several of these articles which were [published decades](#) ago may have changed when compared with modern methods. In addition, there was [significant heterogeneity](#) in the patient populations studied, including multiple studies in which patients were not randomized.

Anesthesia Type

Solution



MTQIP & ASPIRE Centers

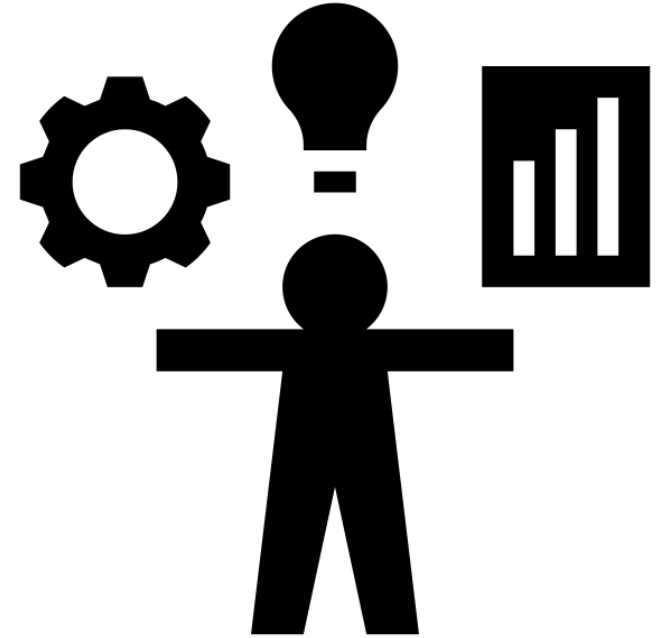
- 1. Beaumont Health System – Dearborn**
- 2. Beaumont Health System – Farmington Hills**
- 3. Beaumont Health System – Royal Oak**
- 4. Beaumont Health System – Trenton**
- 5. Beaumont Health System – Troy**
- 6. Bronson Healthcare – Kalamazoo**
- 7. Henry Ford Health System – Detroit ●**
- 8. Mercy Muskegon**
- 9. Michigan Medicine**
- 10. St. Joseph Mercy – Ann Arbor**
- 11. St. Joseph Mercy – Oakland**
- 12. St. Mary Mercy – Livonia**
- 13. Sparrow Hospital**

Status

- **Isolated Hip Fracture**
- **Matching**
 - **Age**
 - **Gender**
 - **Procedure**
 - **Institution**
 - **Date of Service**
 - **Date of Admission/Discharge**
- **2017-2019**
 - **6,301 patients**
 - **6,101 potential patients with a match (97%)**

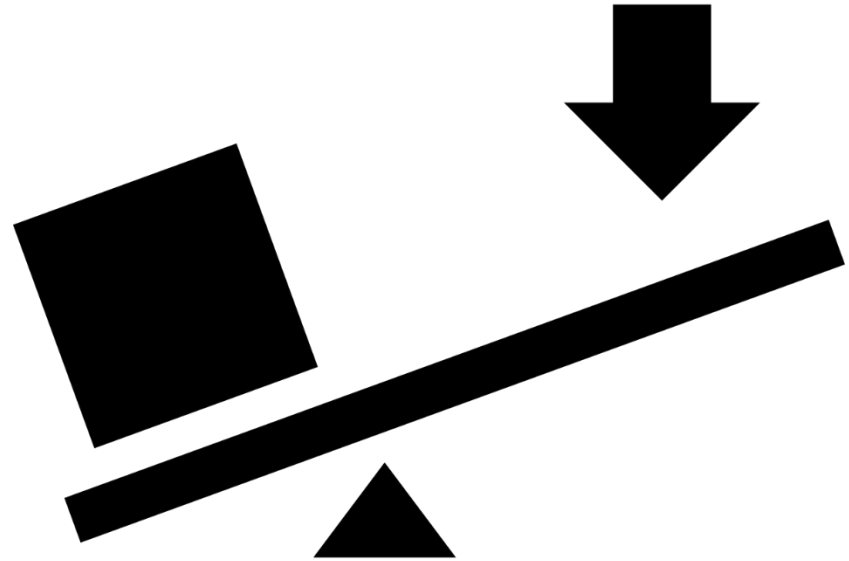
Future

- Impact, impact, impact
- Anticipate data needs
- 80/20 sweet spot
- Share across CQI's
 - Data
 - Projects
- Broaden beyond inpatient



Summarize

- Emergent General Surgery
 - 4 centers
 - Select conditions (4-5)
 - Operative and non-op
- PROM's
 - Pilot
 - Expand
- Share data
- ICU Data



Discussion Opportunity

