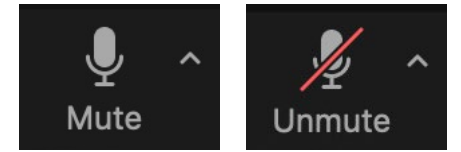


The Michigan Trauma Quality Improvement Program

**Virtual, MI
October 12, 2021**





Meeting Logistics

- **Join via computer and enter full name**
- **Mute all microphones**
- **Discussion opportunities at section ends**
- **Use chat to signal contribution**
- **You'll unmute your own microphone**

Attendance Credit

- **Sign confidentially agreement.**

Disclosures

◆ Mark Hemmila Grants

- Blue Cross Blue Shield of Michigan
- Michigan Department of Health and Human Services
- Department of Defense
- National Institutes of Health - NIGMS

No Photos Please



Evaluations

- ◆ Link will be emailed to you following meeting
- ◆ Please answer the evaluation questions
- ◆ CME for this meeting

Data Submission

- ◆ Data submitted August 6, 2021
 - This report
- ◆ Next data submission
 - October 2, 2021
 - Look for data around Nov 1

Future Meetings

◆ Winter

- Tuesday February 8, 2022
- Ypsilanti, EMU Marriott ?
- Virtual ?

◆ Spring

- Wednesday May 18, 2022
- Traverse City

Bryant Oliphant

- ◆ Consultant for MTQIP
- ◆ Orthopedic Surgery
- ◆ Clinical appointment DMC/Detroit Receiving
- ◆ Research appointment University of Michigan





M•TQIP
10 Years

The Michigan Trauma Quality Improvement Program

**Ann Arbor, MI
October 11, 2011**



Agenda

- ◆ General Announcements (Hemmila)
- ◆ Sepsis (Purtill)
- ◆ Length of Stay (Kepros)
- ◆ Panel and Collaborative Discussion
- ◆ Lunch
- ◆ Projects, Data/Publications Policy, TQIP (Mikhail)
- ◆ Validation, Process Measures, NTDS (Jakubus)
- ◆ DI, On-line Reports, Reports, (Hemmila)

Information

- ◆ Current centers
 - 4 recent, 18 total
- ◆ New centers (January 1)
 - Mt. Clemens
 - Oakwood Dearborn
 - Oakwood Southshore
 - Saint Mary's Health Care - Grand Rapids
 - St. Mary's of Michigan - Saginaw

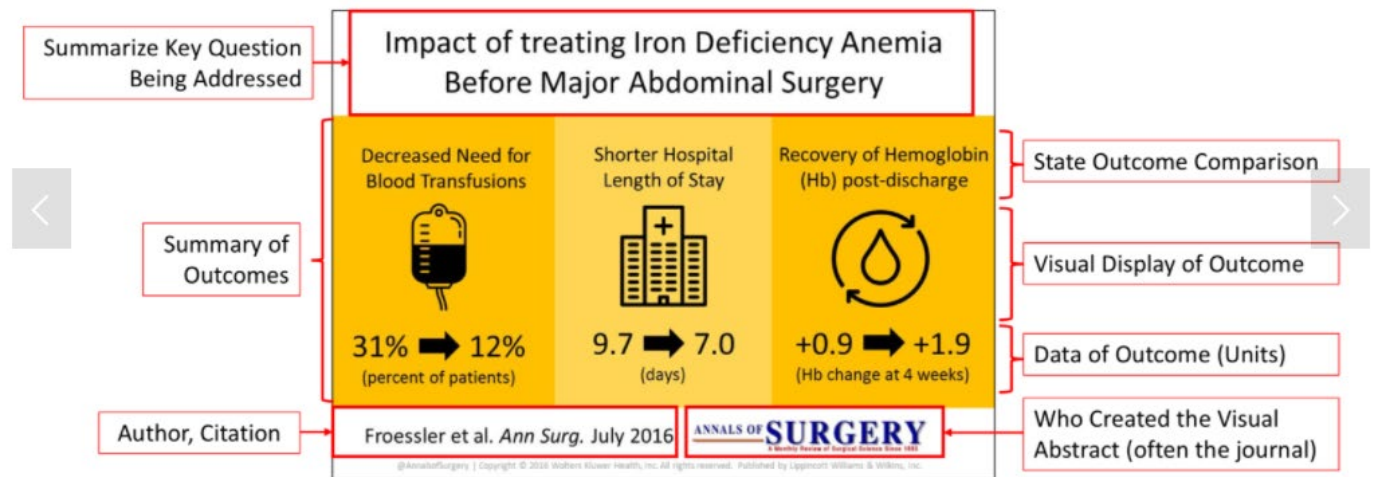
Agenda

- ◆ Intro Comments
- ◆ Andrew Ibrahim - Hospital Design
- ◆ Mark - Data
- ◆ Break
- ◆ Jill - Program Manager Update
- ◆ Judy - Program Manger Update
 - ACS Verification
- ◆ Julia Kelm/John Scott – Patient-reported outcomes
- ◆ Mark - MACS



www.surgeryredesign.com

COMPONENTS OF AN EFFECTIVE VISUAL ABSTRACT



Evaluating the Quality of Hospital Design to Improve Clinical Care

Andrew Ibrahim, MD

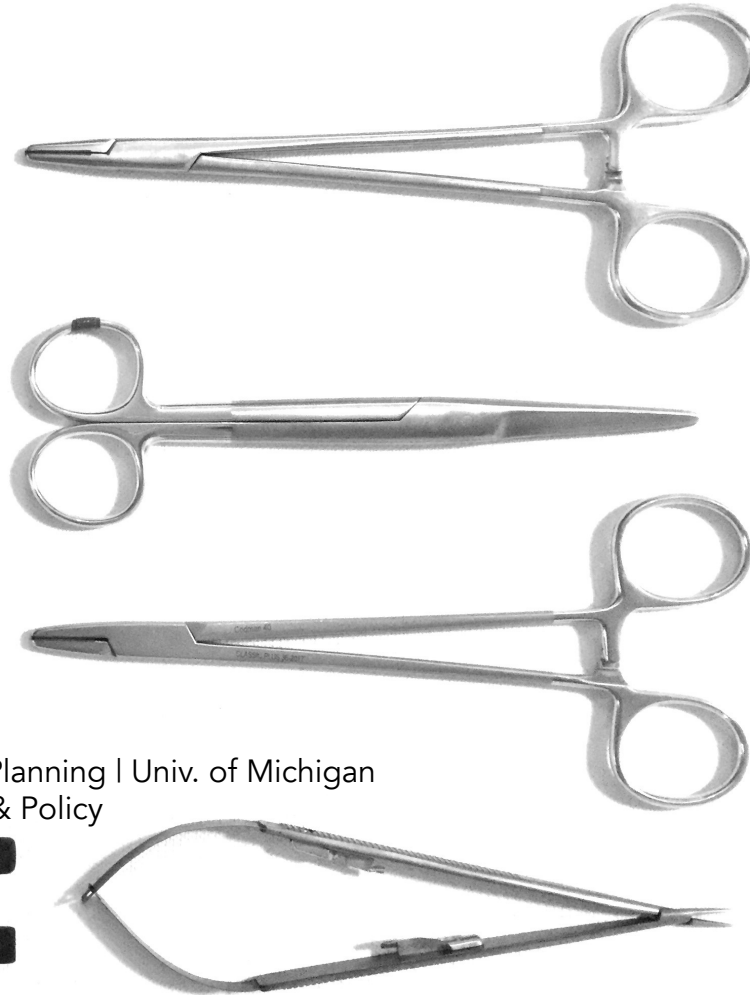




Evaluating the Quality of Hospital Design

ANDREW M. IBRAHIM MD, MSc

Asst. Professor Surgery, Architecture & Urban Planning | Univ. of Michigan
Co-Director, Center for Healthcare Outcomes & Policy



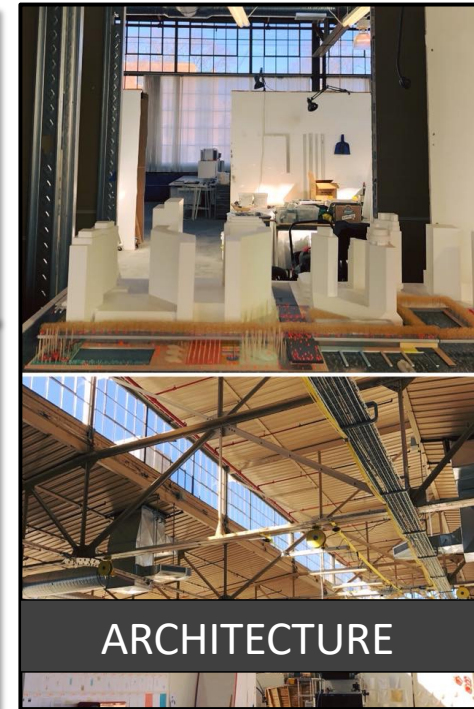
M•TQIP

Michigan
Trauma Quality
Improvement
Virtual Meeting

October 12th, 2021

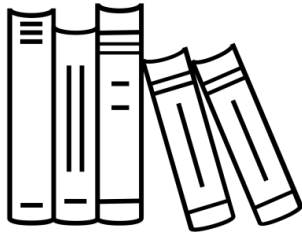


Three Perspectives



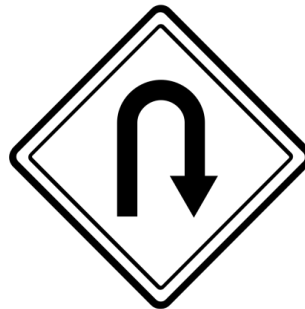
Evaluating the Quality of Hospital Design

Quality?
Since When?



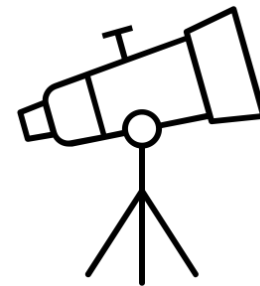
Context for
Surgery & Architecture

Quality Design
Gone Wrong



Right Idea,
Wrong Results

Evidence for
Better Design



Leveraging Surgical
QI in New Context

The Era of Ernest Codman (b. 1869)



The background of the slide is a historical painting depicting a crowded medical lecture hall. In the foreground, several students in white medical coats are visible, some looking towards the front. The middle ground is filled with a dense crowd of men, many in dark suits and ties, looking intently at the front of the room. The scene is dimly lit, with a warm, brownish tone, suggesting an indoor setting with candlelight or early electric lighting. The overall atmosphere is one of a serious, formal educational environment.

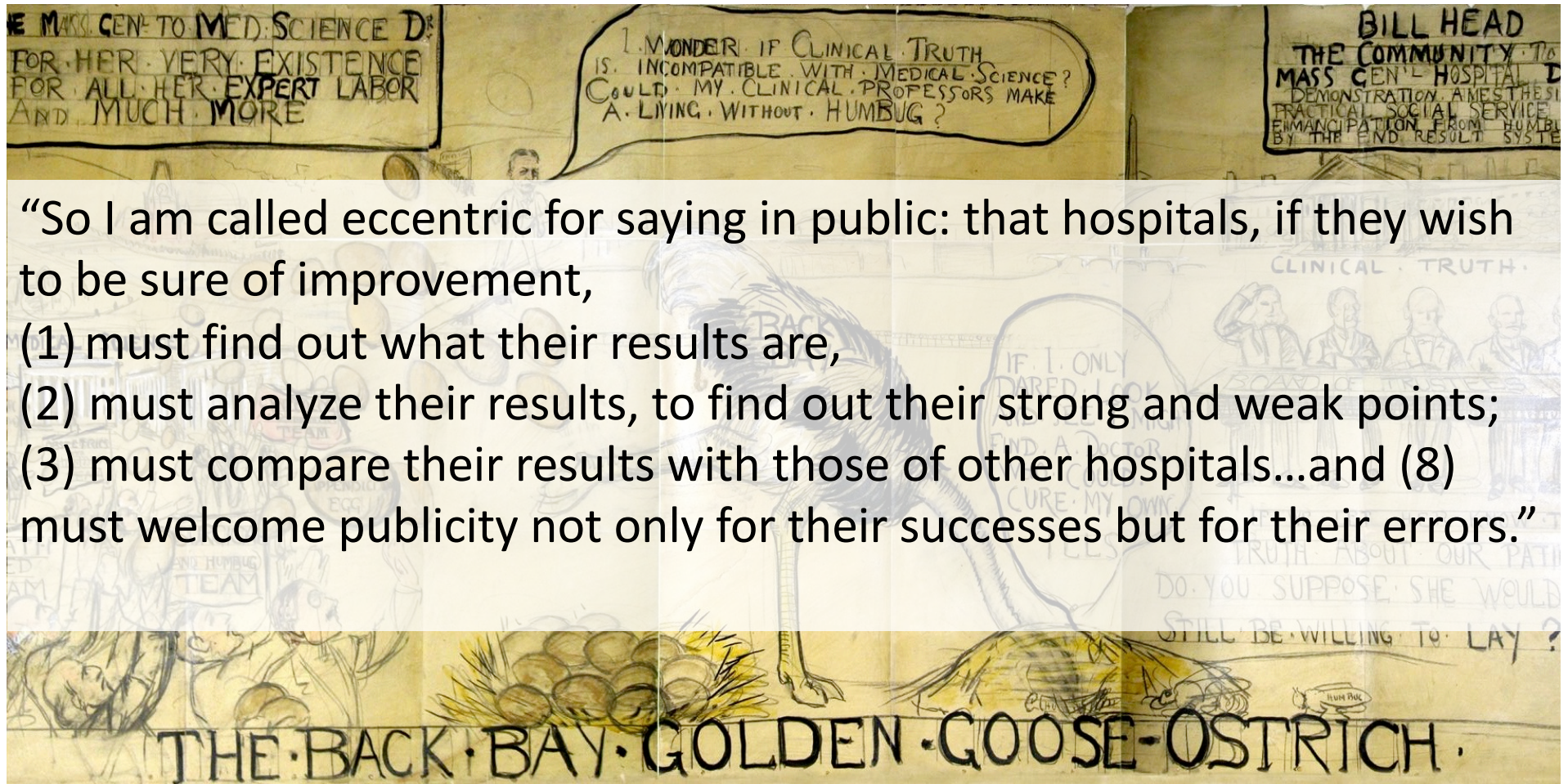
The “End Results Idea”

The common sense notion that every doctor should follow every patient it treats, long enough to determine whether or not the treatment has been successful, and then to inquire, “If not, why not?” with a view to preventing similar failures in the future. — Ernest Codman

The “End Results Idea”

[illegible]

Complications due to:
“Lack of Judgement”
“Lack of Technical Skill”



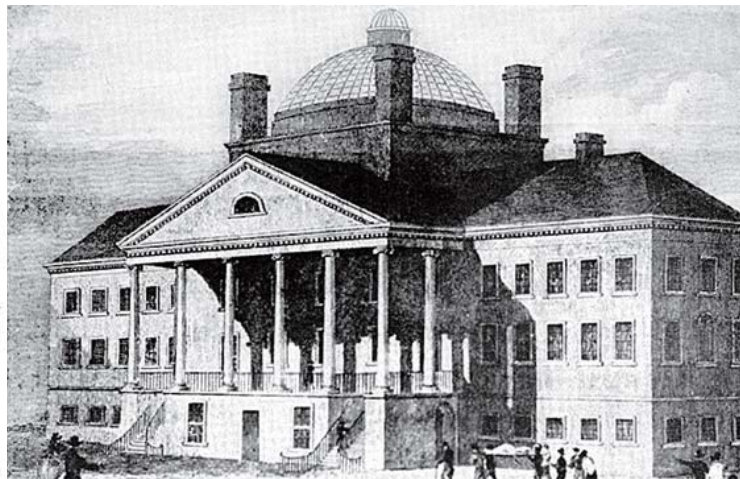
"So I am called eccentric for saying in public: that hospitals, if they wish to be sure of improvement,

- (1) must find out what their results are,
- (2) must analyze their results, to find out their strong and weak points;
- (3) must compare their results with those of other hospitals...and (8)

must welcome publicity not only for their successes but for their errors."

Not So Popular....

**CARTOON BY
PHYSICIAN
MAKES STIR**
Medical Society Is
Divided Over
Action





It may take
100 years for
my ideas to be
accepted.

First Cancer Registry in the United States (1924)



| Face of End Result Card | | | | | |
|--|-----|----------|--------------|-------------------|------------------|
| Name | Age | M. W. S. | Date of Adm. | Date of Operation | Disp. No. |
| Mr. Edward James Sullivan | 45 | | 6/2/18 | 7/2/18 | 201 |
| Addr. of Pt. 10 Crescent St., New York City, N.Y. | | | | | |
| - P.C. Phys. Dr. C. M. Black, 46 Grove St., Boston. | | | | | |
| From. Addr. of P.C. Mrs. George White, Elm St., Salem, Mass. | | | | | |
| From. Site. Duodenal ulcer, with grave doubt of cancer of pylorus and stomach. | | | | | |
| Post-op. Note. Ulcer has curvature of stomach about an inch from pylorus. Tumor very hard and suggested cancer. | | | | | |
| Cause last noted of Epigastric pain seen after meals since September. Vomiting. Anhydrosis. | | | | | |
| No hematemesis, but some melena. | | | | | |
| Op. by C. N. Miller. Asst. C. H. Fox and C. C. Coll. | | | | | |
| Anest. Ether and local anesthetic. Other by C. C. Lord. | | | | | |
| Op. Site. Tumor was piggy-back on lesser curvature of stomach. Partial gastrectomy. | | | | | |
| Stall bladder felt as if full of stones. Duodenum normal except for slight induration of pylorus. Closed without drainage. | | | | | |
| Course of Convalescence. None. Except that during convalescence he vomited several times without apparent cause. | | | | | |
| Aut. No. Path. Report by J. H. Wright. Cancer. | | | | | Signat. A. D. C. |

| Reverse of End Result Card | |
|----------------------------|---|
| Date | Results |
| July 15, '18 | Remained well until March, 1918, since which time similar symptoms returned, and also hematemesis and epigastric tumor. |
| Re-entry | July 18th. Exploration showed numerous metastases in liver and abd. glands. No comp. Discharged two weeks later. |

Establishing Standards...



“...regular staff meetings
to review cases”

- Committee for Hospital Standardization

Morbidity & Mortality Conference



When
Surgeons
Embraced
Measuring
Outcomes....

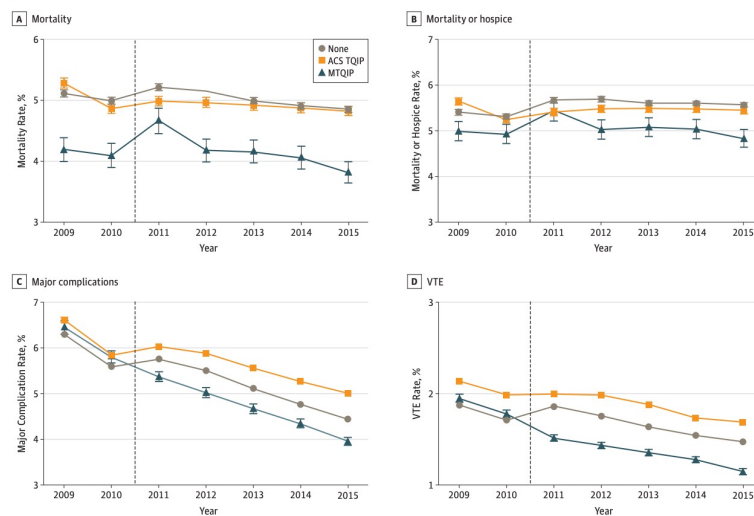
Collaborative Quality Initiatives (CQIs)



- Anesthesiology Performance Improvement & Reporting Exchange (ASPIRE)
- BCBSM Cardiovascular Consortium-Percutaneous Coronary Intervention (BMC2)
- Integrated Michigan Patient-centered Alliance on Care Transitions Collaborative (I-MPACT)
- Michigan Anti-Coagulation Quality Improvement Initiative (MAQI2)
- Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI)
- Michigan Bariatric Surgery Collaborative (MBSC)
- Michigan Emergency Department Improvement (MEDIC)
- Michigan Hospital Medicine Safety Consortium (HMS)
- Michigan Oncology Quality Consortium (MOQC)
- Michigan Radiation Oncology Quality Consortium (MROQC)
- Michigan Society of Thoracic and Cardiovascular Surgeons Quality Collaborative (MSTCVS)
- Michigan Surgical Quality Collaborative (MSQC)
- Michigan Trauma Quality Improvement Program (MTQIP)
- Michigan Urological Surgery Improvement Collaborative (MUSIC)
- Michigan Value Collaborative (MVC)
- Obstetrics Initiative (OBI)

The Power of Evidence to Change Practice

Figure 2. Adjusted Rates of Outcomes



The dotted line indicates the transition from the preintervention period to the postintervention period, and the error bars indicate 95% CIs. ACS TQIP indicates American College of Surgeons Trauma Quality Improvement Program;

MTQIP, Michigan Trauma Quality Improvement Program; VTE, venous thromboembolism.

Research

JAMA Surgery | Original Investigation

Association of Hospital Participation in a Regional Trauma Quality Improvement Collaborative With Patient Outcomes

Mark R. Hemmila, MD; Anne H. Cain-Nielsen, MS; Jill L. Jakubus, PA-C, MHSA, MS; Judy N. Mikhail, RN, PhD; Justin B. Dimick, MD, MPH

“...hospital participation in a regional collaborative quality improvement program is associated with improved patient outcomes beyond benchmark reporting alone while promoting compliance with processes of care.”



@andrewmibrahim

The 'End Results Idea' Beyond Surgery...



The common sense notion that every doctor should follow every patient they treat, long enough to determine whether or not the treatment has been successful, and then to inquire, “If not, why not?” with a view to preventing similar failures in the future.

If Codman was an Architect Talking to Clients



The common sense notion that every [hospital architect] should follow every [hospital they build], long enough to determine whether or not the [hospital] has been successful, and then to inquire, “If not, why not?” with a view to preventing similar failures in the future.

Modified from Codman's “End Results Idea” (1925) where he advocated (to much controversy) that surgeons track patient outcomes after an operation.



@andrewmibrahim

Do You Consistently & Systematically
Measure the Outcomes
of the Buildings You Design?

(awkward silence is okay)



@andrewmibrahim

The uncomfortable truth about post-occupancy evaluation

21 JULY 2020 . BY PHILIP WATSON



Philip Watson, director at HLM Architects, is shocked to discover architects don't seem to care what people think or feel about their buildings

The "Post-Occupancy Evaluation"

Despite US Healthcare Construction
Totaling **\$48 BILLION ANNUALLY**

<5% of Architecture Firms Routinely
Perform a Post-occupancy Evaluation



It may take
100 years for
my ideas to be
accepted.

Problems with OR Design...

"Identifiable hazard in the operating room include infection... faults in equipment, inaccessibility of necessary items, problems in communication, inefficient handling of materials, unconscionable delays ... that are an expression of a hazardous environment."

Problems with OR Design...



Harold Laufman MD
(1912 – 2010)

"Identifiable hazard in the operating room include infection... faults in equipment, inaccessibility of necessary items, problems in communication, inefficient handling of materials, unconscionable delays ... that are an expression of a hazardous environment."

Laufman H, Arch Surg, 1973.

Better OR Design Gone Wrong

(some infection control examples)



[illegible]

- Only 2 doors
- “Hard to Get Through”

[illegible]

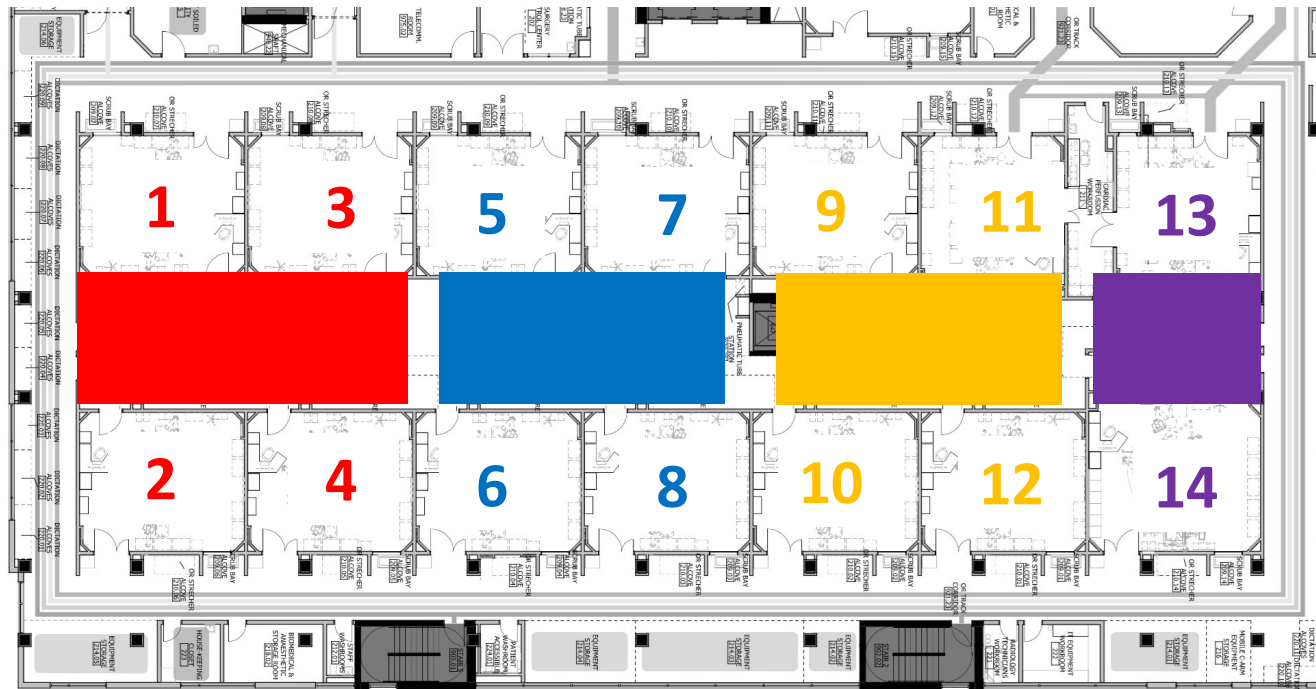
@andrewmibrahim

The OR Corridor...



**GROUP ORS by
CLEAN CORE**

The OR Corridor...



**GROUP ORs by
CLEAN CORE**

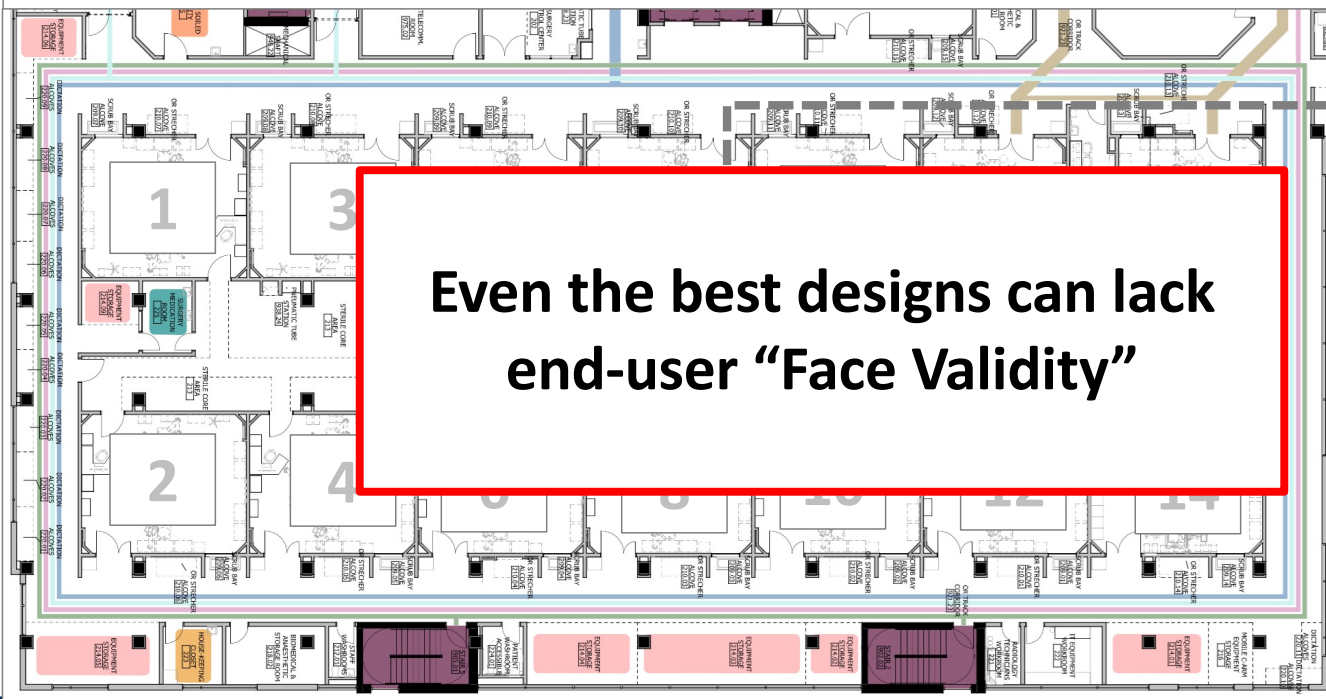
Did it Work? Not really.



Result? MORE TRAFFIC

1. More Outer Traffic
Large Door Use
2. More "Cross OR"
Traffic

Did it Work? Not really.



**Even the best designs can lack
end-user “Face Validity”**

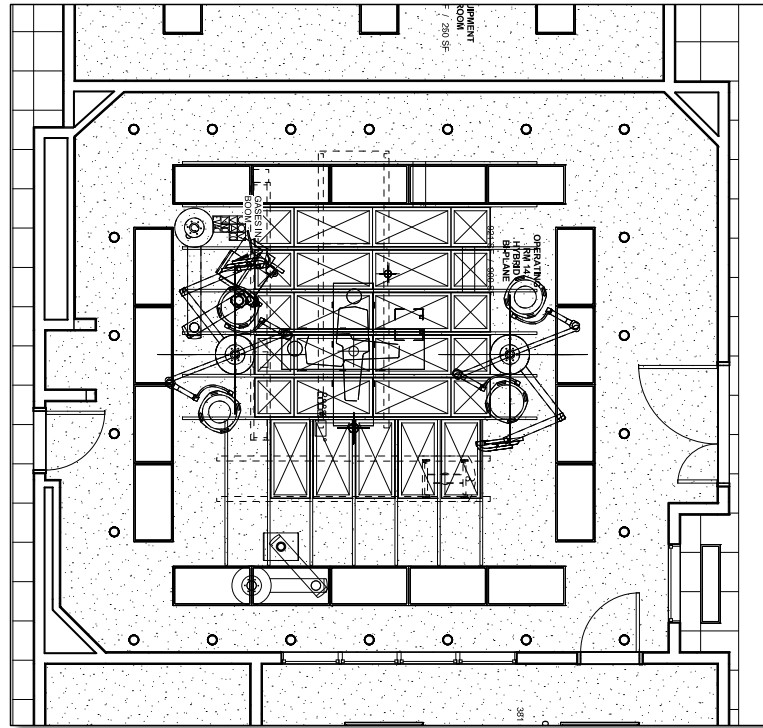
Result? MORE TRAFFIC

1. More Outer Traffic
Large Door Use
2. More “Cross OR”
Traffic

Should We Use Laminar Flow?



Should We Use Laminar Flow?



It's not easy
(or inexpensive)

Should We Use Laminar Flow?

Effect of laminar airflow ventilation on surgical site infections: a systematic review and meta-analysis

Peter Bischoff, N Zeynep Kubilay, Benedetta Allegranzi, Matthias Egger, Petra Gastmeier

Summary

Background The role of the operating room's ventilation system in the prevention of surgical site infections (SSIs) is widely discussed, and existing guidelines do not reflect current evidence. In this context, laminar airflow ventilation was compared with conventional ventilation to assess their effectiveness in reducing the risk of SSIs.

Methods We searched MEDLINE, Embase, Cochrane Central Register of Controlled Trials, and WHO regional medical databases from Jan 1, 1990, to Jan 31, 2014. We updated the search for MEDLINE for the period between Feb 1, 2014, and May 25, 2016. We included studies most relevant to our predefined question: is the use of laminar

Screened >1900 Studies

12 Highest Quality Trials

>500,000 Procedures

Bischoff et al. *Lancet Infect Dis* 2017



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Should We Use Laminar Flow?

Effect of laminar airflow ventilation on surgical site infections: a systematic review and meta-analysis

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Background The role of the operating room environment in surgical site infections (SSIs) is widely discussed, and existing guidelines on operating room ventilation procedures was compared with conventional ventilation.

Methods We searched MEDLINE, Embase, and Cochrane databases from Jan 1, 1990, to Jan 1, 2014, and May 25, 2016. We included

“The available evidence shows no benefit for laminar airflow ...in reducing the risk of SSIs”

Screened >1900 Studies

10 High Quality Trials

10 Procedures

Bischoff et al. *Lancet Infect Dis* 2017



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Should We Use Laminar Flow?



What IS there Evidence For?

Literature Review

 THE CENTER FOR HEALTH DESIGN®

Safety, Performance, and Satisfaction Outcomes in the Operating Room: A Literature Review

**Anjali Joseph, PhD¹, Sara Bayramzadeh, PhD¹,
Zahra Zamani, PhD², and Bill Rostenberg, AIA³**

Health Environments Research
& Design Journal

1-14

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DOI: 10.1177/1937586717705107

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211 Articles

Domains:

- Ventilation
- Temperature
- Acoustics
- Lightings
- Materials

What IS there Evidence For?

Literature Review

**Safety, Performance,
Satisfaction Outcomes
the Operating Room
A Literature Review**

Anjali Joseph, PhD¹, SA
Zahra Zamani, PhD², et al.

**“...this review highlighted the
paucity of research in areas that
are of critical importance from a
design and planning perspective
[of ORs]...”**

articles

ins:

ntilation

mperature

oustics

htings

aterials

HSR and the OR Design Quality

Measuring and Improving the Design Quality of Operating Rooms

Sarah A. Brownlee,¹ Paul J. Whitson,² and Andrew M. Ibrahim^{2,3}

TABLE 1. STRUCTURE, PROCESS, OUTCOMES FRAMEWORK TO EVALUATE OPERATING ROOM DESIGN QUALITY

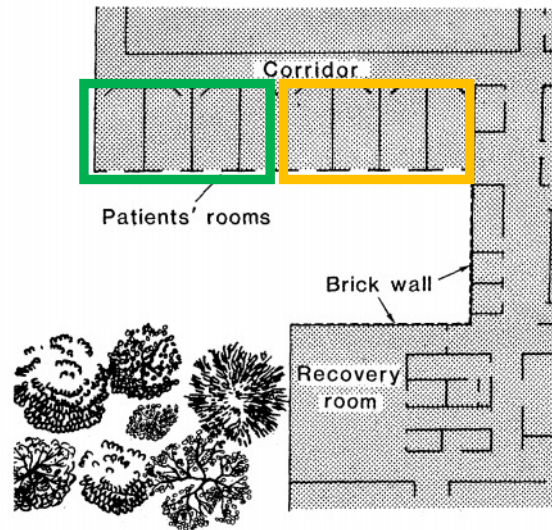
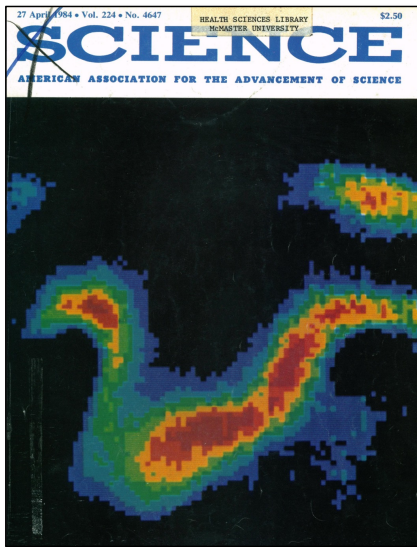
| What is it? | Example measures | Benefits and drawbacks |
|------------------------|---|---|
| Structure | | |
| The actual built space | OR square footage Use of laminar flow ventilation | Easy to measure May not necessarily reflect better quality |
| Process | | |
| Steps involved in care | HVAC system functioning Adequate lighting in working order | Highly actionable when deficient Few process measures correlate to better care |
| Outcomes | | |
| The end result of care | Surgical site infection rates Room turnover time | Face validity as the bottom line Need risk-adjustment to make comparisons fair |

OR = operating room; HVAC = heating, ventilation, air conditioning.



Brownlee et al. SIS, 2019.

Hospital Room Design...



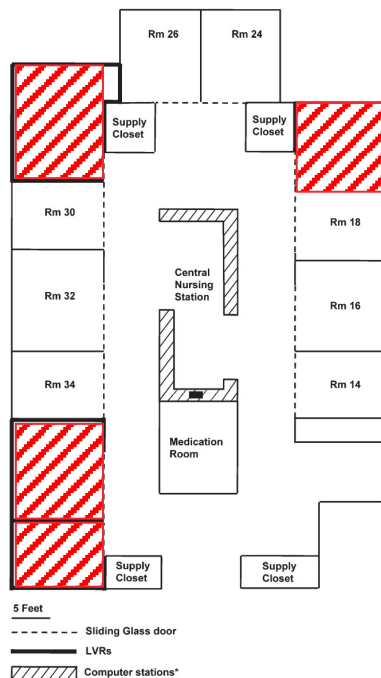
- 23 patients undergoing open cholecystectomy
- Half had a view, half didn't...
- **View of Nature:**
 - *less pain medication*
 - *complained less*
 - *went home earlier*

View Through a Window May Influence Recovery from Surgery

24 January 1983; accepted 1 November 1983

CITED >5,300 TIMES!

ICU Room Design



CHEST

Original Research

CRITICAL CARE MEDICINE

Relationship Between ICU Design and Mortality

David E. Leaf, MD; Peter Homel, PhD; and Phillip H. Factor, DO, FCCP

“Severely ill patients may experience higher mortality rates when assigned to **ICU rooms that are poorly visualized** by nursing staff and physicians.”

(only for most severe patients)*

Barriers to Better Hospital Design



Inadequate
End-User Input
(*"Face Validity"*)



Lacking
Evidence Base
for Design

Way Forward to Better User Input

(reasons to be hopeful)



@andrewmibrahim

1. Better User Input (Virtual Reality)



1. Better User Input (Virtual Reality)



2. Improving Shared Research Literacy



Upcoming Modules (2021)

- ☐ Principles of Research and Public Health
- ☐ Evaluation Quality of Research

3. Anticipating Design Before it's Built



**Agency for Healthcare
Research and Quality**

icipating Organizations

Research and Quality ([AHRQ](#))

Funding Opportunity Title

**Patient Safety Learning Laboratories: Pursuing Safety in
Diagnosis and Treatment at the Intersection of Design,
Systems Engineering, and Health Services Research (R18)**

3. Anticipating Design Before it's Built



Clemson School of Architecture

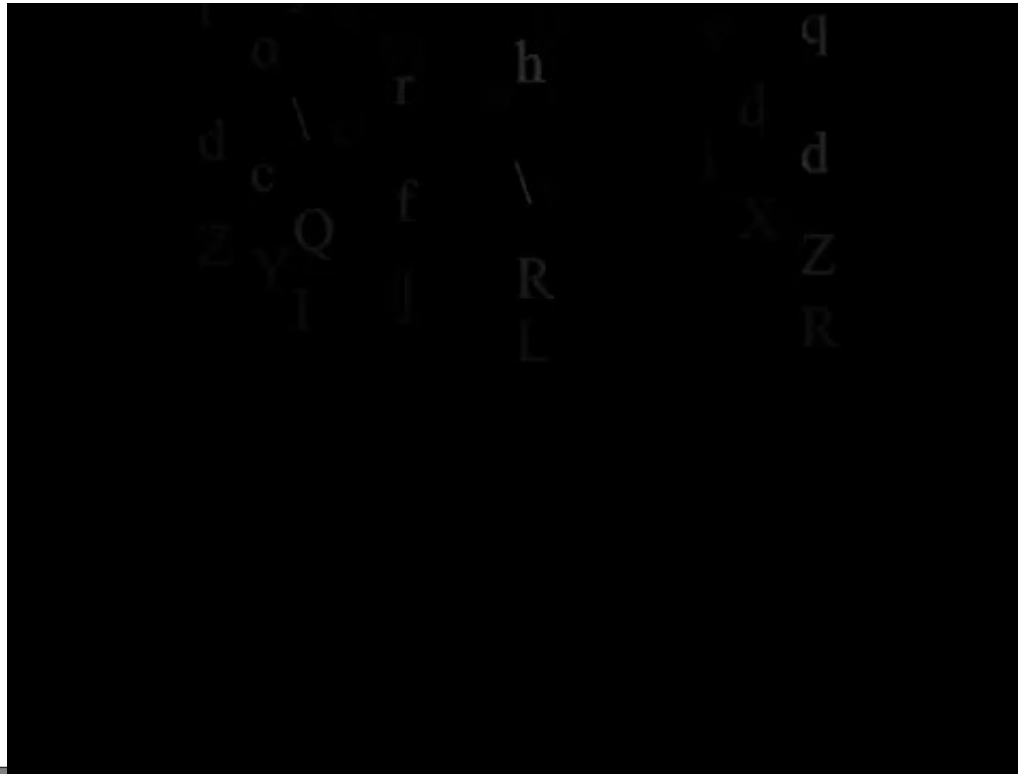


3. Anticipating Design Before it's Built



Clemson School of Architecture

3. Anticipating Design Before it's Built

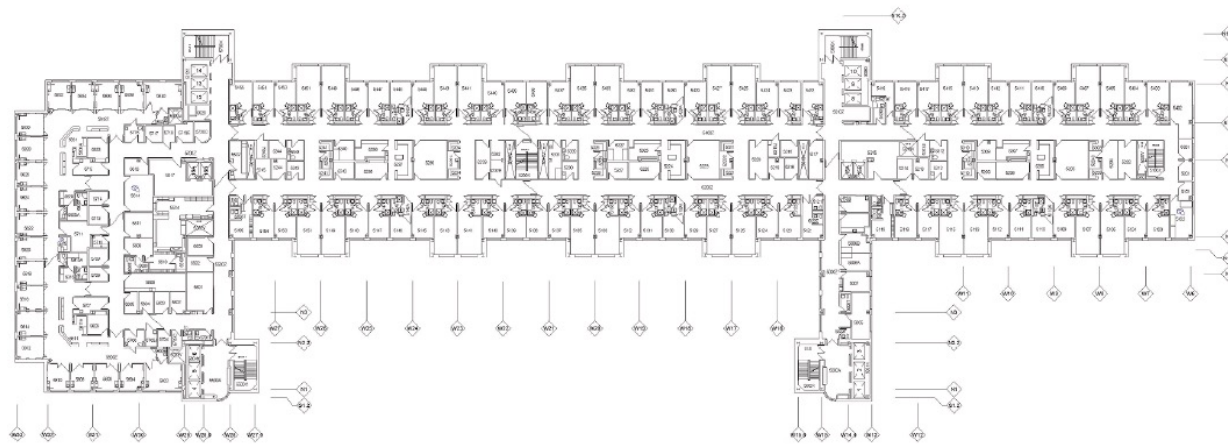


Applying Our Q.I. Toolkit to Hospital Design...



@andrewmibrahim

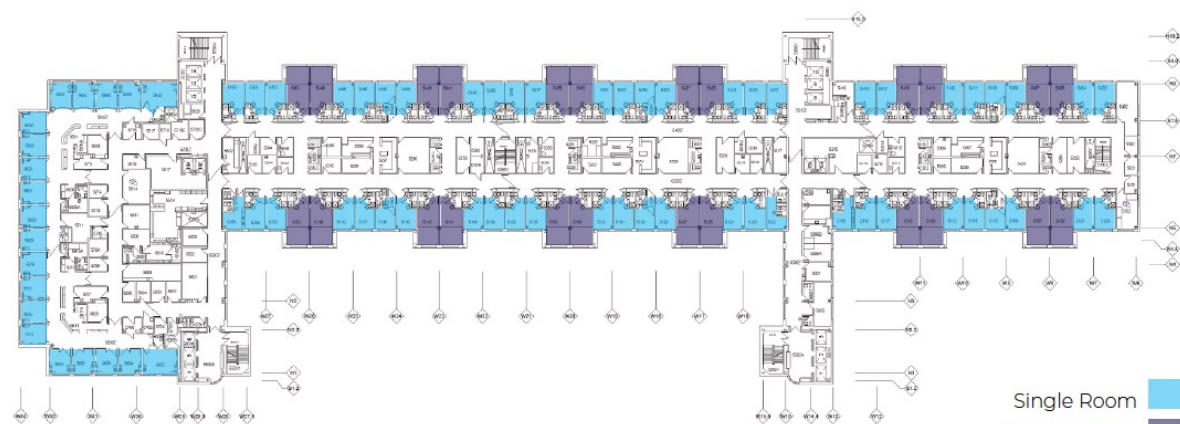
Measuring Our Own Design...



The "Race Track"

HOSPITAL FLOOR PLAN

Measuring Our Own Design...



ROOM TYPE

Measuring Our Own Design...

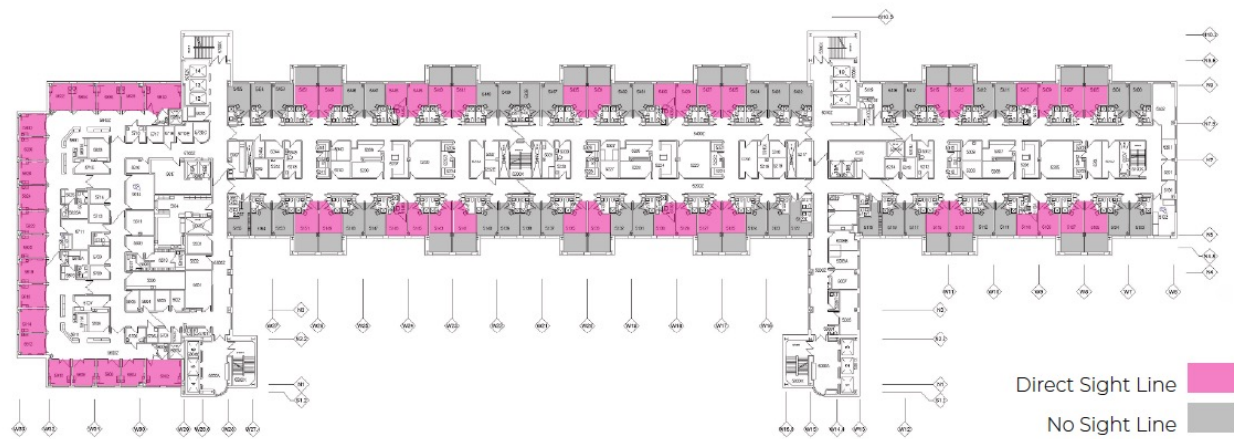


Measuring Our Own Design...



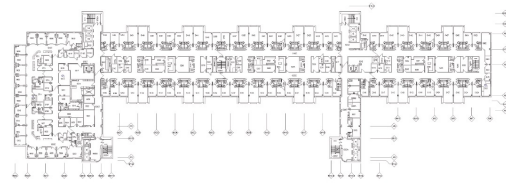
DISTANCE TO MAIN NURSING STATION

Measuring Our Own Design...



DIRECT SIGHT LINE

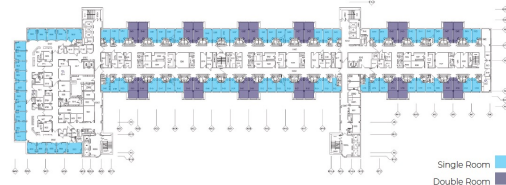
Measuring Our Own Design...



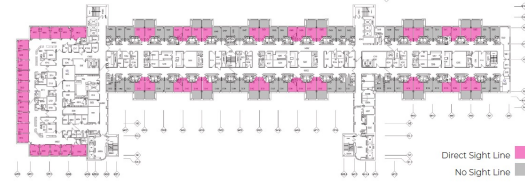
HOSPITAL FLOOR PLAN



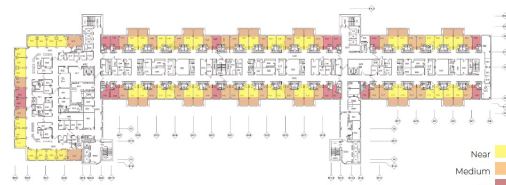
DISTANCE TO MAIN NURSING STATION



ROOM TYPE



DIRECT SIGHT LINE



DISTANCE TO ANY NURSING STATION



WINDOW VIEW

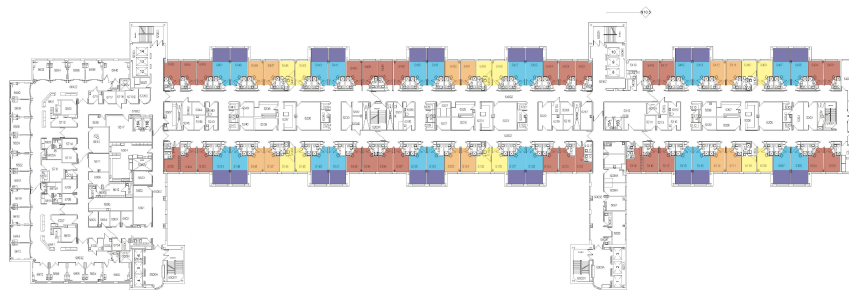
Measuring Our Own Design...



Near Main Nursing Station
Direct line of Site
Window View
Single Room

| Room A | ● | ● | ● | ● |
|--------|---|---|---|---|
| Room B | ● | ● | | ● |
| Room C | ● | ● | | |
| Room D | | | ● | ● |
| Room E | | ● | | |

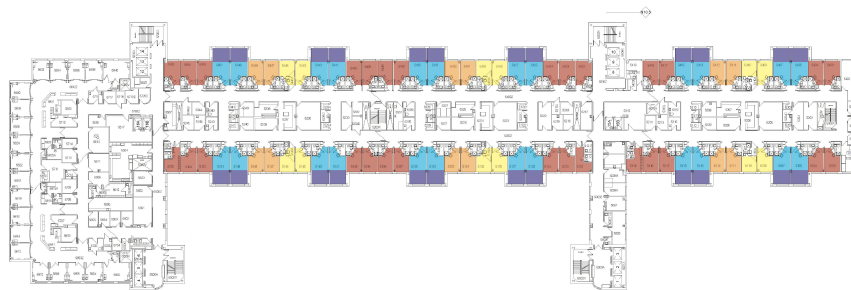
Nursing Knows Design Matters...



| | Single Room | Window View | Direct line of Site | Near Main Nursing Station |
|--------|-------------|-------------|---------------------|---------------------------|
| Room A | • | • | • | • |
| Room B | • | • | • | • |
| Room C | • | • | • | • |
| Room D | | | • | • |
| Room E | | • | | |

← Sickest Patients

Design Matters for Experience...



| | Single Room | Window View | Direct line of Site | Near Main Nursing Station |
|--------|-------------|-------------|---------------------|---------------------------|
| Room A | ● | ● | ● | ● |
| Room B | ● | ● | ● | ● |
| Room C | ● | ● | ● | ● |
| Room D | | | ● | ● |
| Room E | | ● | | |

Patient Satisfaction?
Patient Falls?
ICU Transfers
Failure to Rescue

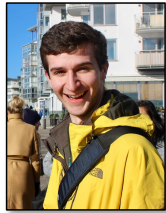
The Team, The Team, The Team...

Project Manger



Ester Oh, MPP

Research Assistant



Mitch Mead, BA

Masters Fellows



Adrian Diaz, MD, MPH



Valeria Valbeauna MD, MSc

Graduate Students



Maya Fraser MPH, (M.Arch)

Collaborators



Marc Norman, MUP

Analyst



Nick Kunnath, MS

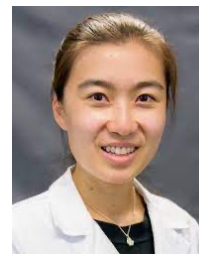
Health & Design Fellow



Kimberly Rollings, PhD



Alisha Lussiez MD, MSc



Yuqi Zhang, MD



Hannah Myers, M.Arch (PhD)



Rachel O'Reggio MPH



@andrewmibrahim

THANK YOU



Questions?

Email: iandrew@umich.edu



@andrewmibrahim

www.SurgeryRedesign.com



@andrewmibrahim

MTQIP Data (Hospital Scoring Index)

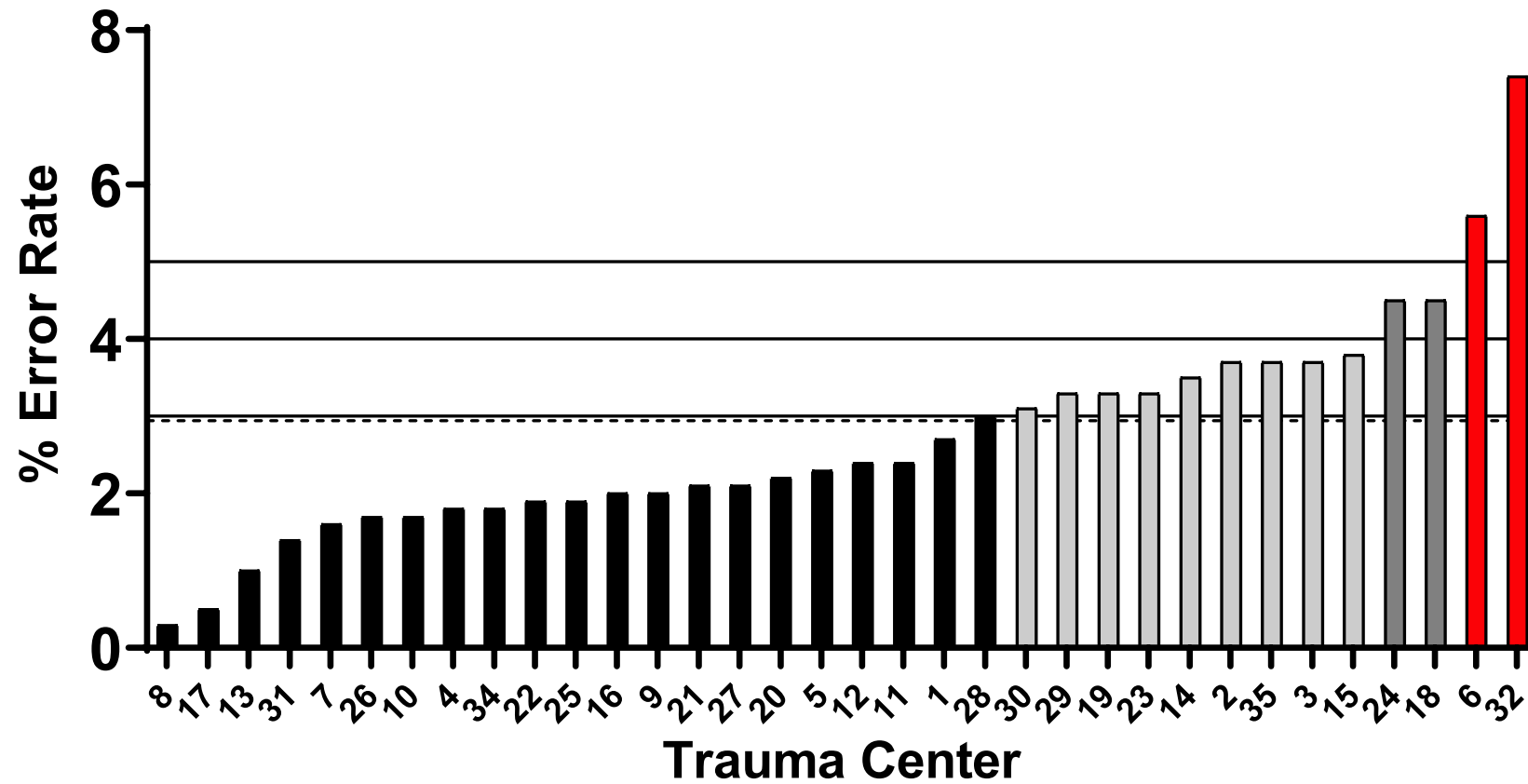
Mark Hemmila, MD



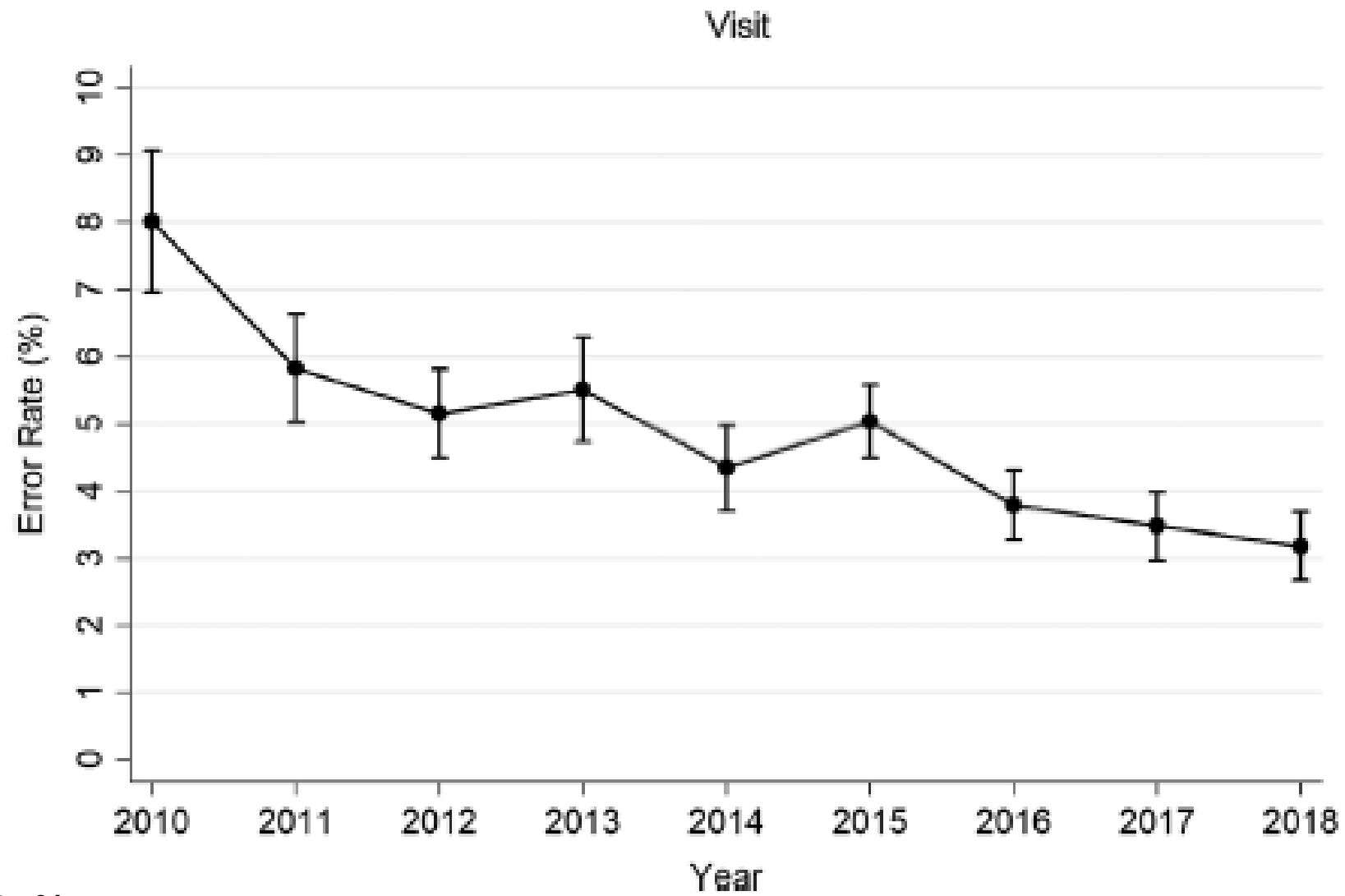
#3 Data Validation Error Rate

- ◆ Data validation error rate (visit during 2021)
 - 0-3.0%
 - 3.1-4.0%
 - 4.1-5.0%
 - > 5.0%

Metric #3 - Data Validation Accuracy Last Processed Report



Mean 2.94%



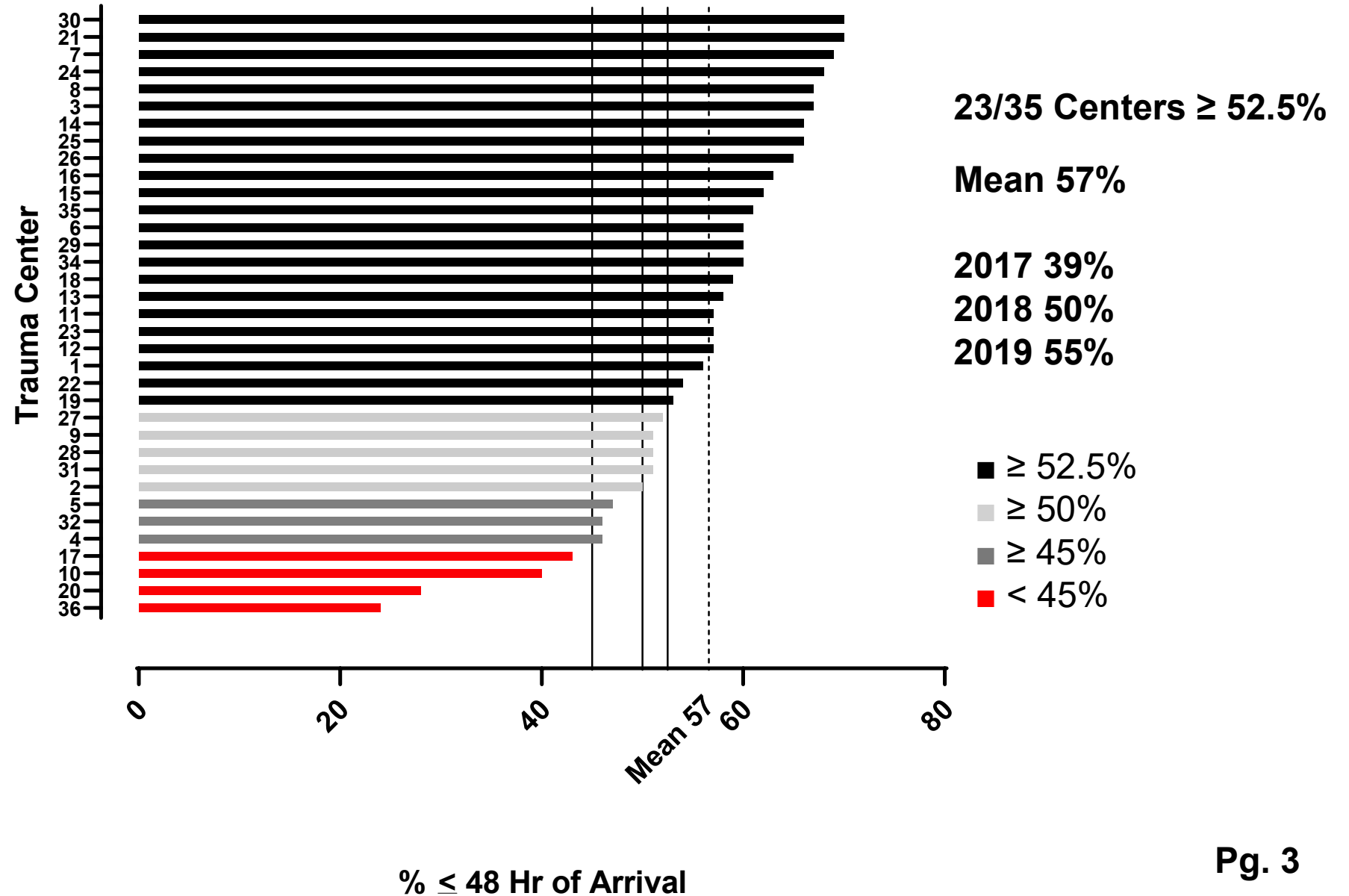
Data Validation Feedback

- ◆ Do you have any concerns about MTQIPs data validation program?
- ◆ How essential is data validation to believing your reports?

#4 Timely LMWH VTE Prophylaxis in Trauma Service Admits

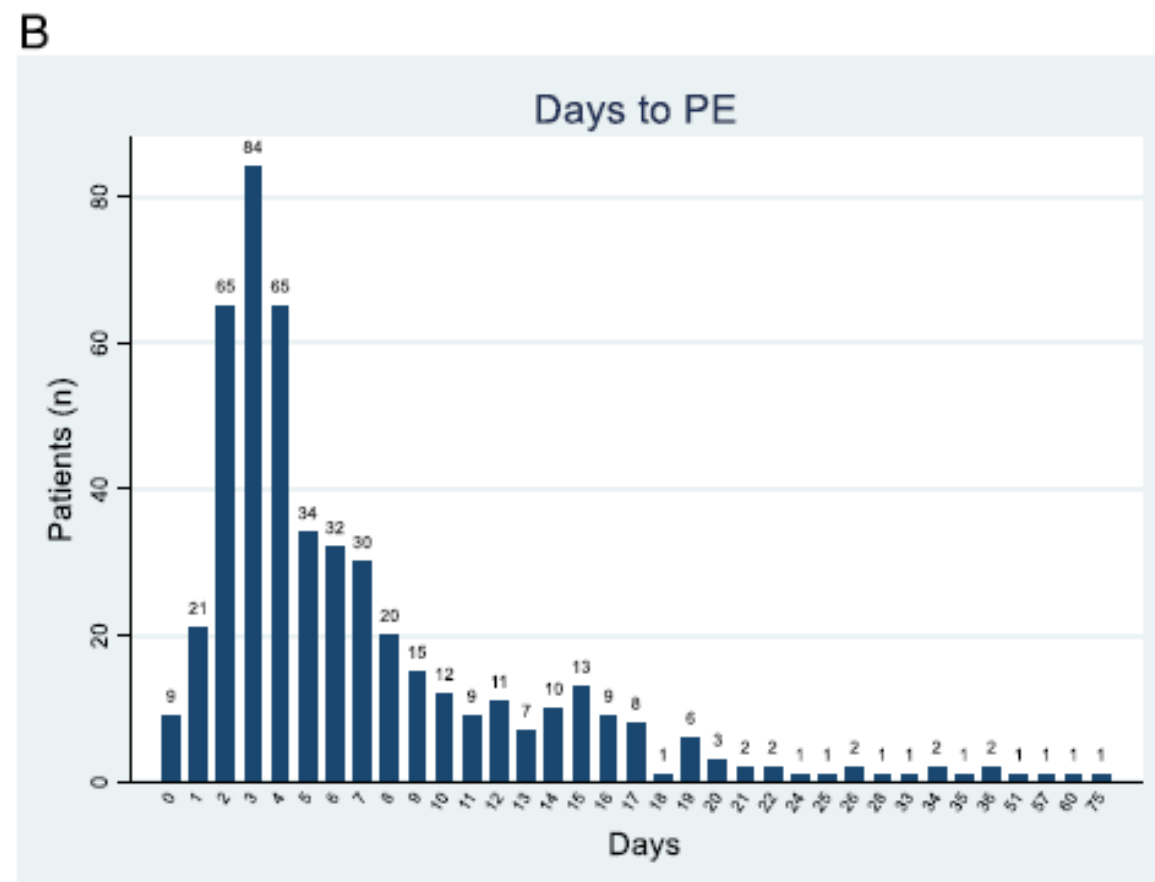
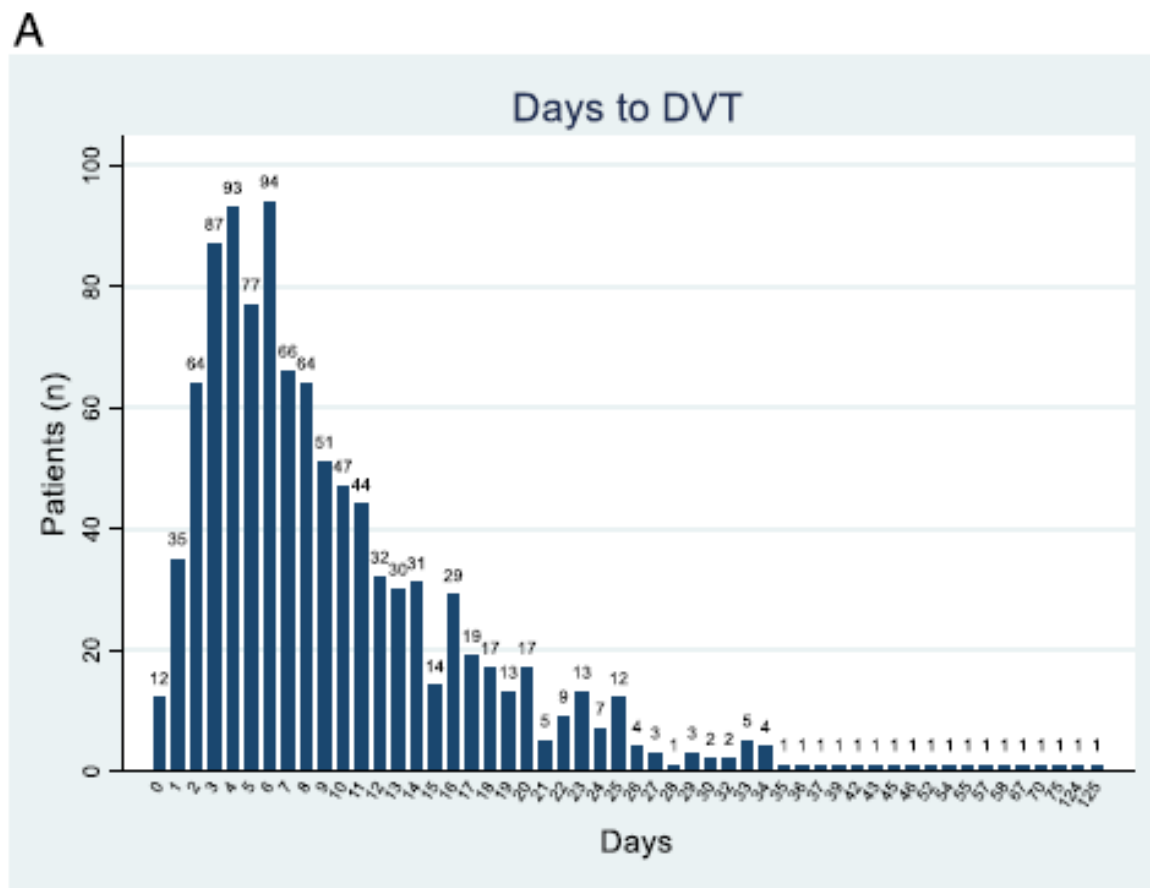
- ◆ Venous Thromboembolism (VTE) Prophylaxis with LMWH Initiated Within 48 Hours of Arrival in Trauma Service Admits with > 2 Day Length of Stay (18 mo: 1/1/20-6/30/21)
 - $\geq 52.5\%$ of patients (≤ 48 hr)
 - $\geq 50\%$ of patients (≤ 48 hr)
 - $\geq 45\%$ of patients (≤ 48 hr)
 - $< 45\%$ of patients (≤ 48 hr)

Metric #4 - VTE Prophylaxis LMWH Timeliness
Cohort 2 - Admit to Trauma
1/1/20 - 5/31/21

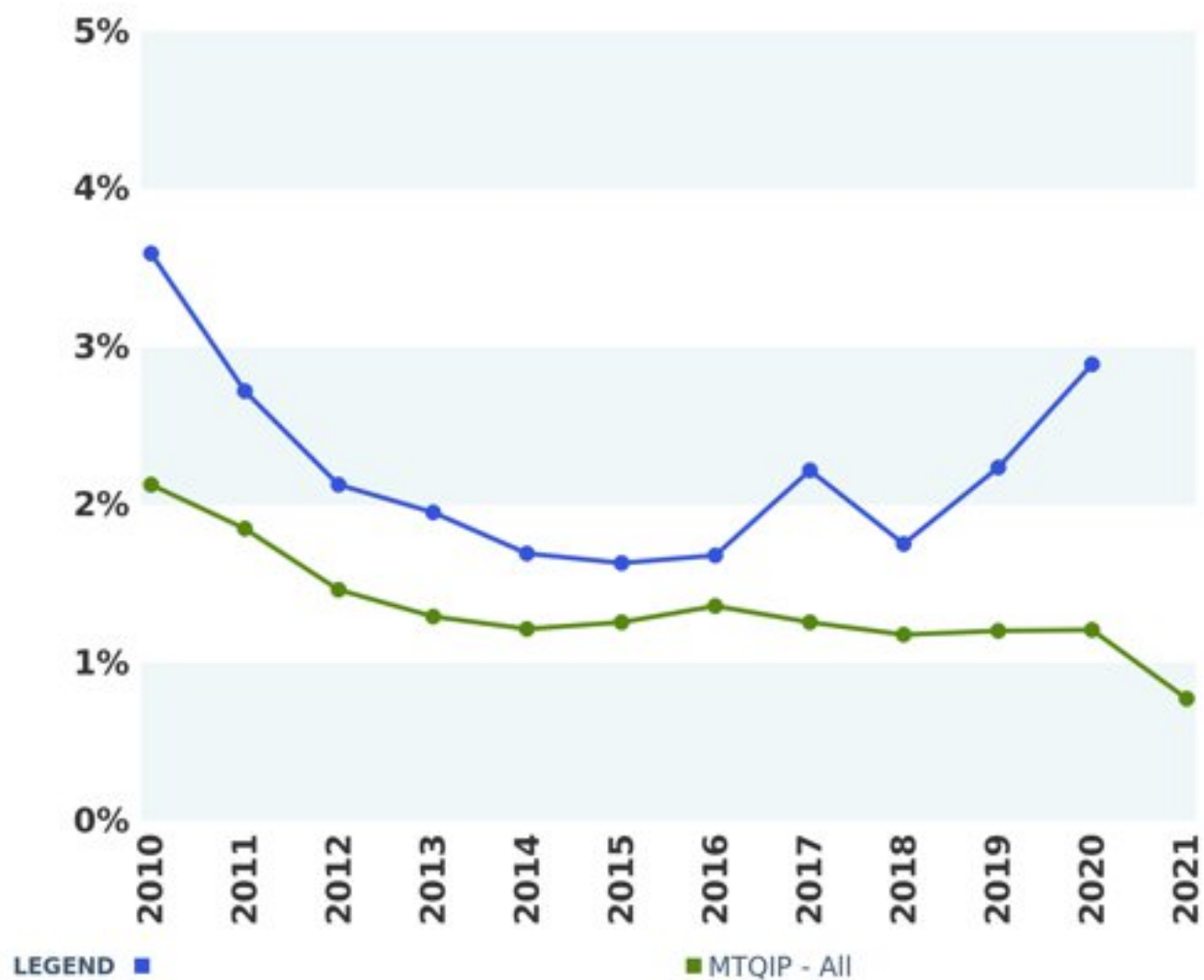


Association of timing of initiation of pharmacologic venous thromboembolism prophylaxis with outcomes in trauma patients

Jason P. Hecht, PharmD, BCPS, BCCCP, Emily J. Han, PharmD, Anne H. Cain-Nielsen, MS,
John W. Scott, MD, MPH, Mark R. Hemmila, MD, and Wendy L. Wahl, MD, Ann Arbor, Michigan

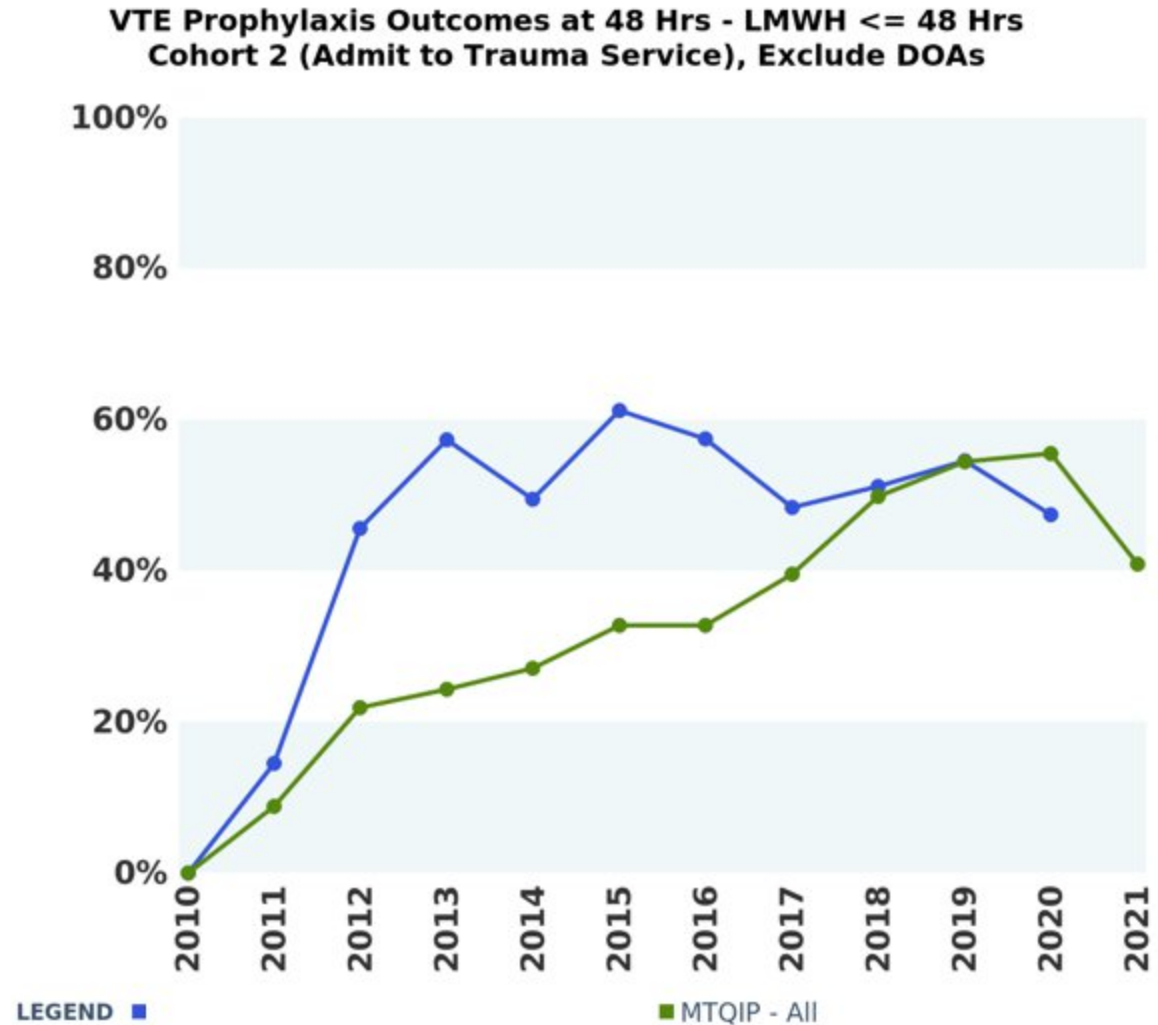


Complications by Type - VTE
Cohort 2 (Admit to Trauma Service), Exclude DOAs

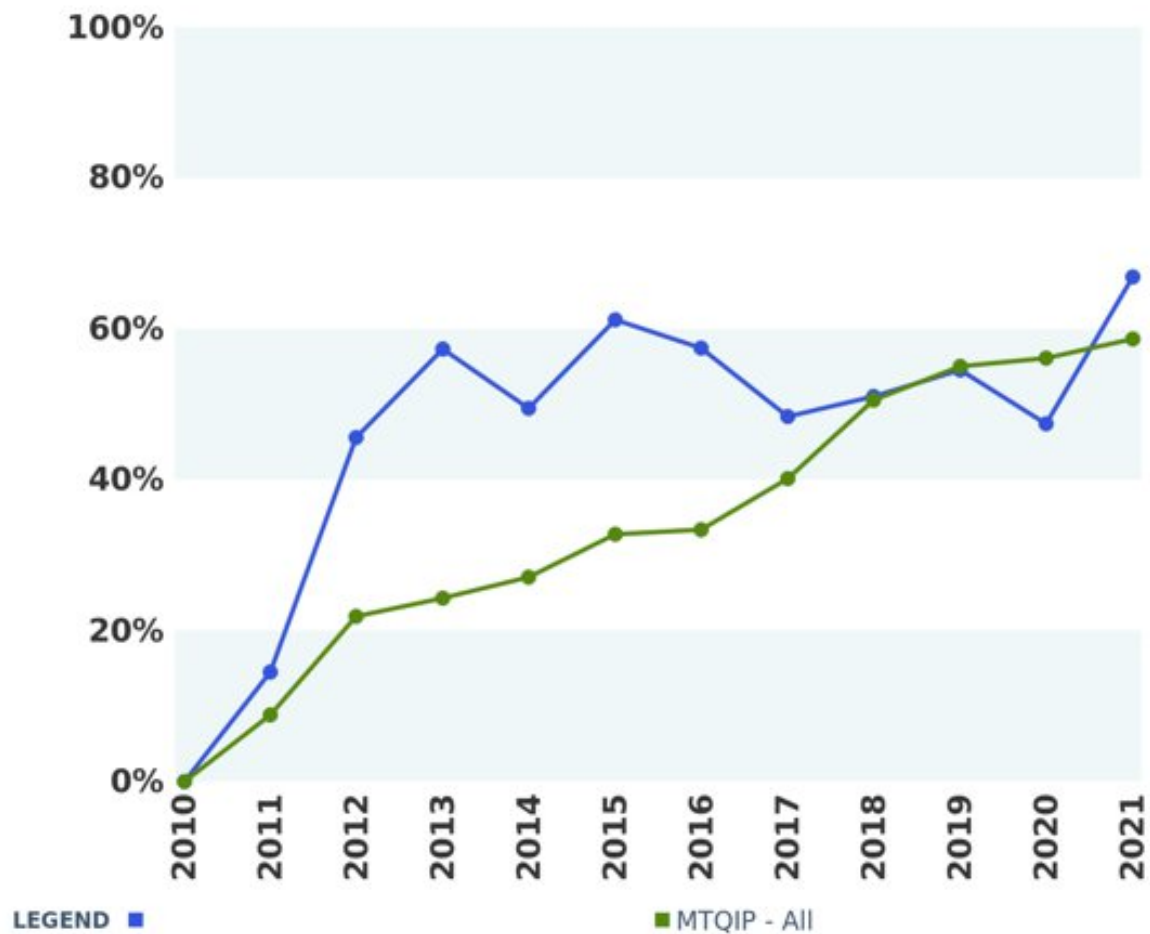


VTE Data

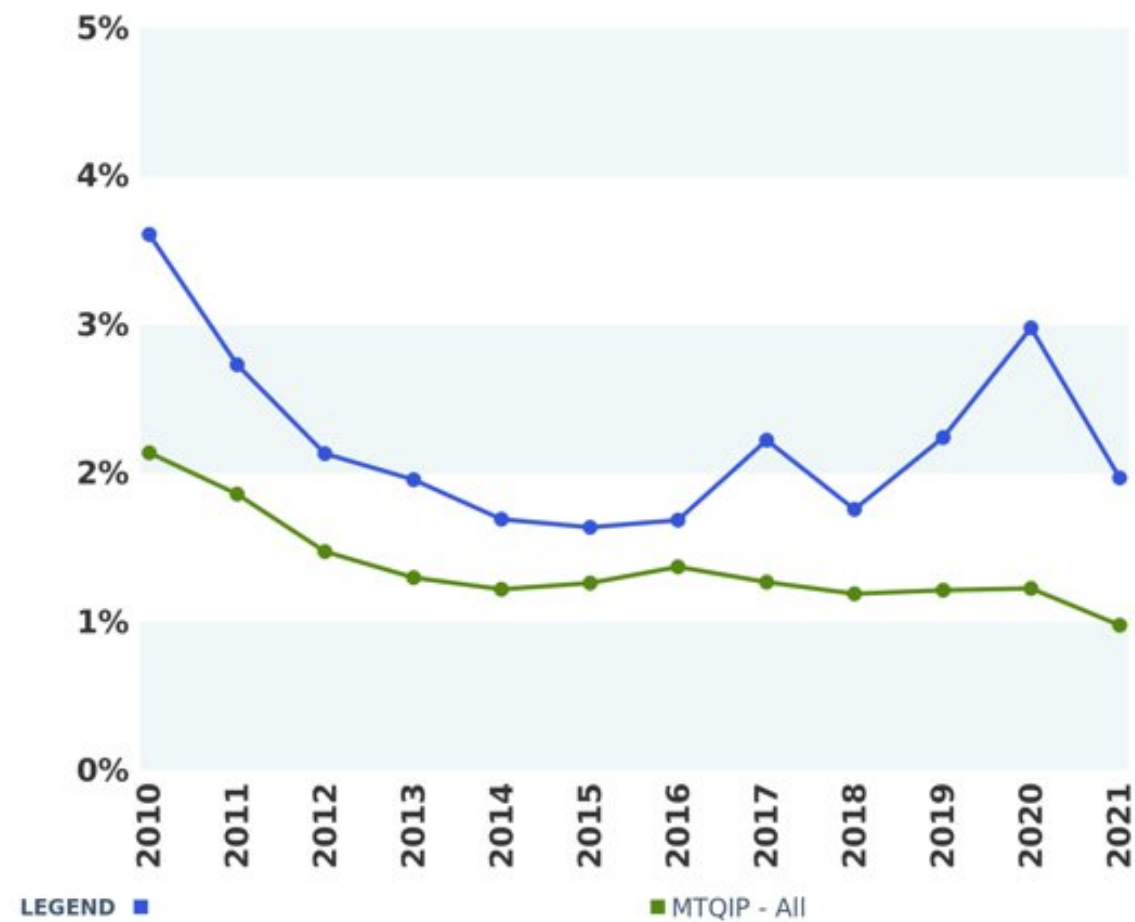
- ◆ Prophylaxis
- ◆ First dose = LMWH
- ◆ Time < 48 hrs
- ◆ Used to be 58%
- ◆ Now 47.5%
- ◆ Does it matter ?



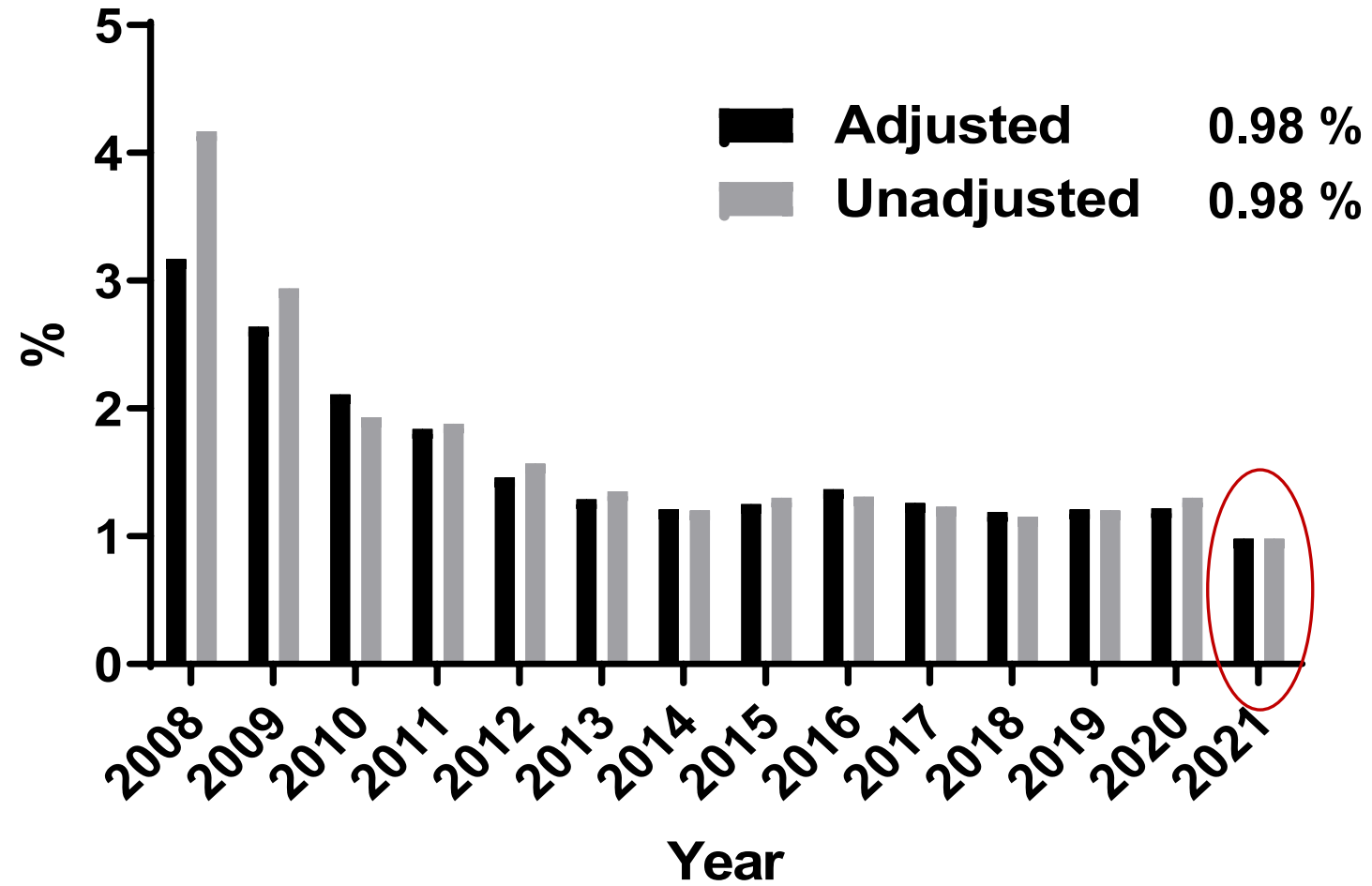
VTE Prophylaxis Outcomes at 48 Hrs - LMWH \leq 48 Hrs
Cohort 2 (Admit to Trauma Service), Exclude DOAs



Complications by Type - VTE
Cohort 2 (Admit to Trauma Service), Exclude DOAs



VTE Event

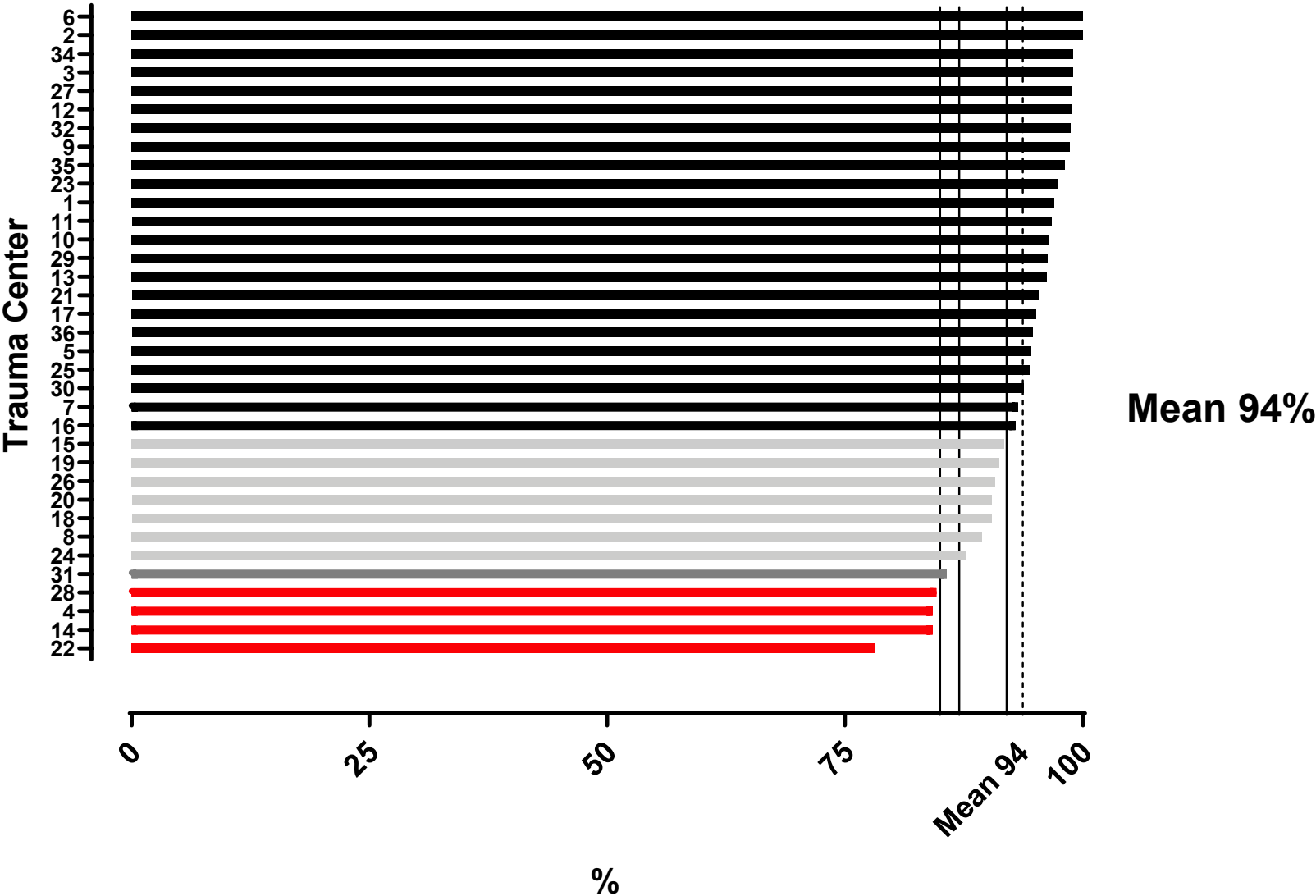


#5 Timely Surgical Repair in Geriatric (Age \geq 65) Isolated Hip Fracture

- ◆ Time to surgical repair of isolated hip fracture in patients age 65 or older (12 mo: 7/1/20-6/30/21)
 - \geq 92% of patients (\leq 48 hr)
 - \geq 87% of patients (\leq 48 hr)
 - \geq 85% of patients (\leq 48 hr)
 - $<$ 85% of patients (\leq 48 hr)

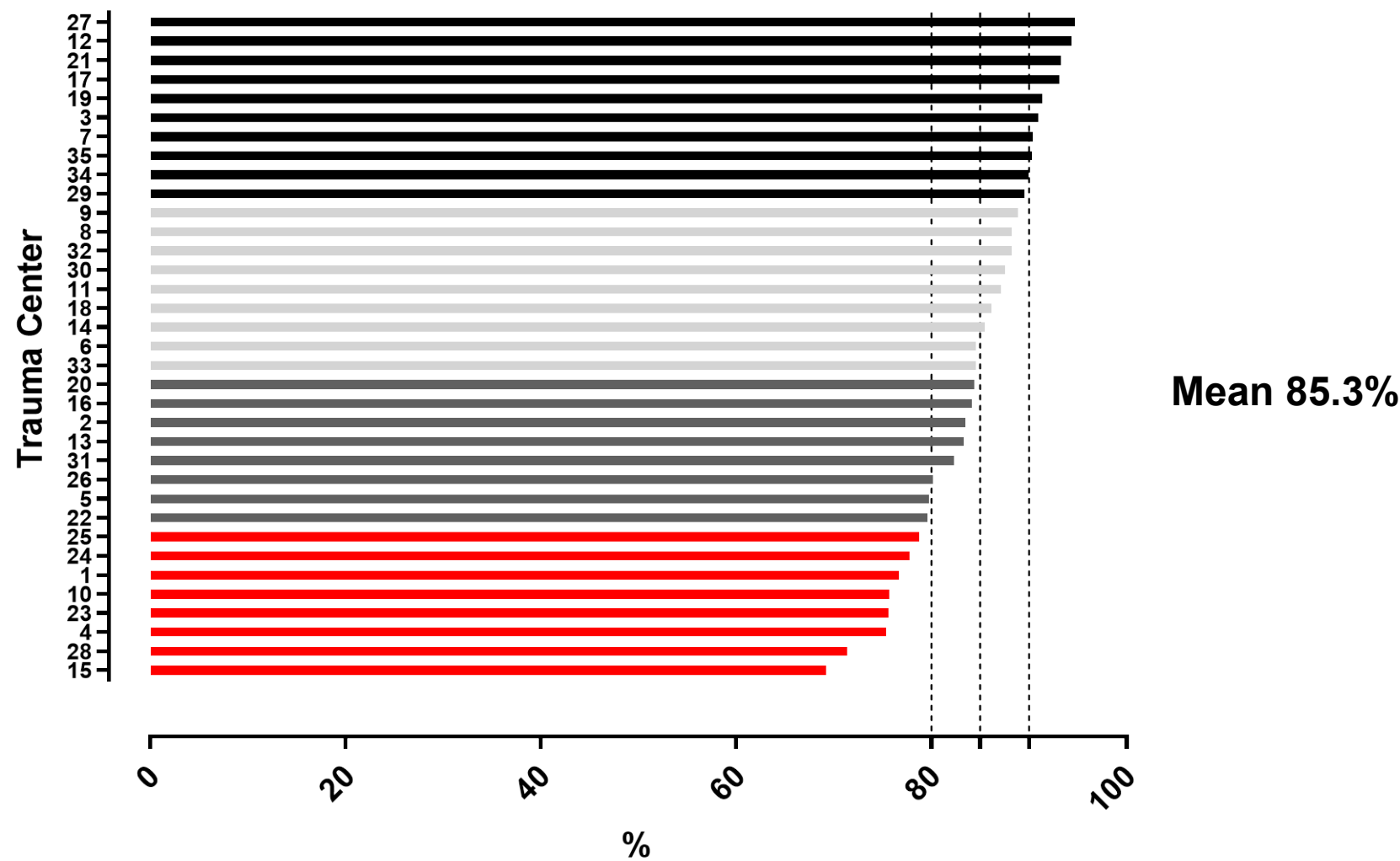
Today

Metric #5 - Timely Surgical Hip Repair ≥ 65 years
Cohort 8 - Isolated Hip Fracture
7/1/20 - 5/31/21



Last Year

Metric #5 - Timely Surgical Hip Repair ≥ 65 years
Cohort 8 - Isolated Hip Fracture
7/1/19 - 1/31/20



What is your experience?

Barriers to OR access

- Block Time
- Inpatient Time Sensitive

System

- Clearance
- Anesthesia
- Orthopedics

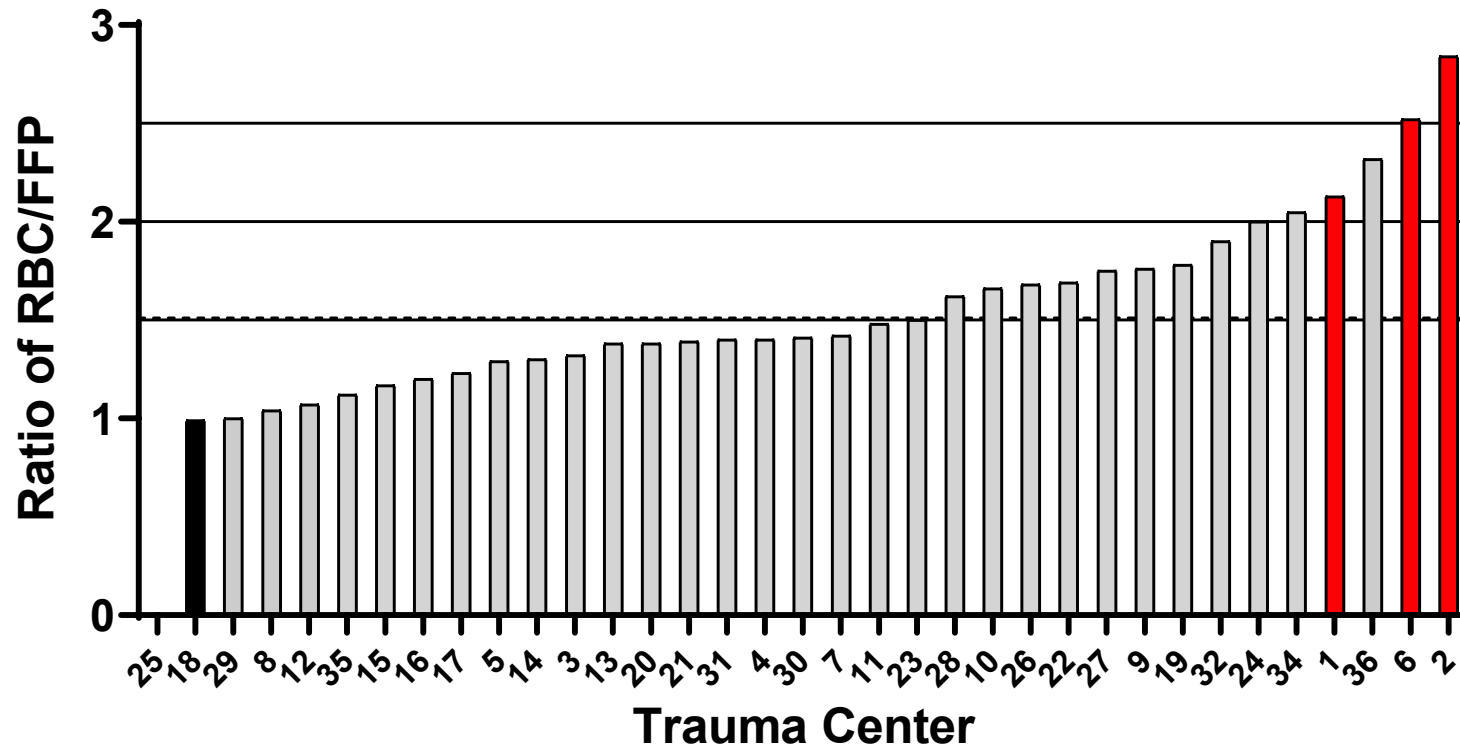
Does this data help?

- Patient is already admitted
- Bed shortages

#6 Red Blood Cell to Plasma Ratio

- ◆ Red blood cell to plasma ratio (weighted mean points) of patients transfused ≥ 5 units in first 4 hours (18 Mo's: 1/1/20-6/30/21)

Metric #6 - RBC to FFP Ratio - Mean
Cohort 1 - MTQIP All
1/1/20 - 5/31/21



Mean 1.51

Blood product availability

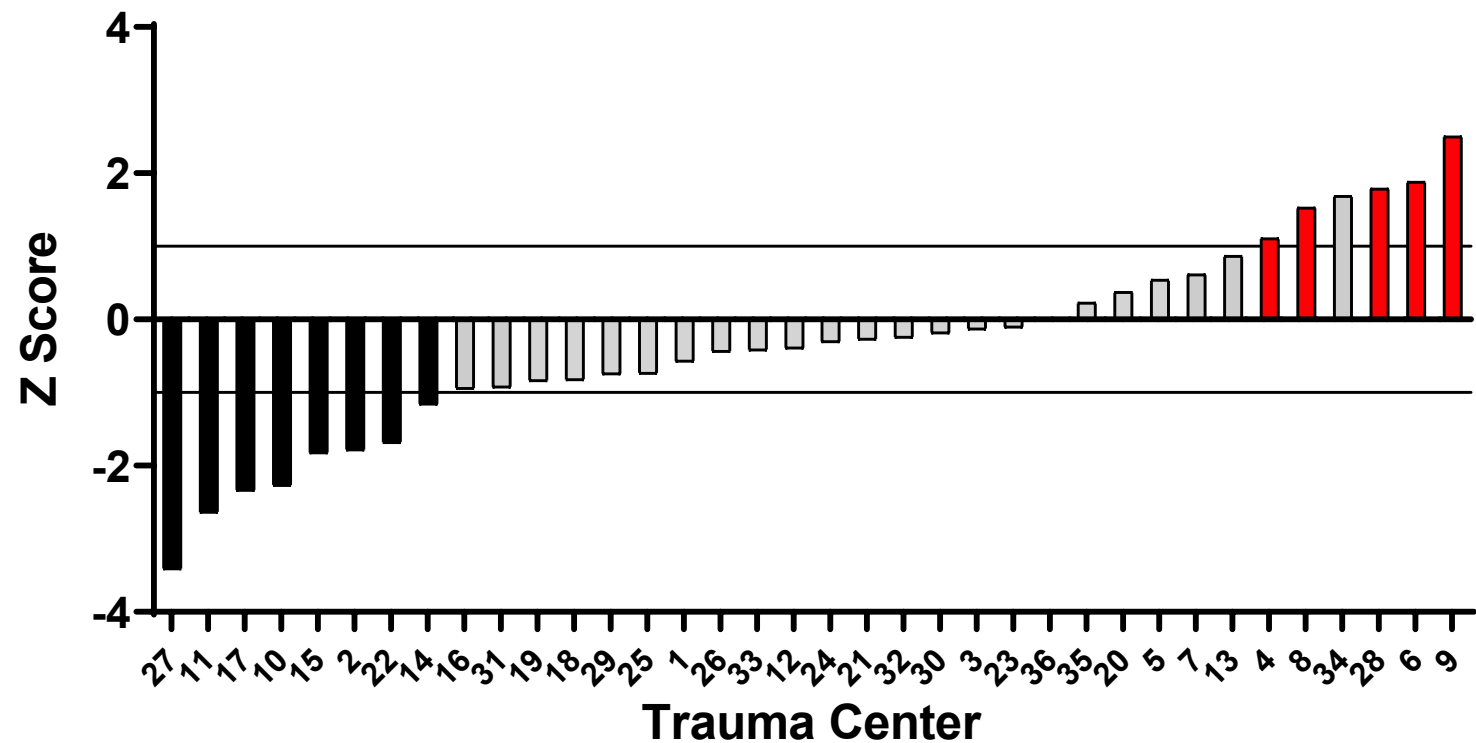
- ◆ Have you had difficult with availability of blood products for trauma resuscitation?
- ◆ What specific products?
- ◆ When?

Z-score

- ◆ Measure of trend in outcome over time
- ◆ Hospital specific
 - Compared to yourself
- ◆ Standard deviation
- ◆ > 1 getting worse
- ◆ 1 to -1 flat
- ◆ < -1 getting better

#7 Serious Complication Rate (Z-score)

Metric #7 - Z Score - Serious Complication Rate
Cohort 2 - Admit to Trauma
7/1/18 - 5/31/21

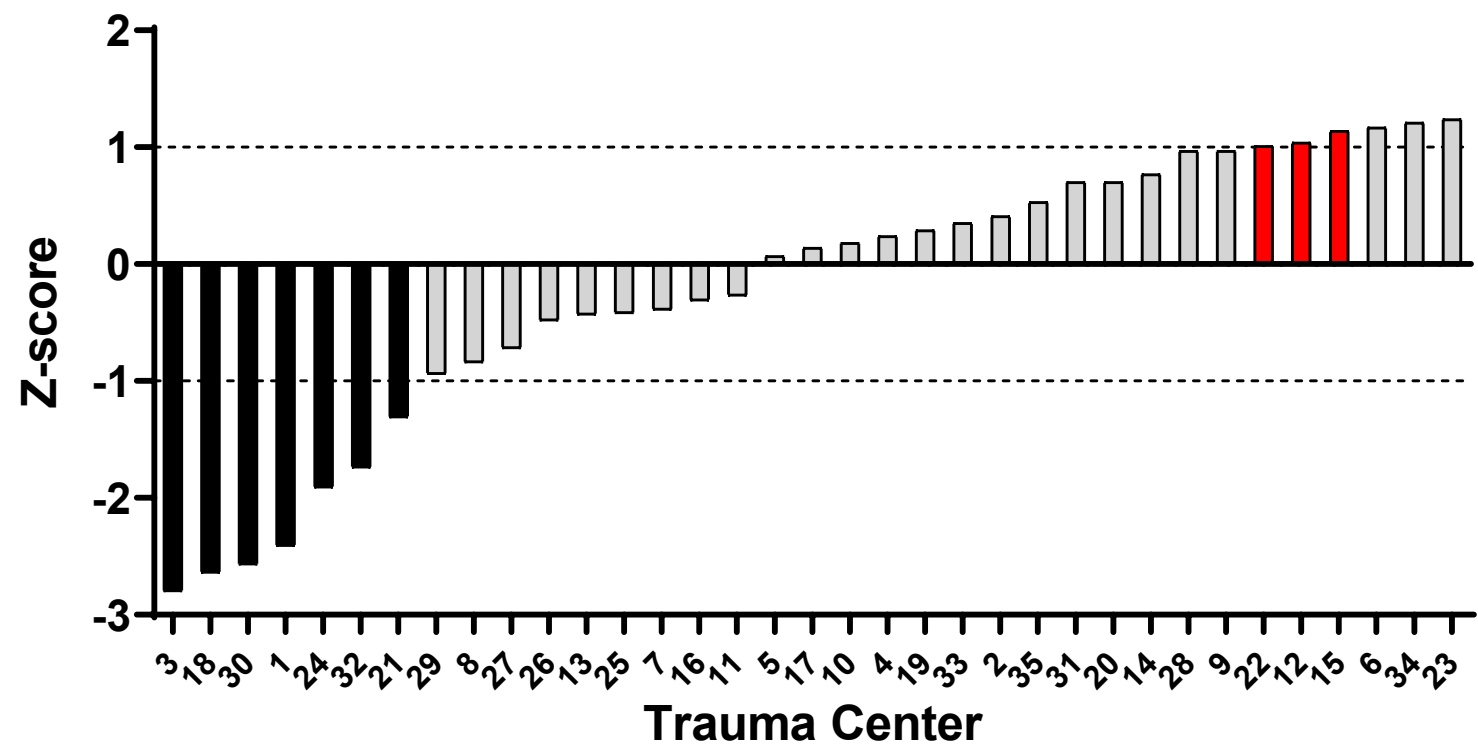


#7 Serious Complication Rate (Z-score)

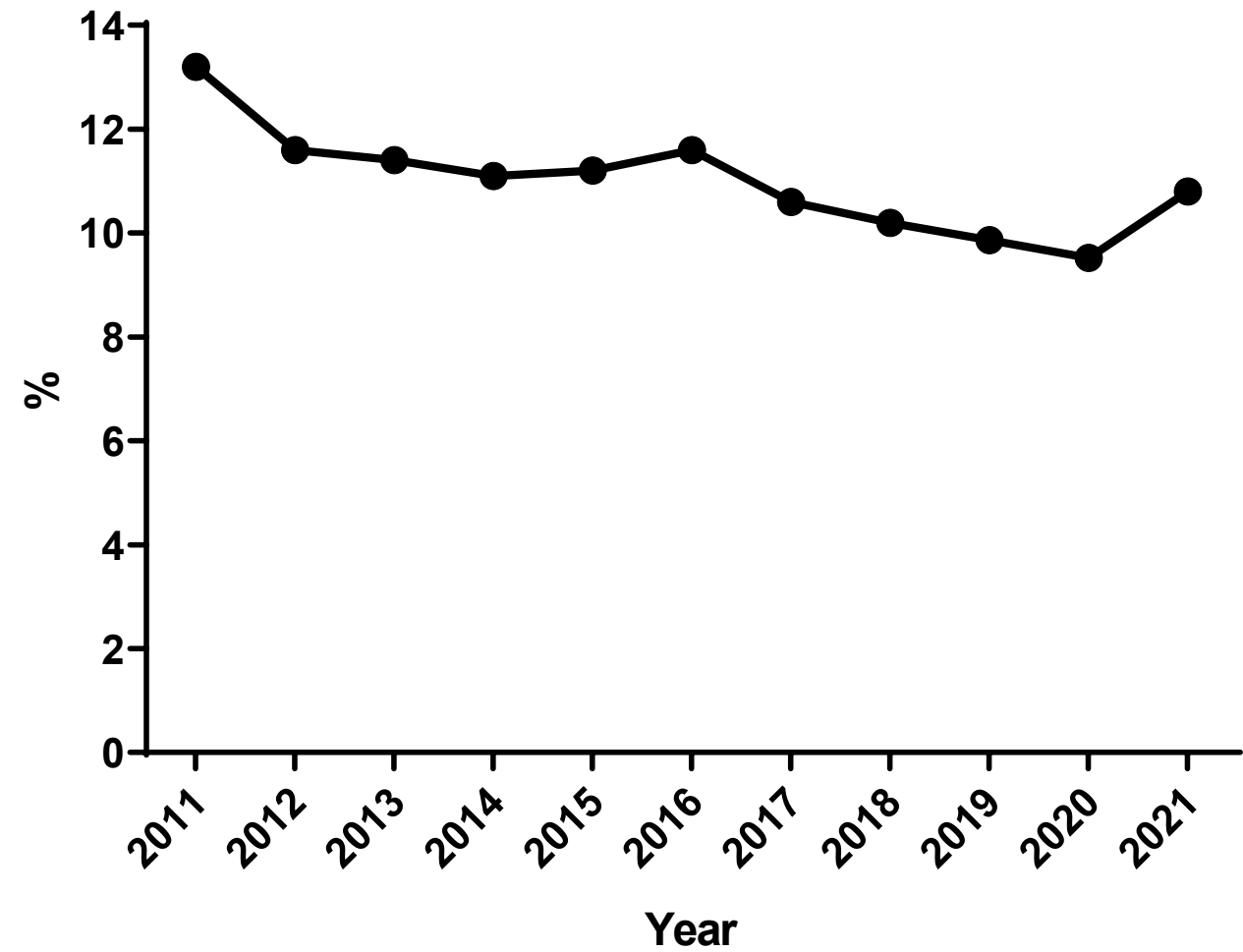
Metric #7 - Z-score - Serious Complication Rate

Cohort 2 - Admit to Trauma

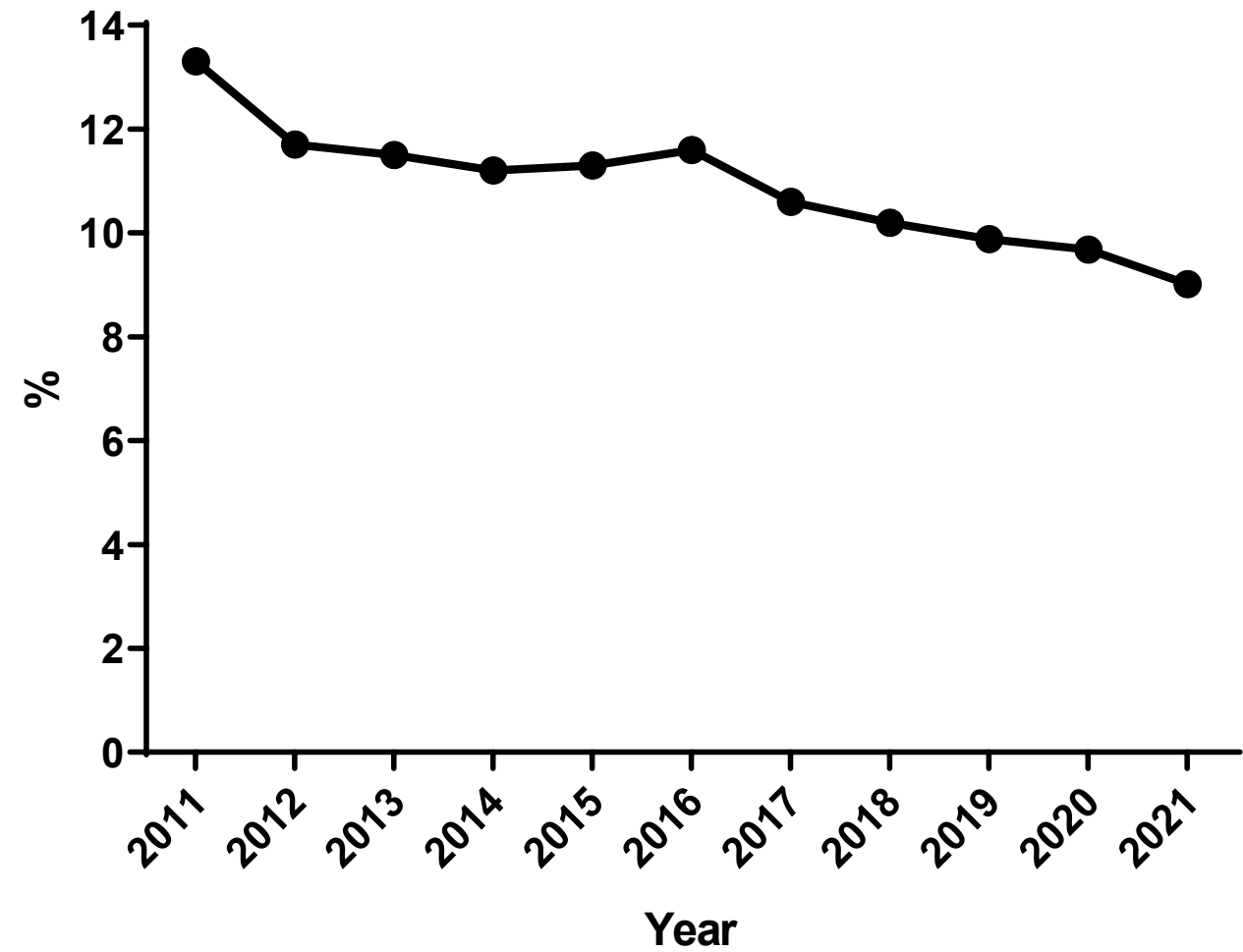
7/1/17 - 1/31/20



Collaborative Outcome Overview - Serious Cx
Cohort 2 - Admit to Trauma

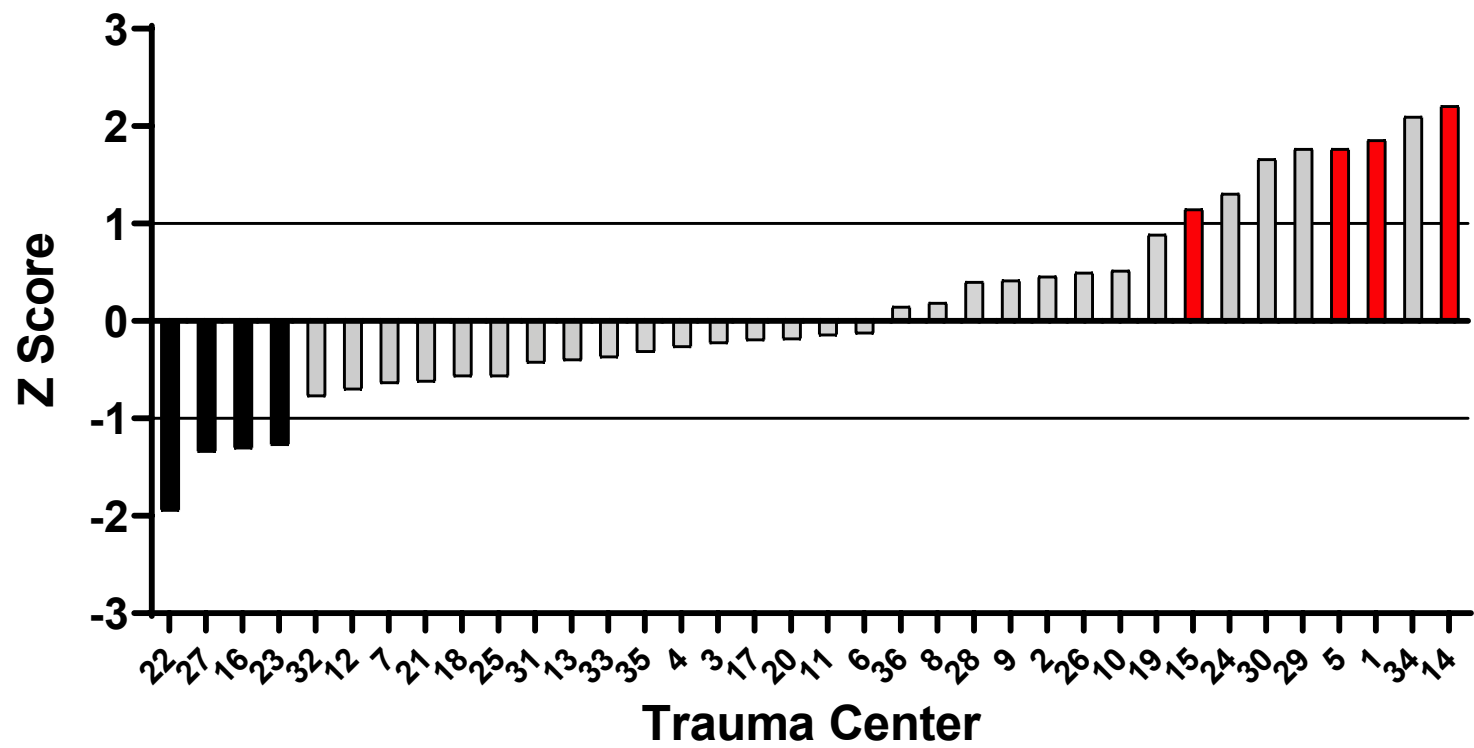


Collaborative Outcome Overview - Serious Cx
Cohort 2 - Admit to Trauma



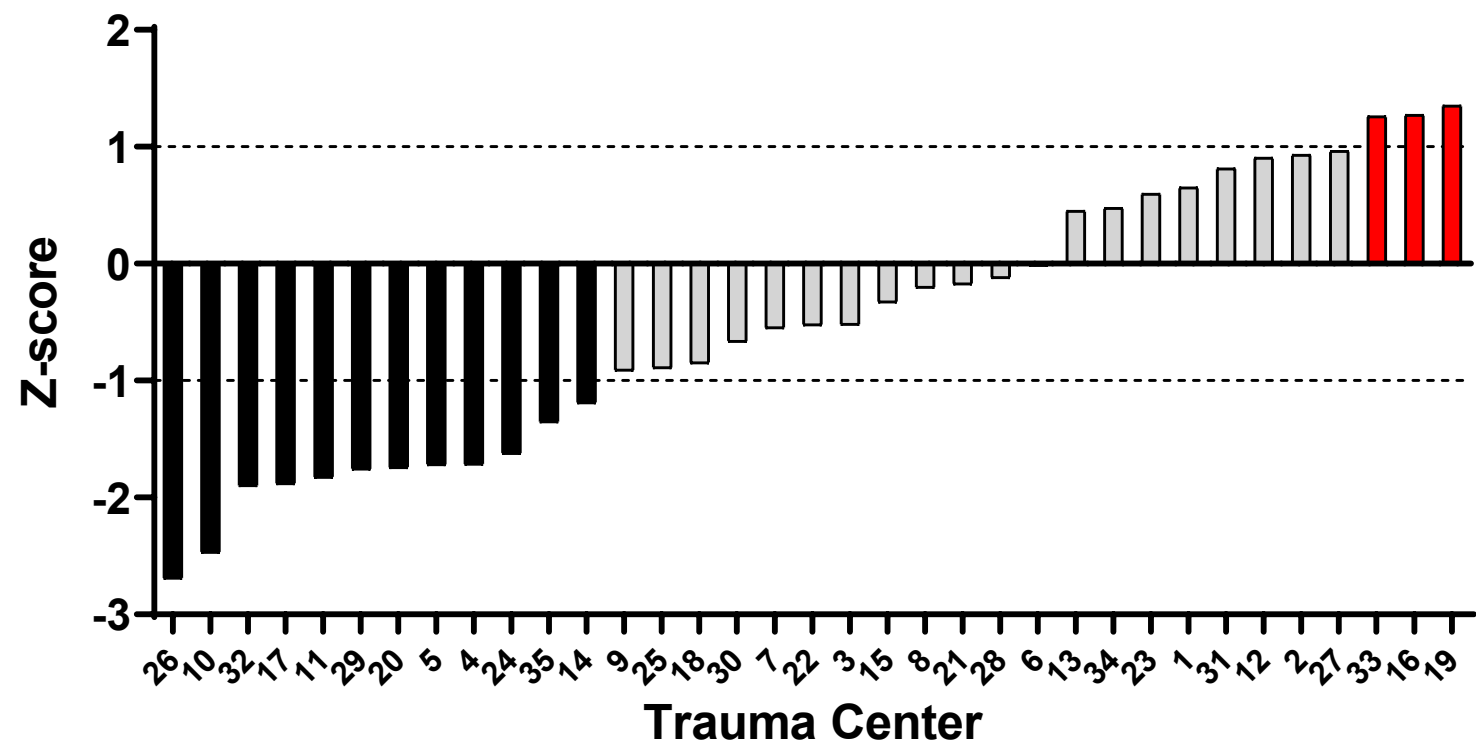
#8 Mortality Rate (Z-score)

Metric #8 - Z Score - Mortality Rate
Cohort 2 - Admit to Trauma
7/1/18 - 5/31/21

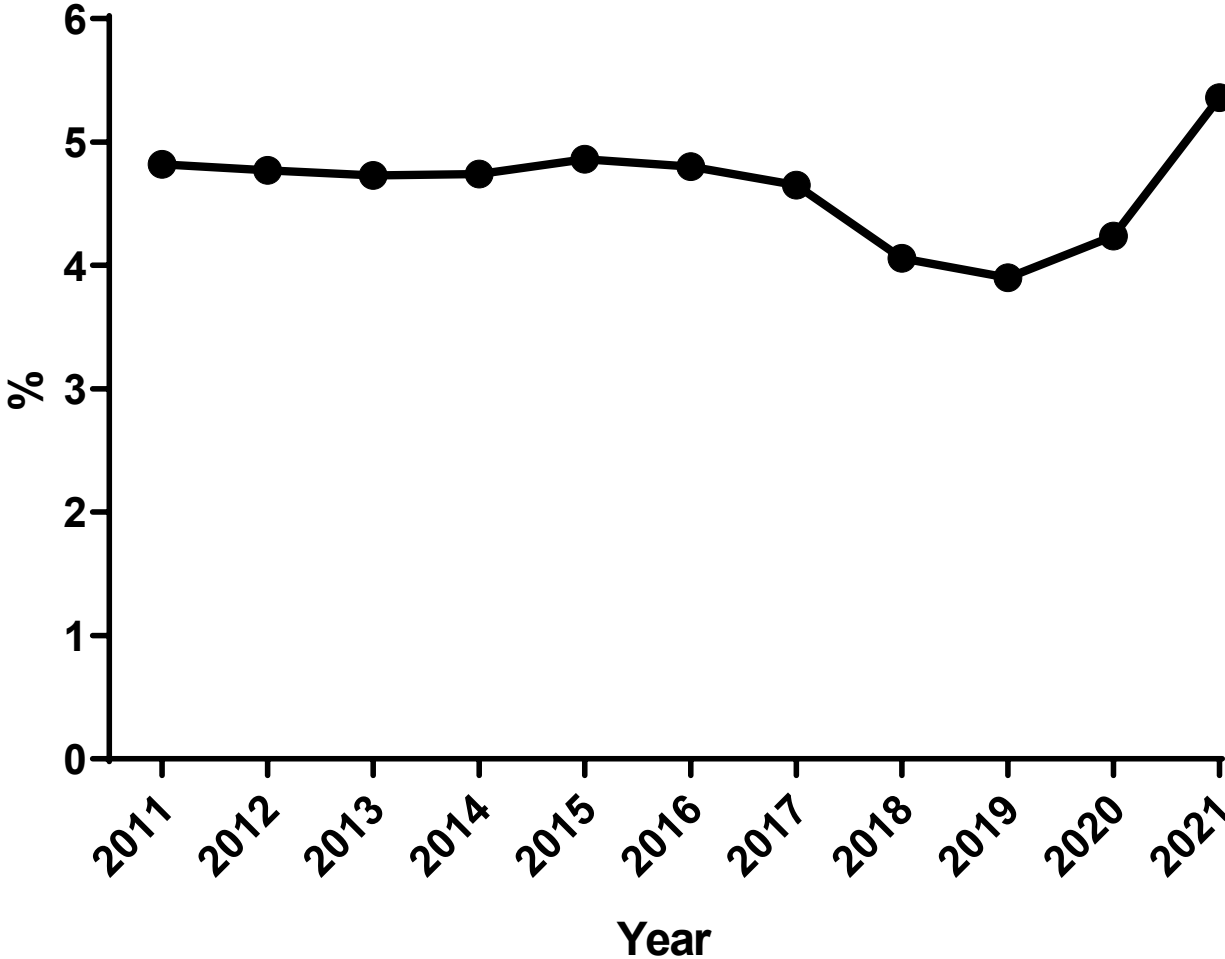


#8 Mortality Rate (Z-score)

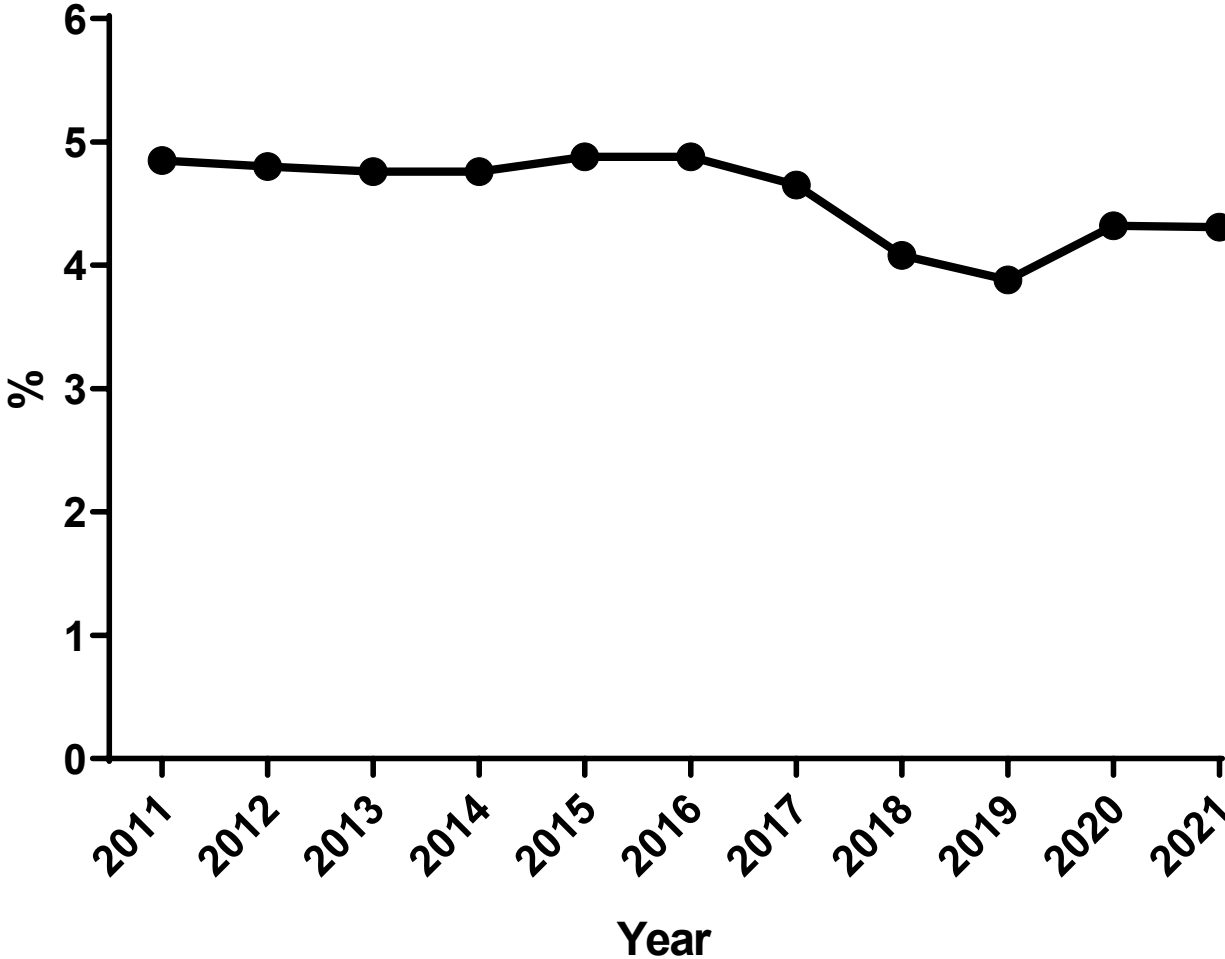
Metric #8 - Z-score - Mortality Rate
Cohort 2 - Admit to Trauma
7/1/17 - 1/31/20



Collaborative Outcome Overview - Mortality
Cohort 2 - Admit to Trauma



Collaborative Outcome Overview - Mortality
Cohort 2 - Admit to Trauma



Mortality

- ◆ Is the slight increase real for you?
- ◆ Why? What factors?
- ◆ Any changes in your ACS TQIP report?

#9 Timely Head CT in TBI Patients on Anticoagulation Pre-Injury

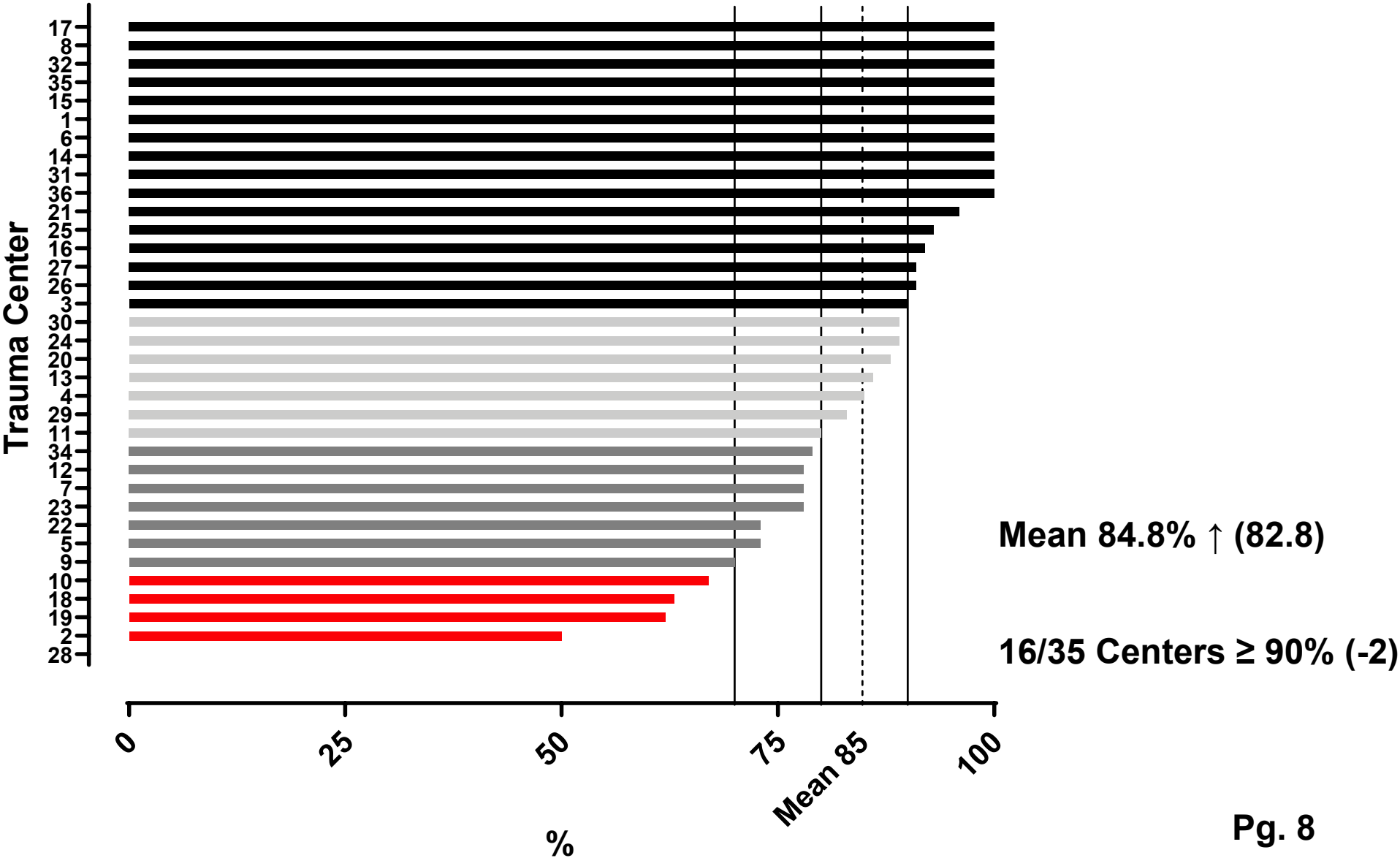
- ◆ Head CT date and time from procedures
- ◆ Presence of prehospital anticoagulation
- ◆ TBI (AIS Head, excluding NFS, scalp, neck, hypoxia)
- ◆ Cohort1, Blunt mechanism
- ◆ Exclude direct admissions and transfer in
- ◆ No Signs of Life = Exclude DOAs
- ◆ Transfers Out = Include Transfers Out
- ◆ Time Period = 7/1/20 to 6/30/21

#9 Head CT in Anticoagulated Patient with TBI

- ◆ Measure = % of patients with Head CT, date, and time
- ◆ Timing
 - $\geq 90\%$ patients (≤ 120 min)
 - $\geq 80\%$ patients (≤ 120 min)
 - $\geq 70\%$ patients (≤ 120 min)
 - $< 70\%$ patients (≤ 120 min)

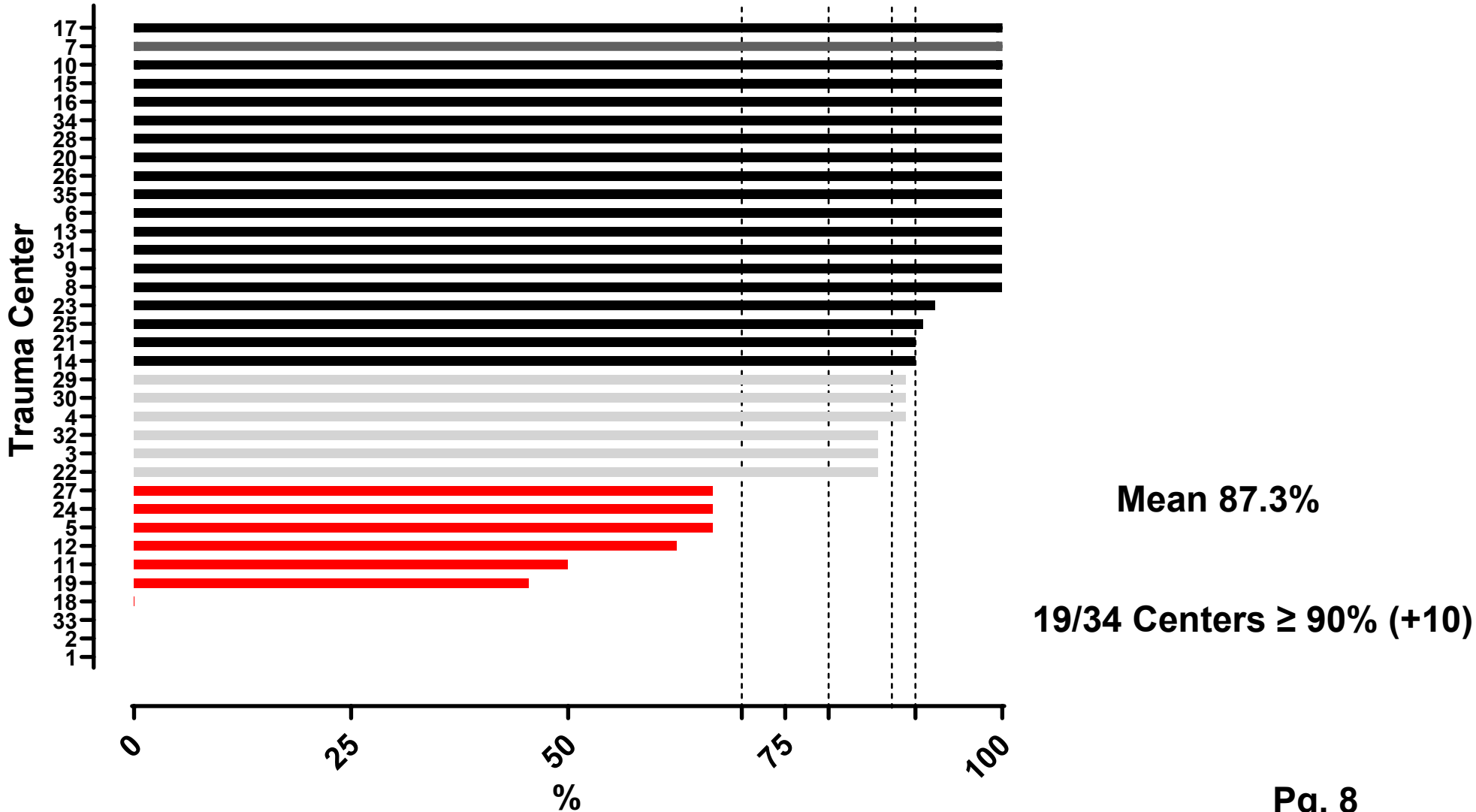
Today

Metric #9 - ED Head CT ≤ 120 min
Cohort 1 - MTQIP All on Anticoagulant (Excluding ASA)
7/1/20 - 5/31/21



Last Year

Metric #9 - ED Head CT ≤ 120 min
Cohort 1 - MTQIP All, TBI on Anticoagulant (Excluding ASA)
7/1/19 - 1/31/20



#10 Timely Antibiotic in Femur/Tibia Open Fractures - Collaborative Wide Measure

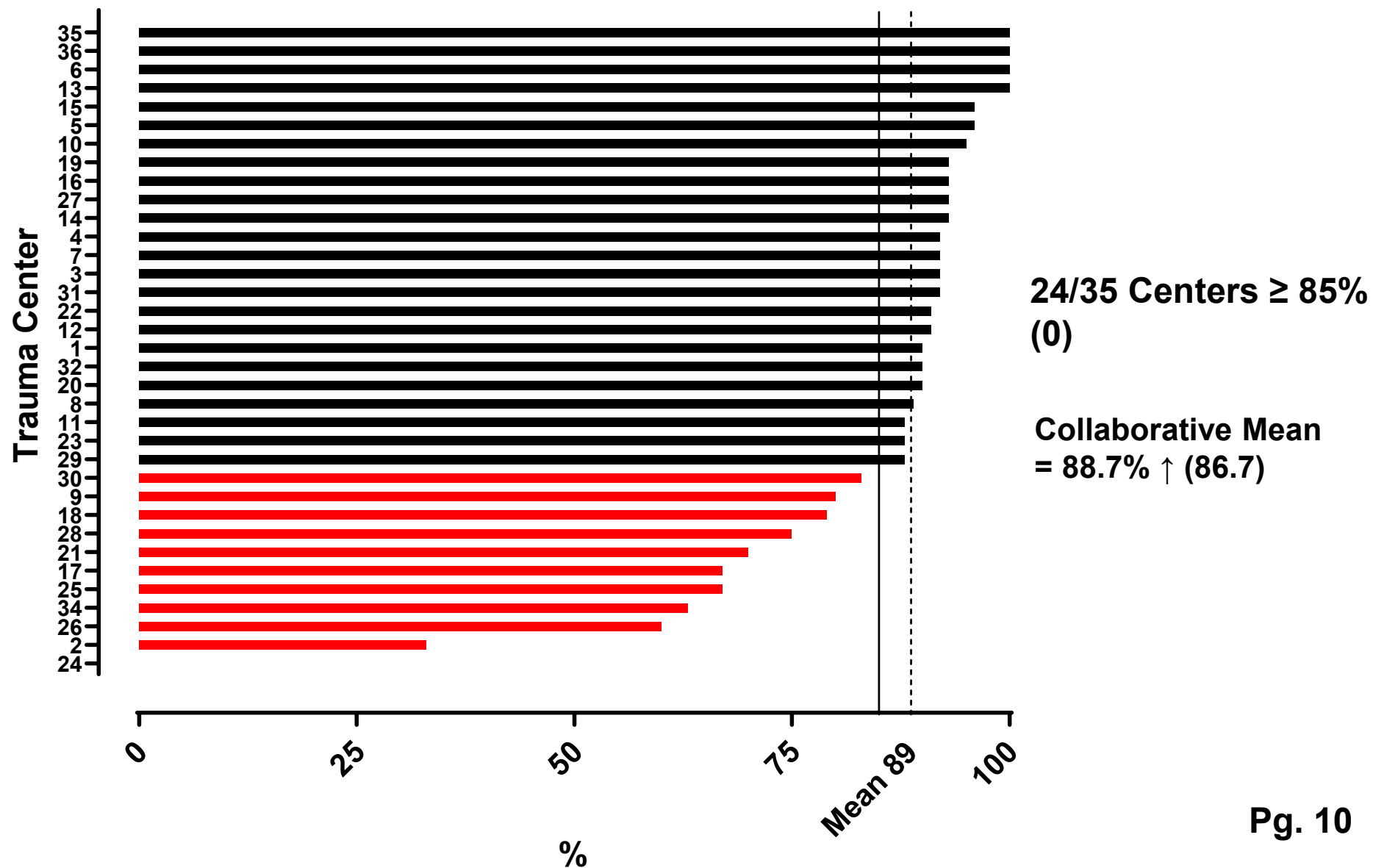
- ◆ Type of antibiotic administered along with date and time for open fracture of femur or tibia
- ◆ Presence of acute open femur or tibia fracture based on AIS or ICD10 codes (See list)
- ◆ Cohort = Cohort 1 (All)
- ◆ Exclude direct admissions and transfer in
- ◆ No Signs of Life = Exclude DOAs
- ◆ Transfers Out = Include Transfers Out
- ◆ Time Period = 7/1/20 to 6/30/21

#10 Open Fracture Antibiotic Usage

- ◆ Measure = % of patients with antibiotic type, date, time recorded ≤ 120 minutes
 - $\geq 85\%$ patients (≤ 120 min) > 10 points
 - All or nothing
- ◆ ACS-COT Orange Book – VRC resources
 - Administration within 60 minutes
 - ◆ ACS OTA Ortho Update
 - ◆ ACS TQIP Best Practices Orthopedics

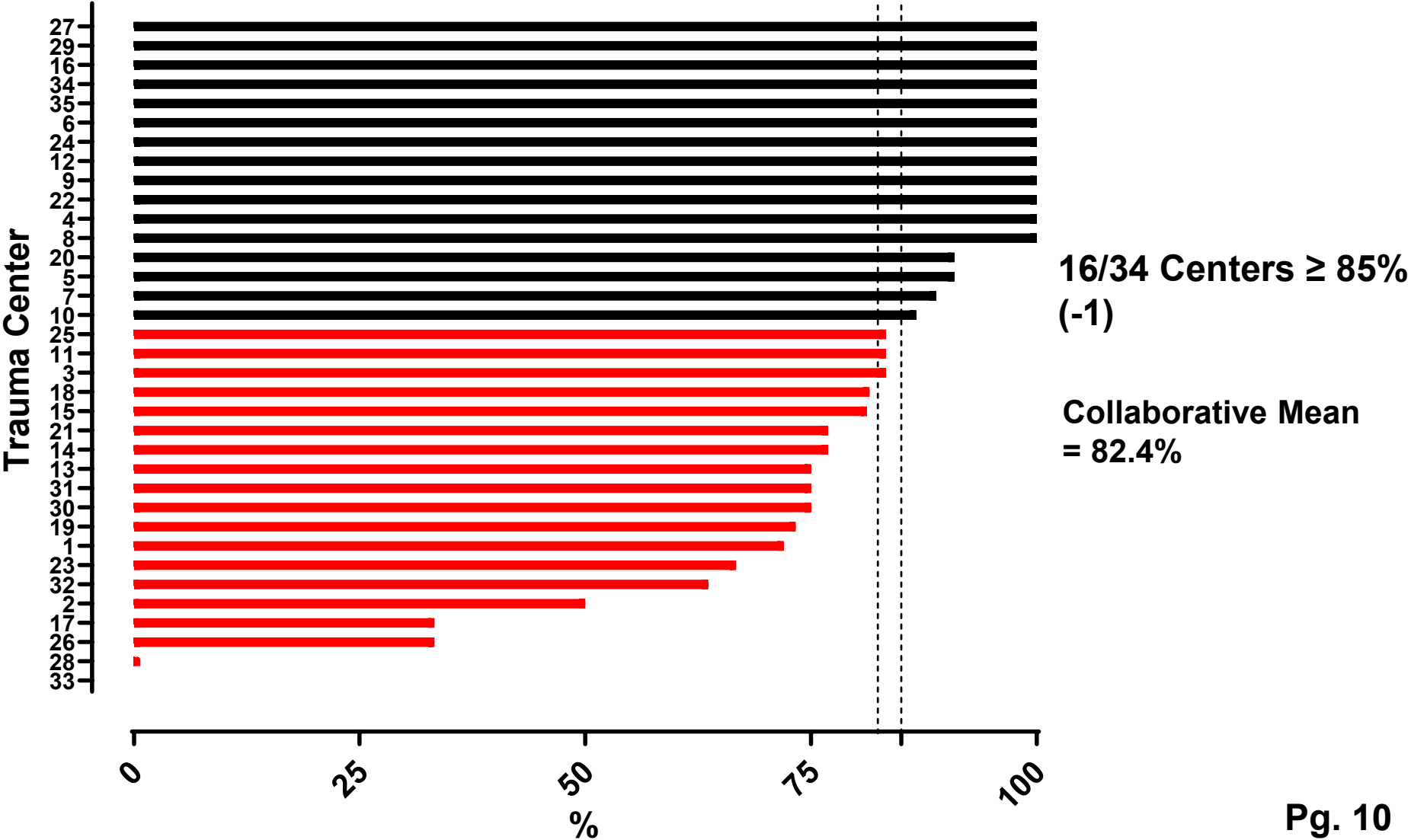
Today

Metric #10 - Open Fracture - Time to Abx \leq 120 min
Cohort 1 - MTQIP All
7/1/20 - 5/31/21

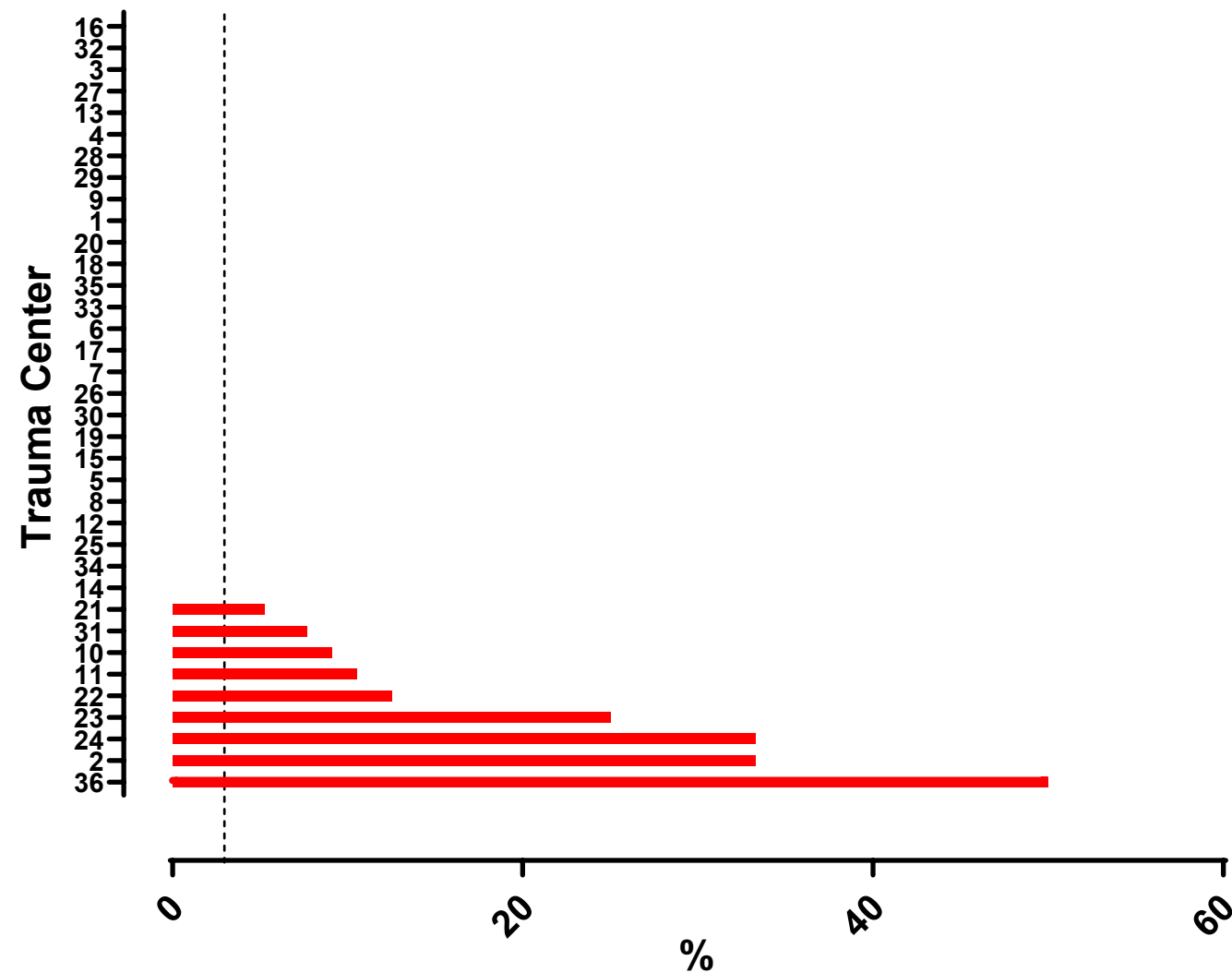


Last Year

Metric #10 - Open Fracture - Time to Abx \leq 120 min
Cohort 1 - MTQIP All
7/1/19 - 1/31/20

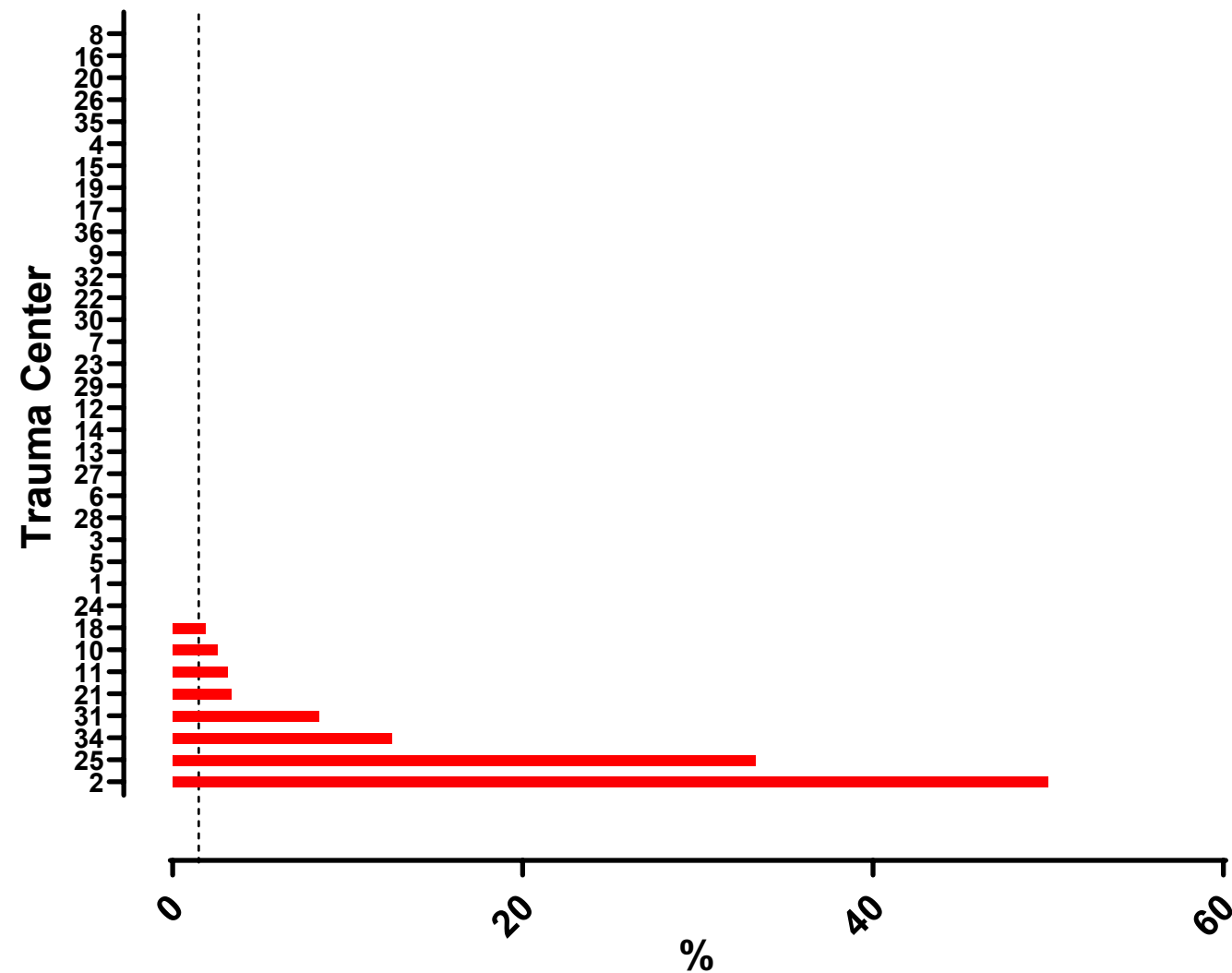


Open Fracture - Missing Type, Date or Time
Cohort 1 - MTQIP All
7/1/20 - 1/31/21



Today

Open Fracture - Missing Type, Date or Time
Cohort 1 - MTQIP All
7/1/20 - 5/31/21



#10 Open Fracture Antibiotic Usage

- ◆ Measure = % of patients with antibiotic type, date, time recorded \leq **90** minutes
 - $\geq 85\%$ patients (≤ 120 min) > 10 points
 - All or nothing
- ◆ Started 7/1/2021
- ◆ Results for 1/1/2021 to 5/30/2021
 - 78% (220/283)

Mortality or Hospice Cohort 7 - National Benchmark

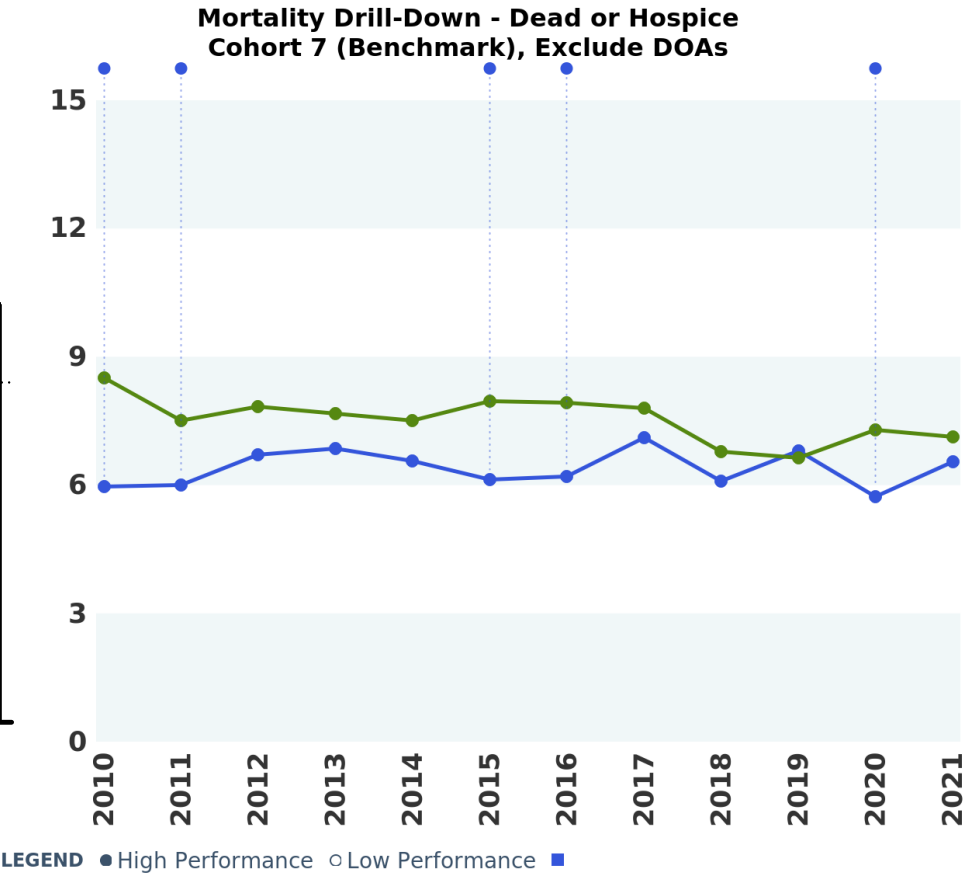
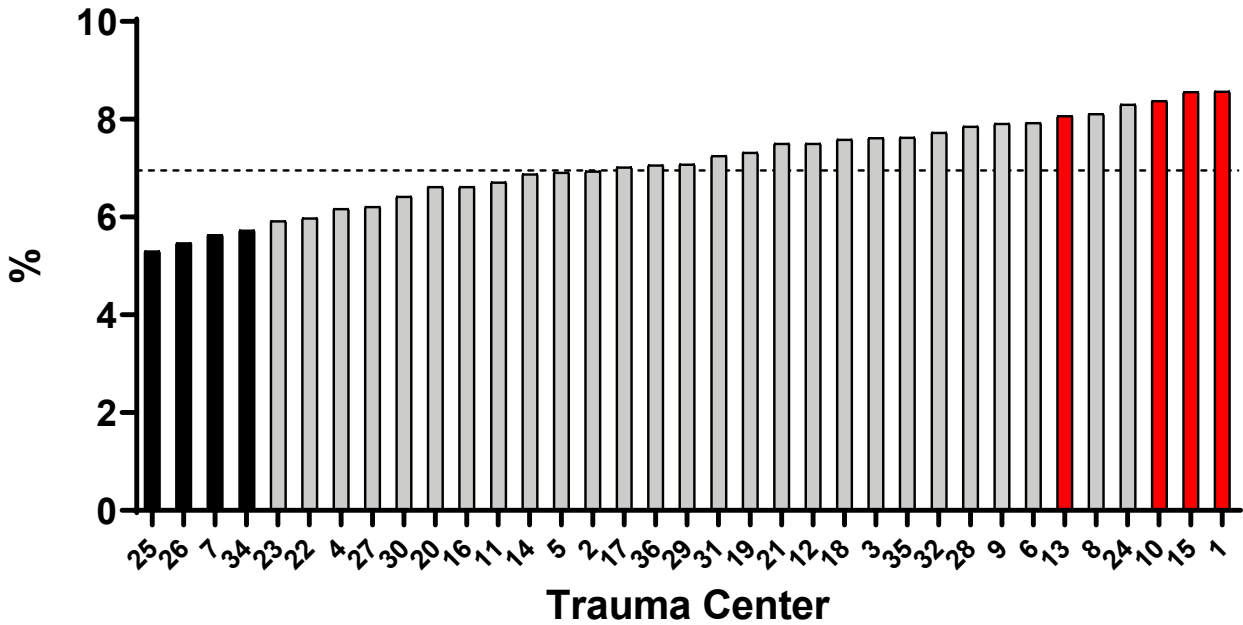


Table 2: Risk-Adjusted Mortality by Cohort

| Cohort | Patients N | Mortality | | | | Odds Ratio and 95% Confidence Interval | | | | |
|-------------------|---------------|--------------------|-----------------|-----------------|---------------------|---|-------|-------|---------|--------|
| | | Observed Events | Observed (%) | Expected (%) | TQIP Average (%) | Odds Ratio | Lower | Upper | Outlier | Decile |
| All Patients | 454 | 29 | 6.4 | 9.0 | 7.6 | 0.67 | 0.46 | 0.98 | Low | 1 |
| Blunt Multisystem | 92 | 10 | 10.9 | 13.5 | 14.9 | 0.87 | 0.54 | 1.40 | Average | 2 |
| Penetrating | 7 | 1 | 14.3 | 10.8 | 10.9 | 1.04 | 0.48 | 2.26 | Average | 7 |

TBI and Anticoagulant Reversal

Mark Hemmila, MD



Summary

- ◆ TBI patient
 - AIS 2-5 in Head
 - 16,884 patients
 - AIS ≥ 3 13,564 patients

| (max) max_hn_ais | Freq. | Percent | Cum. |
|---------------------|-------|---------|--------|
| 2 | 3320 | 19.66 | 19.66 |
| 3 | 6681 | 39.57 | 59.23 |
| 4 | 3845 | 22.77 | 82.01 |
| 5 | 3038 | 17.99 | 100.00 |
| Total | 16884 | 100.00 | |

| | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 2018 | 4715 | 27.93 | 27.93 |
| 2019 | 5292 | 31.34 | 59.27 |
| 2020 | 5196 | 30.77 | 90.04 |
| 2021 | 1681 | 9.96 | 100.00 |
| Total | 16884 | 100.00 | |

| | Freq. | Percent | Cum. |
|--|-------|---------|-------|
| (0) No prior anticoag or antiplt use | 9321 | 55.21 | 55.21 |
| (1) Prior anticoag use | 1358 | 8.04 | 63.25 |
| (2) Prior antiplt use | 5228 | 30.96 | 94.21 |
| (3) Prior anticoag and antiplt use (combo) | 977 | 5.79 | 100 |
| Total | 16884 | 100 | |

| | Freq. | Percent |
|-------------------|-------|---------|
| coumadin | 1027 | 6.08 |
| direct thrombin | 35 | 0.21 |
| factor xa | 1290 | 7.64 |
| aspirin or plavix | 6205 | 36.75 |
| Total | 16884 | 100 |

Prior anticoagulant use

| Reversal Agent | n | % |
|--|-----|-------|
| FFP | 155 | 11.4% |
| Platelets | 47 | 3.5% |
| Vitamin K | 357 | 26.3% |
| 4f PCC | 472 | 34.8% |
| 3f PCC | 7 | 0.5% |
| Antifibrolytic (TXA) | 64 | 4.7% |
| Desmopressin | 12 | 0.9% |
| Protamine | 3 | 0.2% |
| Dialysis | 3 | 0.2% |
| Charcoal | 0 | 0.0% |
| Monoclonal ab (Praxbind) | 3 | 0.2% |
| Modified recombinant factor Xa (Andexanet) | 35 | 2.6% |
| Other | 45 | 3.3% |
| PRBC | 53 | 3.9% |
| Any | 769 | 56.6% |

Prior antiplatelet use

| Reversal Agent | n | % |
|--|------|-------|
| FFP | 89 | 1.7% |
| Platelets | 908 | 17.4% |
| Vitamin K | 30 | 0.6% |
| 4f PCC | 30 | 0.6% |
| 3f PCC | 2 | 0.0% |
| Antifibrolytic (TXA) | 231 | 4.4% |
| Desmopressin | 454 | 8.7% |
| Protamine | 2 | 0.0% |
| Dialysis | 8 | 0.2% |
| Charcoal | 1 | 0.0% |
| Monoclonal ab (Praxbind) | 2 | 0.0% |
| Modified recombinant factor Xa (Andexanet) | 2 | 0.0% |
| Other | 17 | 0.3% |
| PRBC | 132 | 2.5% |
| Any | 1468 | 28.1% |

Prior anticoagulant and antiplatelet use

| Reversal Agent | n | % |
|--|-----|-------|
| FFP | 107 | 11.0% |
| Platelets | 134 | 13.7% |
| Vitamin K | 253 | 25.9% |
| 4f PCC | 371 | 38.0% |
| 3f PCC | 0 | 0.0% |
| Antifibrolytic (TXA) | 50 | 5.1% |
| Desmopressin | 65 | 6.7% |
| Protamine | 1 | 0.1% |
| Dialysis | 1 | 0.1% |
| Charcoal | 1 | 0.1% |
| Monoclonal ab (Praxbind) | 4 | 0.4% |
| Modified recombinant factor Xa (Andexanet) | 34 | 3.5% |
| Other | 31 | 3.2% |
| PRBC | 44 | 4.5% |
| Any | 597 | 61.1% |

For patients w prior anticoagulant use

Summary statistics

| | N | Mean | Std. Dev. | min | p25 | Median | p75 |
|----------------------|-----|---------|--------------|-----|-------|--------|------|
| min to tbi ffp | 140 | 324.429 | 311.114 | 5 | 135.5 | 226.5 | 375 |
| min to tbi prbc | 36 | 332.806 | 429.488 | 5 | 47 | 171.5 | 413 |
| min to tbi plt | 37 | 276.216 | 228.046 | 26 | 92 | 244 | 417 |
| min to tbi vitk | 334 | 242.314 | 243.184 | 0 | 98 | 158 | 274 |
| min to tbi 4fpcc | 457 | 162.416 | 129.122 | 0 | 84 | 126 | 196 |
| min to tbi 3fpcc | 6 | 117.5 | 50.163 | 58 | 66 | 120 | 161 |
| min to tbi antifb | 62 | 140.516 | 168.580 | 0 | 47 | 86 | 192 |
| min to tbi desmo | 11 | 286.727 | 213.803 | 68 | 134 | 217 | 339 |
| min to tbi prot | 2 | 88 | 26.870 | 69 | 69 | 88 | 107 |
| min to tbi hd | 2 | 1072.5 | 316.077 | 849 | 849 | 1072.5 | 1296 |
| min to tbi char | 0 | . | . | . | . | . | . |
| min to tbi monab | 3 | 208.667 | 168.776 | 50 | 50 | 190 | 386 |
| min to tbi fxa | 34 | 186.265 | 112.083 | 66 | 111 | 147 | 228 |
| min to tbi other | 44 | 239.636 | 327.808 | 15 | 89 | 132.5 | 227 |
| min to first rever~l | 731 | 187.906 | 200.266 | 0 | 82 | 133 | 212 |

For patients w prior antiplatelet use

Summary statistics

| | N | Mean | Std. Dev. | min | p25 | Median | p75 |
|----------------------|------|---------|--------------|-----|-----|--------|-----|
| min to tbi ffp | 85 | 318.929 | 316.145 | 4 | 101 | 223 | 410 |
| min to tbi prbc | 85 | 404.106 | 428.567 | 8 | 68 | 204 | 581 |
| min to tbi plt | 871 | 281.69 | 242.427 | 4 | 126 | 205 | 345 |
| min to tbi vitk | 25 | 404.92 | 330.705 | 57 | 111 | 374 | 581 |
| min to tbi 4fpcc | 27 | 197.815 | 124.131 | 18 | 94 | 163 | 264 |
| min to tbi 3fpcc | 0 | . | . | . | . | . | . |
| min to tbi antifb | 223 | 164.713 | 213.503 | 0 | 57 | 110 | 189 |
| min to tbi desmo | 441 | 223.819 | 212.526 | 12 | 92 | 159 | 264 |
| min to tbi prot | 2 | 233.5 | 127.986 | 143 | 143 | 233.5 | 324 |
| min to tbi hd | 7 | 706 | 335.752 | 142 | 480 | 751 | 928 |
| min to tbi char | 0 | . | . | . | . | . | . |
| min to tbi monab | 2 | 69 | 21.213 | 54 | 54 | 69 | 84 |
| min to tbi fxa | 1 | 618 | . | 618 | 618 | 618 | 618 |
| min to tbi other | 13 | 156.692 | 89.654 | 0 | 79 | 197 | 224 |
| min to first rever~l | 1409 | 237.699 | 222.859 | 0 | 99 | 173 | 285 |

For patients w prior anticoagulant and antiplatelet combo use

Summary statistics

| | N | Mean | Std. Dev. | min | p25 | Median | p75 |
|----------------------|-----|---------|--------------|------|------|--------|-------|
| min to tbi ffp | 99 | 334.778 | 331.658 | 23 | 113 | 190 | 451 |
| min to tbi prbc | 28 | 391.893 | 343.091 | 12 | 183 | 301 | 517 |
| min to tbi plt | 130 | 319.938 | 306.773 | 24 | 117 | 213 | 349 |
| min to tbi vitk | 243 | 234.074 | 252.120 | 12 | 99 | 162 | 252 |
| min to tbi 4fpcc | 356 | 178.435 | 191.585 | 12 | 86 | 131 | 189.5 |
| min to tbi 3fpcc | 0 | . | . | . | . | . | . |
| min to tbi antifb | 48 | 125.271 | 111.971 | 0 | 41 | 93.5 | 190 |
| min to tbi desmo | 63 | 241.032 | 230.851 | 12 | 109 | 166 | 283 |
| min to tbi prot | 1 | 64 | . | 64 | 64 | 64 | 64 |
| min to tbi hd | 1 | 1236 | . | 1236 | 1236 | 1236 | 1236 |
| min to tbi char | 1 | 126 | . | 126 | 126 | 126 | 126 |
| min to tbi monab | 3 | 143.333 | 53.985 | 94 | 94 | 135 | 201 |
| min to tbi fxa | 33 | 189.97 | 127.633 | 65 | 98 | 148 | 242 |
| min to tbi other | 31 | 149.871 | 103.796 | 24 | 75 | 107 | 214 |
| min to first rever~l | 577 | 185.102 | 205.898 | 0 | 82 | 129 | 206 |

INR Values:

Tabulation of inr_val

| | Freq. | Percent | Cum. |
|---------|-------|---------|--------|
| 2+ | 470 | 68.91 | 68.91 |
| <2 | 186 | 27.27 | 96.19 |
| >10 | 18 | 2.64 | 98.83 |
| Missing | 8 | 1.17 | 100.00 |
| Total | 682 | 100.00 | |

Time to reversal, by agent, for patients on warfarin, INR 2+

Summary statistics

| | N | Mean | Std. Dev. | min | p25 | Median | p75 |
|----------------------|-----|---------|--------------|------|------|--------|------|
| min to tbi ffo | 121 | 302.752 | 310.014 | 5 | 127 | 198 | 346 |
| min to tbi prbc | 18 | 262 | 323.940 | 6 | 61 | 156 | 258 |
| min to tbi plt | 49 | 317.735 | 285.710 | 36 | 103 | 215 | 417 |
| min to tbi vitk | 403 | 223.814 | 220.007 | 12 | 101 | 158 | 252 |
| min to tbi 4fpcc | 330 | 180.476 | 163.950 | 12 | 91 | 138.5 | 214 |
| min to tbi 3fpcc | 3 | 116.333 | 58.158 | 66 | 66 | 103 | 180 |
| min to tbi antifb | 23 | 158.391 | 108.769 | 6 | 62 | 148 | 237 |
| min to tbi desmo | 19 | 364.158 | 308.248 | 12 | 152 | 290 | 454 |
| min to tbi prot | 1 | 107 | . | 107 | 107 | 107 | 107 |
| min to tbi hd | 2 | 1266 | 42.426 | 1236 | 1236 | 1266 | 1296 |
| min to tbi char | 0 | . | . | . | . | . | . |
| min to tbi monab | 0 | . | . | . | . | . | . |
| min to tbi fxa | 0 | . | . | . | . | . | . |
| min to tbi other | 5 | 390.8 | 564.666 | 15 | 66 | 85 | 431 |
| min to first rever~l | 470 | 187.136 | 192.874 | 5 | 82 | 135 | 218 |

Time to reversal, by agent, for patients on warfarin, INR <2

Summary statistics

| | N | Mean | Std. Dev. | min | p25 | Median | p75 |
|----------------------|-----|---------|--------------|-----|-----|--------|-----|
| min to tbi ffo | 57 | 346.965 | 313.167 | 20 | 134 | 247 | 476 |
| min to tbi prbc | 8 | 554.75 | 547.474 | 10 | 21 | 532.5 | 955 |
| min to tbi plt | 22 | 264.682 | 222.157 | 26 | 134 | 206.5 | 323 |
| min to tbi vitk | 114 | 259.596 | 296.609 | 0 | 90 | 159.5 | 260 |
| min to tbi 4fpcc | 71 | 163.31 | 180.363 | 28 | 70 | 111 | 192 |
| min to tbi 3fpcc | 2 | 97.5 | 55.861 | 58 | 58 | 97.5 | 137 |
| min to tbi antifb | 11 | 73.091 | 59.884 | 16 | 32 | 50 | 113 |
| min to tbi desmo | 7 | 247.714 | 268.891 | 84 | 96 | 117 | 279 |
| min to tbi prot | 1 | 69 | . | 69 | 69 | 69 | 69 |
| min to tbi hd | 0 | . | . | . | . | . | . |
| min to tbi char | 0 | . | . | . | . | . | . |
| min to tbi monab | 0 | . | . | . | . | . | . |
| min to tbi fxa | 0 | . | . | . | . | . | . |
| min to tbi other | 5 | 226.6 | 53.696 | 137 | 230 | 232 | 257 |
| min to first rever~l | 186 | 227.194 | 269.912 | 0 | 79 | 139 | 239 |

| drug grp | Freq. | Percen | Cum. |
|-------------------------|--------|--------|-------|
| | | | |
| (1) Aspirin Only | 3,825 | 22.95 | 22.95 |
| (2) Plavix Only | 346 | 2.08 | 25.02 |
| (3) Factor Xa Only | 725 | 4.35 | 29.37 |
| (4) Coumadin Only | 602 | 3.61 | 32.98 |
| (5) Aspirin + Plavix | 1,057 | 6.34 | 39.32 |
| (6) Aspirin + Factor Xa | 434 | 2.6 | 41.93 |
| (7) Aspirin + Coumadin | 359 | 2.15 | 44.08 |
| (8) None | 9,321 | 55.92 | 100 |
| | | | |
| Total | 16,669 | 100 | |

215 dropped; 35 direct thrombin and 180 other combos

| | | (1) Aspirin Only | (2) Plavix Only | (3) Factor Xa Only | (4) Coumadin Only | (5) Aspirin + Plavix | (6) Aspirin + Factor_Xa | (7) Aspirin + Coumadin | (8) None | p-value |
|--|------|---------------------|---------------------|---------------------|---------------------|----------------------|-------------------------|------------------------|---------------------|---------|
| | | N=3,825 | N=346 | N=725 | N=602 | N=1,057 | N=434 | N=359 | N=9,321 | |
| tbi_flag | 1 | 3,825 (100.0%) | 346 (100.0%) | 725 (100.0%) | 602 (100.0%) | 1,057 (100.0%) | 434 (100.0%) | 359 (100.0%) | 9,321 (100.0%) | |
| year | 2018 | 1,147 (30.0%) | 88 (25.4%) | 133 (18.3%) | 193 (32.1%) | 265 (25.1%) | 98 (22.6%) | 121 (33.7%) | 2,622 (28.1%) | <0.001 |
| | 2019 | 1,206 (31.5%) | 122 (35.3%) | 242 (33.4%) | 204 (33.9%) | 357 (33.8%) | 138 (31.8%) | 134 (37.3%) | 2,820 (30.3%) | |
| | 2020 | 1,117 (29.2%) | 106 (30.6%) | 257 (35.4%) | 150 (24.9%) | 307 (29.0%) | 137 (31.6%) | 79 (22.0%) | 2,969 (31.9%) | |
| | 2021 | 355 (9.3%) | 30 (8.7%) | 93 (12.8%) | 55 (9.1%) | 128 (12.1%) | 61 (14.1%) | 25 (7.0%) | 910 (9.8%) | |
| (max) max_hn_ais | 2 | 816 (21.3%) | 69 (19.9%) | 167 (23.0%) | 88 (14.6%) | 197 (18.6%) | 105 (24.2%) | 80 (22.3%) | 1,760 (18.9%) | <0.001 |
| | 3 | 1,523 (39.8%) | 136 (39.3%) | 280 (38.6%) | 209 (34.7%) | 340 (32.2%) | 158 (36.4%) | 101 (28.1%) | 3,866 (41.5%) | |
| | 4 | 884 (23.1%) | 67 (19.4%) | 127 (17.5%) | 146 (24.3%) | 257 (24.3%) | 94 (21.7%) | 78 (21.7%) | 2,133 (22.9%) | |
| | 5 | 602 (15.7%) | 74 (21.4%) | 151 (20.8%) | 159 (26.4%) | 263 (24.9%) | 77 (17.7%) | 100 (27.9%) | 1,562 (16.8%) | |
| any_reversal | 0 | 2,984 (78.0%) | 216 (62.4%) | 382 (52.7%) | 191 (31.7%) | 560 (53.0%) | 206 (47.5%) | 107 (29.8%) | 8,990 (96.4%) | <0.001 |
| | 1 | 841 (22.0%) | 130 (37.6%) | 343 (47.3%) | 411 (68.3%) | 497 (47.0%) | 228 (52.5%) | 252 (70.2%) | 331 (3.6%) | |
| min_to_first_reversal | | 250.5542 (235.2346) | 236.4646 (229.5576) | 174.8116 (191.0397) | 199.4987 (209.4453) | 216.476 (197.0619) | 182.7327 (183.1808) | 197.1093 (229.3615) | 248.5109 (277.4457) | <0.001 |
| Data are presented as mean (SD) for continuous measures, and n (%) for categorical measures. | | | | | | | | | | |

Break

Back at 2:00 p



Attendance Credit

- **Sign confidentially agreement.**

MTQIP Program Manager Update

Jill Jakubus, PA-C MHSA



Confidentiality Agreement

Please don't forget to sign for attendance credit

New Staff Transition

- **Data Quality Specialist**
 - **MTQIP/MACS data validation**
 - **Education curation**
 - **Member resource**



Shauna Di Pasquo



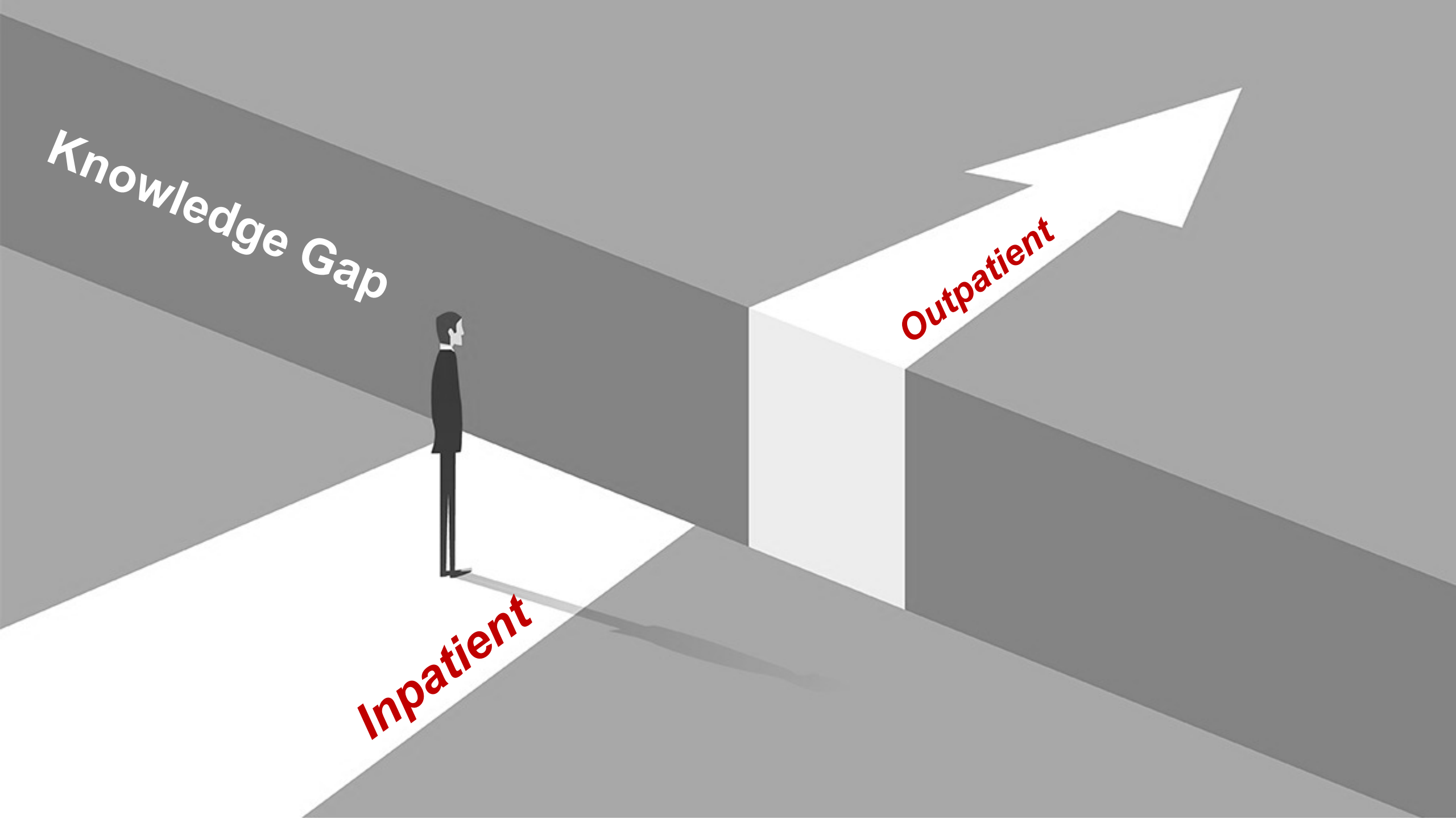
Opioid Quality Improvement Initiatives

Pop Quiz



Q

How many tablets of pain medication does an opioid-naive patient need at discharge after a **total hip arthroplasty**?



Knowledge Gap

Outpatient

Inpatient

Takeaways from our research on opioid prescribing after surgery

1



Becoming a new chronic opioid user is the most common post-surgical complication

2



Prescribing often far exceeds pain management needs

3



Prescription size is the strongest predictor of how much opioid a person will use

Ways to reduce risk associated with opioid prescribing after surgery

1



Prescribing Recommendations

Implementing evidence-based, operation-specific opioid prescribing recommendations can help to eliminate overprescribing.

2



Transitions of Care

Improving care coordination between surgeons and primary care providers could lead to earlier identification of patients at risk for new chronic use.

3



Disposal

Having a variety of methods for patients to dispose of leftover opioids can decrease opportunities for diversion and misuse.

Literature



Effect of injury location and severity on opioid use after trauma

Rachel C. Baker, MD, Craig S. Brown, MD, MSc, John R. Montgomery, MD, MSc, Charles A. Mouch, MD, Brooke C. Kenney, MPH, Michael J. Englesbe, MD, Jennifer F. Waljee, MD, MSc, MPH, and Mark R. Hemmila, MD, Ann Arbor, Michigan

OBJECTIVE: Recent data have suggested that persistent opioid use is prevalent following trauma. The effect of type of injury and total injury burden is not known. We sought to characterize the relationship between injury location and severity and risk of persistent opioid use.

METHODS: We investigated postdischarge opioid utilization among patients who were admitted for trauma between January 2010 and June 2017 using the Optum Clinformatics Database. New persistent opioid use (NPOU) was defined as one of the following scenarios: (1) two separate opioid prescription fills between 0 and 14 days postdischarge and having 1+ fills in the 91 to 180 days following discharge or (2) filling a prescription in the 15 to 90 days following discharge in addition to a filling in the 91 to 180 day postdischarge period. Multivariable logistic regression was used to assess the relationship between injury type and severity with new persistent opioid use development.

RESULTS: A total of 26,437 opioid-naïve patients were included in the analysis. Overall, 2,277 patients (8.6%) met the criteria for NPOU. After adjustment for confounding, NPOU was significantly more common for patients with injury to the extremities (adjusted odds ratio [aOR], 1.75; 95% confidence interval [CI], 1.57–1.94) or abdomen (adjusted odds ratio [aOR], 1.42; 95% CI, 1.22–1.64). Importantly, patients with maximum Abbreviated Injury Scale score of ≥ 2 for any body region had 1.49-fold odds of NPOU compared with patients with score of 1 (95% CI, 1.28–1.73), while no difference was seen across groupings of total injury burden based on Injury Severity Score.

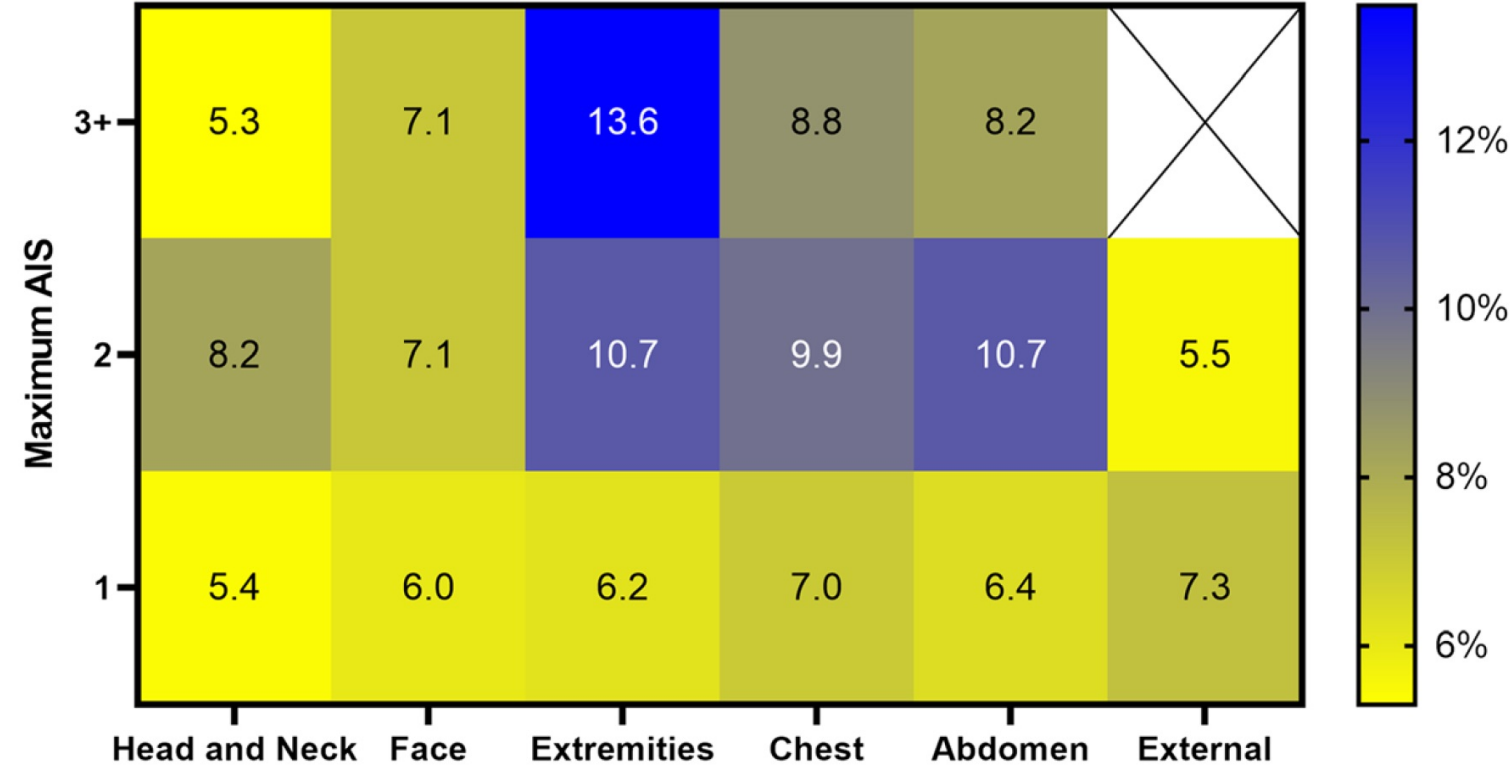
CONCLUSION: New persistent opioid use is common among patients suffering from trauma. In addition, patients suffering from extremity and abdominal injuries are at highest risk. Maximum individual region injury severity predicts development of new persistent use, whereas total injury severity does not. (*J Trauma Acute Care Surg.* 2021;91: 226–233. Copyright © 2021 Wolters Kluwer Health, Inc. All rights reserved.)

CONCLUSION: New persistent opioid use is common among patients suffering from trauma. In addition, patients suffering from extremity and abdominal injuries are at highest risk. Maximum individual region injury severity predicts development of new persistent use, whereas total injury severity does not. (*J Trauma Acute Care Surg.* 2021;91: 226–233. Copyright © 2021 Wolters Kluwer Health, Inc. All rights reserved.)

Literature



Proportion of Patients Within Each Body Region with New Persistent Opioid Use



Literature

Age-related Opioid Exposure in Trauma: A Secondary Analysis of the Multimodal Analgesia Strategies for Trauma (MAST) Randomized Trial

Gabrielle E Hatton^{1 2 3}, Heather R Kregel^{1 2 3}, Claudia Pedroza⁴, Thaddeus J Puzio^{1 3}, Sasha D Adams^{1 3}, Charles E Wade^{1 3}, Lillian S Kao^{1 2 3}, John A Harvin^{1 3 5}

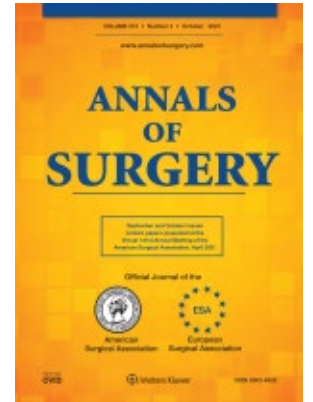
Objective: Evaluate the effect of age on opioid consumption after traumatic injury.

Summary background data: Older trauma patients receive fewer opioids due to decreased metabolism and increased complications, but adequacy of pain control is unknown. We hypothesized that older trauma patients require fewer opioids to achieve adequate pain control.

Methods: A secondary analysis of the multimodal analgesia strategies for trauma Trial evaluating the effectiveness of 2 multimodal pain regimens in 1561 trauma patients aged 16 to 96 was performed. Older patients (≥ 55 years) were compared to younger patients. Median daily oral morphine milligram equivalent (MME), opioid-related complications, and death

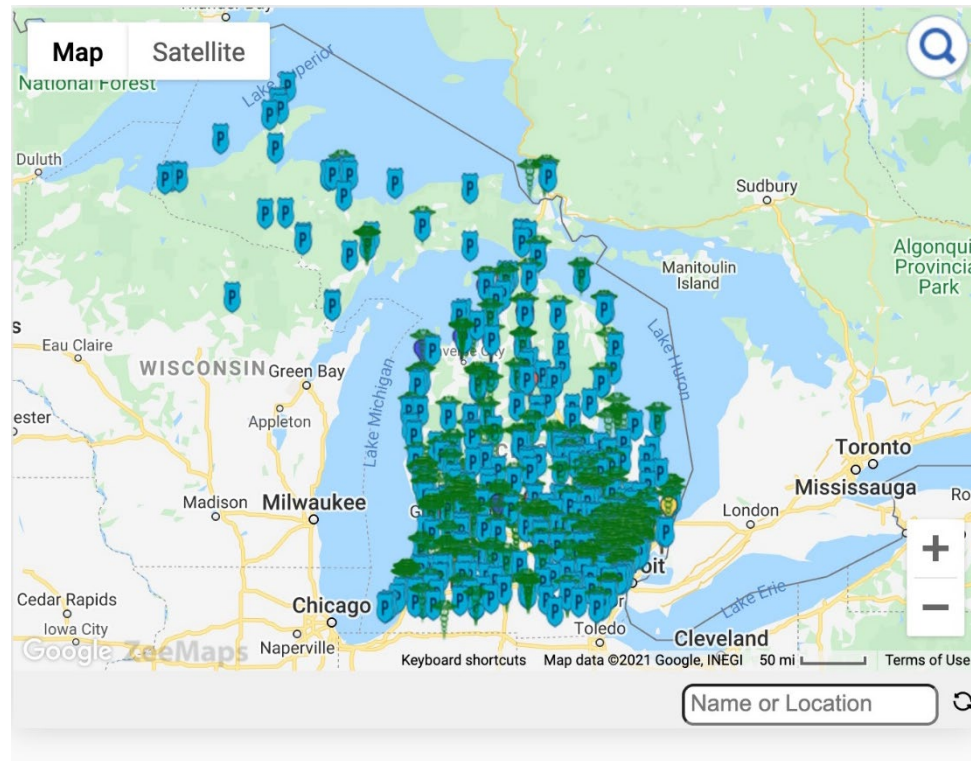
Results: Older patients (14 [9-22]) compared to 33 (24-43) [20] vs 14 [9-22], $P = 0.0$

Conclusions: Older trauma patients required fewer opioids than younger patients with similar characteristics and pain scores. Opioid dosing for post-traumatic pain should consider age. A 20 to 25% dose reduction per decade after age 55 may reduce opioid exposure without altering pain control.



Tools

Disposal Map



<https://michigan-open.org/safe-opioid-disposal/disposal-map/>

Tools

Opioid Prescribing Recommendations

| Orthopaedic Surgery | Oxycodone 5mg tablets* |
|---|------------------------|
| ✓ Total Hip Arthroplasty | 0 - 30 |
| ✓ Total Knee Arthroplasty | 0 - 50 |

Tools

Opioid Prescribing Recommendations

Orthopaedic Surgery

Oxycodone 5mg tablets*

^ [Total Hip Arthroplasty](#)

0 - 30

The manuscript containing this data is currently under review for publication. Michigan OPEN will make the data public upon completion of the review and publication process.

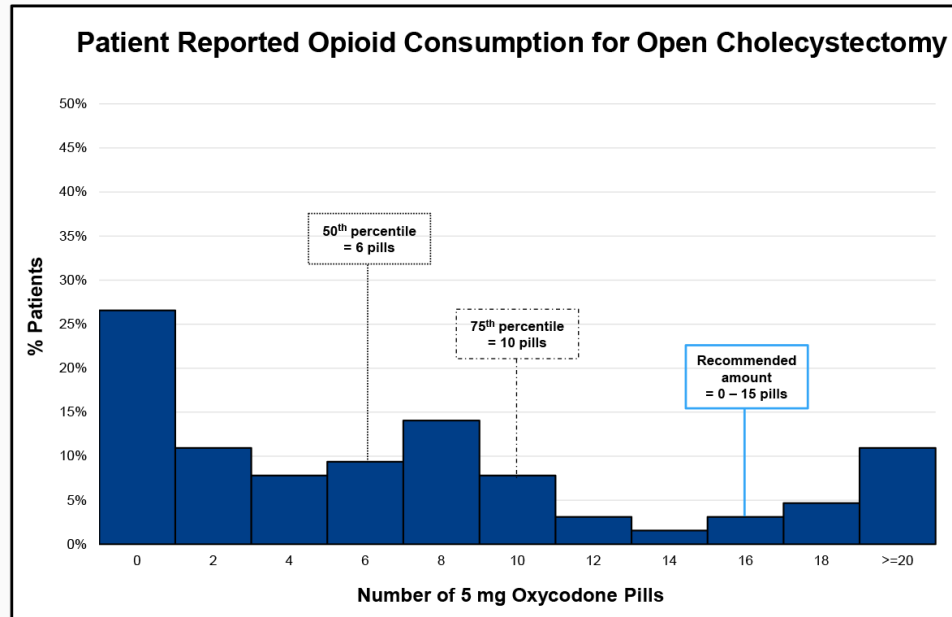
[Download PDF](#)

Tools

Opioid Prescribing Recommendations

[Cholecystectomy - Open](#)

0 - 15



64
opioid naïve
patients

26
hospitals

January 1, 2018
to
May 31, 2019

CQI Opioid Reporting





2022 MTQIP Opioid Reporting

MTQIP Reporting Direction

Opiod Process Measures

| | | | | | | |
|---------------|----------|-------|------|--------------------|--------------|--------------------|
| Tablet Type 1 | Strength | Units | | Max Dose (Tabs) | Max Freq/Day | Quantity (Tabs) |
| | | | | | | |
| Tablet Type 2 | Strength | Units | | Max Dose (Tabs) | Max Freq/Day | Quantity (Tabs) |
| | | | | | | |
| Solution Type | Strength | Units | mL | Max Dose (mL) | Max Freq/Day | Quantity (mL) |
| | | | | | | |
| Other Type | Strength | Units | Form | Max Dose (Product) | Max Freq/Day | Quantity (Product) |
| | | | | | | |

Discharge Opioid Prescription

MTQIP Reporting Direction

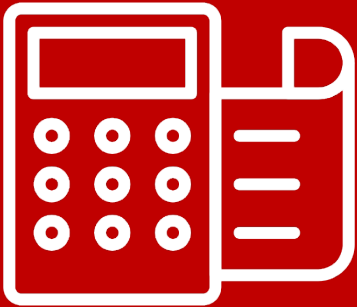
Opiod Process Measures

| | | | | | | |
|---------------|----------|-------|------|--------------------|--------------|--------------------|
| Tablet Type 1 | Strength | Units | | Max Dose (Tabs) | Max Freq/Day | Quantity (Tabs) |
| | | | | | | |
| Tablet Type 2 | Strength | Units | | Max Dose (Tabs) | Max Freq/Day | Quantity (Tabs) |
| | | | | | | |
| Solution Type | Strength | Units | mL | Max Dose (mL) | Max Freq/Day | Quantity (mL) |
| oxycodone | 5 | mg | 5 | 10 | 6 | 100 |
| Other Type | Strength | Units | Form | Max Dose (Product) | Max Freq/Day | Quantity (Product) |
| | | | | | | |

Discharge Opioid Prescription

MTQIP Reporting Direction

Measure



MME/Rx
MME/day

Identify



Opportunities

Create



Recommendations

Understand



Consumption



Discussion

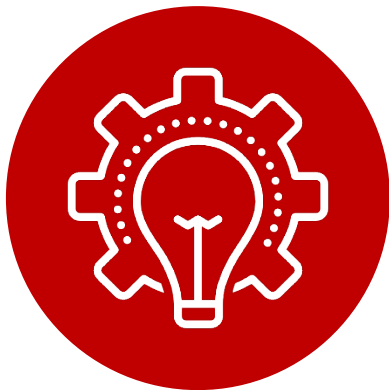


Analytic Updates

Research in Progress

| Center | PI | Topic | Phase |
|-----------------------------|----------|---|--|
| Detroit Receiving | Oliphant | The accuracy of orthopedic data in a trauma registry | Analysis |
| Henry Ford | Johnson | EMS vs. private car effect on outcomes | |
| Michigan Medicine | Anderson | Trauma outcomes | New |
| Michigan Medicine | Hemmila | Pedestrian protection | |
| ● Michigan Medicine | Oliphant | Decreasing time to antibiotic administration in open fractures of the femur and tibia through PI in CQI | Presented CSA/MSA Accepted <i>Surgery</i> |
| Michigan Medicine | Oliphant | Trauma center characteristics that drive quality, cost and efficiency in lower extremity injuries | New |
| Michigan Medicine | Ward | Clinical decision support tools | |
| Spectrum Health | Chapman | Outcomes in operative fixation of rib fractures | Analysis |
| Spectrum Health | Little | Traumatic frontal sinus fractures | Transitioning to center level analysis only |
| ● Spectrum Health | Miller | Outcomes in IMN of long bone fractures | Preparing for submission |
| ● St Joseph Mercy Ann Arbor | Curtiss | Infection rates in operative trauma patients | New |
| St Joseph Mercy Ann Arbor | Hecht | Time to anticoagulant reversal | |
| St. Joseph Mercy Ann Arbor | Hoesel | Rib fractures in the elderly | Analysis |
| St. Joseph Mercy Ann Arbor | Keyes | Impact of COVID-19 on trauma in the ED | |
| ● U of M Health - West | Mitchell | Blunt cerebral vascular injury | Analysis |

Patient-Reported Outcomes Progress



- 31
- 8
- 3
- 5
- 1
- 11
- 23
- 18
- 13
- 2
- 35
- 26
- 24
- 20
- 36
- 22
- 14
- 6
- 15
- 21
- 19
- 30
- 4



- 9
- 12
- 10
- 34
- 17
- 28



- 29
- 7
- 25



- 32
- 16
- 27

Deliberation

Review

Signed

Program Confirmed



Thank You

MTQIP Program Manager Update

Judy Mikhail, PhD



Meeting CME/Evaluation



- Evaluation link will be sent following meeting to those who filled out confidentiality agreement
- No confidentiality agreement=no CME
- Annual 4 questions included from BCBSM
 1. I find value in MTQIP
 2. Our hospital can only participate in MTQIP with \$ support from BCBSM
 3. MTQIP's coordinating center (*Mark/Jill/Judy*) is a valued partner
 4. BCBSM/BCN has been a reliable partner in MTQIP's quality efforts

Virtual ACS Visit Panel Discussion

1. Metro Health: Eric Mitchell, Yvonne Prowant
2. Michigan Medicine: Mark Hemmila, Cindy Wegryn
3. Bronson Methodist: Oreste Romeo, Cheryl Stevenson

Metro Health Lessons Learned ACS Virtual Visit May 3&4, 2021

Dr. Eric Mitchell, TMD & Yvonne Prowant, RN, TPM

Eric.Mitchell@umhwest.org yvonne.prowant@umhwest.org

First Impression Ma



Virtual Visit First Impression

- PRQ
- Charts (25) and required documents
- Pre-Review virtual meeting with reviewers (1 week before the visit)

Start Early



- Print and follow directions exactly.
- Check the ACS site frequently for updates.
- Create and publish a project calendar with key milestone dates.
- Send a 'Save the Date' calendar note to everyone who will be invited to the virtual participation.
- Spreadsheet preparation, patient selection and file preparation and sharing will TAKE MUCH LONGER than you might think.
- Talk to or visit someone who has had a virtual visit.

Box.com

One Note

All documents in '.pdf'
format

In Epic, a chart can be
saved in pdf format, no
'printing and scanning' is
needed.

Organize in sections and
categories exactly as they
show. Make it easy for
them to find what they
need.

This takes a LONG TIME!!
Plan accordingly.

April.hills@umhwest.org
is a great resource.

New Section 1

New Section 2

Abd_Thoracic
Injuries

Adverse Events

Deaths

Hospice

MTP

Neurosurgical
InjuriesNon-Surgical
Admissions and T...Orthopaedic
InjuriesAbd_Thoracic
Injuries

Patient Summary

Prehospital

Trauma Flowsheet a...

ED

History and Physical

Consults

Progress Notes

Operative Reports- ...

Anesthesia and OR ...

Imaging

Blood Bank

Discharge Summary

Autopsy

Guidelines_Protocols

PIPS

Patient Summary

Prehospital

Trauma Flowsheet a...

ED

History and Physical

Consults

Progress Notes

N/A

The organization of patient chart documents in One Note

Recruit an **IT SPECIALIST** ASAP and explain scope and timeframe. Be sure they understand that PHI info will be shared and the scope of files (hundreds).

Identify and orient a **VISIT COORDINATOR** who is organized and skilled with on-line meetings and can devote the time needed for organizing logistics. This person works closely with and meets regularly with the TPM but is **NOT the TPM**.

PRQ Section Meetings

Pre-Review Coaching

Copy **section of submitted PRQ** and distribute it to the liaison and clinical leader responsible for that section

TMD and TPM hold a **brief meeting** with them to review the ACS visit schedule and the PRQ info. Discuss potential questions reviewers may ask in their specialty.

Visit the clinical leader and liaison in their space for each area that will be toured and identify what will be shown and potential questions.

Virtual Review Meeting – instead of dinner.



- Send each participant a 'quick reference' for do's and don'ts for successful virtual meetings.

Practice, Practice, Practice

- About a month before, hold **10-15 min practice 'web meetings'** to test sound, background, image, & name visibility (name,title). See what the reviewers will see. Everyone should join from where they will be during visit.
- Send 'key points instructions' to everyone who is invited.
- Use **private spaces with camera on**.
- **Practice the tour** and create a small audience to provide feedback (background noise, what can they see and hear, transition time, stability of picture, audio quality). We practiced 3 different times. Be sure there are not areas where the video or audio doesn't work.
- We used an I-pad on a stand, a speaker/microphone combo, and carried a backup with us.

Know Your Cases and PI Documents Thoroughly

- Start thinking of your review at the beginning of your data year...Dot your I's and cross your T's.
- Be sure you have loop closure on issues.
- Identify charts that might be selected for your review so that you don't spend time searching for them. Know the categories.
- They will choose 25 charts from the spreadsheets you submit. Choose cases carefully and wisely for each spreadsheet.
- **Know these cases thoroughly!**
- We printed copies of key documents and made them available for TMD, TPM, and PI RN during the review for quick reference when questions were asked. Each had a notebook in the review room.

Maximize the Pre-Review Meeting with the Reviewers



Trauma
supplies are
organized,
color-coded,
and labeled to
follow
ATLS
assessment.



- Do a brief PPT presentation

- Brief hospital overview
- Show pictures of key areas that will be toured, that you want to highlight, but may be hard to see during the tour due to patients in rooms. For us, it was the trauma bay and color coding and organization of supplies according to ATLS assessment.
- Intro of trauma team (ones on this call)
- Overview of how the documents are organized and how to access them. (Share your screen and show them.)
- Ask reviewers about their preferences
- Ask them to access a chart within 24 hours and let you know that it was successful. (Can not use a MAC)



**UNIVERSITY OF
MICHIGAN HEALTH-WEST**
MICHIGAN MEDICINE

Michigan Medicine Visit

September 1 & 2, 2021

UM Verification


- ◆ Submit PRQ and get virtual date
- ◆ Preselected Chart Review (PCR) Template
 - Submit to lead reviewer 30-days prior (early)
 - Get list back of 20-25 charts by reviewer in 7 days
 - Preload charts (we had 2 weeks)
- ◆ Choose and arrange software
 - Dropbox (secure file share)
 - Zoom (videoconference)


Pre-review call

- ◆ Schedule as early as possible
- ◆ 7 days prior to visit
- ◆ TMD, TPM, navigators, coordinator
- ◆ Reviewers
- ◆ Listen to their preferences
 - We were asked to combine some pdf's
- ◆ Try out tour
 - 2 laptops and web cams

Charts

- ◆ Due 7 days prior to visit **
- ◆ Organize by # and label (1 PI Form, 2 Registry Summary, etc.)
- ◆ The PI/Event Resolution Form (TOPIC) is extremely helpful
- ◆ Progress notes 1-2 day prior, day of, and 1-2 day post adverse event
- ◆ Combined radiology studies into one pdf
- ◆ Will also be submitting documents in Appendix 1

 Upload ▾

 Create ▾

 Follow



Name ↑



Administrative



Community Outreach



Neurosurgery



Orthopaedic Surgery



Performance Improvement and Patient Safety (PIPS)




Radiology




Trauma Registry



Trauma Service











 Upload ▾

 Create ▾

 Follow



Name ↑

| | | |
|---|-----------------------------|---|
|  | PIPS Initiatives |  |
|  | PIPS Meeting Attendance |  |
|  | PIPS Plan |  |
|  | TQIP Reports |  |
|  | Trauma PIPS meeting minutes |  |

Virtual Visit

- ◆ One Zoom on for entire time
- ◆ Second Zoom for Reviewer 2
- ◆ Agenda
- ◆ Cell phones
- ◆ Rehearse
- ◆ Tour
 - Split up and leapfrog to avoid transfer delay
 - Coordinator
- ◆ 85% of visit was done prior to 2-day VRC review

VIRTUAL VISIT AGENDA

The site visit process will last approximately 12 hours over the 2-day period. Do not create your own agenda. We ask that you follow the agenda provided below. All times are estimated and based on the trauma center's local time.

| Day 1 | | | |
|--------------------|---|--|---|
| Times | Agenda | Requirements | Attendees |
| 8:00 am - 8:30 am | Introductions | <ul style="list-style-type: none"> Introduce essential personnel. Review logistics for virtual review process. Provide brief presentation on the structure of the trauma program, e.g. electronic medical record (EMR) and PI Plan/process. | <ul style="list-style-type: none"> Trauma medical director (TMD) Trauma program manager (TPM) Trauma registrar Performance improvement (PI) coordinator (if applicable) Hospital administrator (CEO or equivalent) Navigators Onsite logistics coordinator State/EMS designating representative (if applicable) |
| 8:30 am - 12:30 pm | Medical Record Review <i>(Reviewers may break as needed during this period)</i> | <ul style="list-style-type: none"> Provide separate videoconferencing calls or breakout rooms for each reviewer to conduct medical record review separately. Assign navigators that are familiar with the trauma patients, EMR, and supporting PI documentation for each reviewer to assist with chart review and all sessions. Provide patient medical record information in the Pre-selected Chart Review template (for reviewer to select patient charts refer to Appendix 2 and 3). Ensure medical records are based on the reporting period consistent with pre-review questionnaire (PRQ). Provide a chart summary or report for each medical record selected (refer to Appendix 2). Provide access to the following: <ul style="list-style-type: none"> Radiology images EMR PI documentation and supporting standards documentation Conduct the Alternate Pathway Candidate Review (if applicable). <ul style="list-style-type: none"> 30-minute meeting with the Alternate Pathway Candidate | <ul style="list-style-type: none"> TMD TPM Trauma registrar PI coordinator (if applicable) Alternate Pathway Candidate (if applicable) Navigators Onsite logistics coordinator State/EMS designating representative (if applicable) |



ACS VRC Virtual Visit – Michigan Medicine Adult Trauma Program

Wednesday, September 1

| | |
|-----------------|------------------------------------|
| 8:00am-8:30am | Introductions |
| 8:30 am-12:30pm | Medical Record Review |
| 1:30 pm-2:00 pm | ACS/TQIP MTQIP Report Review |
| 2:00 pm-3:00 pm | Review of Program Documents |
| 3:00 pm-5:00 pm | Review Meeting (previously dinner) |

Thursday, September 2

| | |
|-----------------|--|
| 8:00am- 9:30am | Hospital Tour |
| 9:30am-9:45am | Trauma Medical Director |
| 10:00am-10:30am | Trauma Program Managers |
| 10:30am-10:45am | Trauma Medical Director & Program Managers |
| 10:45am-11:00am | Reviewers only - Closed Meeting |
| 11:00am-12:00pm | Exit Interview |

8:00am-8:30am INTRODUCTIONS

Link: <https://umich.zoom.us/j/91602164609>

Password: Trauma

- Introduce essential personnel.
- Review logistics for virtual review process.
- Provide brief presentation on the structure of the trauma program, e.g. electronic medical record (EMR) and PI Plan/process.

ACS VRC

| Position | Name | Cell |
|--|------|------|
| Primary Reviewer | | |
| Second Reviewer | | |
| Michigan Medicine | | |
| Position | | |
| Trauma Medical Director | | |
| SICU Director | | |
| Trauma Program Manager | | |
| Trauma Program Manager | | |
| Trauma Registrar | | |
| Trauma Registrar | | |
| PI Coordinator/MTQIP Clinical Reviewer | | |
| Hospital Administrator | | |
| Navigator | | |
| Onsite logistics coordinator | | |

Day 1: Wednesday September 1, 2021

8:30am-12:30pm MEDICAL RECORD REVIEW (Lead)

Link: <https://umich.zoom.us/j/93715691490>

Password: N/A

- Provide separate videoconferencing calls
- Chart review
- Assign navigators familiar with the trauma patients, EMR, and supporting PI documentation for each reviewer.
- Provide a chart summary or report for each medical record selected (refer to Appendix 2)
- Provide access to the following:
 - Radiology images
 - EMR
 - PI documentation and supporting standards documentation

ACS VRC

| Position | Name | Cell |
|------------------------------|------|------|
| Primary Reviewer | | |
| Michigan Medicine | | |
| Position | | |
| Trauma Medical Director | | |
| Trauma Program Manager | | |
| Trauma Registrar | | |
| Navigator | | |
| Onsite logistics coordinator | | |

Day 1: Wednesday September 1, 2021

8:30am-12:30pm, MEDICAL RECORD REVIEW (Secondary)

Link: <https://umich.zoom.us/j/91602164609>

Password: Trauma

- Provide separate videoconferencing calls
- Chart review
- Assign navigators familiar with the trauma patients, EMR, and supporting PI documentation for each reviewer.
- Provide a chart summary or report for each medical record selected (refer to Appendix 2)
- Provide access to the following:
 - Radiology images
 - EMR
 - PI documentation and supporting standards documentation

ACS VRC

| Position | Name | Cell |
|------------------------------|------|------|
| Second Reviewer | | |
| Michigan Medicine | | |
| Position | | |
| SICU Director | | |
| Trauma Program Manager | | |
| Trauma Registrar | | |
| Navigator | | |
| Onsite logistics coordinator | | |

TMD

- ◆ List of charts with notes
- ◆ Key documents in a folder on my computer
- ◆ UM ACS Summary
 - People
 - Physical Footprint
 - Quality
 - Programs
 - Progress on opportunities for improvement

TMD

- ◆ List of charts with notes
- ◆ Key documents in a folder on my computer
- ◆ UM ACS Summary
- ◆ ACS TQIP / MTQIP presentation

Michigan Medicine Adult Trauma Verification Visit

Quality Reporting and Activity

TMD

- ◆ List of charts with notes
- ◆ Key documents in a folder on my computer
- ◆ UM ACS Summary
- ◆ ACS TQIP / MTQIP presentation
- ◆ PIPS initiatives summary

PIPS Initiatives Reporting Year 2020

EMS activation PI

One system process improvement effort completed during the reporting year was development and implementation of EMS activation criteria for trauma activation from the field. In collaboration with EMS providers and the adult and pediatric trauma teams of the level one trauma centers within our medical control authority, criteria were developed to allow EMS providers to activate the trauma system directly from the field for Class 1 and 2 trauma patients. These criteria are based on anatomic and mechanistic criteria endorsed by the American College of Surgeons. After review and revision at medical control authority meetings, and education to EMS providers and local ED providers, these criteria have been implemented to great success. A full description of this process improvement project will be available on site for further review.

Trauma Cart

An additional system process improvement effort completed during the reporting year was development and implementation of a specialized trauma cart for use during trauma resuscitation in the Emergency Department. This cart supplies nearly all the equipment necessary for high level trauma resuscitation in a single location for the team. A multi-disciplinary team from the trauma service, the ED, the OR, and material service met and developed the supplies for the cart and developed a system for daily checks and resupply when used. After discussion in our Trauma Quality of Care committee meetings and education to the Acute Care Surgery and ED teams the cart was introduced into care and has been met with great success during trauma resuscitation. A full summary of this process will be available on site for further review.

Staged approach to small bore feeding tube placement in the ICU

One system improvement generated as a result of multi-disciplinary patient review was a staged approach to small bore feeding tube placement in the ICU. An elderly patient suffered the unfortunate complication of a pneumothorax during feeding tube placement that progressed to acute respiratory failure and ultimately transition to comfort care. A protocol has been developed and implemented that incorporates the use of portable X-ray to confirm intra-esophageal tube placement prior to further advancement to prevent pulmonary injury. Since implementation no further patient care complications have been encountered. A full review of this process improvement effort will be available to the site reviewers at the time of the site visit.

Emergent Transfer from VA Hospital Protocol

An additional system improvement completed following multi-disciplinary patient review was the development of an emergent transfer protocol for patients presenting to the local Veteran's Administration ED following traumatic injury. The recommendations specifically address patients with delayed presentation following injury as local EMS protocols specifically exclude the VA when trauma criteria are met in the field. This protocol was developed after a patient with a high grade splenic injury presented to the VA by private vehicle 4 days after injury. The protocol-developed in conjunction with the surgical staff of the VA and Michigan Medicine endorses the preferential triage of patients to Michigan Medicine for surgical evaluation and requires any patient being admitted to the VA following traumatic injury be evaluated by surgery at VA prior to admission. A full review of this process will be available to the site reviewers at the time of the site visit.

ED blood transfusion/trauma pack algorithm

A new algorithm was created for emergent blood transfusion for trauma patients in the ED. Retrieving pre-arrival trauma packs from the blood bank is reserved for patients with penetrating truncal injury, hypotension/cardiac arrest, and those receiving blood transfusion during transfer. All other patients begin transfusion therapy -when necessary- using blood available in the ED blood bank. When requesting emergency blood products from either the blood bank or ED lab, staff are required to use the pink emergency transfusion form (available in all resuscitation bays). The form includes, at minimum, the patient's age and gender and when available a patient registration sticker. If patients require more than 2U PRBC/2U FFP the trauma chief communicates to the blood bank- via the trauma radio- the initiation of the massive transfusion protocol and a trauma pack will be retrieved from the blood bank. When massive



BRONSON METHODIST HOSPITAL ACS TIPS

Date of Review

September 23 & 24, 2021

Oreste Romeo, MD,FACS, Trauma Medical Director

Cheryl Stevenson, MSN, RN, Trauma Program Coordinator

2021 Virtual Visit

☐ 6 months ahead of time

- ☐ Assign roles for the review
- ☐ Develop plan
- ☐ Meet with IT
- ☐ List out needs
- ☐ Keep up to date on the ACS requirements and changes

2021 Virtual Visit

- ☐ Pick Platform that works best with your institution and ACS
 - ☐ Microsoft Teams
 - ☐ SharePoint for shared documents
- ☐ Have one contact person for developing SharePoint
 - ☐ Schedule weekly meetings
 - ☐ Make sure your contact person is available the two weeks prior to review

2021 Virtual Visit

☐ SharePoint

- ☐ Know how to navigate the site
- ☐ Practice with your team
- ☐ Follow ACS required documents format for labeling
 - ☐ Added extra tab
 - ☐ PRQ
 - ☐ 2- day agenda
 - ☐ Name of those attending with titles

Virtual Tour Tips

- ❑ Know equipment ahead of time
- ❑ Use Bluetooth speaker and sturdy/quiet stand for I-pad
- ❑ Used three devices
 - ❑ Blood bank-I-pad
 - ❑ Helipad, ambulance bay, outside of decontamination room-Cell Phone
 - ❑ Inside Hospital-I-pad
- ❑ Practice...practice...practice

Pre-Review Meeting

- ☐ Held 3 weeks ahead of time
- ☐ Introduced those in attendance
- ☐ Opened SharePoint and provided brief introduction and showed how to navigate
- ☐ Be available for IT questions prior to the review

ACS Time Frame

- ❑ Introduction PowerPoint for opening 30 minutes
- ❑ TPC did introduction at beginning of each timeframe except review meeting
- ❑ Chart Review took about 2 hours
- ❑ PowerPoint for TQIP/MTQIP discussion
- ❑ Afternoon meeting ran over ~40 minutes
- ❑ Second day
- ❑ Tour and 15-minute conversation with reviewers, TMD, and TPC
- ❑ Kept same timeframe for final report out



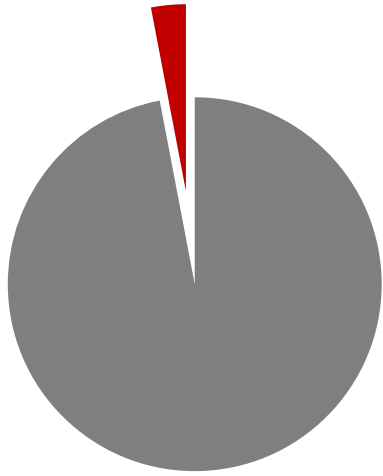
Thank you!
bronsonhealth.com

Patient Related Outcome Measures (PROMS) in Trauma

John W. Scott, MD, MPH
Julia Kelm, BS



High-quality inpatient care is the first step in ensuring optimal outcomes after injury



95%
of trauma
patients
**survive to
discharge**

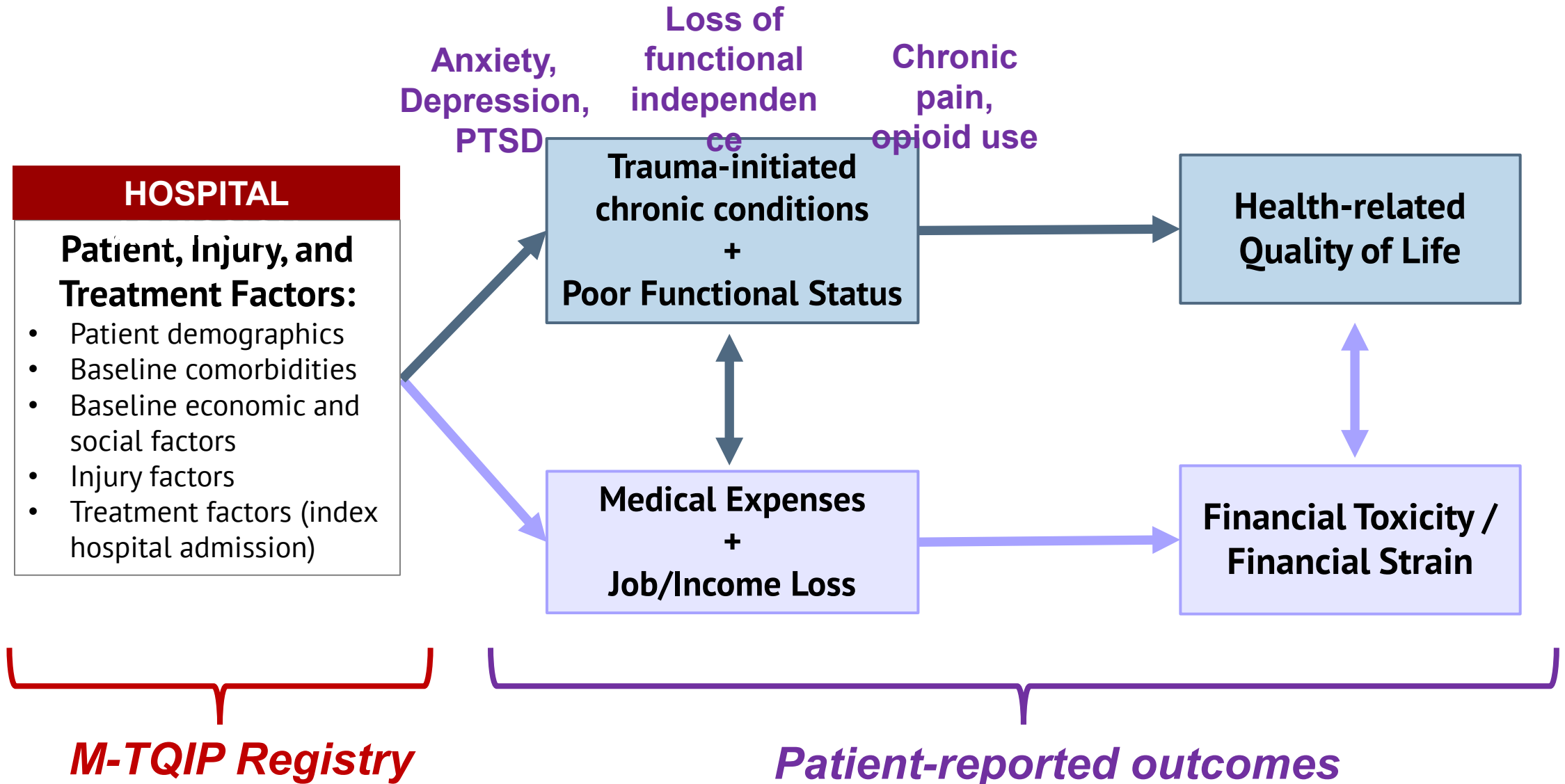


MTQIP centers
have some of **the
nation's best
risk-adjusted
inpatient
outcomes**

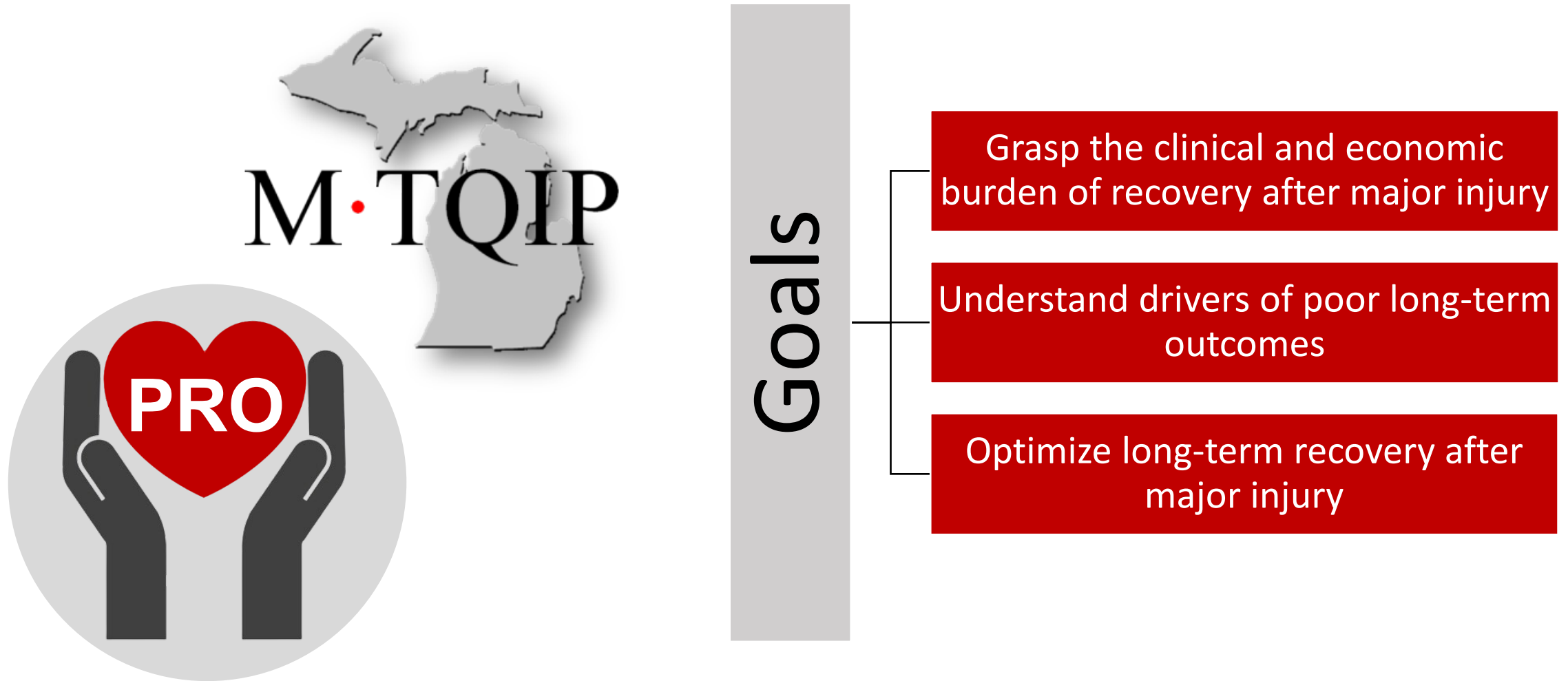


For our
patients,
surviving to
discharge is
**just the
beginning**

Major injury has a profound long-term impact on our patients' lives



MTQIP Patient Reported Outcomes – Pilot Project



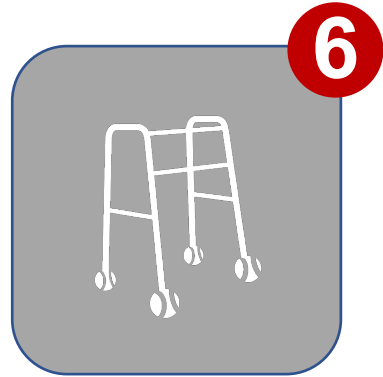
MTQIP Patient Reported Outcomes – Pilot Cohort

- **Age ≥ 18 years**
- **Inclusion criteria**
 - **ISS ≥ 15**
 - **Fracture**
 - **Humerus, radius, femur, tibia, pelvis, 2+ ribs**
 - **Trauma Operation**
 - **Intubation**
- **Exclusion criteria**
 - **ISS ≤ 7**

Protocol for Survey



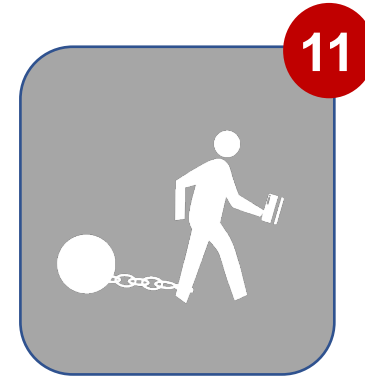
**Hospital
Review**



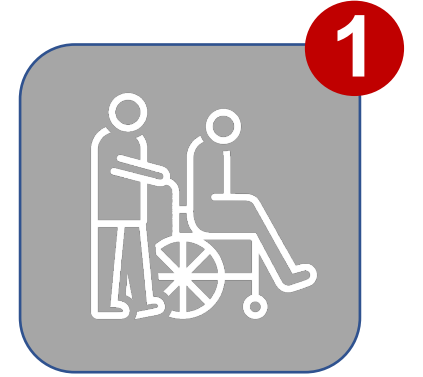
EQ-5D-5L



Opioid



Economic



**Caregiver
Burden**



Hello !

You are about to begin the survey from the **Michigan Trauma Quality Improvement Program (MTQIP)**. This survey is meant solely to improve patient care and long term recovery for those who experience traumatic injury.

All information collected will remain private, secure, and anonymous.

If you are willing to participate, kindly press the next button below to begin.

Previous

Next

Michigan Trauma Quality Improvement Program | MTQIP



Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you choose to rate this hospital **during your stay?**

0 1 2 3 4 5 6 7 8 9 10

Hospital Rating



Would you recommend this hospital to your friends and family?

Definitely yes

Probably yes

Probably no

Definitely no

Did you take any opioid pain medication at any time in the year before your traumatic injury?

Yes

No

Prefer not to answer

Did you have a prescription for a narcotic/opioid-based pain medication when you were discharged from the hospital? This could be in the form of pills, a patch, liquid, etc.

Yes

No

Prefer not to answer

Previous

Next

Have you had problems paying or were unable to pay any medical bills related to your injury?

This includes bills, debt, payments, for doctors, dentists, hospitals, therapists, medication, equipment, nursing home or home care.

Yes

No

Prefer not to answer

Do you currently have any medical bills that are being paid off over time?

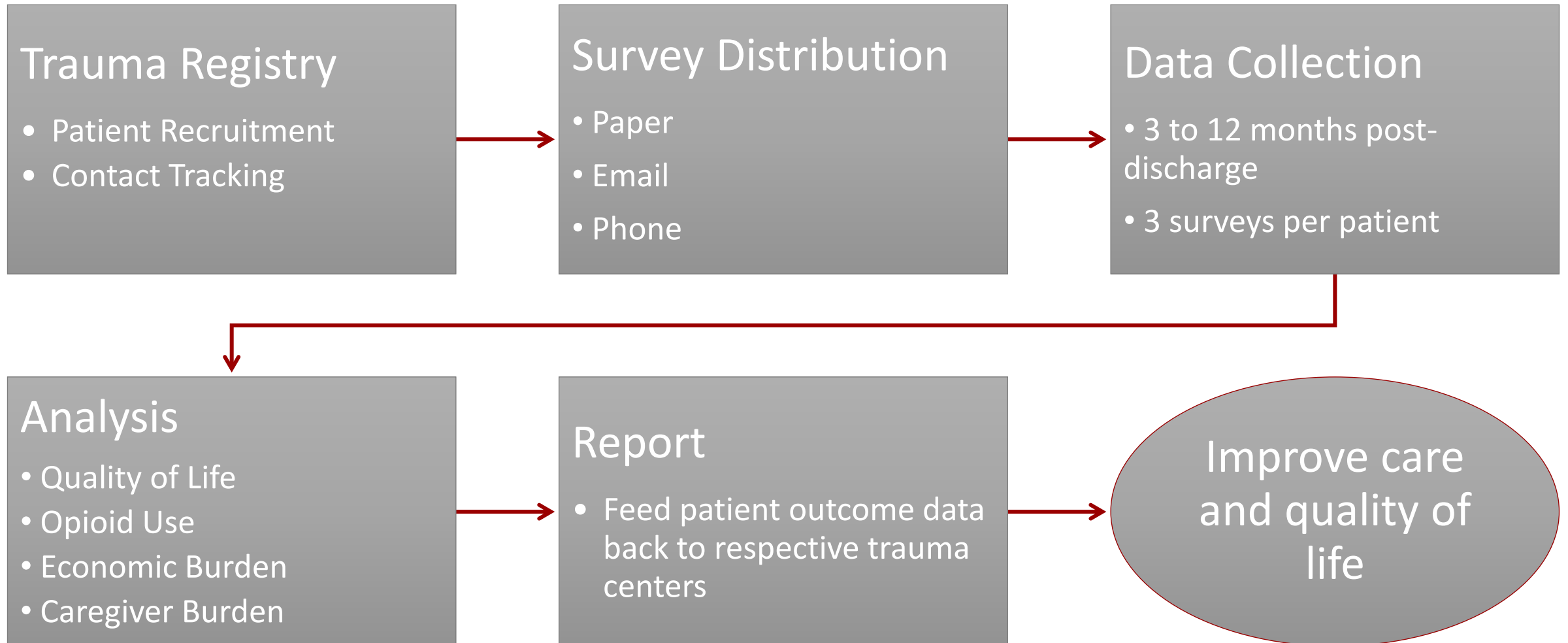
This could include medical bills being paid off with a credit card, through personal loans, or bill paying arrangements with hospitals or other providers.

Yes

No

Prefer not to answer

Data Collection Flow



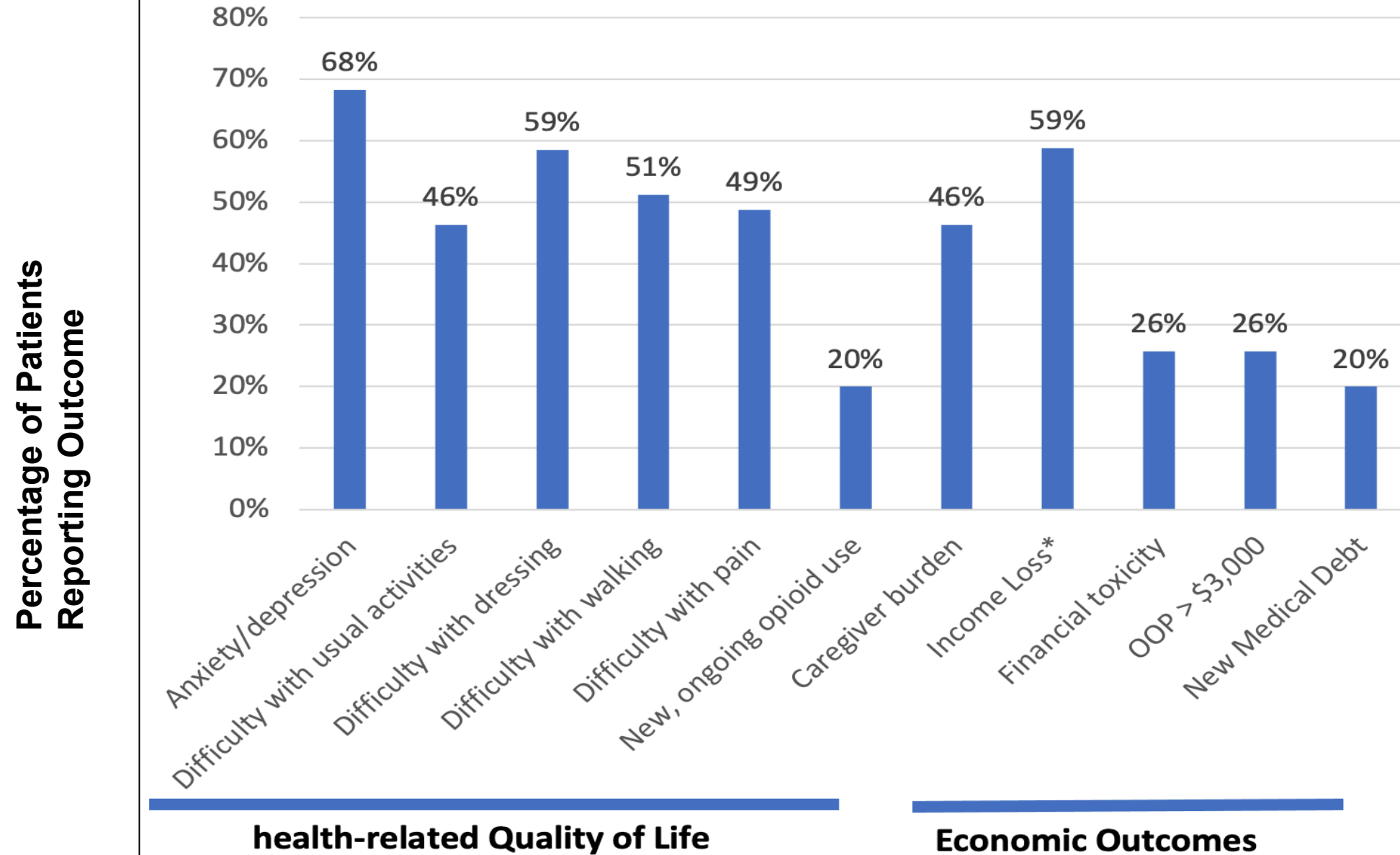
MTQIP Patient Reported Outcomes – Pilot Cohort

- **Preliminary finding**
- **Single trauma center**
- **02/01/2021 – 07/19/2021**



53
Responses

Table. Patient-reported outcomes 1 month after discharge for traumatic injury



*Income loss only reported for those employed at time of injury

Clinical and Economic Patient-Reported Outcomes

Key Findings from PROMs Pilot

02/01/2021 – 07/19/2021

**80% report
difficulty in ≥ 1
domain of health-
related quality of
life**

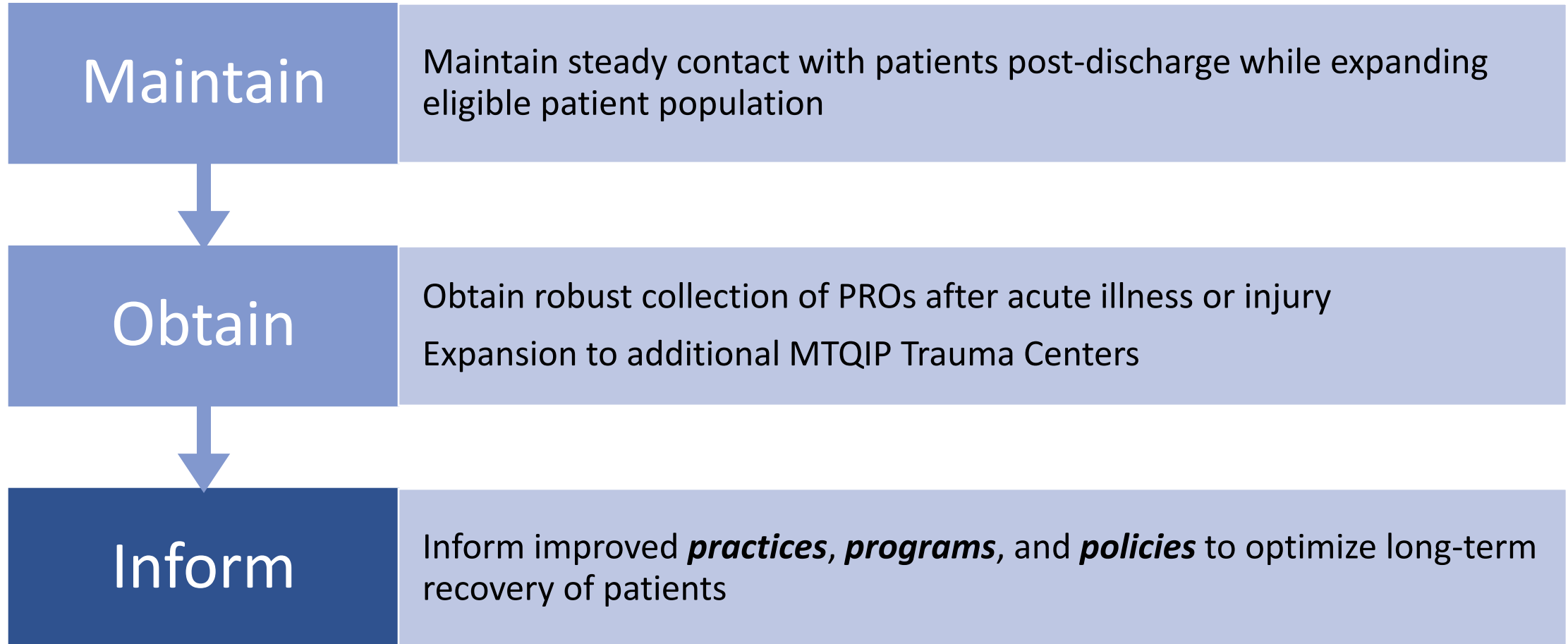
**100% of employed
patients unable to
return to work**

**1-in-3 report
financial toxicity**

Next Phase of Project Expansion

- Implement PROM at multiple trauma centers already enrolled in MTQIP
 - Capture patient outcomes across Michigan
 - 3-, 6-, and 12-month surveys
- Collaboration to contribute to knowledge on clinical and economic outcomes after acute illness or injury

Optimizing recovery after major injury



Please join us in this effort to optimize recovery after major injury for all our patients.



Thank you!

MACS Update



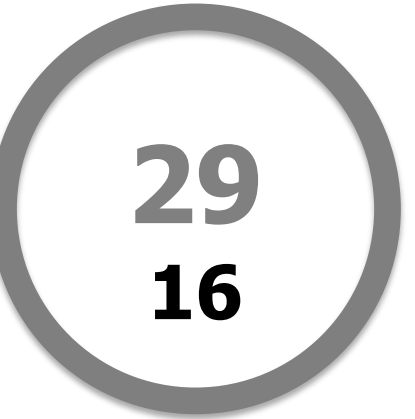
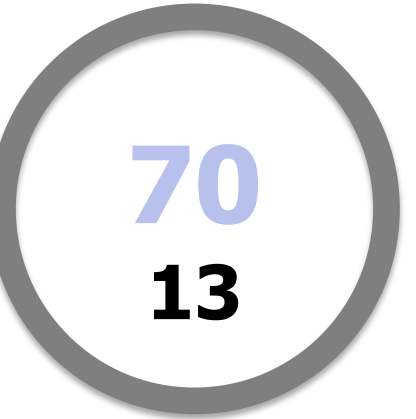
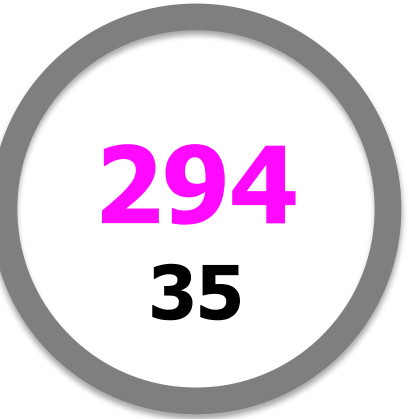
Participants

- St. Joseph Mercy Ann Arbor
- Spectrum Health
- Sparrow Hospital
- Michigan Medicine
- University of Michigan Health - West
- Detroit Receiving/Harper
- McLaren Macomb
- Ascension Borgess Hospital
- Mercy Health St. Mary's (Grand Rapids)

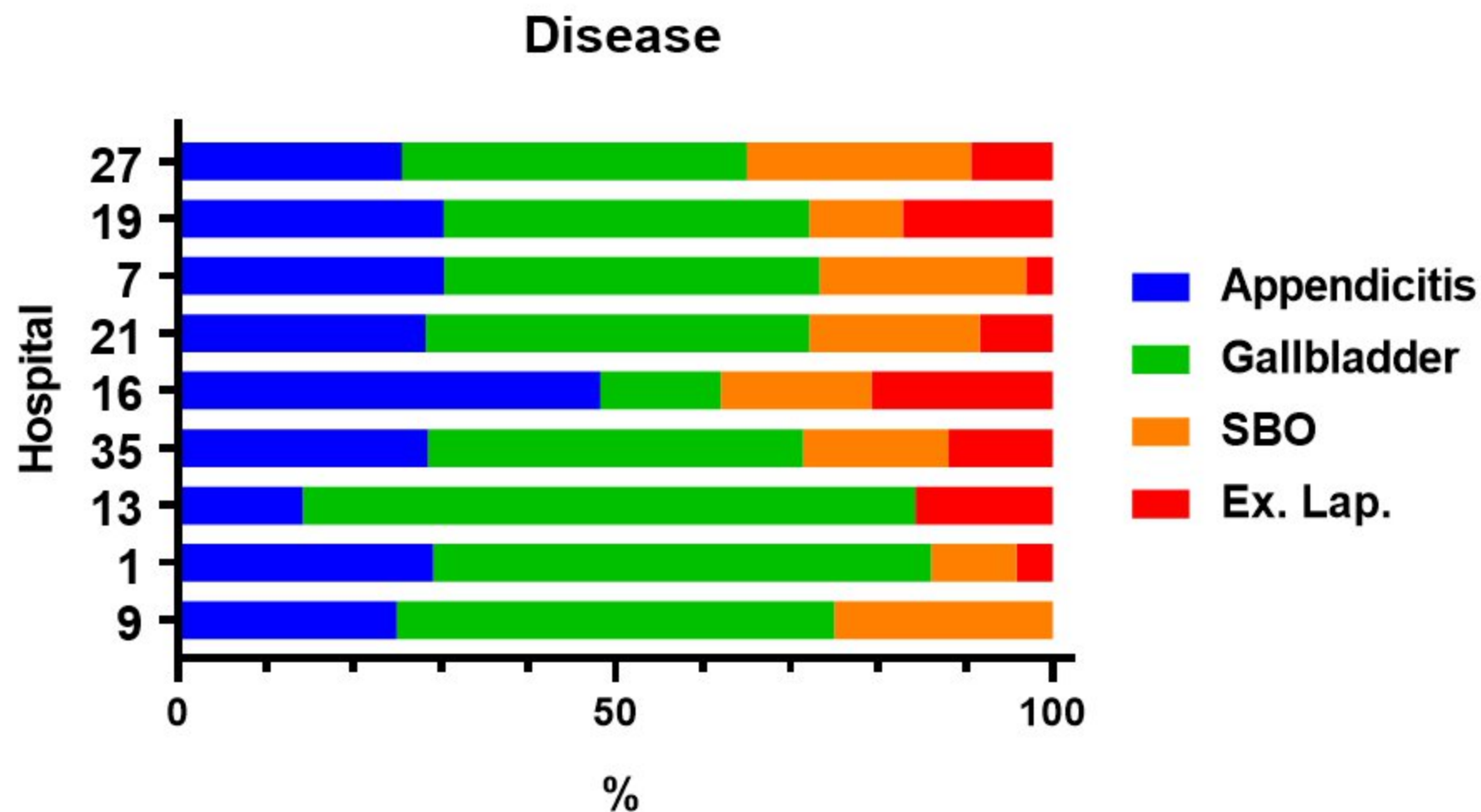
Recruitment

- ◆ Room for 3 more hospitals in 2022
- ◆ Contact
 - Mark Hemmila
 - Kim Kramer
 - Judy Mikhail
- ◆ Next Meeting
 - Thursday December 9th

Index Patient Records = 9,447 Total = 10,724



Total Patients = 9,447



CPT – Operation, 15 most frequent

| | N | % |
|---|-------------|-------------|
| 47562, Laparoscopic cholecystectomy | 2586 | 27.4 |
| 44970, Laparoscopic appendectomy | 1951 | 20.7 |
| 47563, Lap cholecystectomy w IOC | 307 | 3.2 |
| 44120, Resection of small intestine | 293 | 3.1 |
| 44005, Freeing of bowel adhesion | 209 | 2.2 |
| 47600, Open cholecystectomy | 156 | 1.7 |
| 44143, Partial colectomy w colostomy | 105 | 1.1 |
| 43840, Gastorrhaphy, Graham patch | 90 | 1.0 |
| 44160, Partial colectomy with TI | 88 | 0.9 |
| 49000, Exploration of abdomen | 87 | 0.9 |
| 44140, Partial colectomy w anast | 81 | 0.9 |
| 49561, Repair ventral/inc hernia | 74 | 0.8 |
| 44950, Open appendectomy | 54 | 0.6 |
| 49587, Repair umbilical hernia | 54 | 0.6 |
| 44050, Reduction volvulus | 45 | 0.5 |
| All other | 3267 | 34.6 |

Outcomes

| | N | % |
|-------------------------|------|------|
| Any Complication | 1523 | 16.1 |
| Incisional SSI | 91 | 1.0 |
| Organ space SSI | 150 | 1.6 |
| Sepsis or severe sepsis | 281 | 3.0 |
| Anastomotic leak | 26 | 0.3 |
| Wound disruption | 30 | 0.3 |
| Enterocutaneous fistula | 12 | 0.1 |
| Ileus | 176 | 1.9 |
| C. difficile colitis | 46 | 0.5 |
| VTE | 66 | 0.7 |
| Pneumonia | 99 | 1.0 |
| Cardiac arrest | 42 | 0.4 |
| Post-discharge ED visit | 566 | 6.0 |
| Readmission | 1100 | 11.6 |
| Mortality | 323 | 3.4 |

Acute Appendicitis - Medical Management

- ◆ Medical management = 13.5%
- ◆ 13/351 failed and got operation index = 3.7%
- ◆ 76/351 failed and got operation in 12 mo = 21.7
- ◆ IV Abx Mean 3.2, Median 3 days
- ◆ po Home Abx Mean 9.4, Median 10 days

Emergency Ex. Lap – Outcomes

| | N | % |
|-------------------------|-----|------|
| Any Complication | 443 | 57.6 |
| Incisional SSI | 39 | 5.1 |
| Organ space SSI | 85 | 11.1 |
| Sepsis or severe sepsis | 142 | 18.5 |
| Anastomotic leak | 18 | 2.3 |
| Wound disruption | 15 | 2.0 |
| Enterocutaneous fistula | 6 | 0.8 |
| Ileus | 87 | 11.3 |
| C. difficile colitis | 19 | 2.5 |
| VTE | 23 | 3.0 |
| Pneumonia | 54 | 7.0 |
| Cardiac arrest | 28 | 3.6 |
| Post-discharge ED visit | 104 | 13.5 |
| Readmission | 138 | 17.9 |
| Mortality | 121 | 15.7 |

SBO - Hernia

- ◆ Associated hernia requiring repair = 34%
 - Primary = 52%
 - Mesh = 47%
- ◆ Location
 - Ventral/incisional 21%
 - No Midline Component 26%
 - Umbilical 32%
 - Inguinal 9%
- ◆ Hernia size, mean
 - Width 1.6 ± 3.2 cm
 - Length 2.1 ± 4.4 cm

Summary

- ◆ Contact Kim Kramer or Mark Hemmila
 - kikramer@med.umich.edu
 - mhemmila@umich.edu
- ◆ Meeting
 - Great discussion
 - Thursday December 9th, 2021
 - Oliver Varban - Laparoscopic cholecystectomy

Questions

Wrap Up

Judy Mikhail, PhD



Conclusion

- ◆ Thank you for attending
- ◆ Evaluations
 - Fill out and turn in
- ◆ Questions?
- ◆ See you in February