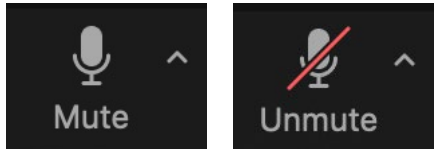
The Michigan Trauma Quality Improvement Program

Virtual, MI
May 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

M | ZOOM

Disclosures

- Salary Support for MTQIP from BCBSM/BCN and MDHHS
  - Mark Hemmila
  - Judy Mikhail
  - Jill Jakubus
  - Anne Cain-Nielsen

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
- No CME for this meeting

Data Submission

- Data submitted April 2, 2021
  - This report
  - 4-week turnaround
- Next data submission
  - June 4, 2021

Future Meetings

- Fall
  - Tuesday October 12, 2021 (10 years)
  - Ypsilanti, EMU Marriott ?
  - Virtual ?
- Winter
  - Tuesday February 8, 2022
  - Ypsilanti, EMU Marriott
  - Virtual

Agenda

- Data
- Hospital QI Index
- MACS
- Jill - Program Manager Update
- Break
- STAC/COVID Panel
- Judy - Program Manger Update
  - Activation Criteria Overview
  - ACS Visit TQIP Examples

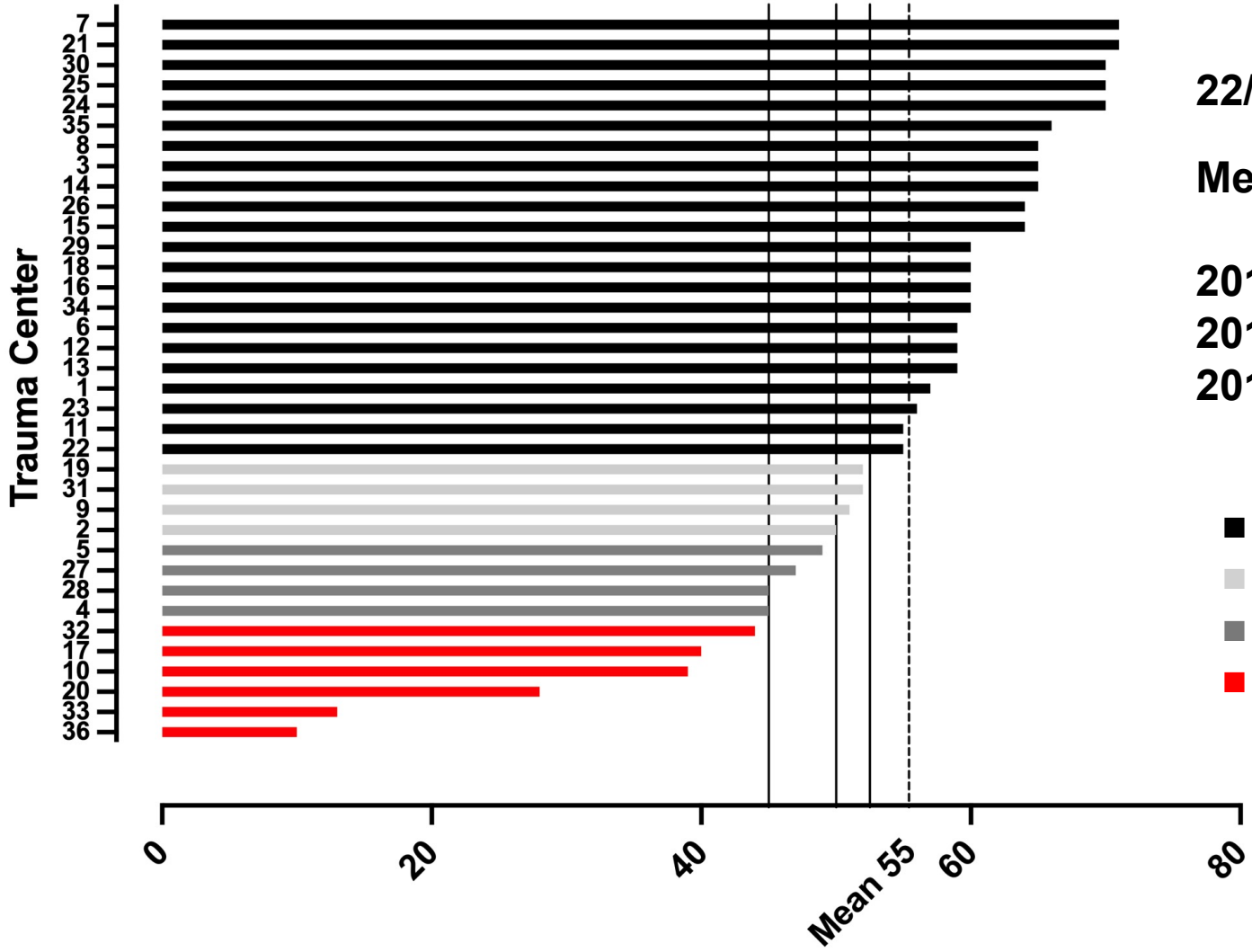
MTQIP Hospital Scoring Index Results

Mark Hemmila, MD

#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)
  - ≥ 52.5% of patients (≤ 48 hr)
  - ≥ 50% of patients (≤ 48 hr)
  - ≥ 45% of patients (≤ 48 hr)
  - < 45% of patients (≤ 48 hr)

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



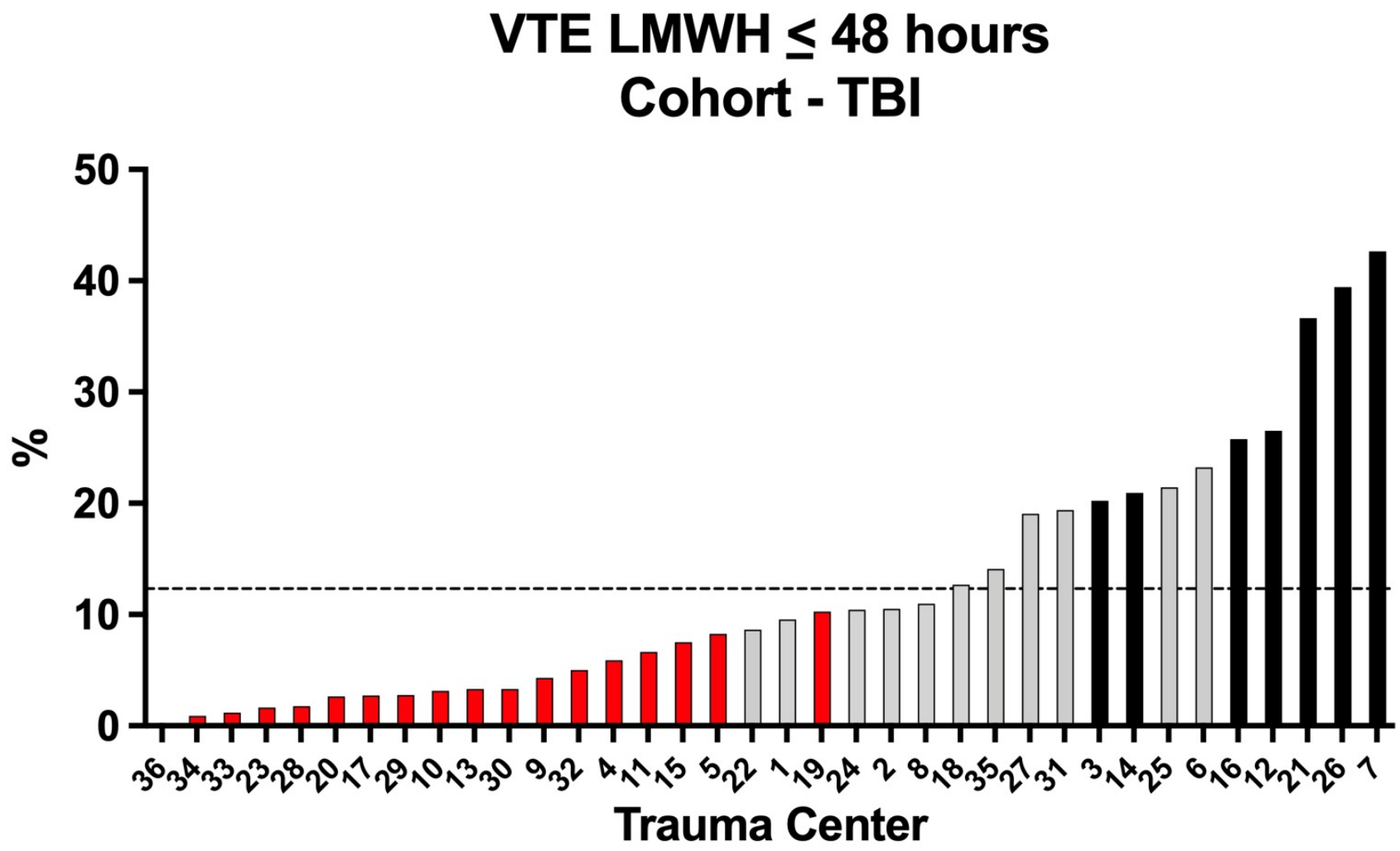
22/35 Centers ≥ 52.5%

Mean 55.4%

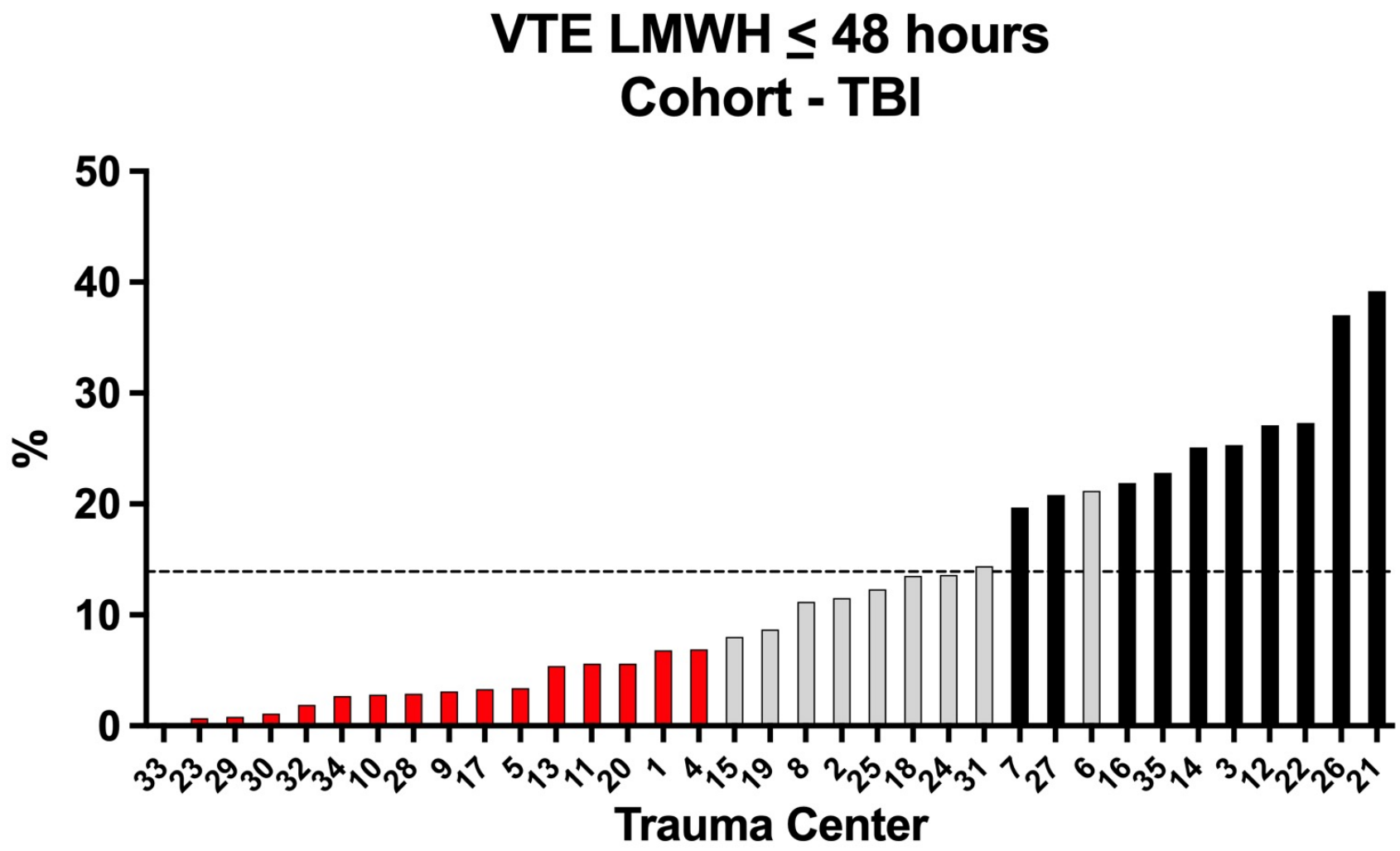
2017 39%
2018 50%
2019 55%

■ ≥ 52.5%
■ ≥ 50%
■ ≥ 45%
■ < 45%

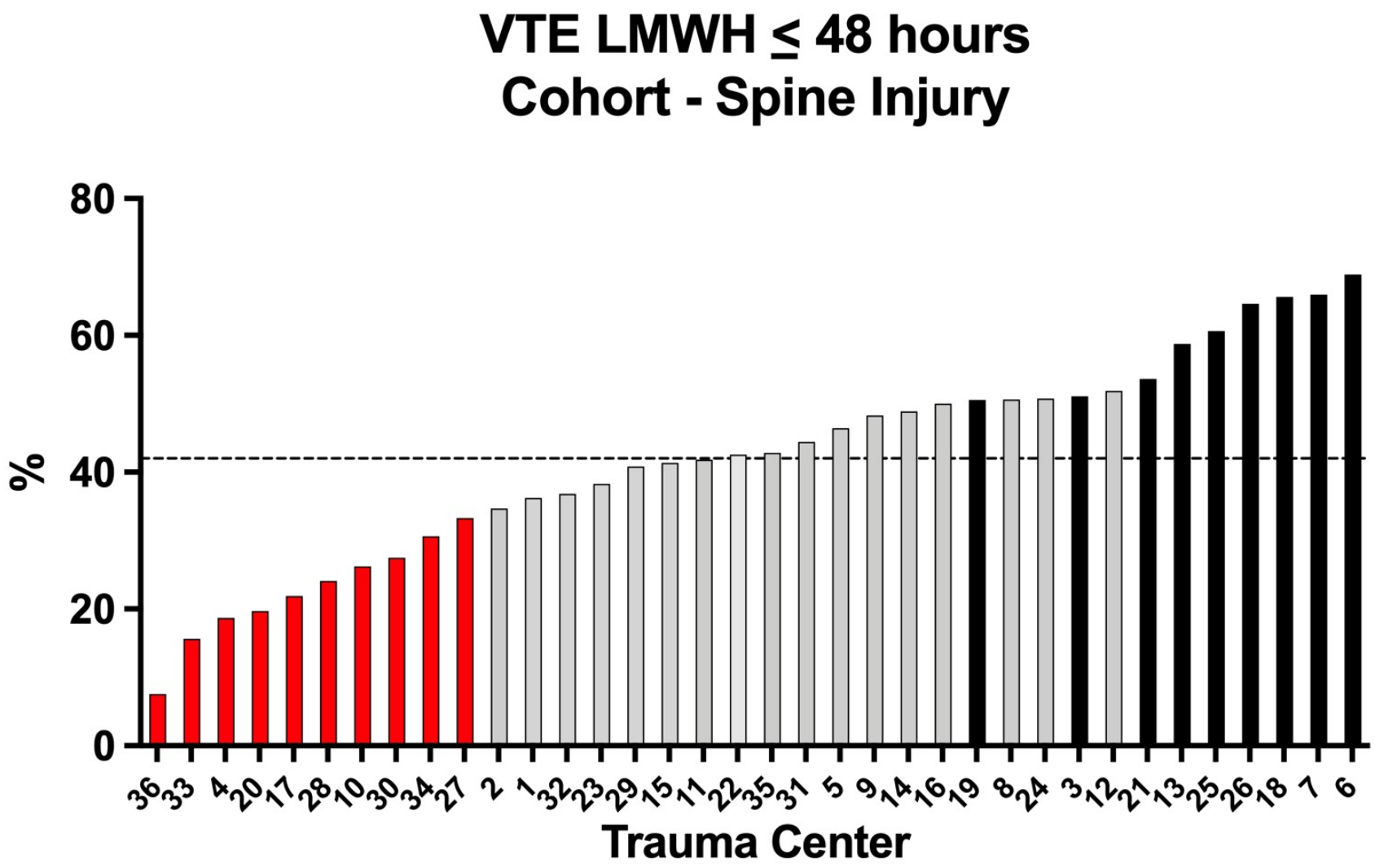
Today


VTE LMWH ≤ 48 hours
Cohort - TBI
%
50
40
30
20
10
0
36 34 33 23 28 20 17 29 10 13 30 9 32 4 11 15 5 22 1 19 24 2 8 18 35 27 31 3 14 25 6 16 12 21 26 7
Trauma Center

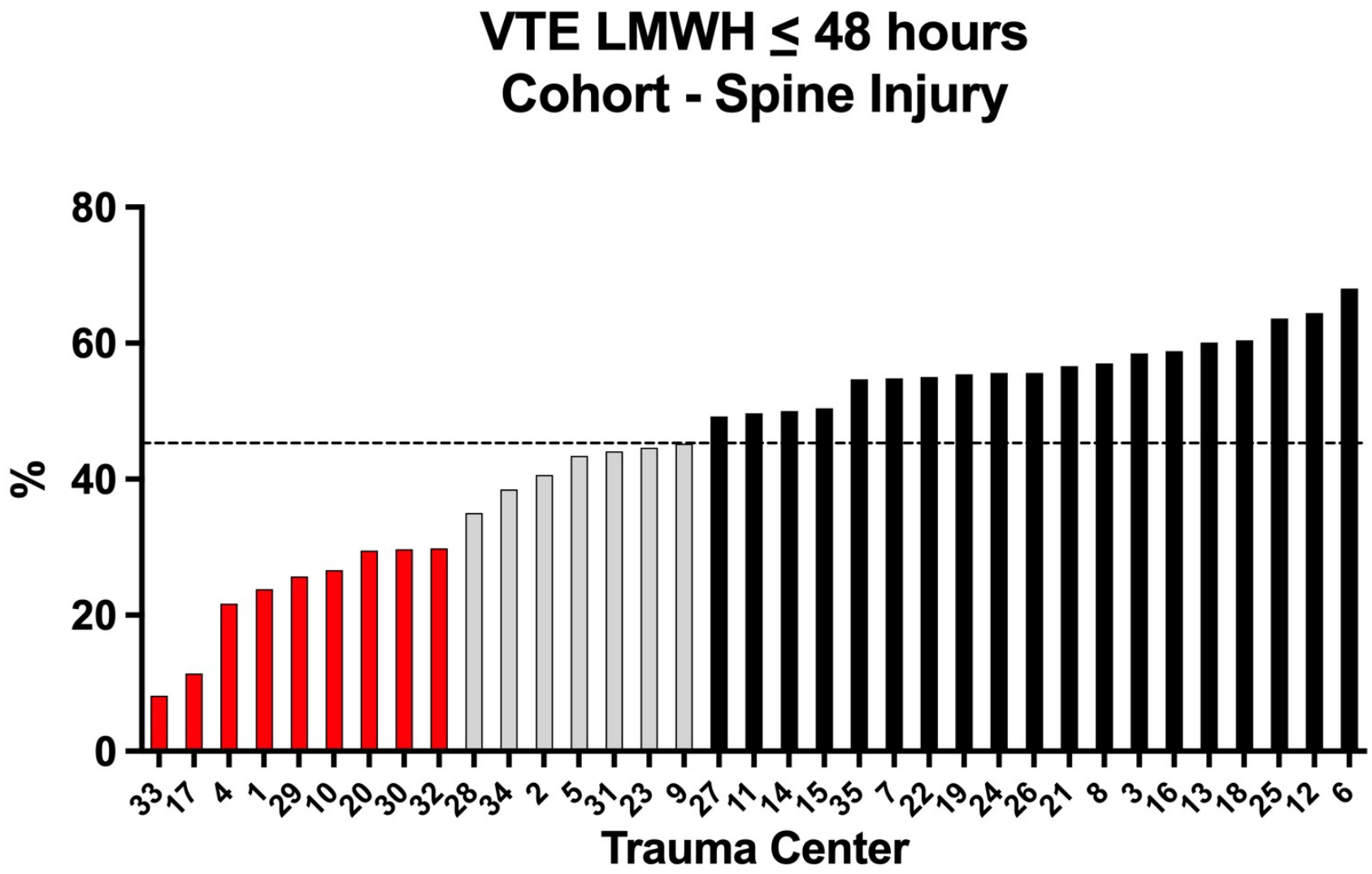
Last Year

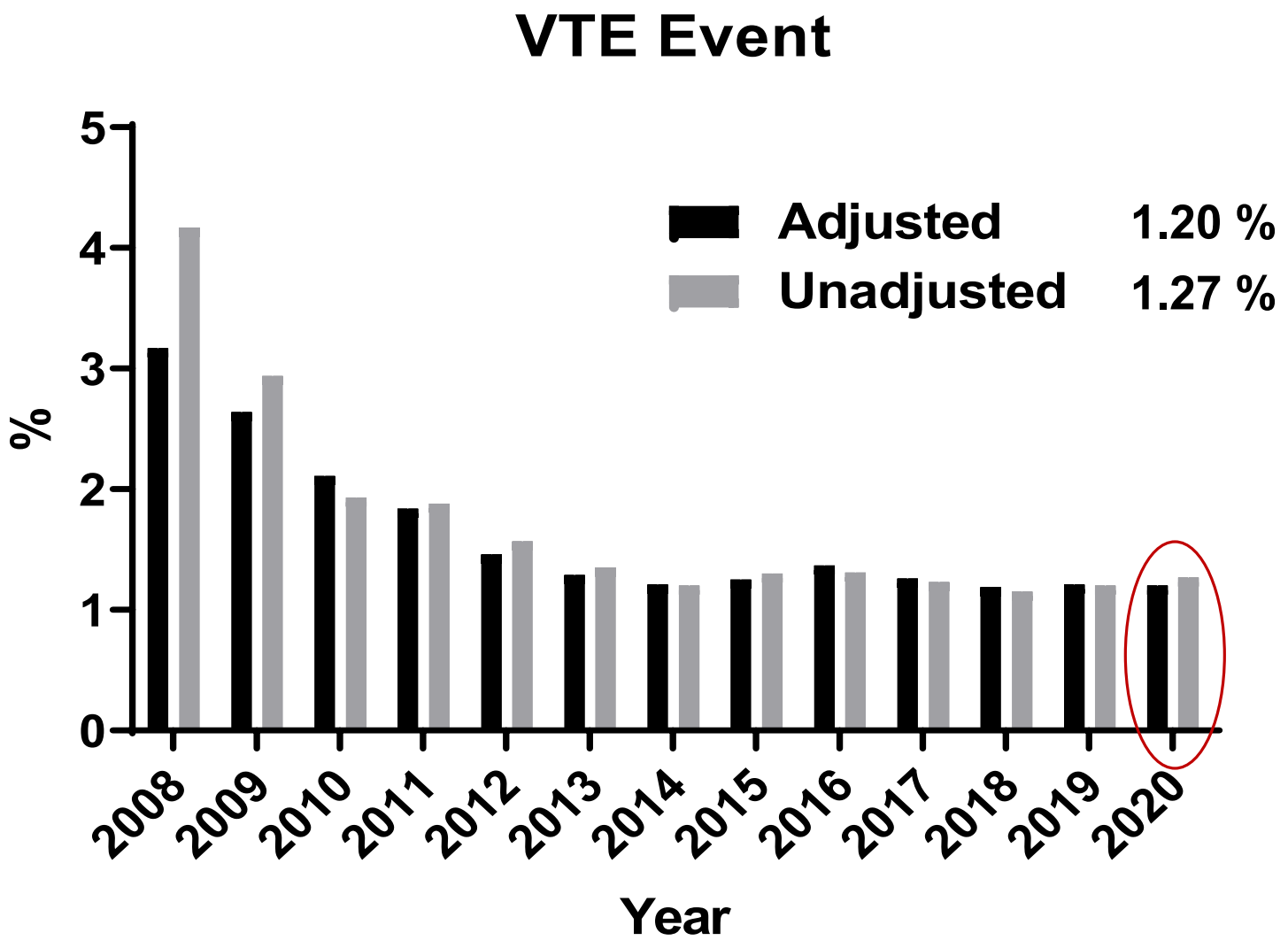

VTE LMWH ≤ 48 hours
Cohort - TBI
%
50
40
30
20
10
0
33 23 29 30 32 34 10 28 9 17 5 13 11 20 1 4 15 19 8 2 25 18 24 31 7 27 6 16 35 14 3 12 22 26 21
Trauma Center

Today

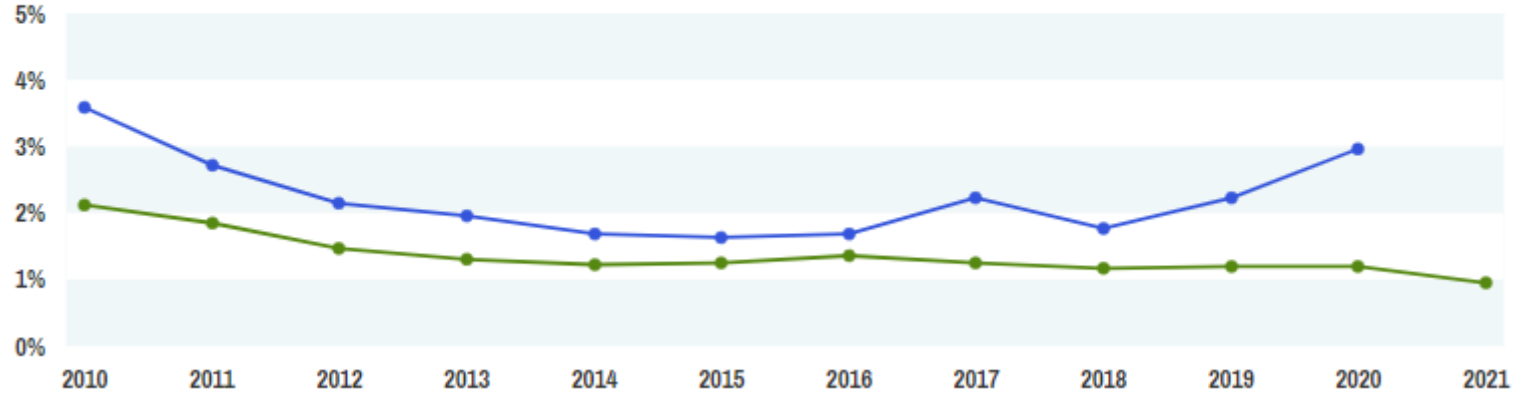

VTE LMWH ≤ 48 hours
Cohort - Spine Injury
%
80
60
40
20
0
36 33 4 20 17 28 10 30 34 27 2 1 32 23 29 15 11 22 35 31 5 9 14 16 19 8 24 3 12 21 13 25 26 18 7 6
Trauma Center

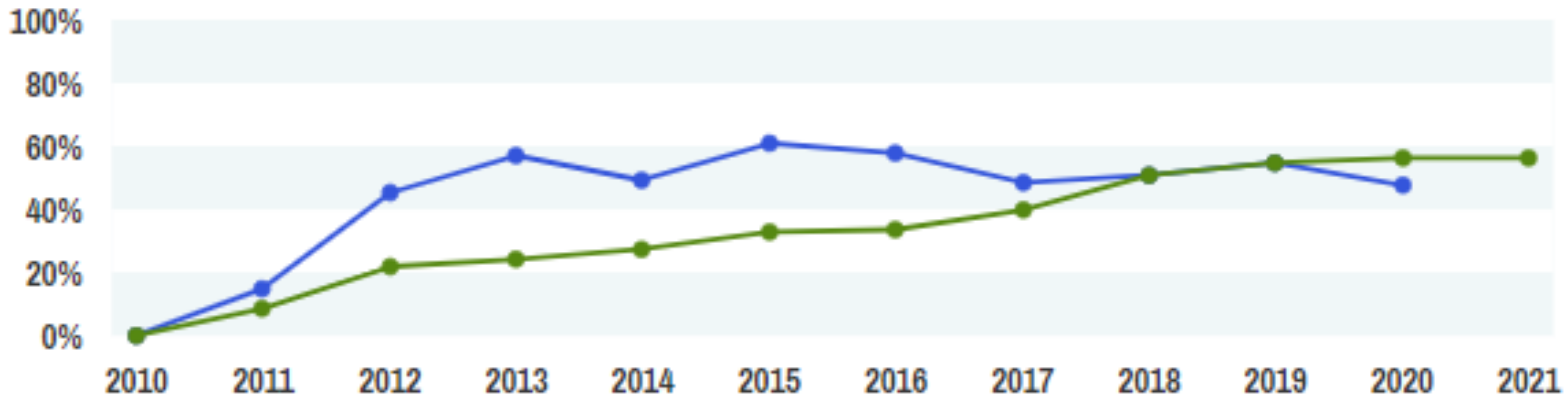
Last Year


VTE LMWH ≤ 48 hours
Cohort - Spine Injury
80
60
40
20
0
%
33 17 4 1 29 10 20 30 32 28 34 2 5 31 23 9 27 11 14 15 35 7 22 19 24 26 21 8 3 16 13 18 25 12 6
Trauma Center


VTE Event
Adjusted 1.20 %
Unadjusted 1.27 %
%
0
1
2
3
4
5
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Year

VTE


5%
4%
3%
2%
1%
0%
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021

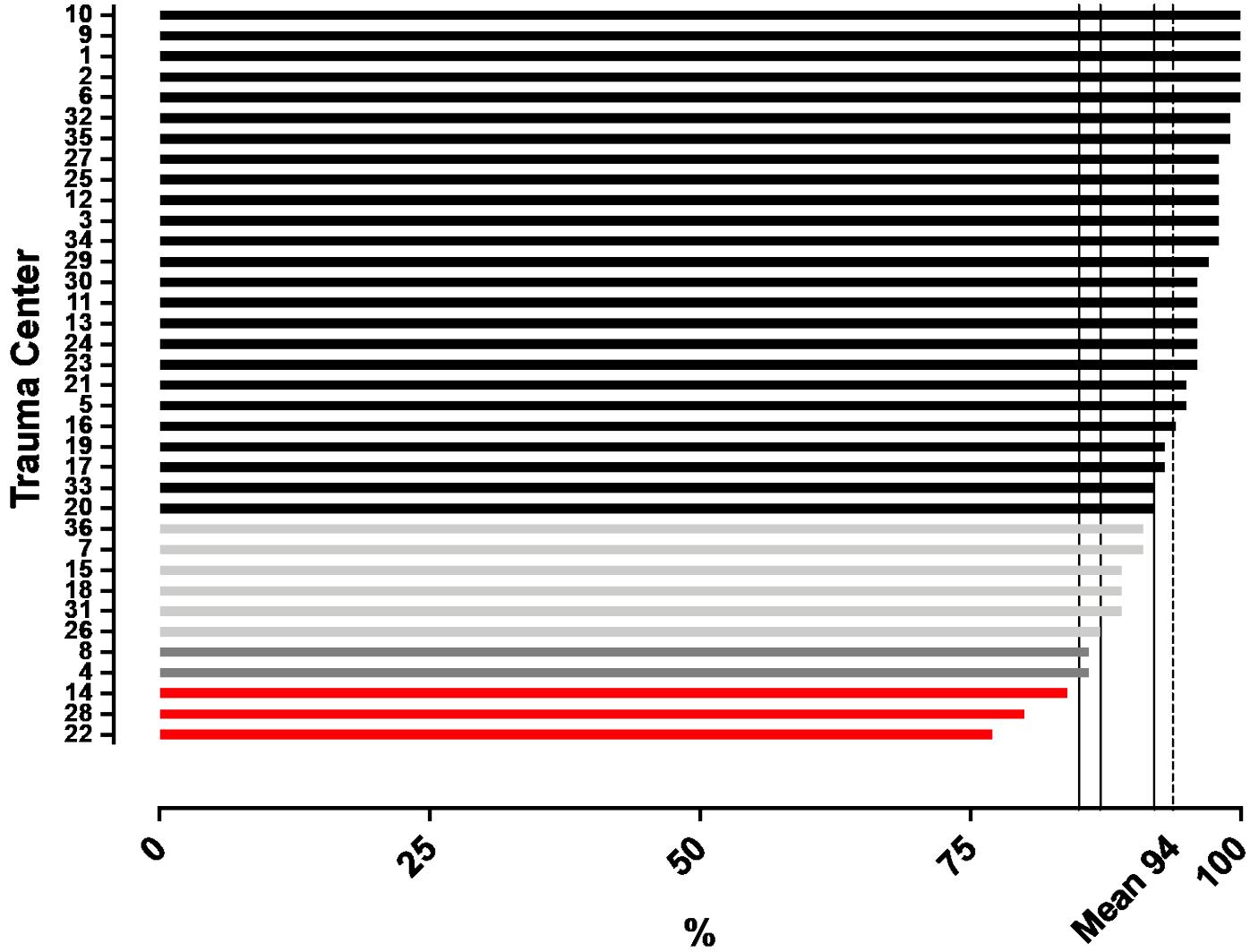

100%
80%
60%
40%
20%
0%
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021

#5 Timely Surgical Repair in Geriatric (Age ≥ 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)
  - ≥ 92% of patients (≤ 48 hr)
  - ≥ 87% of patients (≤ 48 hr)
  - ≥ 85% of patients (≤ 48 hr)
  - < 85% of patients (≤ 48 hr)

Today

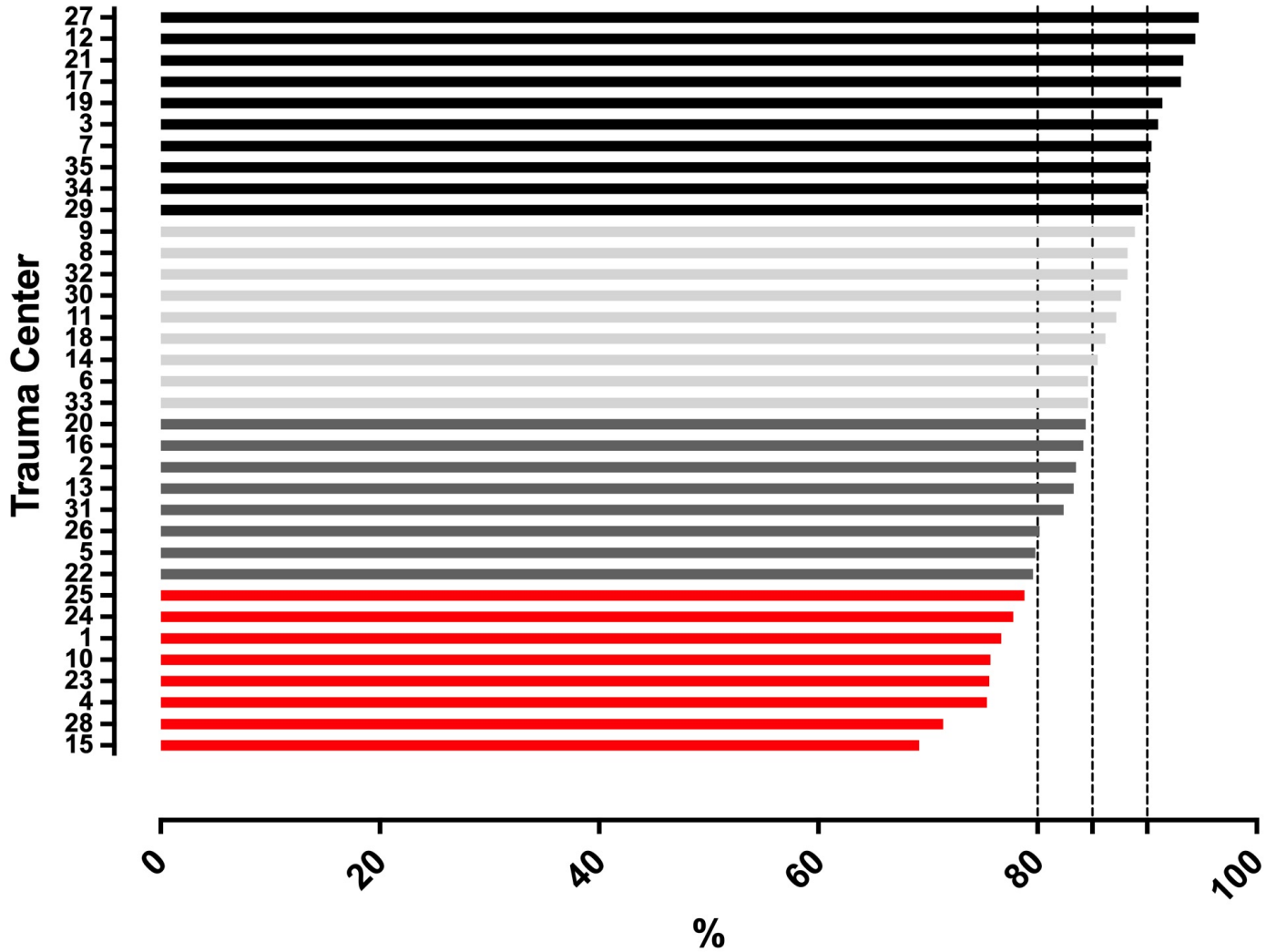
Metric #5 - Timely Surgical Hip Repair ≥ 65 years
Cohort 8 - Isolated Hip Fracture
7/1/20 - 1/31/21



Mean 94%

Last Year

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

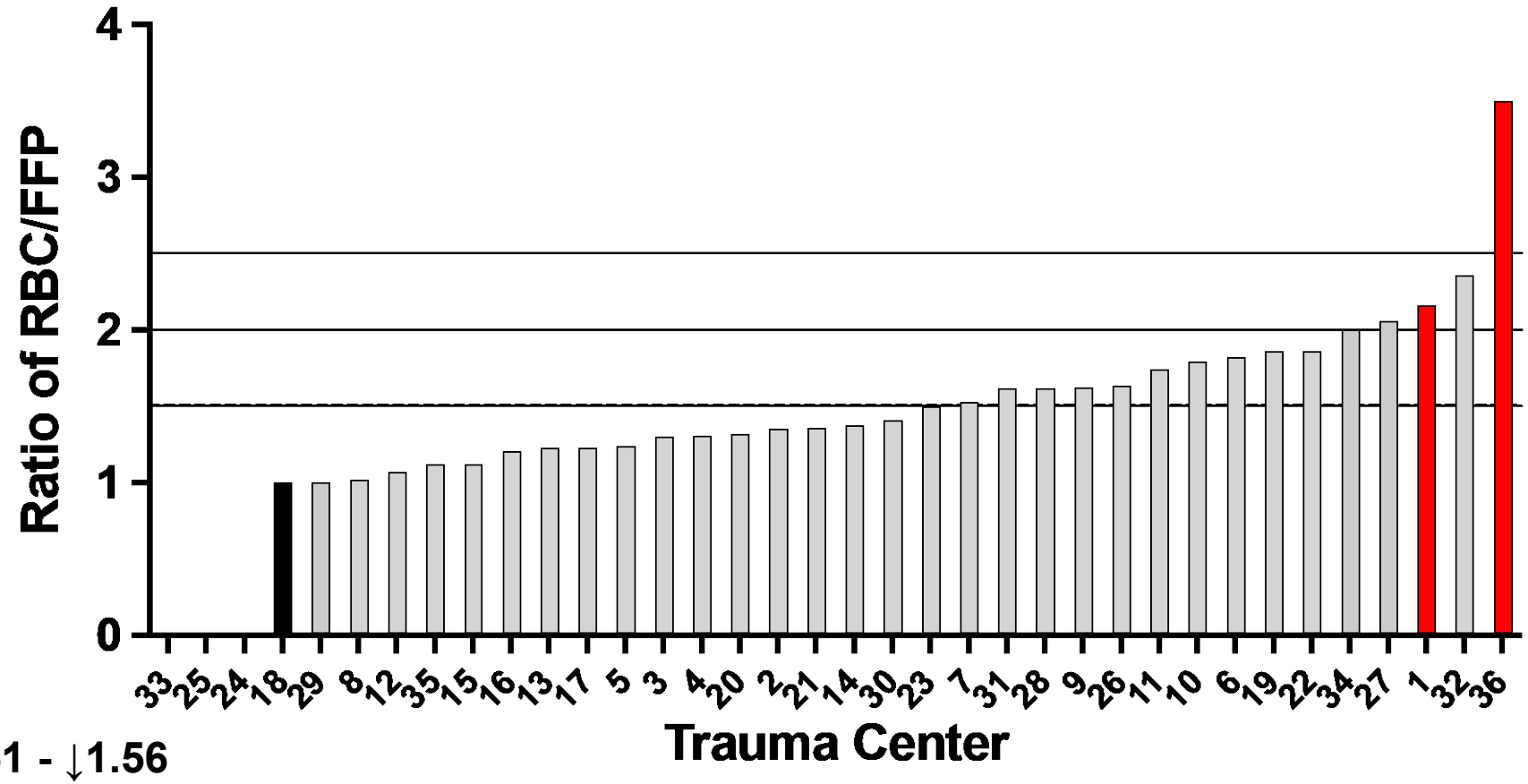


Mean 85.3%

#6 Red Blood Cell to Plasma Ratio

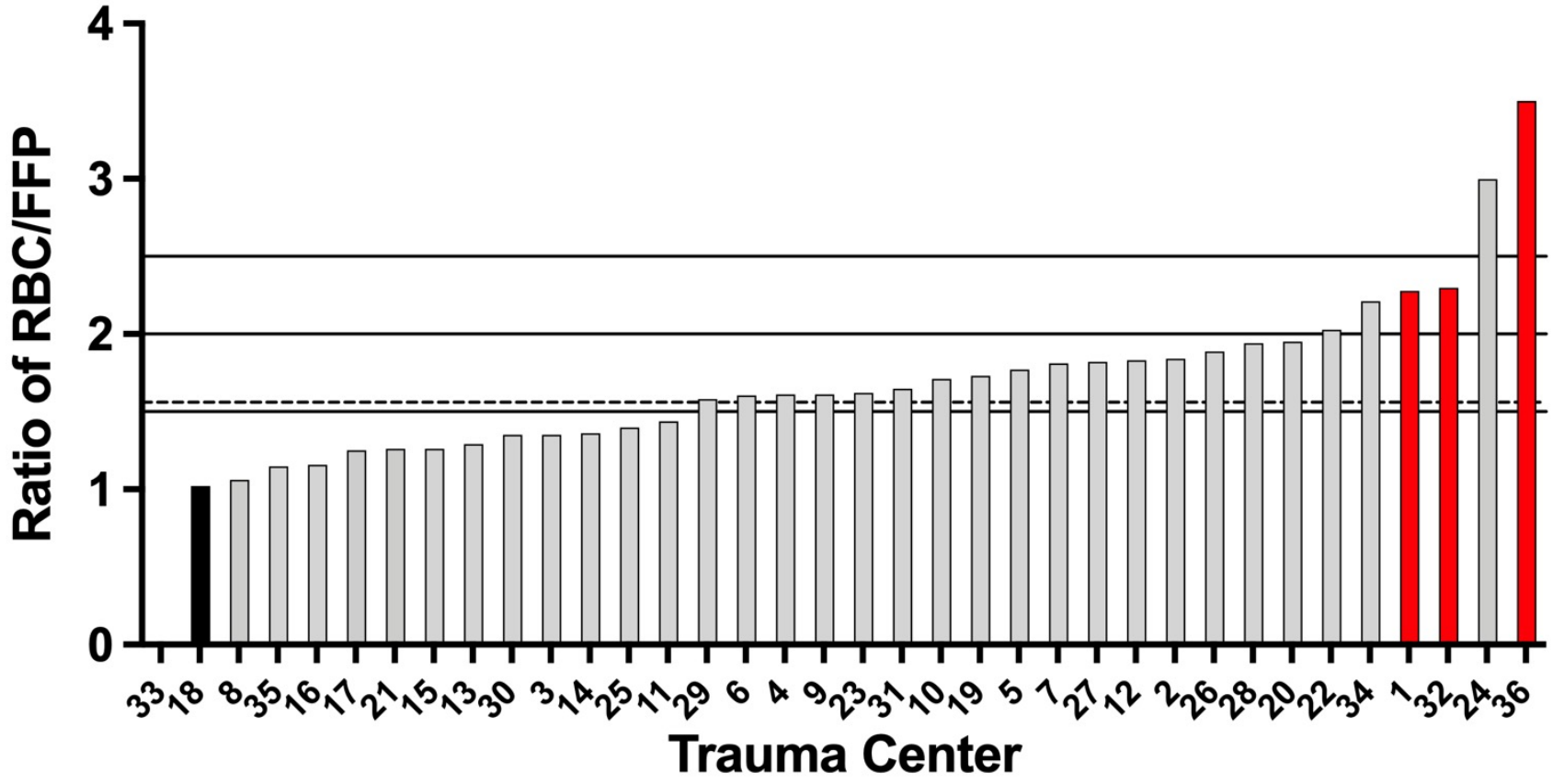
- Red blood cell to plasma ratio (weighted mean points) of patients transfused ≥5 units in first 4 hours (18 Mo's: 1/1/20-6/30/21)

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



Mean 1.51 - ↓1.56

RBC to FFP Ratio - Mean
Cohort 1 - MTQIP All
11/1/18 - 1/31/21



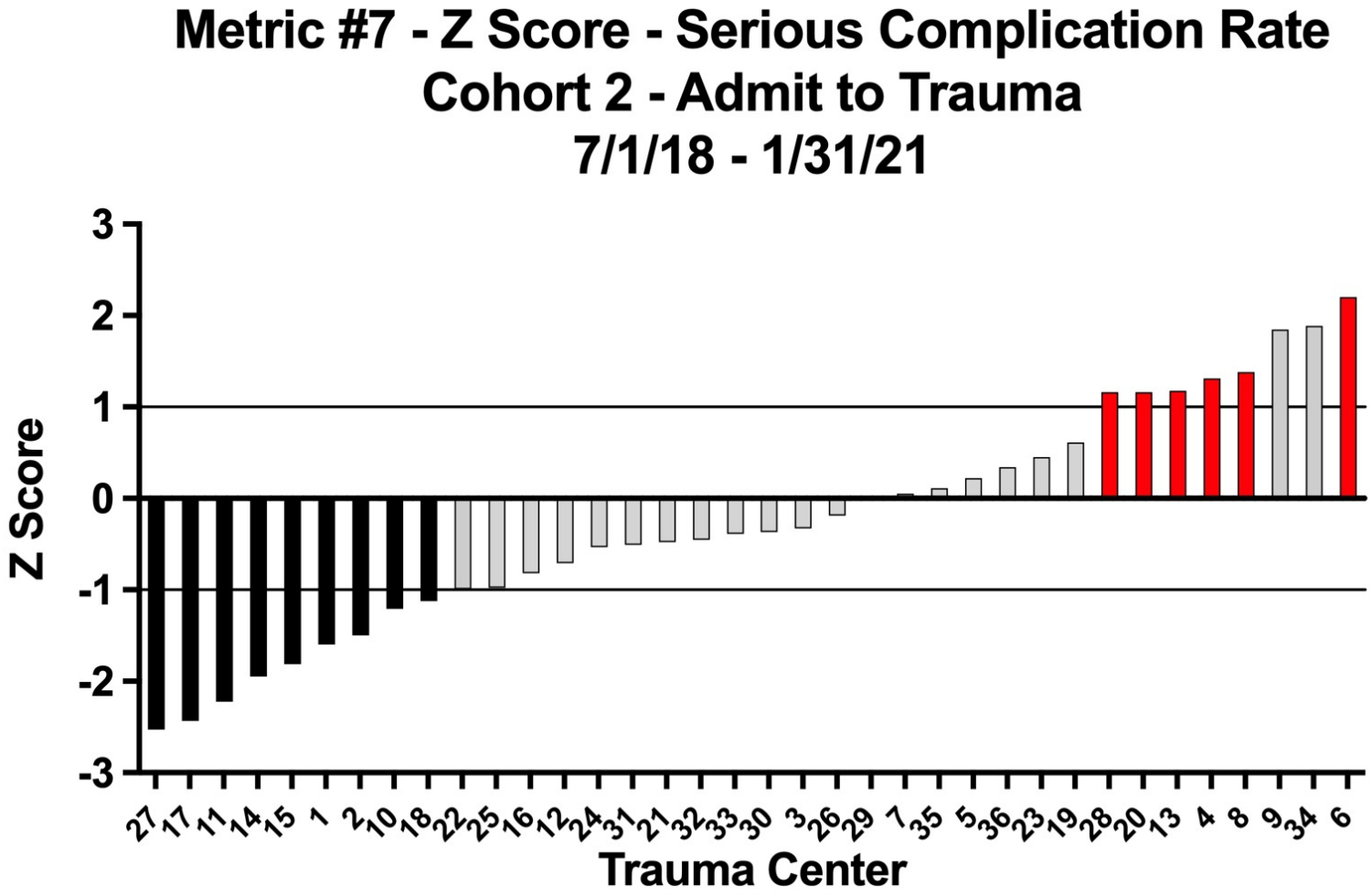
3 Years

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

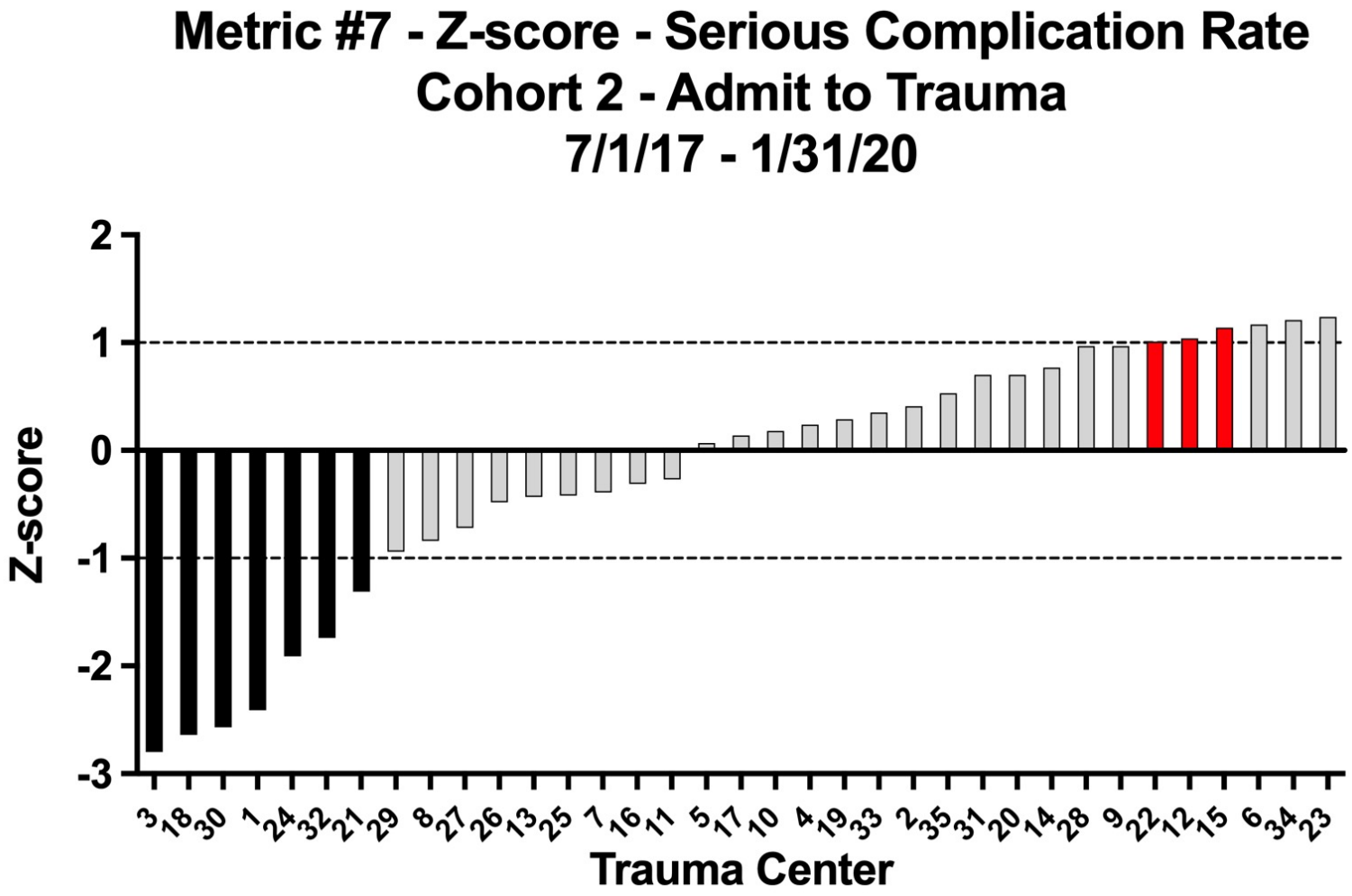
Today

#7 Serious Complication Rate (Z-score)



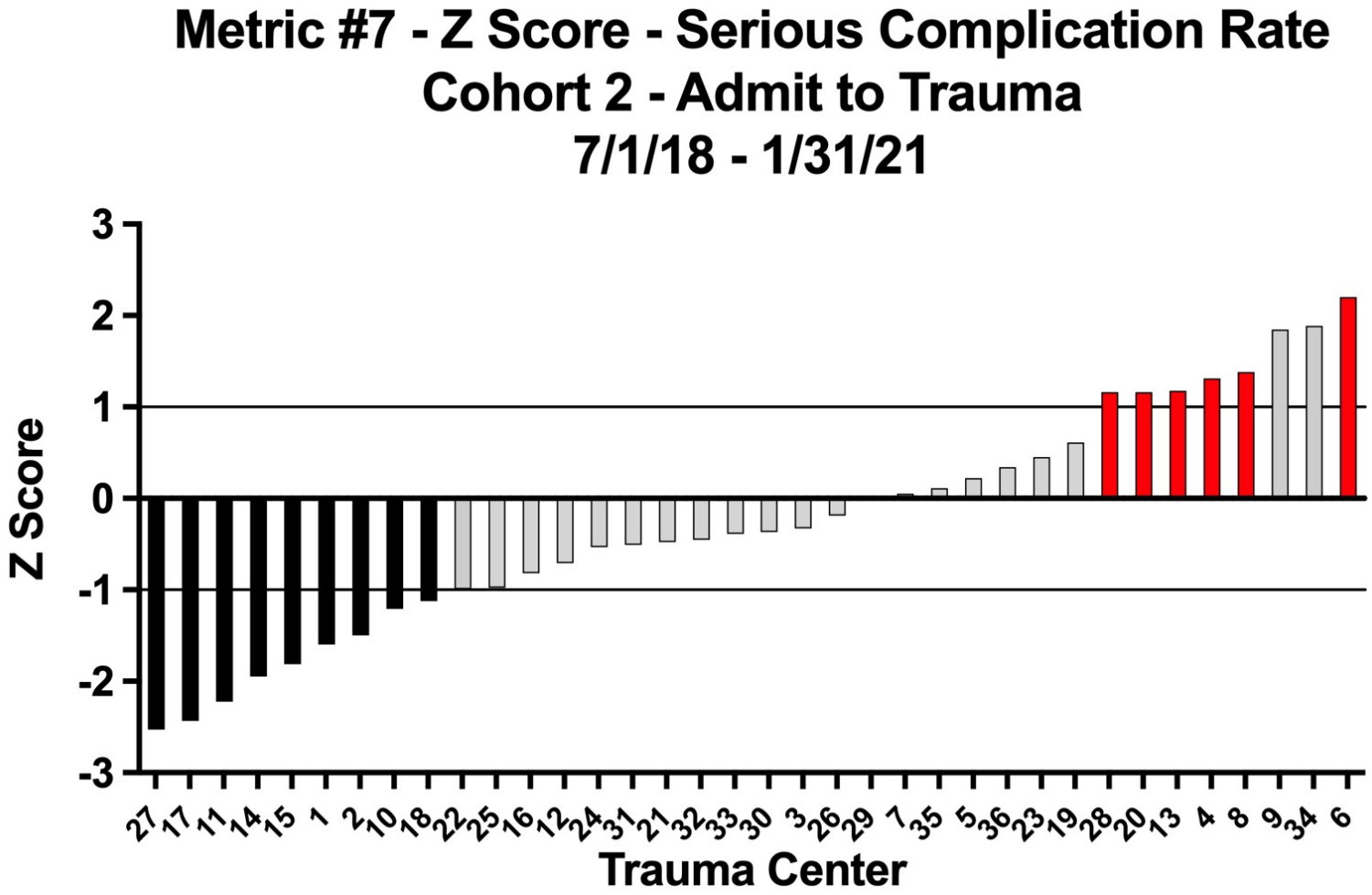
Last Year

#7 Serious Complication Rate (Z-score)

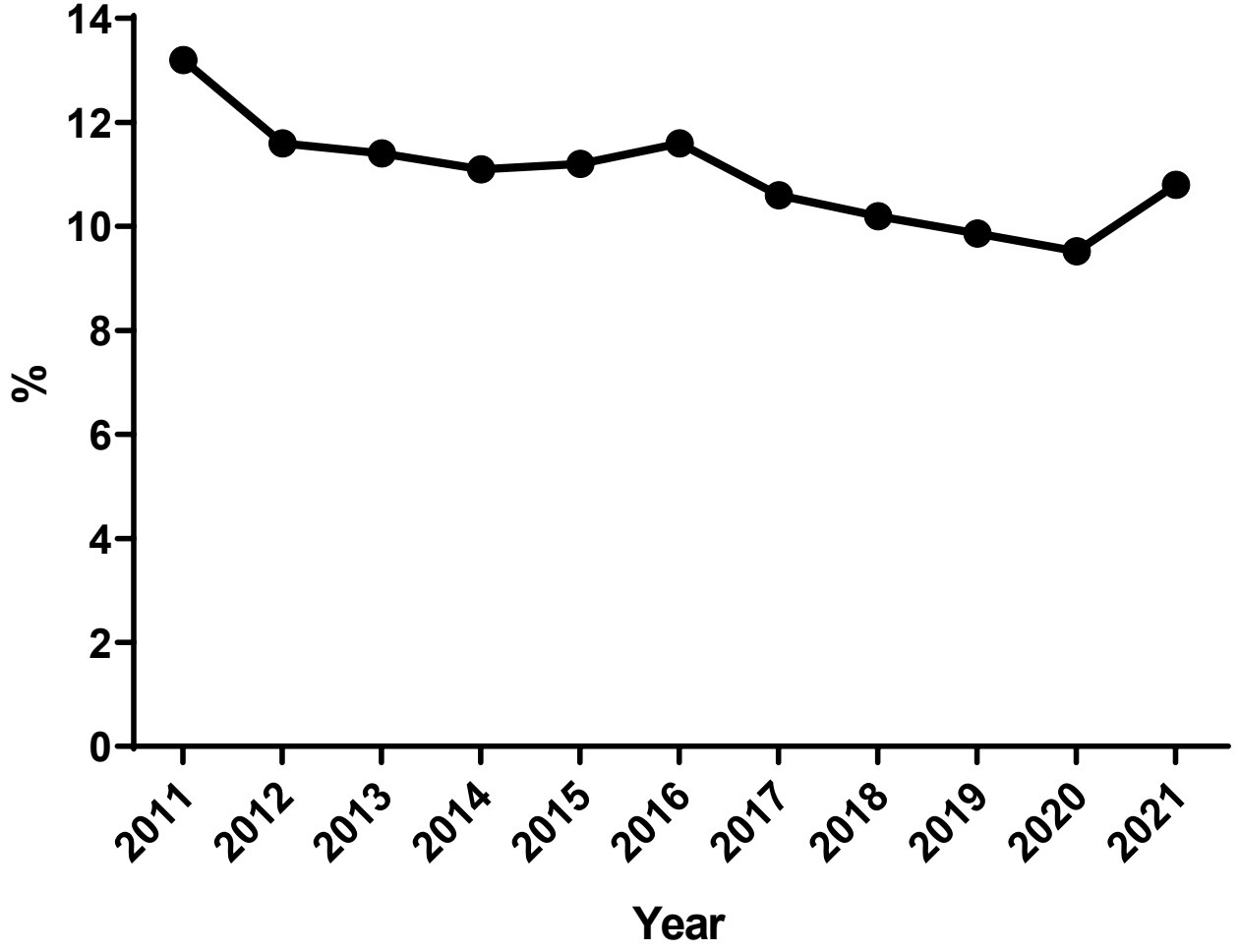


Today

#7 Serious Complication Rate (Z-score)

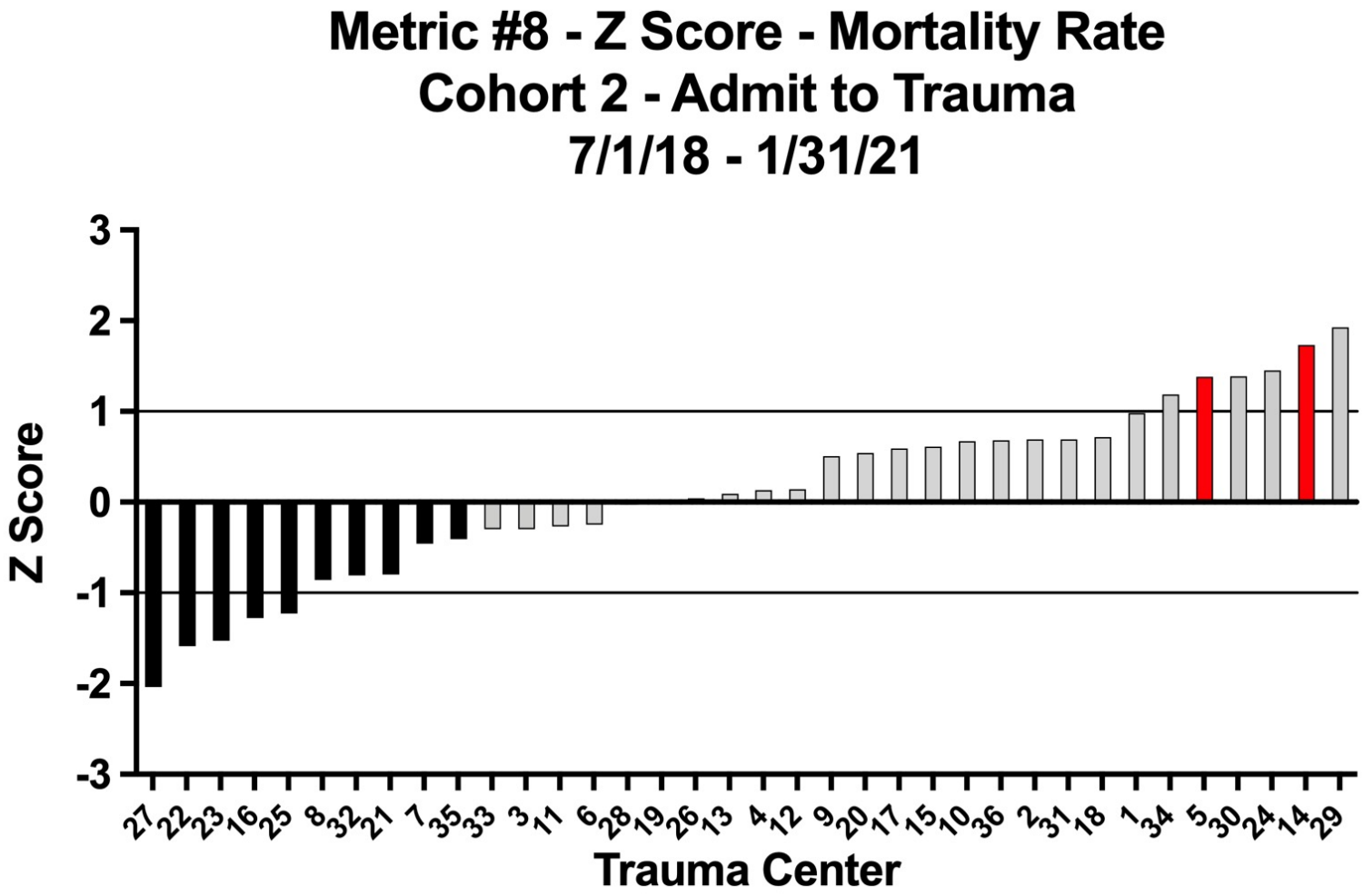


Collaborative Outcome Overview - Serious Cx
Cohort 2 - Admit to Trauma



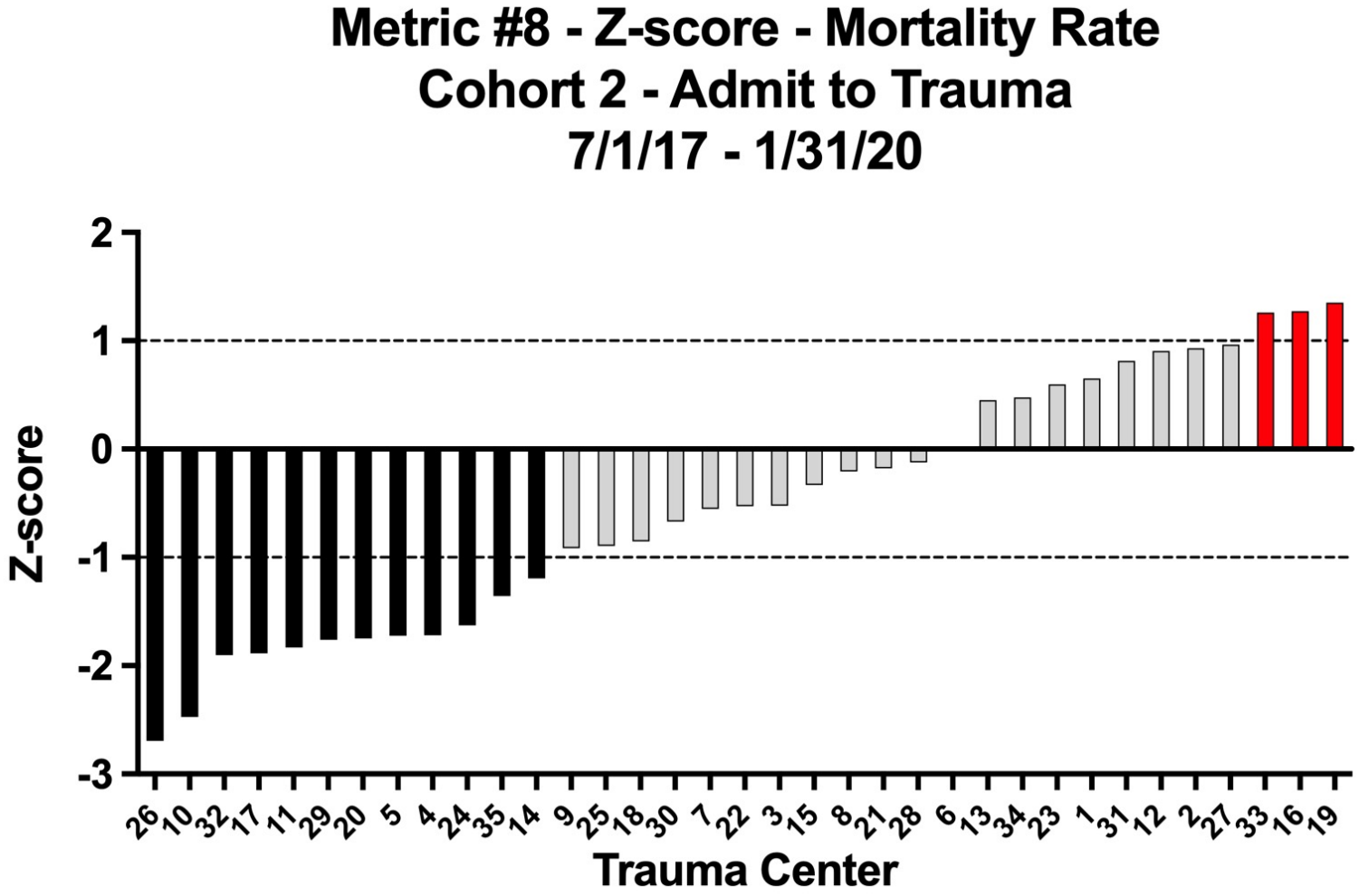
Today

#8 Mortality Rate (Z-score)



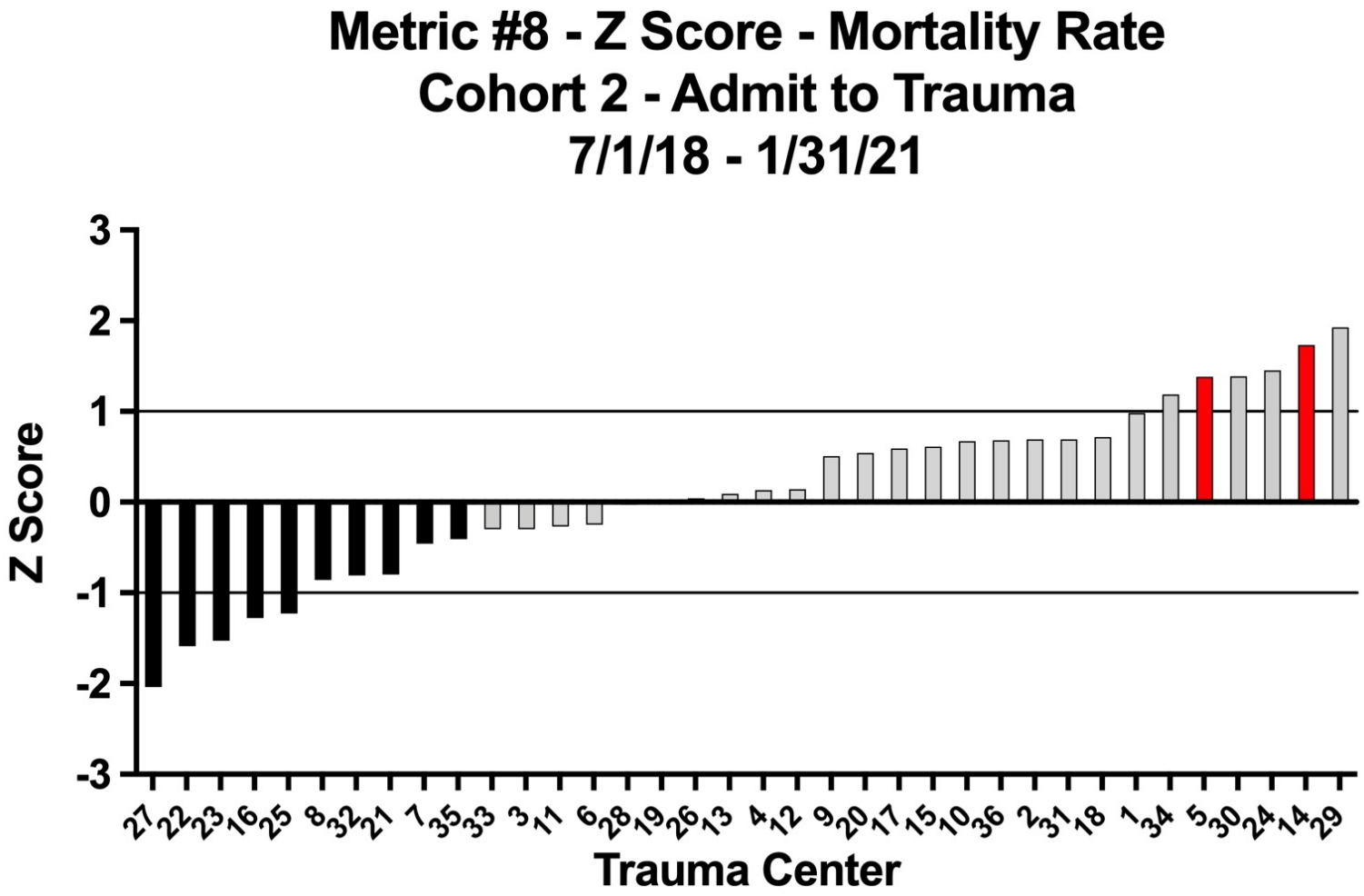
Last Year

#8 Mortality Rate (Z-score)



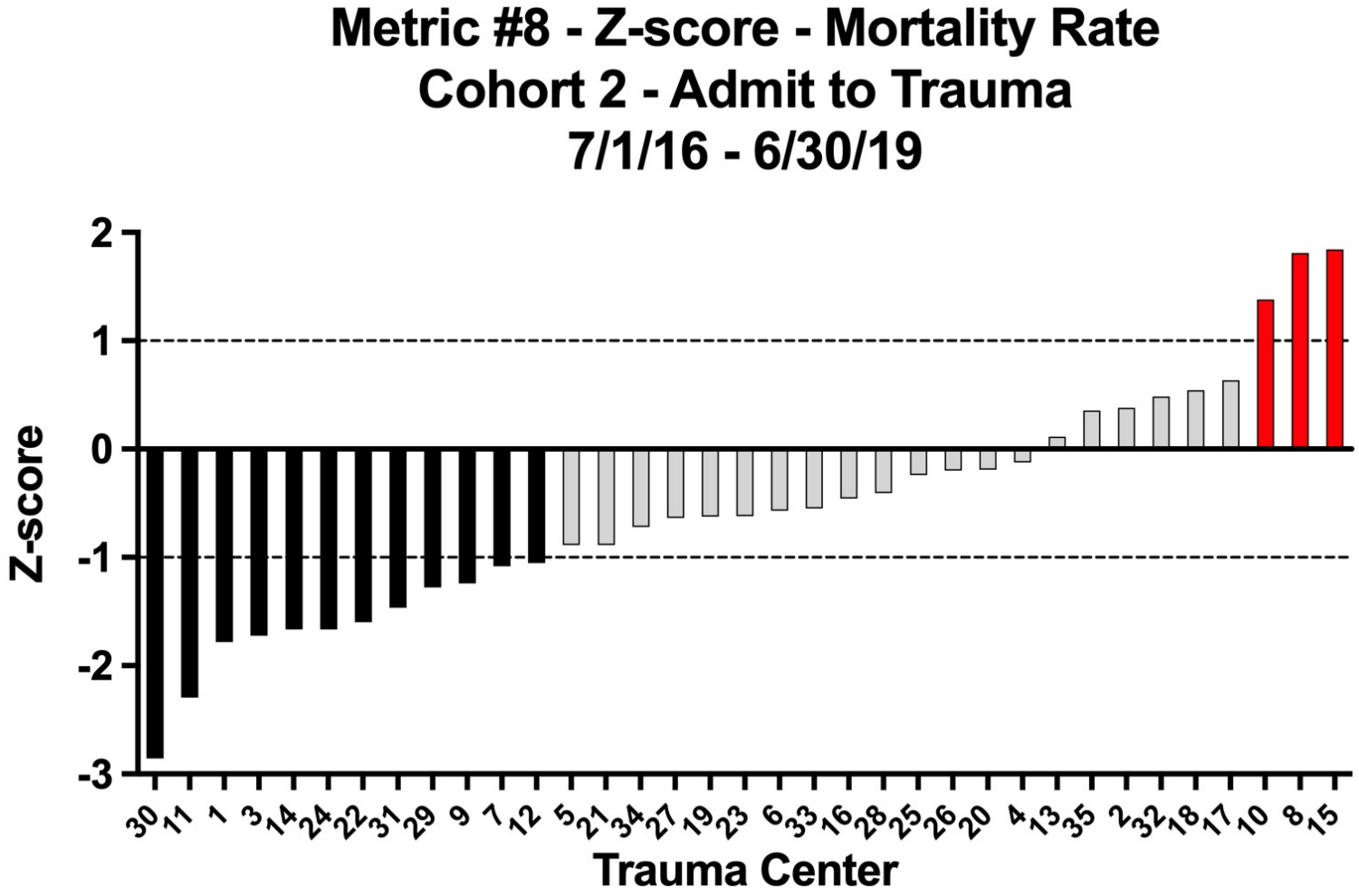
Today

#8 Mortality Rate (Z-score)

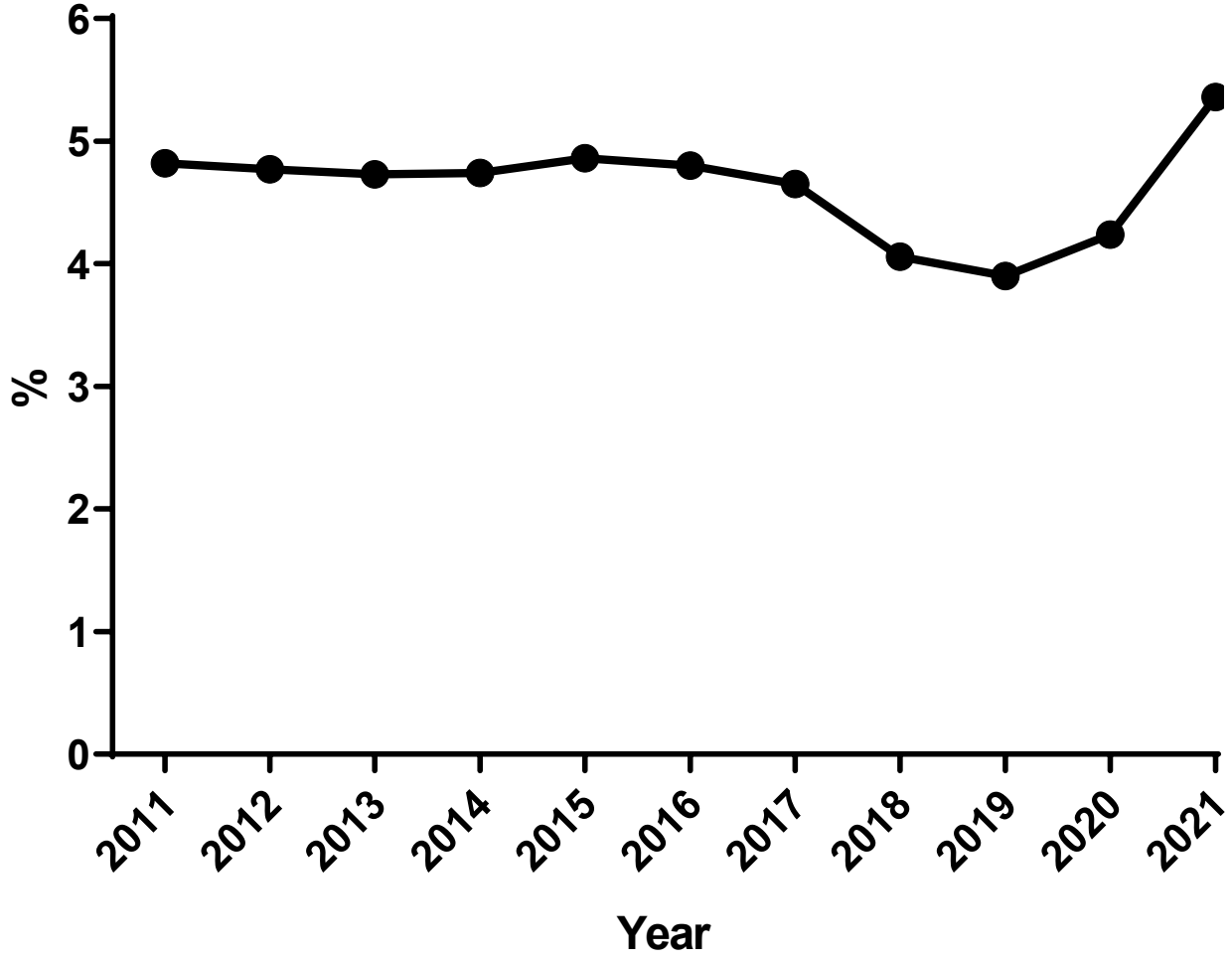


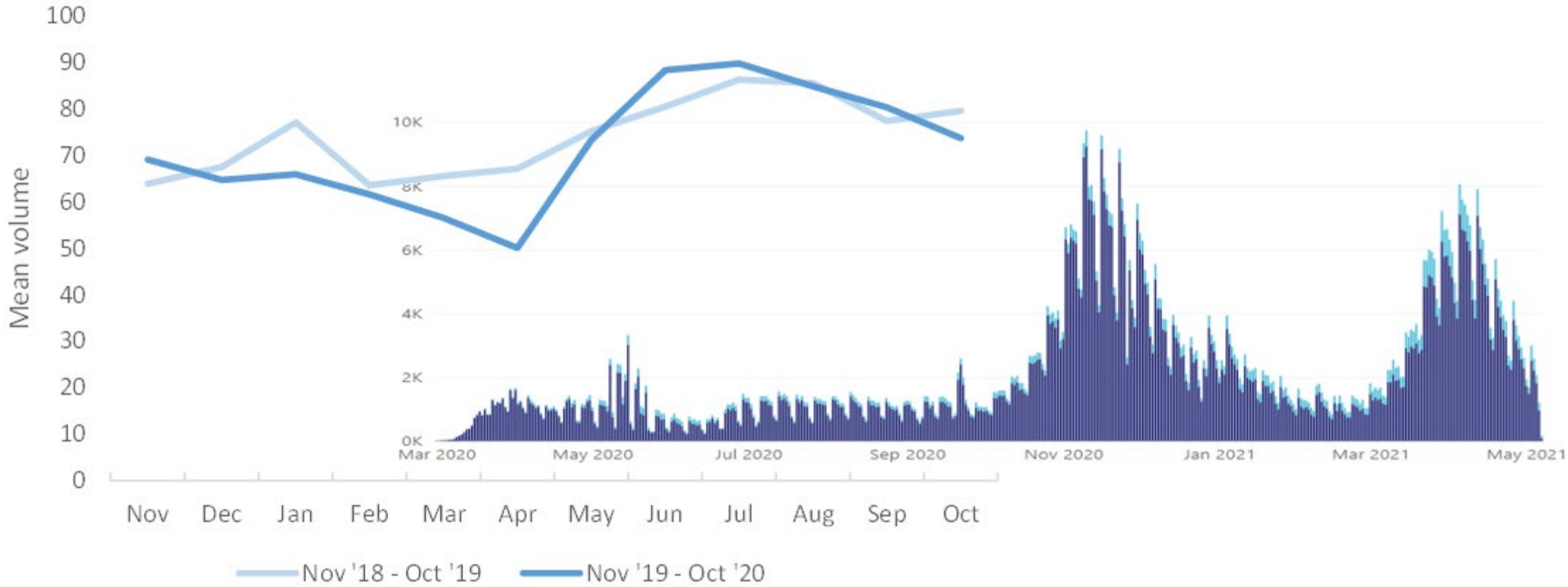
2 Years Ago

#8 Mortality Rate (Z-score)



Collaborative Outcome Overview - Mortality
Cohort 2 - Admit to Trauma




100
90
80
70
60
50
40
30
20
10
0
Mean volume
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
10K
8K
6K
4K
2K
0K
Mar 2020
May 2020
Jul 2020
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Nov '18 - Oct '19
Nov '19 - Oct '20

#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 = 7/1/19 to 6/30/20

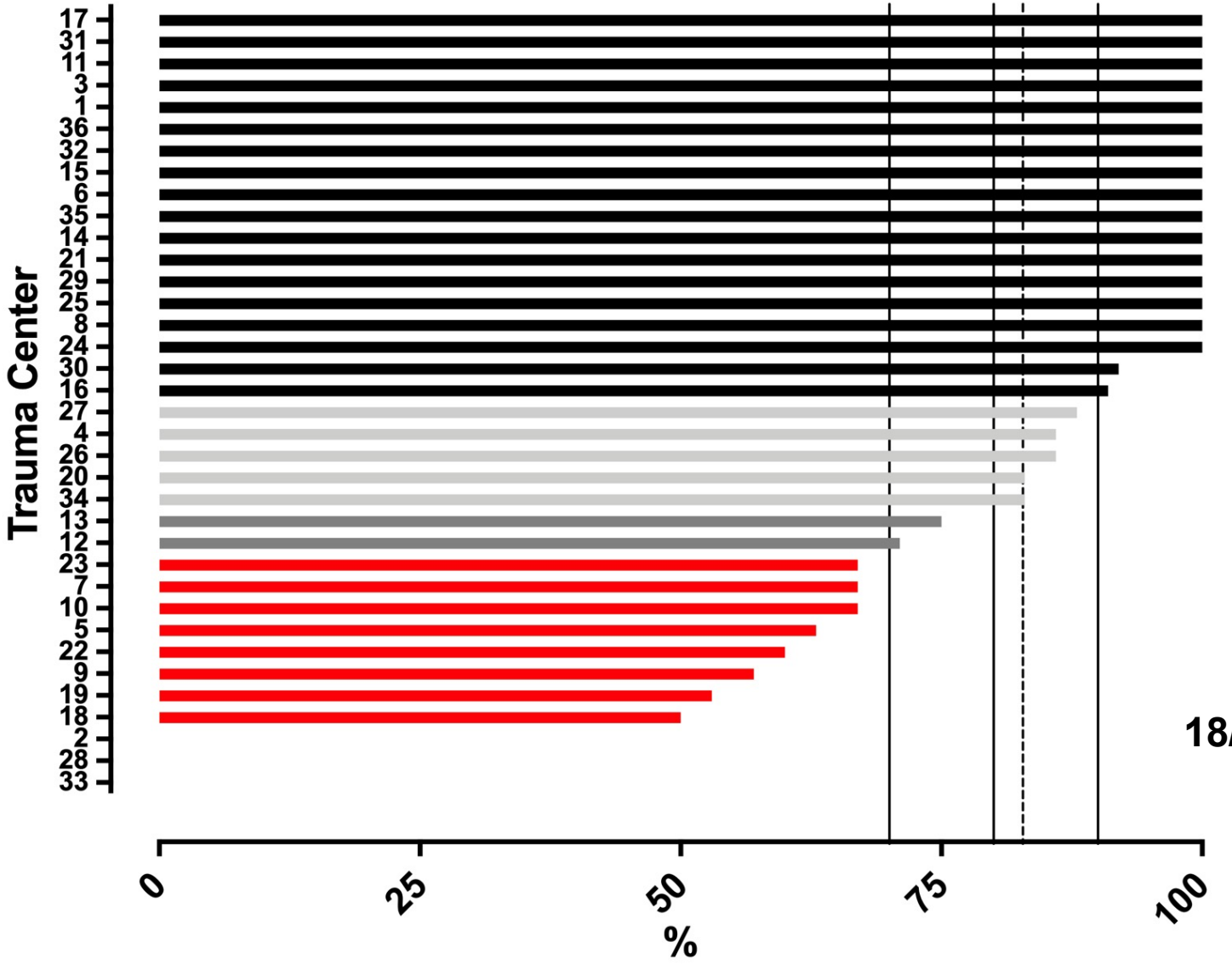
#9 Head CT in Anticoagulated Patient with TBI

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

Today

261 Patients

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

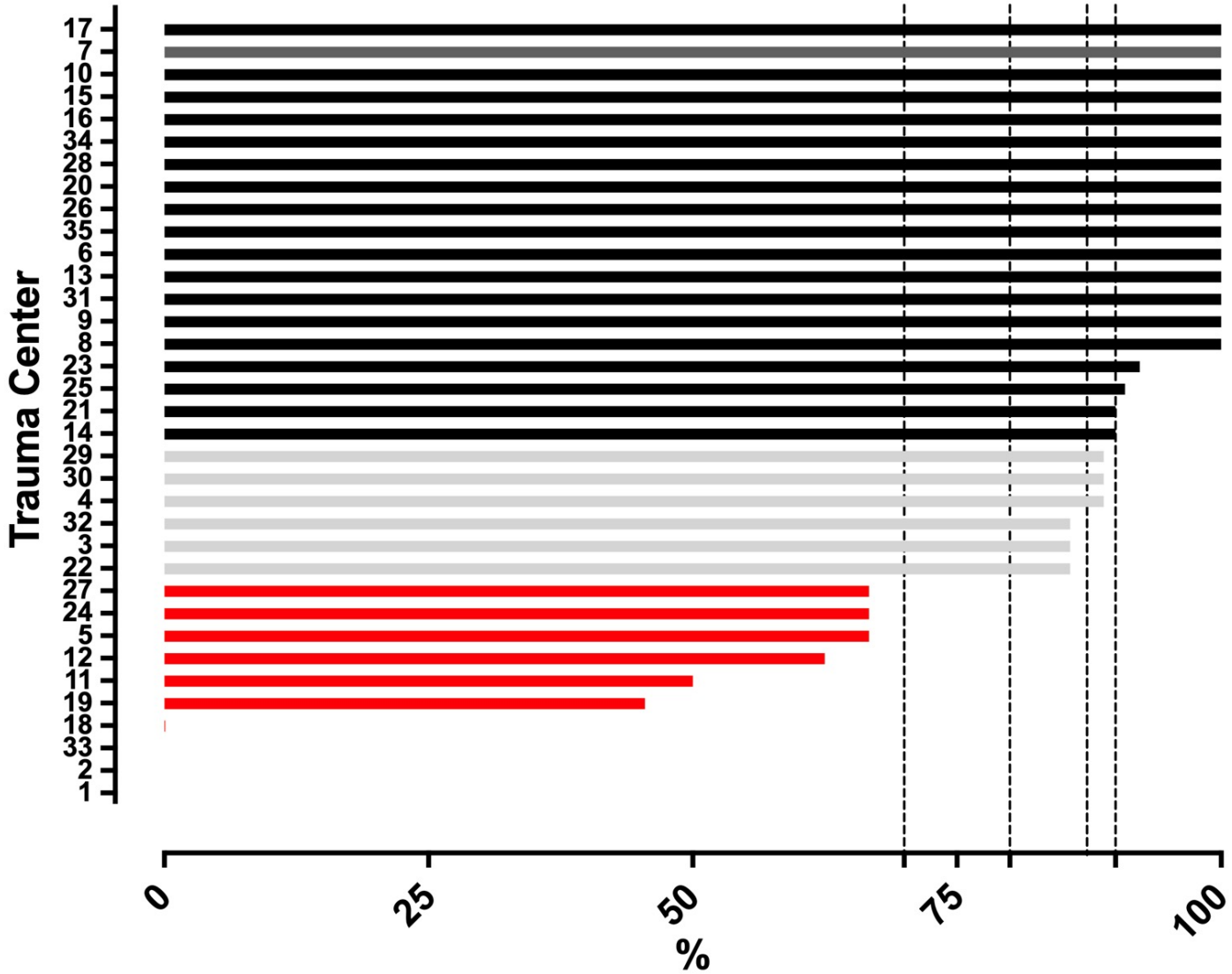


Mean 82.8% ↓

18/35 Centers ≥ 90% (-1)

Last Year

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



Mean 87.3%

19/34 Centers ≥ 90% (+10)

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

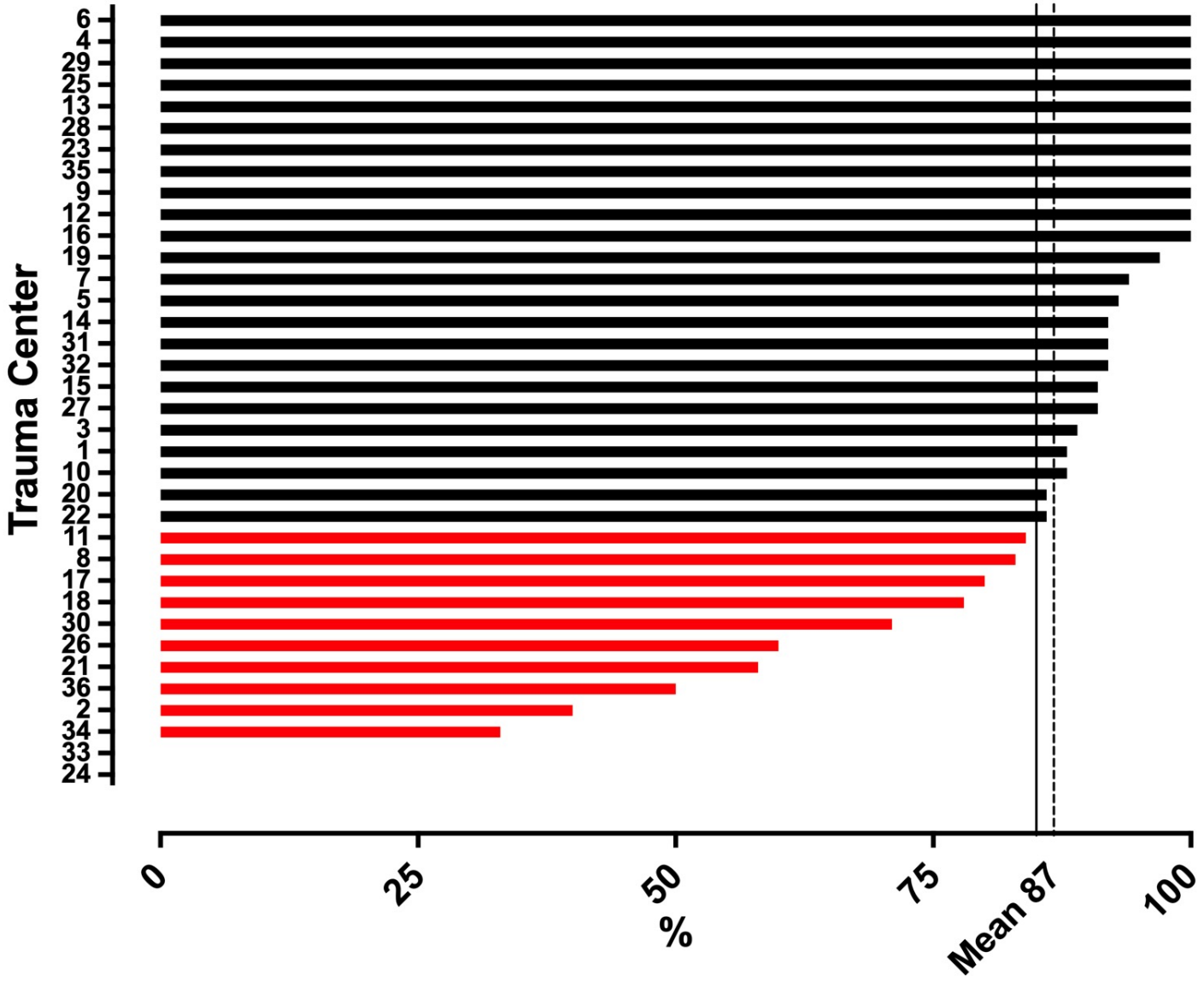
- Type of antibiotic administered along with date and time for open fracture of femur or tibia
- Presence of acute open femur or tibia fracture based on AIS or ICD10 codes (See list)
- Cohort = Cohort 1 (All)
- Exclude direct admissions and transfer in
- No Signs of Life = Exclude DOAs
- Transfers Out = Include Transfers Out
- Time Period = 7/1/19 to 6/30/20

#10 Open Fracture Antibiotic Usage

- Measure = % of patients with antibiotic type, date, time recorded ≤ 120 minutes
  - ≥ 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 ≤ 120 min
Cohort 1 - MTQIP All
7/1/20 - 1/31/21

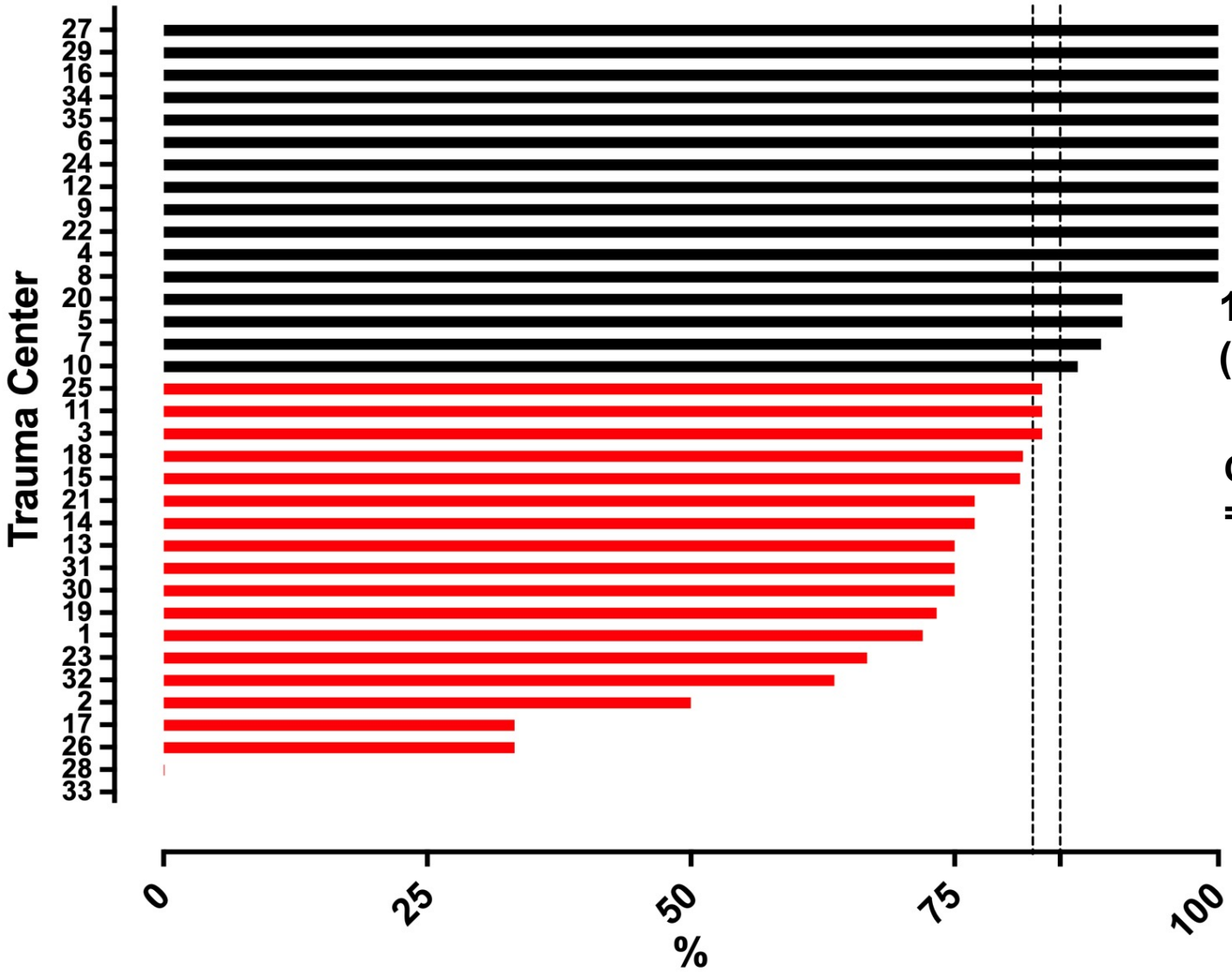


5 Centers ≥ 85%

aborative Mean
.7%

Last Year

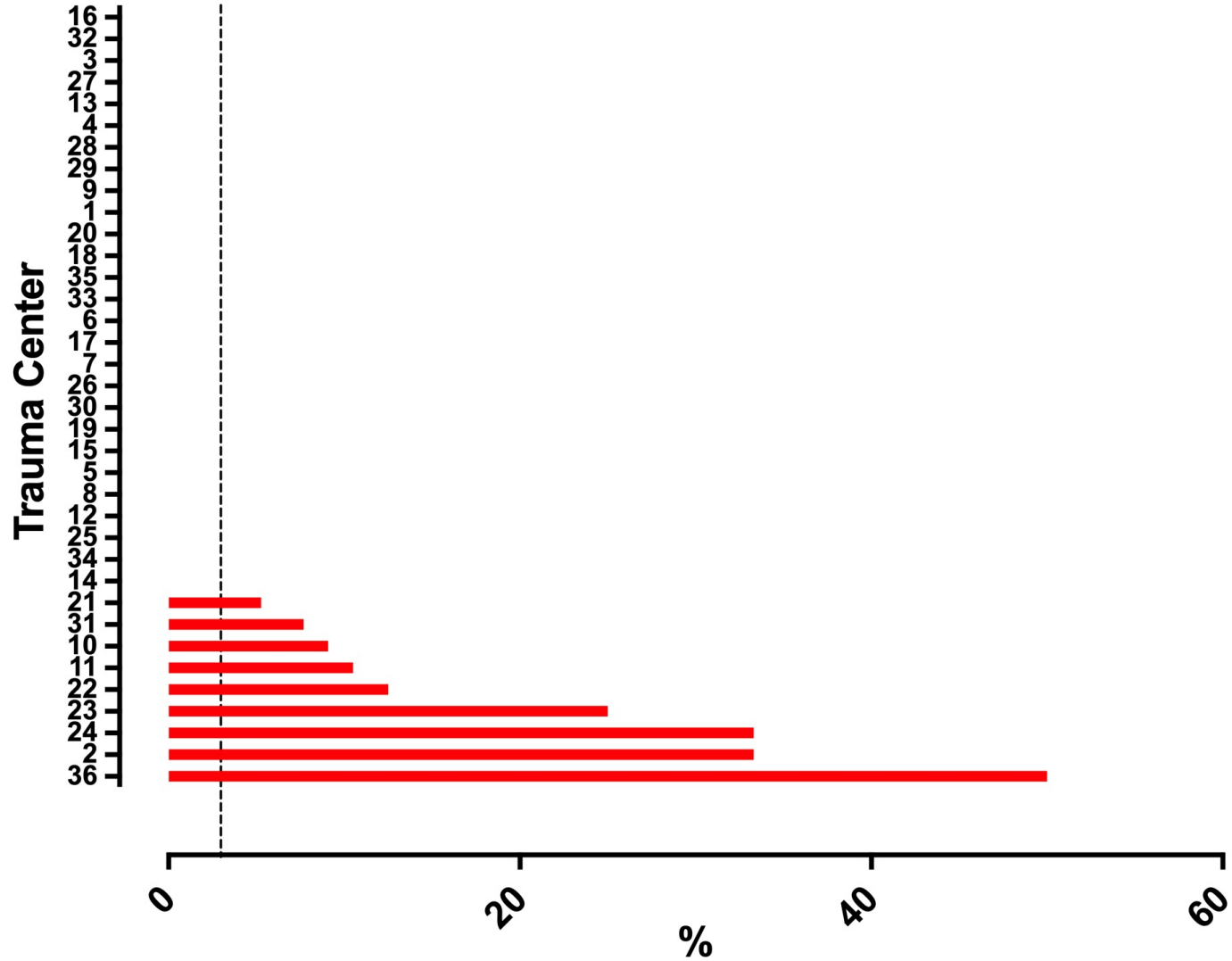
Metric #10 - Open Fracture - Time to Abx ≤ 120 min
Cohort 1 - MTQIP All
7/1/19 - 1/31/20



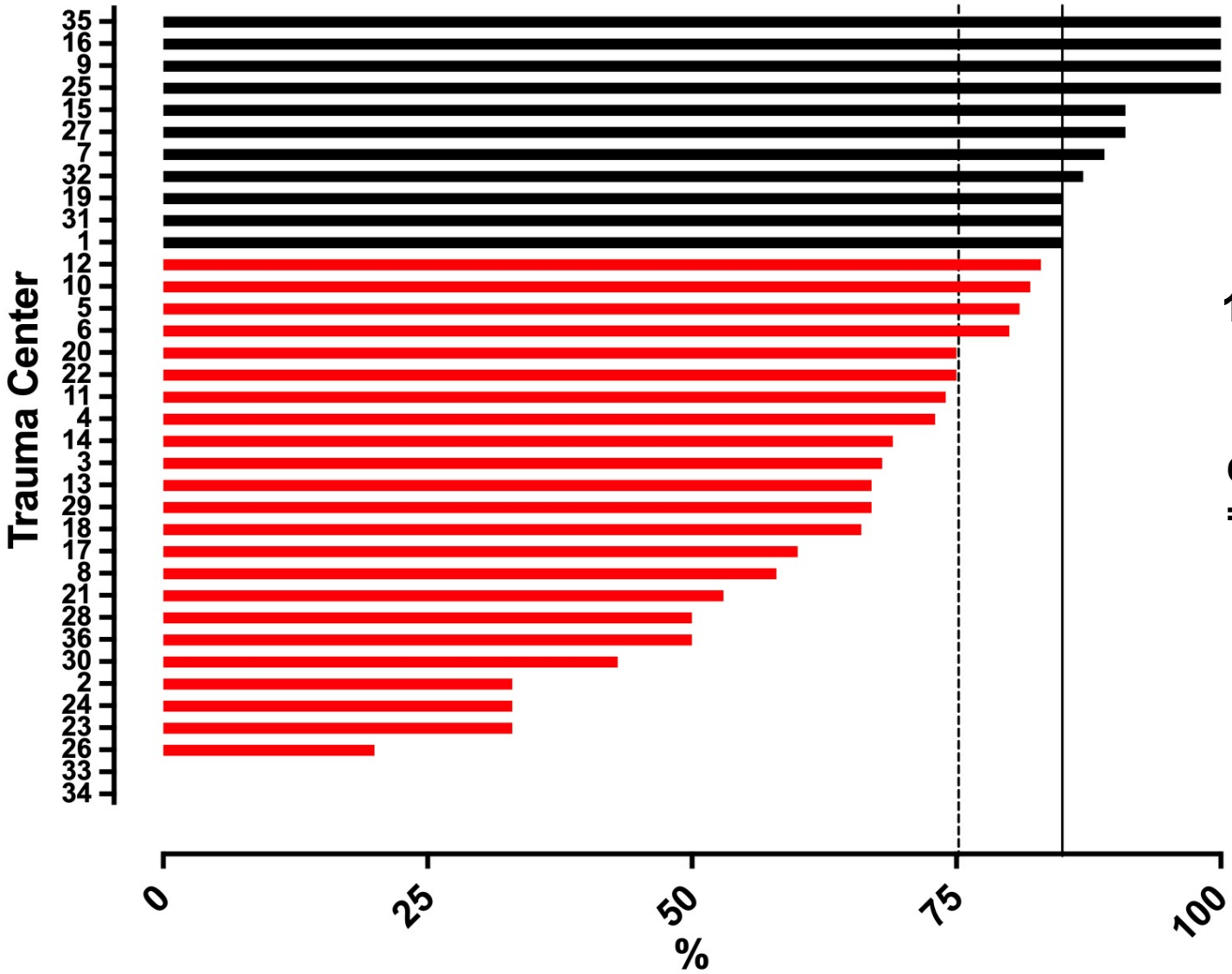
16/34 Centers ≥ 85%
(-1)

Collaborative Mean
= 82.4%

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

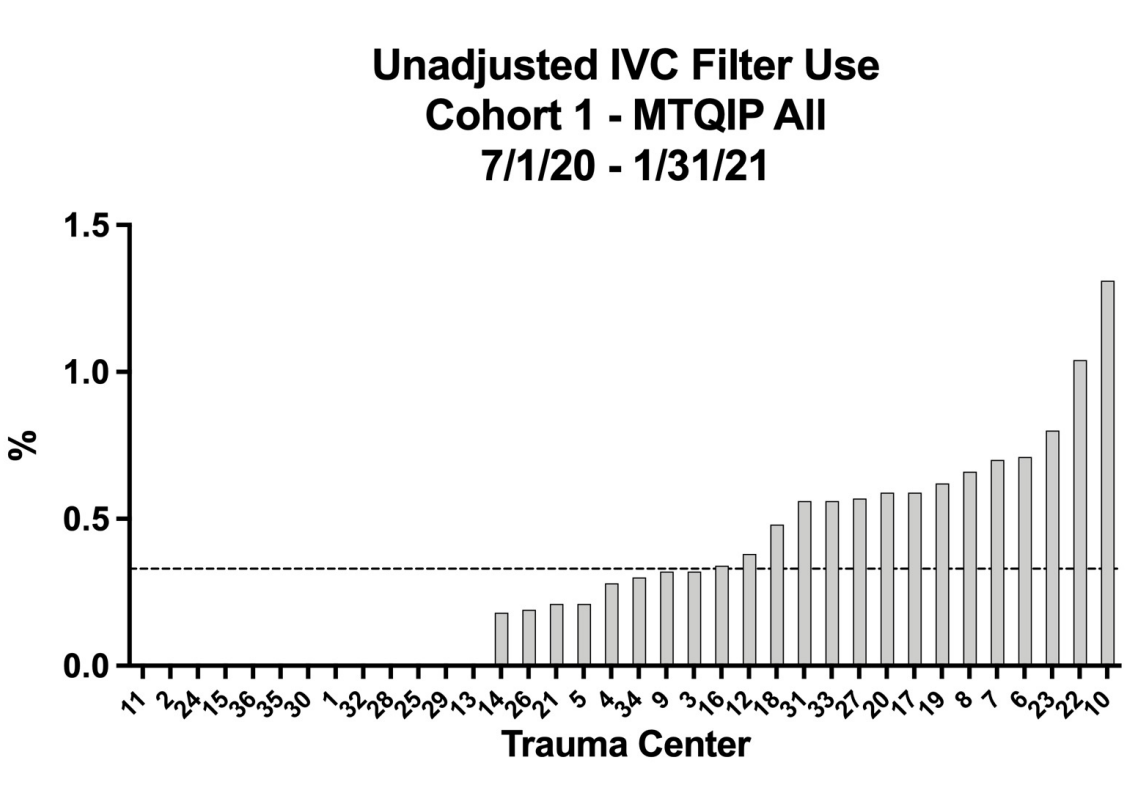


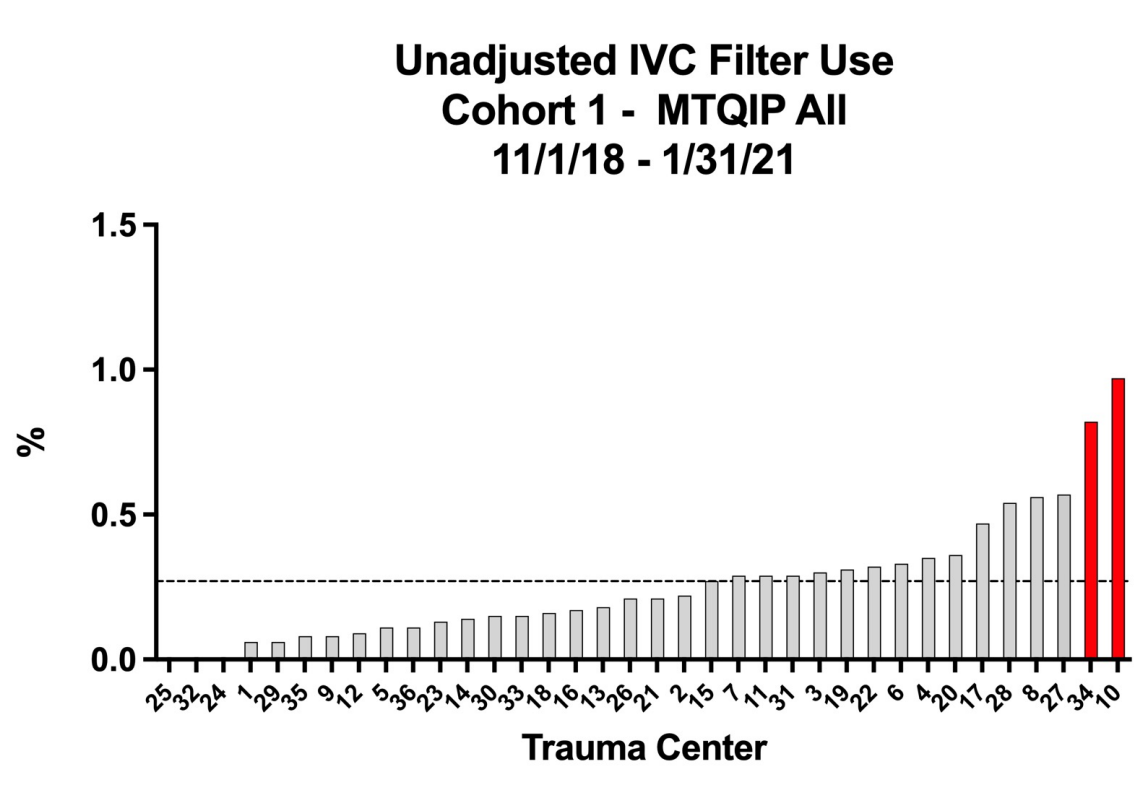
Open Fracture - Time to Abx ≤ 60 min
Cohort 1 - MTQIP All
7/1/20 - 1/31/21



11/34 Centers ≥ 85%

Collaborative Mean = 75.2%


Unadjusted IVC Filter Use
Cohort 1 - MTQIP All
7/1/20 - 1/31/21
1.5
1.0
0.5
0.0
%
11 2 24 15 36 35 30 1 32 28 25 29 13 14 26 21 5 4 34 9 3 16 12 18 31 33 27 20 17 19 8 7 6 23 22 10
Trauma Center


Unadjusted IVC Filter Use
Cohort 1 - MTQIP All
11/1/18 - 1/31/21
1.5
1.0
0.5
0.0
%
25 32 24 1 29 35 9 12 5 36 23 14 30 33 18 16 13 26 21 2 15 7 11 31 3 19 22 6 4 20 17 28 8 27 34 10
Trauma Center

MTQIP Hospital Scoring Index Future

Mark Hemmila, MD

CQI Index Changes for 2021

#3	10	**Data Validation Error Rate**	
		0.0-3.0%	10
		3.1-4.0%	8
		4.1-5.0%	5
		> 5.0%	0
#4	10	**Timely LMWH VTE Prophylaxis in Trauma Admits** (18 mo: 1/1/20-6/30/21)	
		≥ 52.5 % of patients (≤ 48 hr)	10
		≥ 50.0 % of patients (≤ 48 hr)	8
		≥ 45.0 % of patients (≤ 48 hr)	5
		< 45.0 % of patients (≤ 48 hr)	0
#5	10	**Timely Surgical Repair in Geriatric (Age ≥ 65) Isolated Hip Fxs** (12 mo: 7/1/20-6/30/21)	
		≥ 92.0 % of patients (≤ 48 hr)	10
		≥ 87.0 % of patients (≤ 48 hr)	8
		≥ 85.0 % of patients (≤ 48 hr)	5
		< 85.0 % of patients (≤ 48 hr)	0

Data Validation Error Rate
0-4.0%
4.1-5.0%
5.1-6.0%
6.1-7.0%
> 7.0%
Timely LMWH VTE Prophyla
≥ 50% of patients (≤ 48 hr)
≥ 45% of patients (≤ 48 hr)
≥ 40% of patients (≤ 48 hr)
< 40% of patients (≤ 48 hr)
Timely Surgical Repair in Ge
≥ 90% of patients (≤ 48 hr)
≥ 85% of patients (≤ 48 hr)
≥ 80% of patients (≤ 48 hr)
< 80% of patients (≤ 48 hr)

#4 Timely LMWH VTE Prophylaxis in Trauma Service Admits

- Currently has to be first dose
- Some patients get Heparin and then switched within the 48 hr window to LMWH

- How to avoid giving heparin

#9 Head CT in Anticoagulated Patient with TBI

- Low n per center
- High stakes

- Collaborative wide metric?
- Balance with encouraging individual centers to improve

#10 Open Fracture Antibiotic Usage

- Collaborative wide
- Reduce to 90 minutes?

Other thoughts

- Reinstate IVC filter
- Time to intervention for hemorrhage
- Time to anticoagulant reversal
- TXA

MACS Update

Participants

- St. Joseph Mercy Ann Arbor
- Spectrum Health
- Sparrow Hospital
- Michigan Medicine
- Metro Health
- Detroit Receiving/Harper
- McLaren Macomb

Recruitment

- Strong Potentials
  - Ascension Borgess Hospital
  - Mercy Health St. Mary's (Grand Rapids)
- Potentials
  - Henry Ford Detroit
  - Mid-Michigan Midland

BCBSM 2021 and 2022

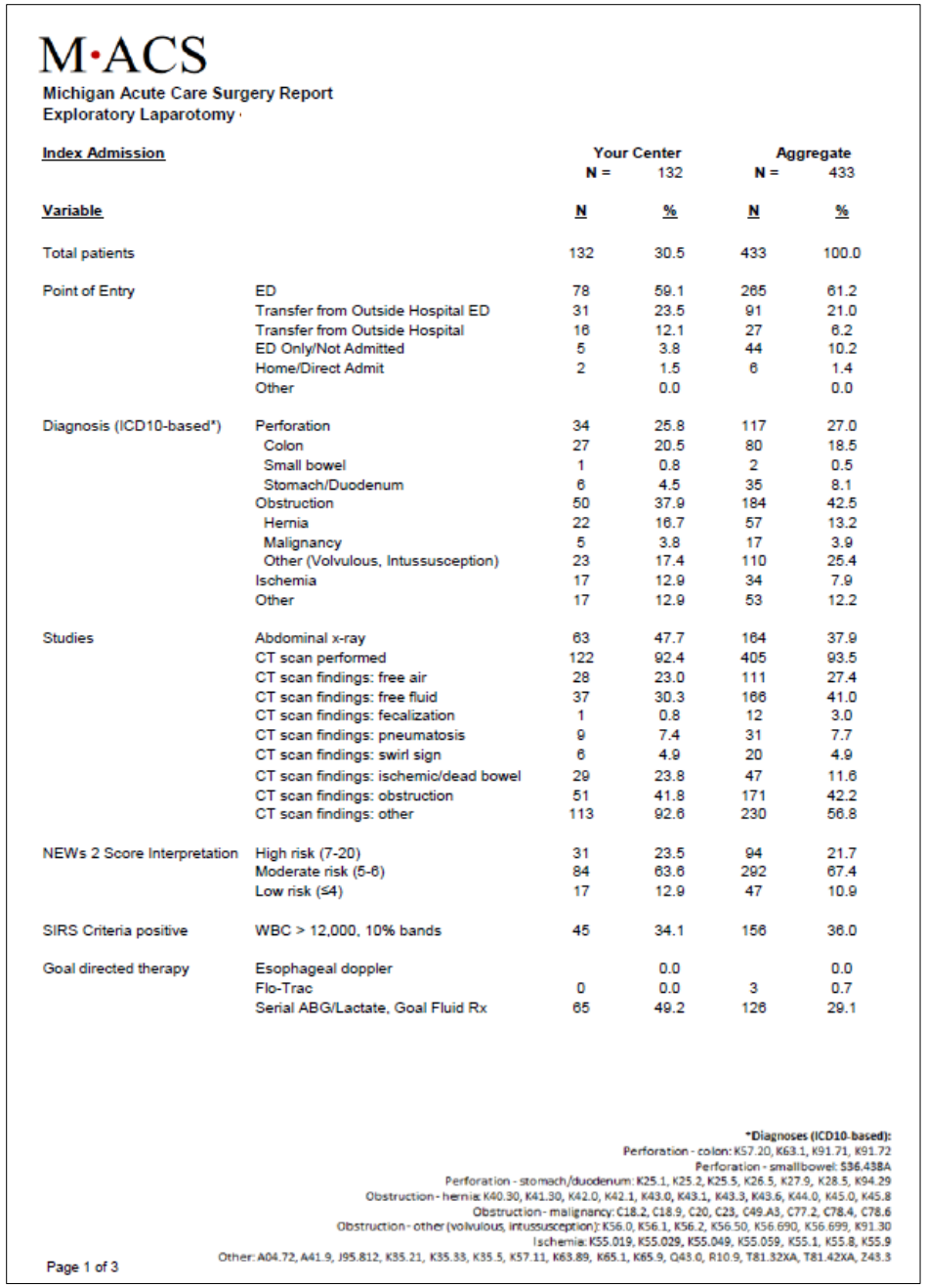
- SOW Deliverables
  - 2 yrs
  - Coordinator - Kim Kramer, PA
  - Analytic Support - Laura Gerhardinger
  - 3 Meetings/yr
  - ArborMetrics reporting
  - Data validation program
  - Performance Index

Overview of Data Capture

- Diseases
  - Acute Appendicitis
  - Acute Gallbladder disease
    - Cholecystitis
    - Choledocholithiasis/Cholangitis
    - Gallstone pancreatitis
  - SBO
    - Hernia (if present)
  - Emergent Exploratory Laparotomy
  - Operative and non-operative cases

Reports

- Summary
- Acute Appendicitis
- Acute Gallbladder Disease
- Small Bowel Obstruction
  - Hernia if present
- Emergent Exploratory Laparotomy



M·ACS

Michigan Acute Care Surgery Report
Exploratory Laparotomy

Index Admission		Your Center N = 132		Aggregate N = 433	
Variable		**N**	**%**	**N**	**%**
Total patients		132	30.5	433	100.0
Point of Entry	ED	78	59.1	265	61.2
	Transfer from Outside Hospital ED	31	23.5	91	21.0
	Transfer from Outside Hospital	16	12.1	27	6.2
	ED Only/Not Admitted	5	3.8	44	10.2
	Home/Direct Admit	2	1.5	6	1.4
	Other		0.0		0.0
Diagnosis (ICD10-based*)	Perforation	34	25.8	117	27.0
	Colon	27	20.5	80	18.5
	Small bowel	1	0.8	2	0.5
	Stomach/Duodenum	6	4.5	35	8.1
	Obstruction	50	37.9	184	42.5
	Hernia	22	16.7	57	13.2
	Malignancy	5	3.8	17	3.9
	Other (Volvulous, Intussusception)	23	17.4	110	25.4
	Ischemia	17	12.9	34	7.9
	Other	17	12.9	53	12.2
Studies	Abdominal x-ray	63	47.7	164	37.9
	CT scan performed	122	92.4	405	93.5
	CT scan findings: free air	28	23.0	111	27.4
	CT scan findings: free fluid	37	30.3	166	41.0
	CT scan findings: fecalization	1	0.8	12	3.0
	CT scan findings: pneumatosis	9	7.4	31	7.7
	CT scan findings: swirl sign	6	4.9	20	4.9
	CT scan findings: ischemic/dead bowel	29	23.8	47	11.6
	CT scan findings: obstruction	51	41.8	171	42.2
	CT scan findings: other	113	92.6	230	56.8
NEWs 2 Score Interpretation	High risk (7-20)	31	23.5	94	21.7
	Moderate risk (5-6)	84	63.6	292	67.4
	Low risk (≤4)	17	12.9	47	10.9
SIRS Criteria positive	WBC > 12,000, 10% bands	45	34.1	156	36.0
Goal directed therapy	Esophageal doppler		0.0		0.0
	Flo-Trac	0	0.0	3	0.7
	Serial ABG/Lactate, Goal Fluid Rx	65	49.2	126	29.1

***Diagnoses (ICD10-based):**
Perforation - colon: K57.20, K63.1, K91.71, K91.72
Perforation - smallbowel: S36.438A
Perforation - stomach/duodenum: K25.1, K25.2, K25.5, K26.5, K27.9, K28.5, K94.29
Obstruction - hernia: K40.30, K41.30, K42.0, K42.1, K43.0, K43.1, K43.3, K43.6, K44.0, K45.0, K45.8
Obstruction - malignancy: C18.2, C18.9, C20, C23, C49.A3, C77.2, C78.4, C78.6
Obstruction - other (volvulous, intussusception): K56.0, K56.1, K56.2, K56.50, K56.690, K56.699, K91.30
Ischemia: K55.019, K55.029, K55.049, K55.059, K55.1, K55.8, K55.9
Other: A04.72, A41.9, J95.812, K35.21, K35.33, K35.5, K57.11, K63.89, K65.1, K65.9, Q43.0, R10.9, T81.32XA, T81.42XA, Z43.3

Page 1 of 3

Summary

- Rolling enrollment every 6 mo
- Contact Kim Kramer or Mark Hemmila
  - kikramer@med.umich.edu
  - mhemmila@umich.edu
- Meeting
  - Great discussion
  - Thursday September 16th, 2021

Program Manager Data Update

Jill Jakubus, PA-C, MHSA

Topics

- **Box Migration**
  Delirium Reporting
  Triage Build
  Patient-Reported Outcomes (PRO)
  Research in Progress

box

June 2021
Remove files

Dropbox

July 2021
New folder
Email notification

Topics

- Box Migration
- Delirium Reporting
  Triage Build
  Patient-Reported Outcomes (PRO)
  Research in Progress

Delirium

Definition

Acute onset of behaviors characterized by restlessness, delusions, and incoherence of thought and speech. Delirium can often be traced to one or more contributing factors, such as a severe or chronic medical illness, changes in your metabolic balance (e.g., low sodium), medication, infection, surgery, or drug withdrawal.

OR

Patient tests positive after using an objective screening tool like the Confusion Assessment Method (CAM) or the Intensive Care Delirium Screening Checklist (ICDSC).

OR

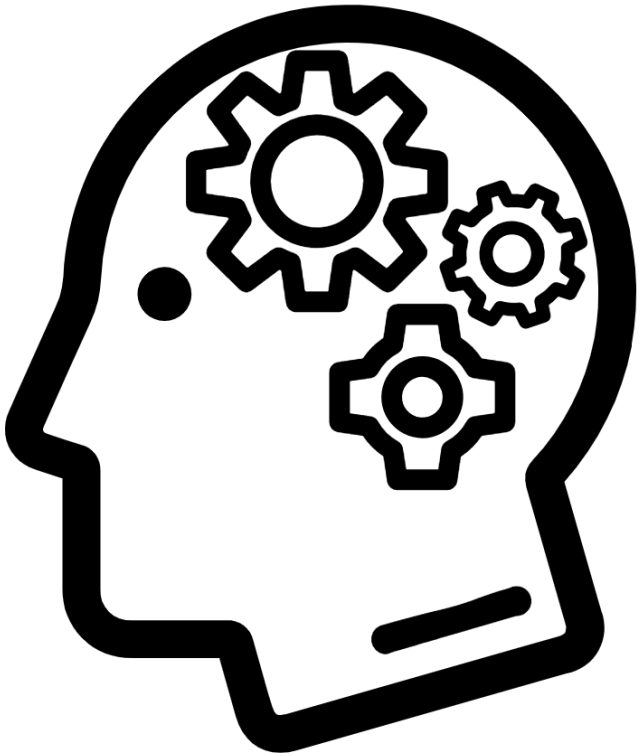
A diagnosis of delirium documented in the patient's medical record.

Additional Information

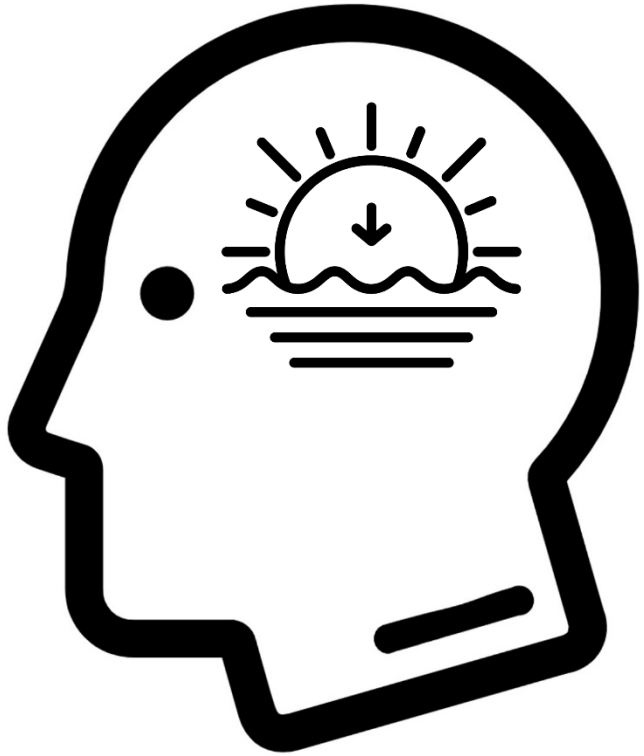
- Must have occurred during the patient's initial stay at your hospital.
- Exclude patients whose delirium is due to alcohol withdrawal.

Jan 2020

Delirium FAQ



Dementia

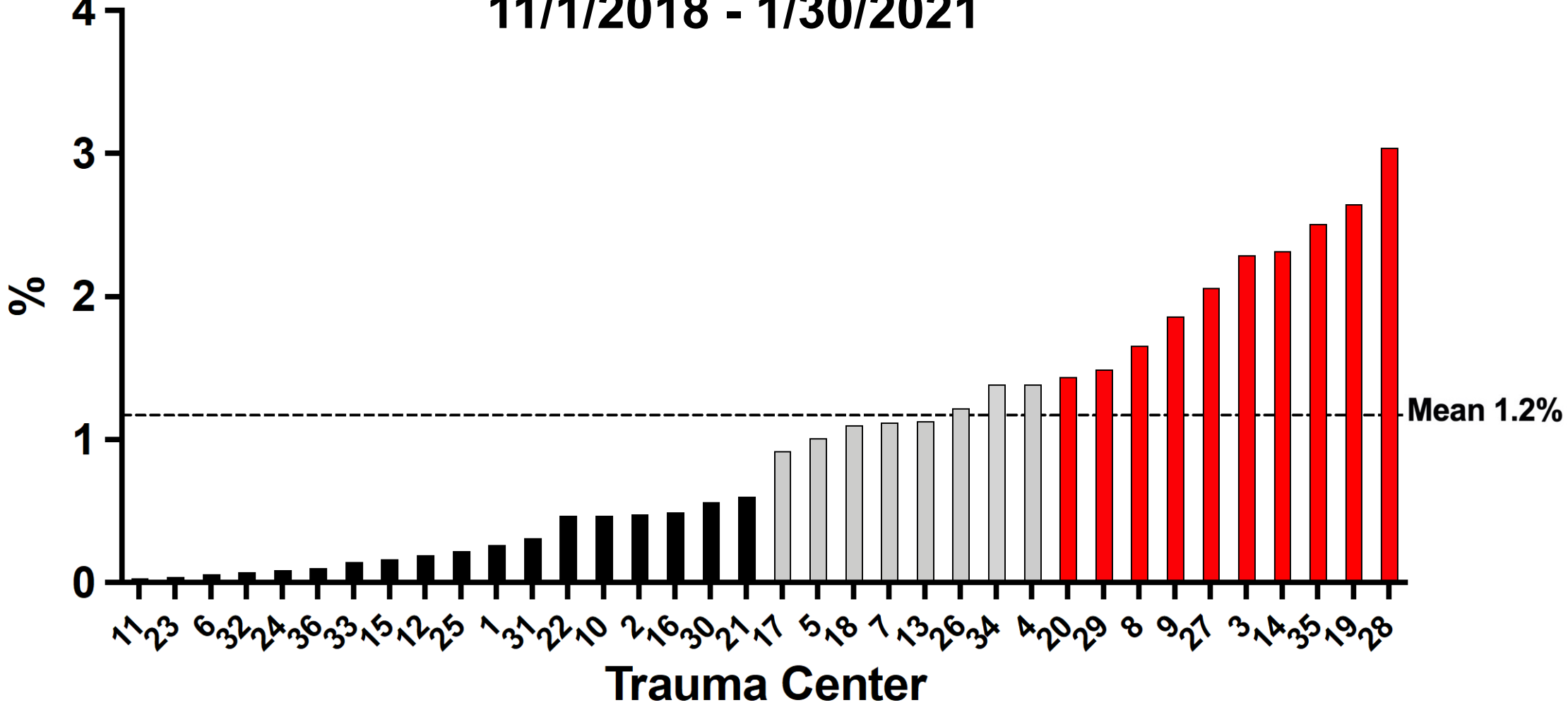


Sundowners

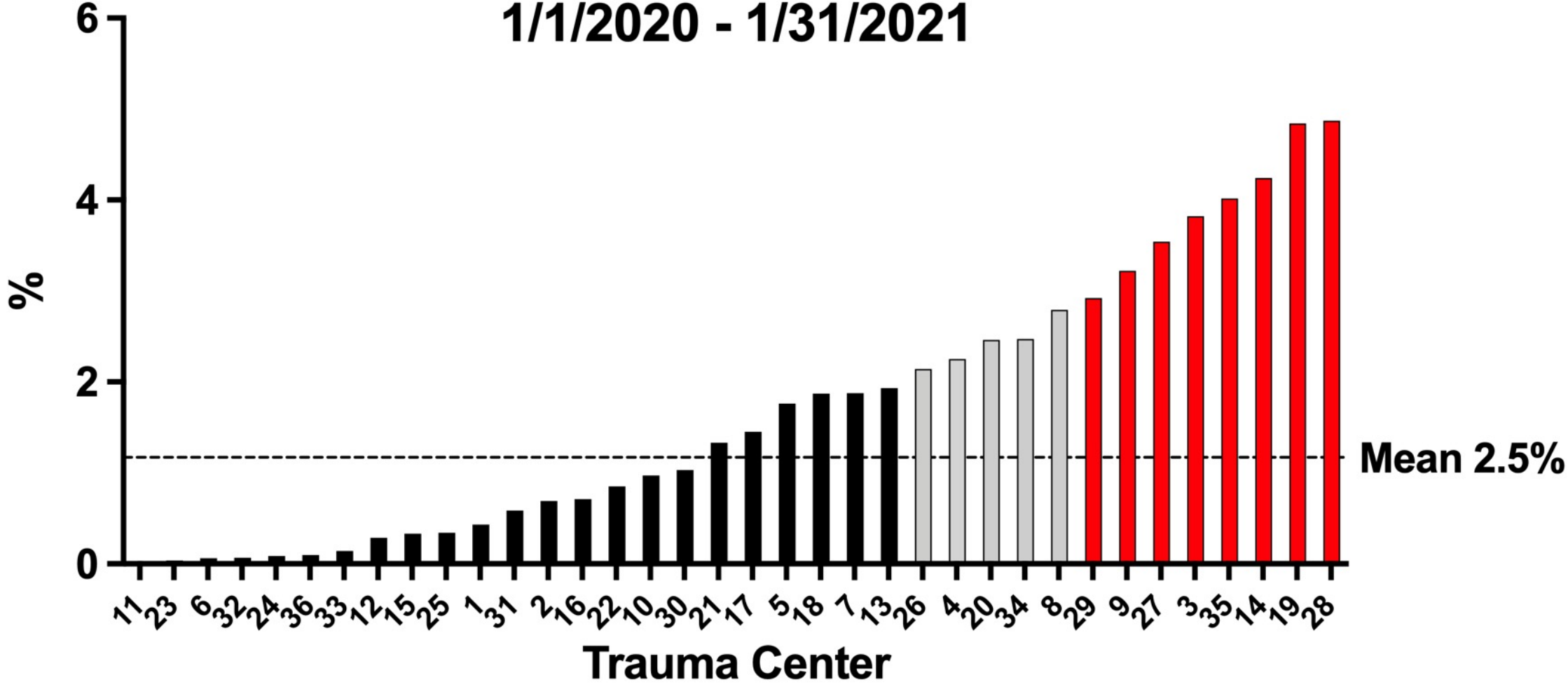
Included

NEW

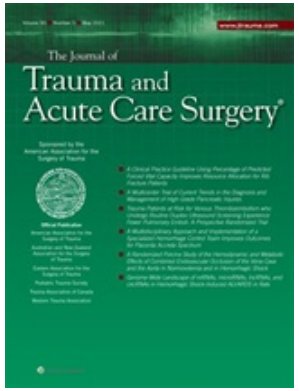
Delirium
Cohort 2 - Admit to Trauma
11/1/2018 - 1/30/2021



Delirium
Cohort 2 - Admit to Trauma
1/1/2020 - 1/31/2021



Literature



Prevalence and Risk Factors for Development of Delirium in Surgical and Trauma Intensive Care Unit Patients

Pratik Pandharipande, MD, MSCI, Bryan A. Cotton, MD, FACS, Ayumi Shintani, PhD, MPH, Jennifer Thompson, MPH, Brenda Truman Pun, MSN, ACNP, John A. Morris, Jr., MD, FACS, Robert Dittus, MD, MPH, and E. Wesley Ely, MD, MPH

Background: Although known to be an independent predictor of poor outcomes in medical intensive care unit (ICU) patients, limited data exist regarding the prevalence of and risk factors for delirium among surgical (SICU) and trauma ICU (TICU) patients. The purpose of this study was to analyze the prevalence of and risk factors for delirium in surgical and trauma ICU patients.

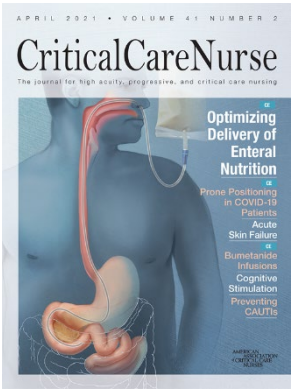
Methods: SICU and TICU patients requiring mechanical ventilation (MV) >24 hours were prospectively evaluated for delirium using the Richmond Agitation Sedation Scale (RASS) and the Confusion Assessment Method for the ICU (CAM-ICU). Those with baseline dementia, intracranial injury, or ischemic/hemorrhagic strokes that would confound the evaluation of delirium were excluded. Markov models were used to analyze predictors for daily transition to delirium.

Results: One hundred patients (46 SICU and 54 TICU) were enrolled. Prevalence of delirium was 73% in the SICU and 67% in the TICU. Multivariable analyses identified midazolam [OR 2.75 (CI 1.43–5.26, $p = 0.002$)] exposure as the strongest independent risk factor for transitioning to delirium. Opiate exposure showed an inconsistent message such that fentanyl was a risk factor for delirium in the SICU ($p = 0.007$) but not in the TICU ($p = 0.936$), whereas morphine exposure was associated with a lower risk of delir

Results: One hundred patients (46 SICU and 54 TICU) were enrolled. Prevalence of delirium was 73% in the SICU and 67% in the TICU. Multivariable analyses identified midazolam [OR 2.75 (CI 1.43–5.26, $p = 0.002$)] exposure as the strongest independent risk factor for transitioning to delirium. Opiate exposure showed an inconsistent message such that

J Trauma. 2008 Jul;65(1):34-41.doi: 10.1097/TA.0b013e31814b2c4d.

Literature



Delirium in Trauma Patients: Prevalence and Predictors

Kathryn T. Von Rueden, RN, MS, CNS-BC
Breighanna Wallizer, RN, MS, CCRN, AG-ACNP
Paul Thurman, RN, MS, ACNPC, CCNS
Karen McQuillan, RN, MS, CNS-BC, CCRN
Tiffany Andrews, RN, MS, CCNS, ACNPC
Jennifer Merenda, RN, MS
Heesook Son, RN, PhD

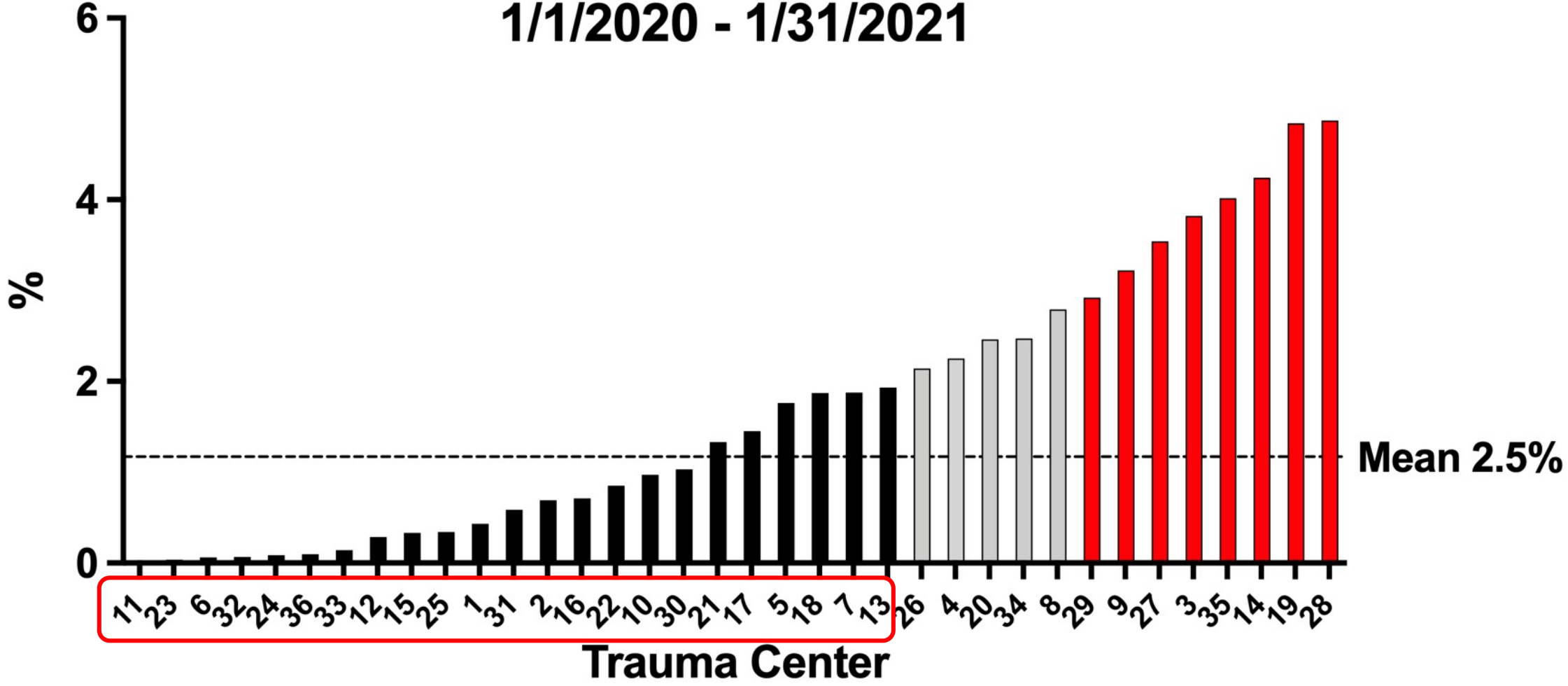
BACKGROUND Delirium is associated with increased mortality, morbidity, hospital costs, and postdischarge cognitive dysfunction. Most research focuses on nontrauma patients receiving mechanical ventilation in the intensive care unit.

OBJECTIVES To determin
and intermediate care
METHODS Trauma patie
Intensive Care Unit. Ex
impairment, not speak
RESULTS Of the 215 stu
unit and 11% of patien
53.4 years) than patien

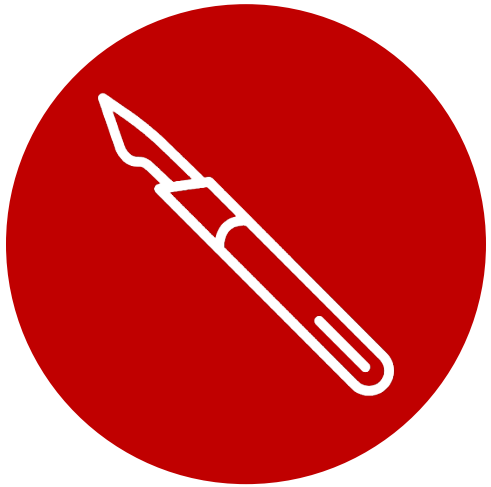
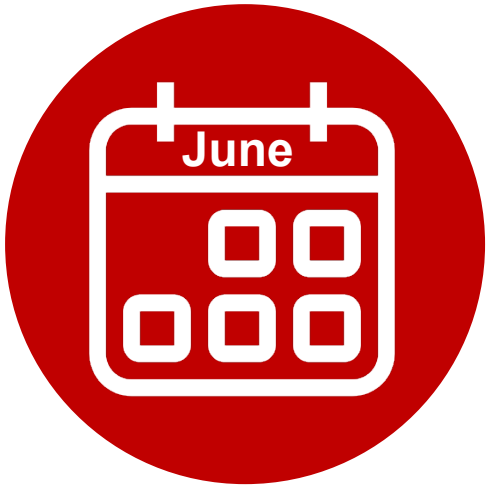
RESULTS Of the 215 study patients, 24% were positive for delirium; 36% of patients in the intensive care unit and 11% of patients in the intermediate care unit. Delirium-positive patients were older (mean age, 53.4 years) than patients who were not (mean age, 44 years; $P = .004$). Although mechanical ventilation (odds ratio, 4.73, $P = .004$) was the strongest independent risk factor for delirium, 12% of delirium-positive patients were not receiving mechanical ventilation. Other predictors of delirium were use of antipsychotic medications, higher scores on the Acute Physiology and Chronic Health Evaluation III, and lower scores on the Richmond Agitation-Sedation Scale.

Crit Care Nurse. 2017 Feb;37(1):40-48. doi: 10.4037/ccn2017373.

Delirium
Cohort 2 - Admit to Trauma
1/1/2020 - 1/31/2021



Homework

Providers	Program Managers	Abstraction Staff	MTQIP
			
Documentation	**Report Review**	**Internally Validate**	**June Review**
Benchmarking	**Z-Score Calibration** **Actionable Feedback**	**Data Validation**	**Collaborative Fidelity**

Discussion

Topics

- Box Migration
- Delirium Reporting
- Triage Build
  Patient-Reported Outcomes (PRO)
  Research in Progress

MTQIP Meeting – Feb 2021

Cribari

- Major Trauma = ISS>15
- Exclude direct admit
- Exclude no signs of life

	Not Major Trauma	Major Trauma	Total
Highest Level TTA	A	B	C
Midlevel TTA	D	E	F
No TTA	G	H	I

NFTI

- Transfusion of packed red blood cells within 4 hrs of arrival
- Discharge from ED to OR within 90 minutes of arrival
- Discharge from ED to interventional radiology
- Discharge from ED to ICU with a stay ≥ 3 days (72 hrs)
- Mechanical ventilation within 3 days, not including OR or procedures
- Death within 60 hrs of arrival
- Exclude direct admit
- Exclude no signs of life

	No Intervention	Intervention	Total
Highest Level TTA	A	B	C
Midlevel TTA	D	E	F
No TTA	G	H	I

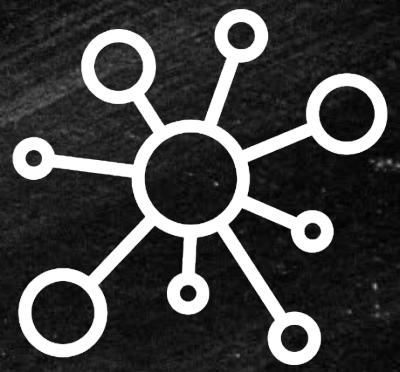
NEI-6

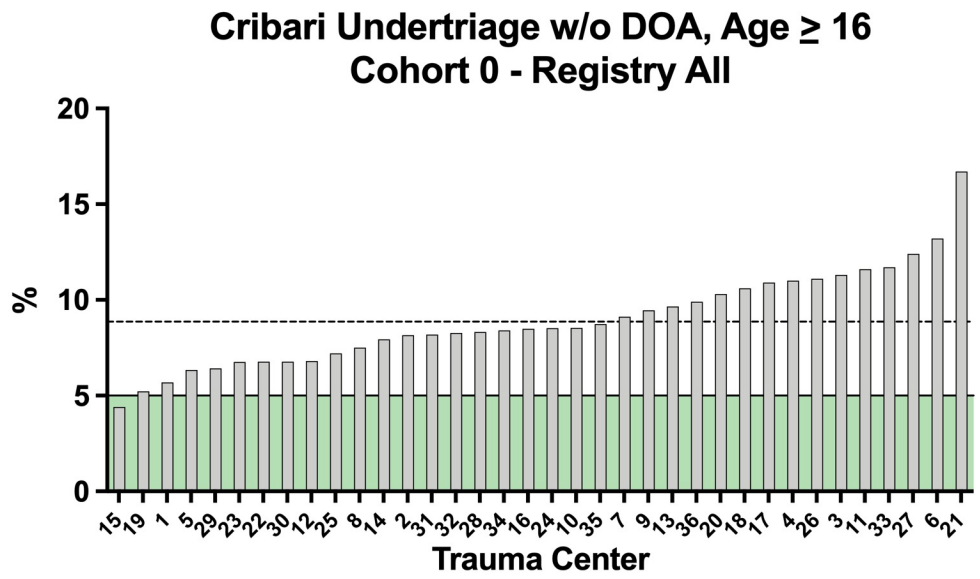
- Receive ≥5 units of packed red blood cells within the first 4 hrs of arrival
- Any operation within 6 hrs of arrival
- Any angiography within 6 hrs of arrival
- Chest tube within 6 hrs of arrival
- Central line placement within 6 hrs of arrival
- Emergent intubation
- Placement of ICP monitor or intracranial OR within the first 24 hrs of arrival
- Exclude direct admit
- Exclude no signs of life

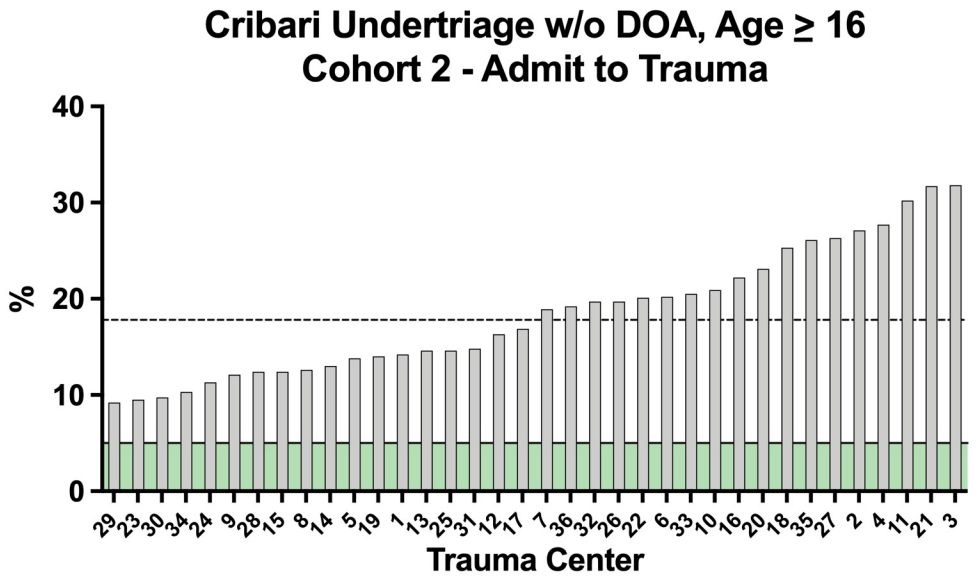
	No Intervention	Intervention	Total
Highest Level TTA	A	B	C
Midlevel TTA	D	E	F
No TTA	G	H	I

Overtriage	A/C x 100	25-35%
Undertriage	(E+H)/(F+I) x 100	≤ 5%

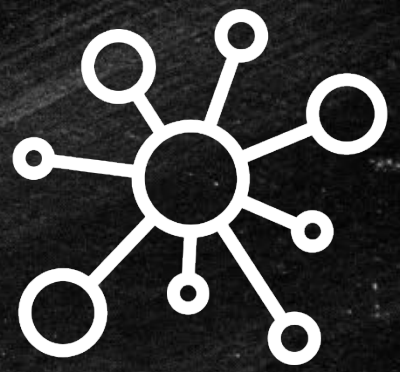
How to use triage analytics . . .




Cribari Undertriage w/o DOA, Age ≥ 16
Cohort 0 - Registry All
%
20
15
10
5
0
15 19 1 5 29 23 22 30 12 25 8 14 2 31 32 28 34 16 24 10 35 7 9 13 36 20 18 17 4 26 3 11 33 27 6 21
Trauma Center


Cribari Undertriage w/o DOA, Age ≥ 16
Cohort 2 - Admit to Trauma
%
40
30
20
10
0
29 23 30 34 24 9 28 15 8 14 5 19 1 13 25 31 12 17 7 36 32 26 22 6 33 10 16 20 18 35 27 2 4 11 21 3
Trauma Center

How does my center perform on all the triage matrices?



PRQ // Over/Under Triage *Cohort 2 (Admit to Trauma Service), Exclude DOAs, Age: >= 16, 11/01/2018 - 01/31/2021, Undertriage Cribari*

FILTERS

HOSPITALS
Select Some Options
Select All
APPLY

COHORT
Cohort 2 (Admit to Tra

DEAD
No Filter

NO SIGNS OF LIFE
Exclude DOAs

AIS / ISS
ALL

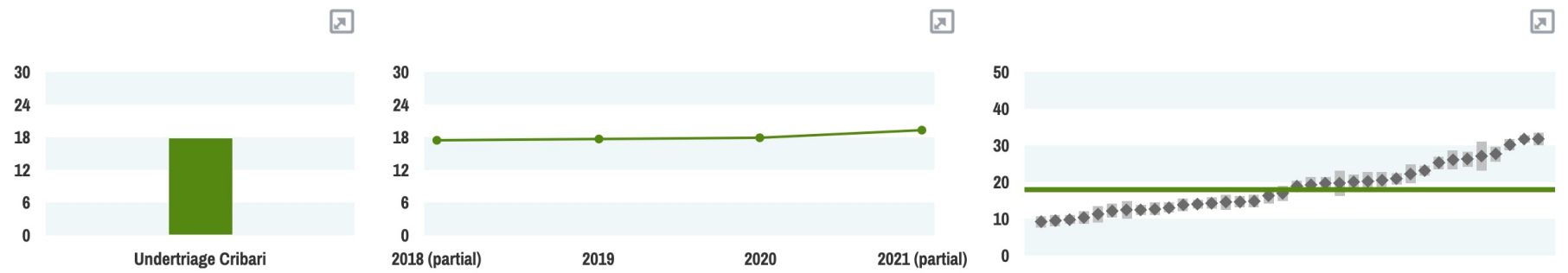
AGE
>= 16

TRANSFERS OUT
Include Transfers Out

PERIOD GROUP
Default Periods

DEFAULT PERIODS
Custom

LEGEND MTQIP - All Other Hospitals MTQIP - All 95% Confidence Interval



Over/Under Triage	MTQIP - All - Unadj
Overtriage Cribari	45.8
Overtriage NEI-6	36.8
Overtriage NFTI	37.9
Undertriage Cribari	17.8
Undertriage NEI-6	8.72
Undertriage NFTI	9.26

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PRQ // Triage Matrix Drill Down *Cohort 2 (Admit to Trauma Service), Exclude DOAs, Age: >= 16, 11/01/2018 - 01/31/2021, Missing Activation Level*

FILTERS

HOSPITALS
Select Some Options
Select All
APPLY

COHORT
Cohort 2 (Admit to Tra

DEAD
No Filter

NO SIGNS OF LIFE
Exclude DOAs

AIS / ISS
ALL

AGE
>= 16

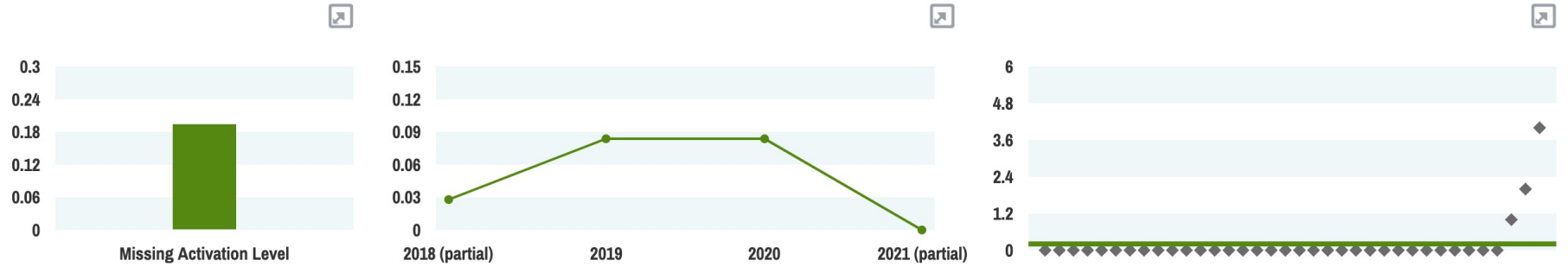
TRANSFERS OUT
Include Transfers Out

PERIOD GROUP
Default Periods

DEFAULT PERIODS
Custom

TRENDING INTERVAL
Annual

LEGEND MTQIP - All Other Hospitals MTQIP - All



Triage Matrix Drill Down	MTQIP - All - Unadj
Missing Activation Level	0.19
Cribari A - Highest Level TTA + Not Major Trauma	6.97
Cribari B - Highest Level TTA + Major Trauma	8.25
Cribari D - Midlevel TTA + Not Major Trauma	64.5
Cribari E - Midlevel TTA + Major Trauma	14.3
Cribari G - No TTA + Not Major Trauma	5.17
Cribari H - No TTA + Major Trauma	0.76
NEI-6 A - Highest Level TTA + No Intervenion	5.60
NEI-6 B - Highest Level TTA + Intervention	9.62
NEI-6 D - Midlevel TTA + No Intervenion	71.7
NEI-6 E - Midlevel TTA + Intervention	7.14

PRQ // **Triage Matrix Drill Down** *Cohort 2 (Admit to Trauma Service), Exclude DOAs, Age: >= 16, 11/01/2018 - 01/31/2021, NFTI E - Midlevel TTA + Intervention*

FILTERS

HOSPITALS: Select Some Options

Select All

APPLY

COHORT: Cohort 2 (Admit to Tra

DEAD: No Filter

NO SIGNS OF LIFE: Exclude DOAs

AIS / ISS: ALL

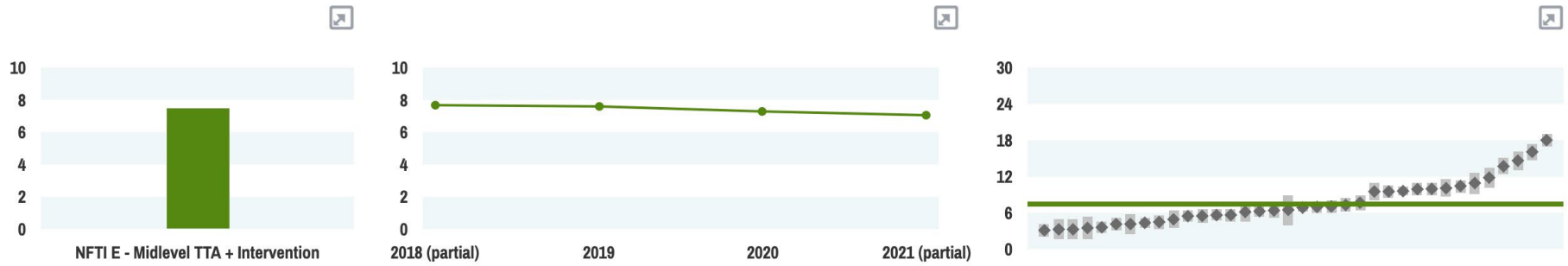
AGE: >= 16

TRANSFERS OUT: Include Transfers Out

PERIOD GROUP: Default Periods

DEFAULT PERIODS: Custom

LEGEND MTQIP - All | Other Hospitals | MTQIP - All | 95% Confidence Interval



Triage Matrix Drill Down	MTQIP - All - Unadj
NFTI D - Midlevel TTA + No Intervention	71.4
NFTI E - Midlevel TTA + Intervention	7.47
NFTI G - No TTA + No Intervention	5.56
NFTI H - No TTA + Intervention	0.37

	No Intervention	Intervention	Total
Highest Level TTA	A	B	C
Midlevel TTA	D	E	F
No TTA	G	H	I

Overtriage	A/C x 100	25-35%
Undertriage	(E+H)/(F+I) x 100	≤ 5%

PRQ // **Triage Matrix Drill Down** *Cohort 2 (Admit to Trauma Service), Exclude DOAs, Age: >= 16, 11/01/2018 - 01/31/2021, NFTI E - Midlevel TTA + Intervention*

FILTERS

HOSPITALS: Select Some Options

Select All

APPLY

COHORT: Cohort 2 (Admit to Tra

DEAD: No Filter

NO SIGNS OF LIFE: Exclude DOAs

AIS / ISS: ALL

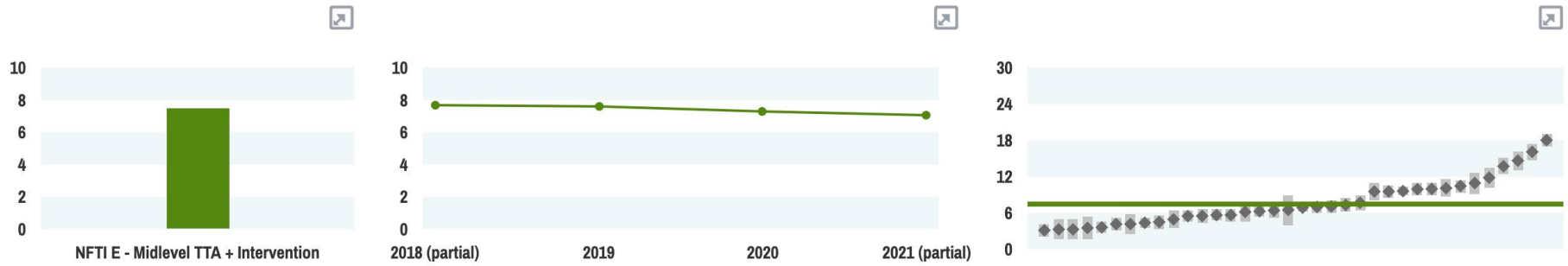
AGE: >= 16

TRANSFERS OUT: Include Transfers Out

PERIOD GROUP: Default Periods

DEFAULT PERIODS: Custom

LEGEND MTQIP - All | Other Hospitals | MTQIP - All | 95% Confidence Interval



Triage Matrix Drill Down	MTQIP - All - Unadj
NFTI D - Midlevel TTA + No Intervention	71.4
NFTI E - Midlevel TTA + Intervention	7.47
NFTI G - No TTA + No Intervention	5.56
NFTI H - No TTA + Intervention	0.37

	No Intervention	Intervention	Total
Highest Level TTA	A	B	C
Midlevel TTA	D	E	F
No TTA	G	H	I

Overtriage	A/C x 100	25-35%
Undertriage	(E+H)/(F+I) x 100	≤ 5%

PRQ // Triage Matrix Drill Down *Exclude DOAs, Age: >= 16, 11/01/2018 - 01/31/2021, NFTI E - Midlevel TTA + Intervention*

FILTERS

HOSPITALS
Select Some Options
Select All
APPLY

COHORT
Cohort 0 (All)

DEAD
No Filter

NO SIGNS OF LIFE
Exclude DOAs

AIS / ISS
ALL

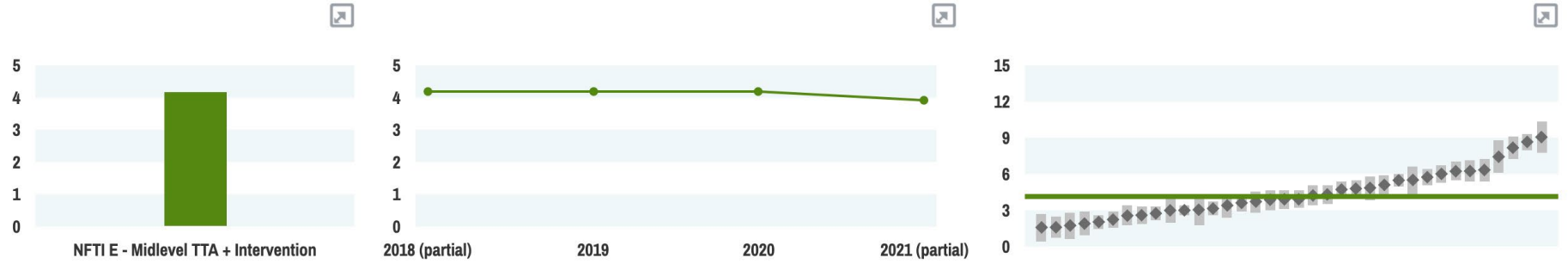
AGE
>= 16

TRANSFERS OUT
Include Transfers Out

PERIOD GROUP
Default Periods

DEFAULT PERIODS
Custom

LEGEND MTQIP - All | Other Hospitals | MTQIP - All | 95% Confidence Interval



Triage Matrix Drill Down	MTQIP - All - Unadj
NFTI E - Midlevel TTA + Intervention	4.18
NFTI G - No TTA + No Intervention	26.6
NFTI H - No TTA + Intervention	0.69

	No Intervention	Intervention	Total
Highest Level TTA	A	B	C
Midlevel TTA	D	E	F
No TTA	G	H	I

Overtriage	A/C x 100	25-35%
Undertriage	(E+H)/(F+I) x 100	≤ 5%

PRQ // Interventions Drill Down *Cohort 2 (Admit to Trauma Service), Exclude DOAs, Age: >= 16, 11/01/2018 - 01/31/2021, NFTI - Discharge ED to ICU w/LOS >= 72 hours*

FILTERS

HOSPITALS
Select Some Options
Select All
APPLY

COHORT
Cohort 2 (Admit to Tra

DEAD
No Filter

NO SIGNS OF LIFE
Exclude DOAs

AIS / ISS
ALL

AGE
>= 16

TRANSFERS OUT
Include Transfers Out

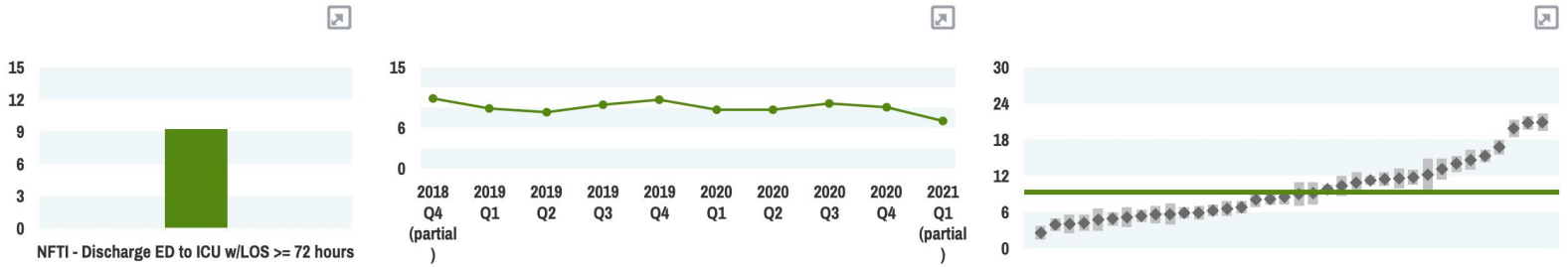
PERIOD GROUP
Default Periods

DEFAULT PERIODS
Custom

TRENDING INTERVAL
Quarterly

PEER GROUPS
MTQIP - All

LEGEND MTQIP - All | Other Hospitals | MTQIP - All | 95% Confidence Interval



Interventions Drill Down	MTQIP - All - Unadj
NEI-6 - Transfusion >= 5 units RBC 0-4 hrs arrival	1.46
NEI-6 - Any operation 0-6 hours of arrival	8.18
NEI-6 - Any angiography 0-6 hours of arrival	1.25
NEI-6 - Chest tube 0-6 hours of arrival	3.82
NEI-6 - Central line placement 0-6 hrs arrival	1.34
NEI-6 - Emergent intubation	7.72
NEI-6 - ICP or intracranial OR 0-24 hrs arrival	0.46
NFTI - Transfusion RBC within 0-4 hrs arrival	5.03
NFTI - Discharge ED to OR within 90 min arrival	3.17
NFTI - Discharge ED to IR	0.0023
NFTI - Discharge ED to ICU w/LOS >= 72 hours	9.23
NFTI - Mechanical ventilation within 3 days	6.56
NFTI - Death within 60 hours of arrival	1.89

Discussion

Topics

- Box Migration
- Delirium Reporting
- Triage Build
- Patient-Reported Outcomes (PRO) Research in Progress

PRO Amendments

- Amendment 3 in your Box folder
- Global where applicable
- Trauma patient reporting available now
- MACS patient reporting coming soon
- Phone contact available now
- Email contact in testing

PRO Sandbox

M·TQIP

Home | Membership | Calendar | Resources | Leadership | Contact Us

PATIENT-REPORTED OUTCOMES

COHORT FORMATION

Healing isn't complete when the patient leaves the hospital. That's why the Michigan Trauma Quality Improvement Program (MTQIP) offers patient-reported outcomes (PRO) for participating hospitals.

Patient-reported outcomes measure the patient's experience after leaving the hospital to help healthcare providers improve the quality of care. PRO's aim to measure and feedback what matters most to the patient, such as suffering, debility, financial burden and return to usual activities.

DATA PORTALS

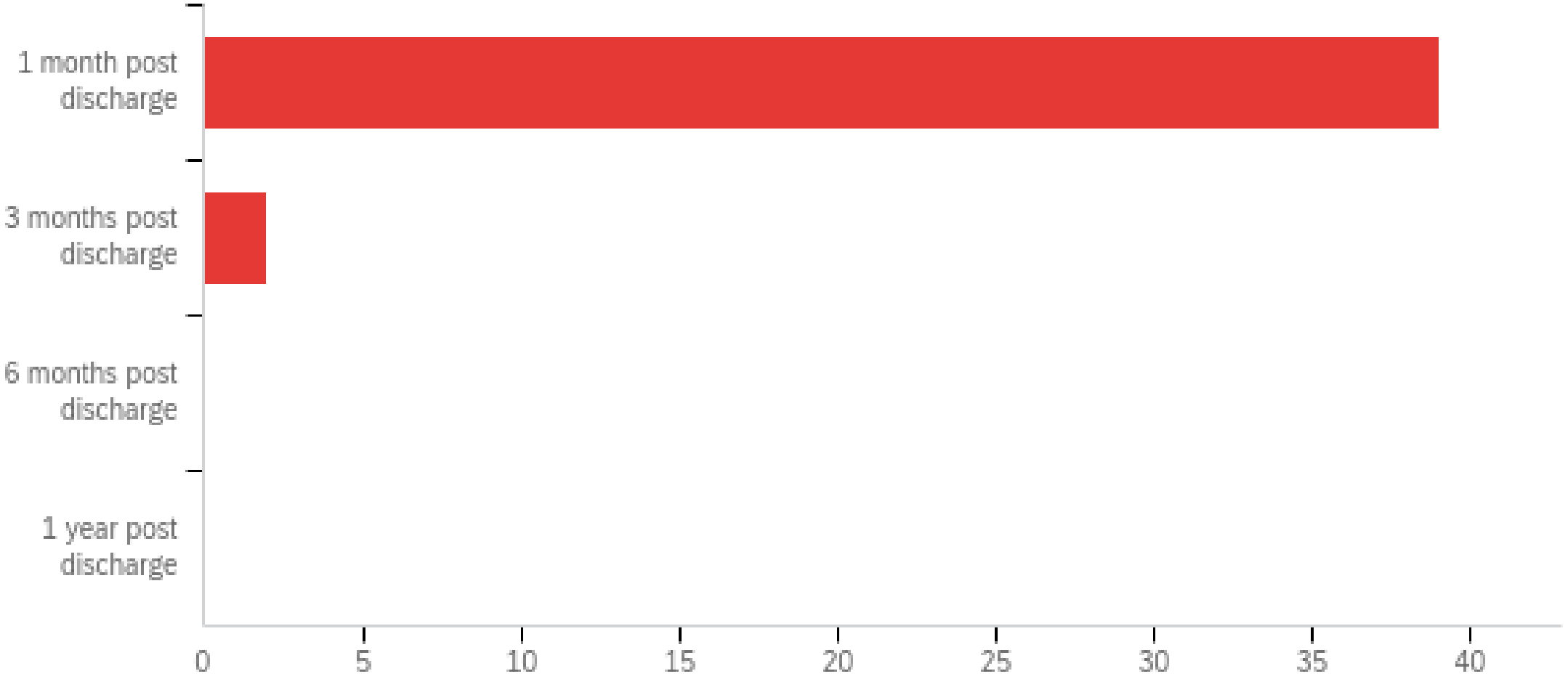
Access Data
PRO Sandbox

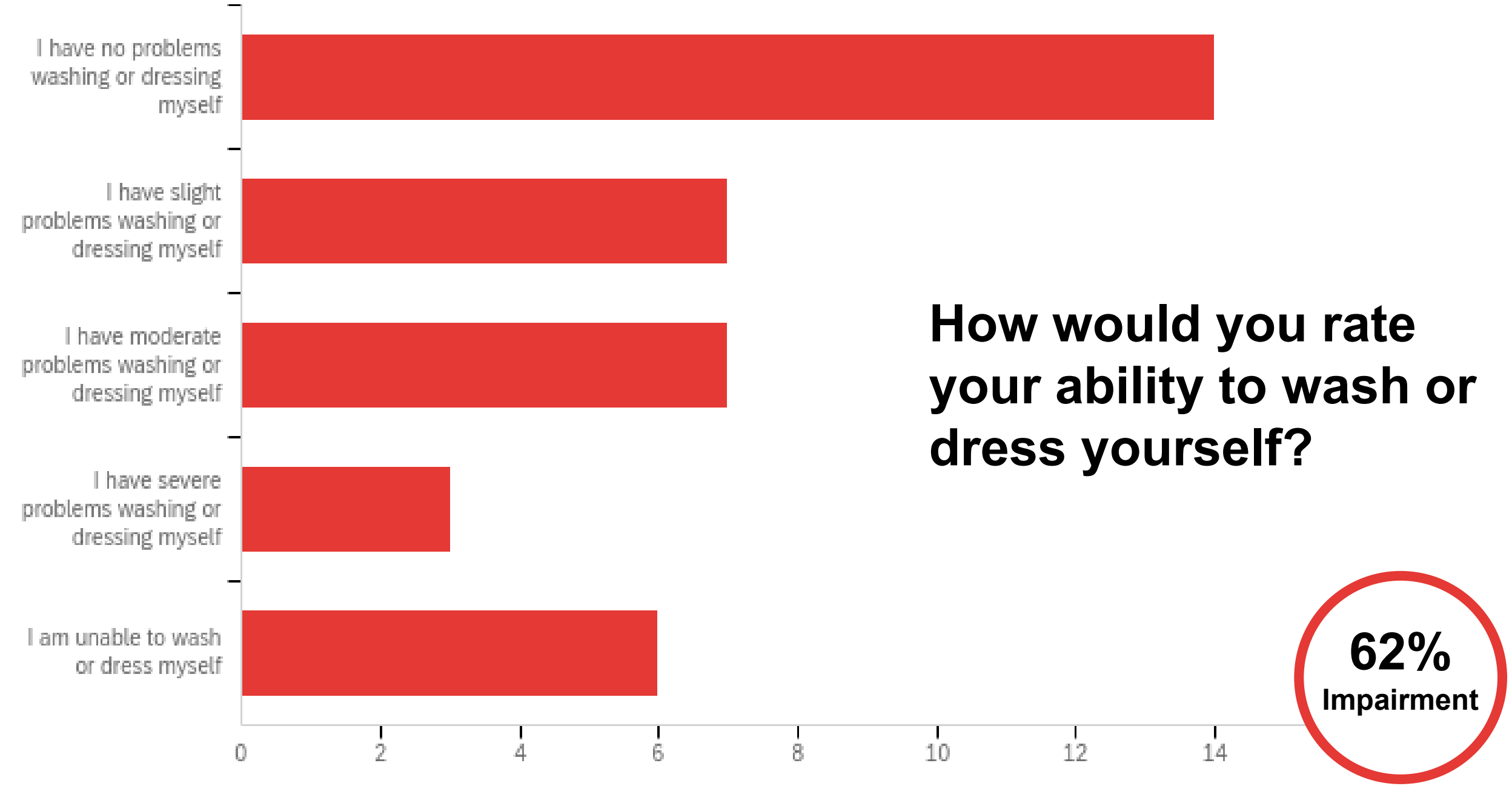

Current Feedback
MTQIP Staff:
Julia Kelm

PRO Current Criteria

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

What time point call is this?

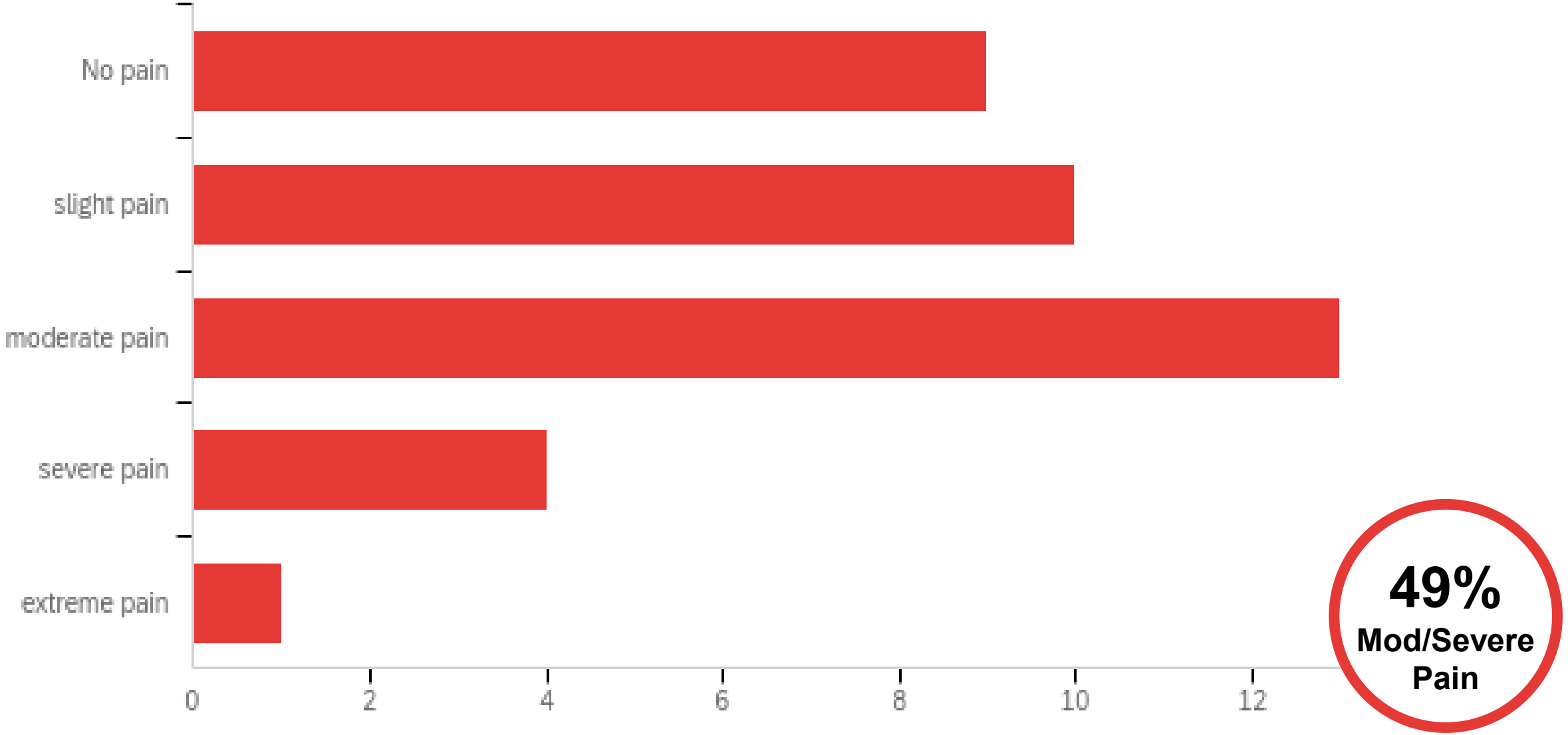




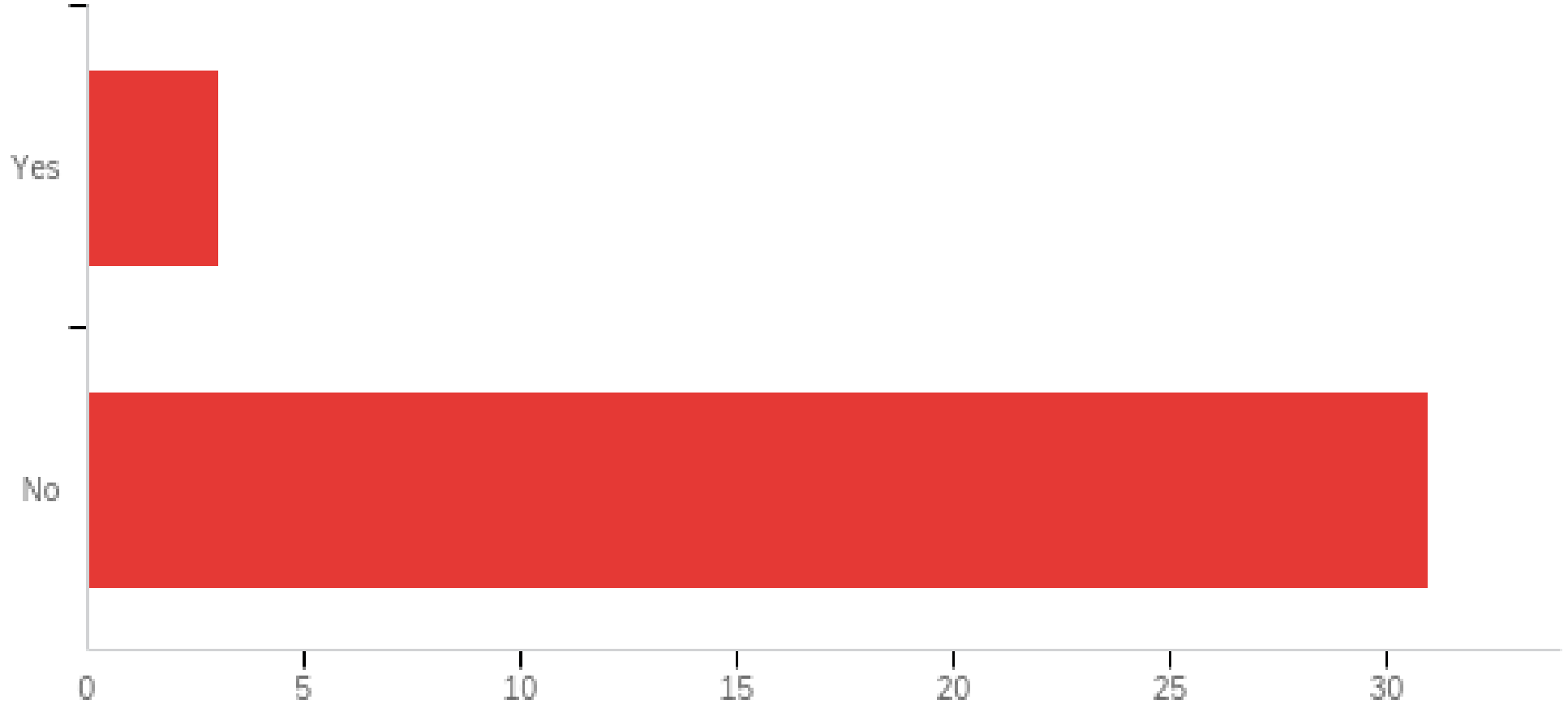
How would you rate your ability to wash or dress yourself?

62%
Impairment

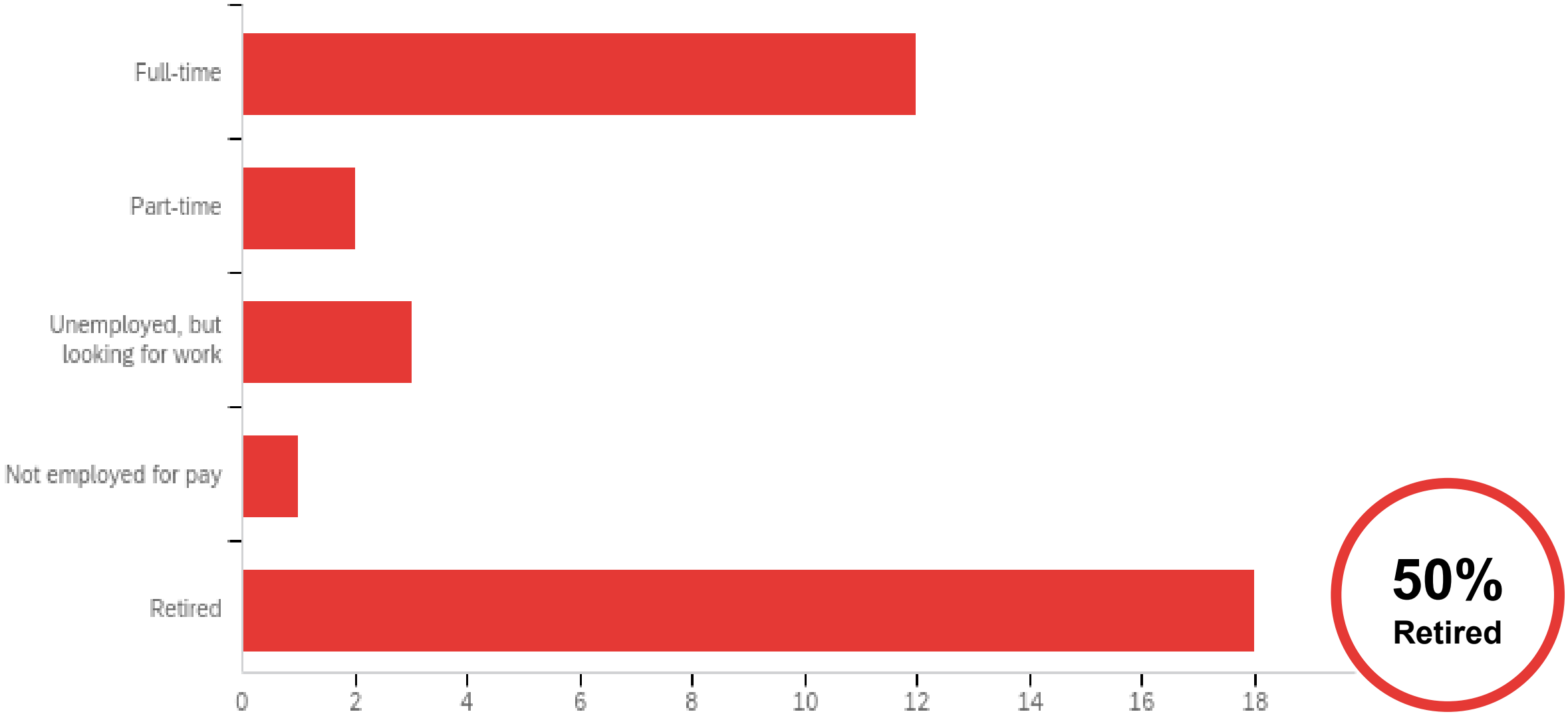
How would you rate your level of pain or discomfort?



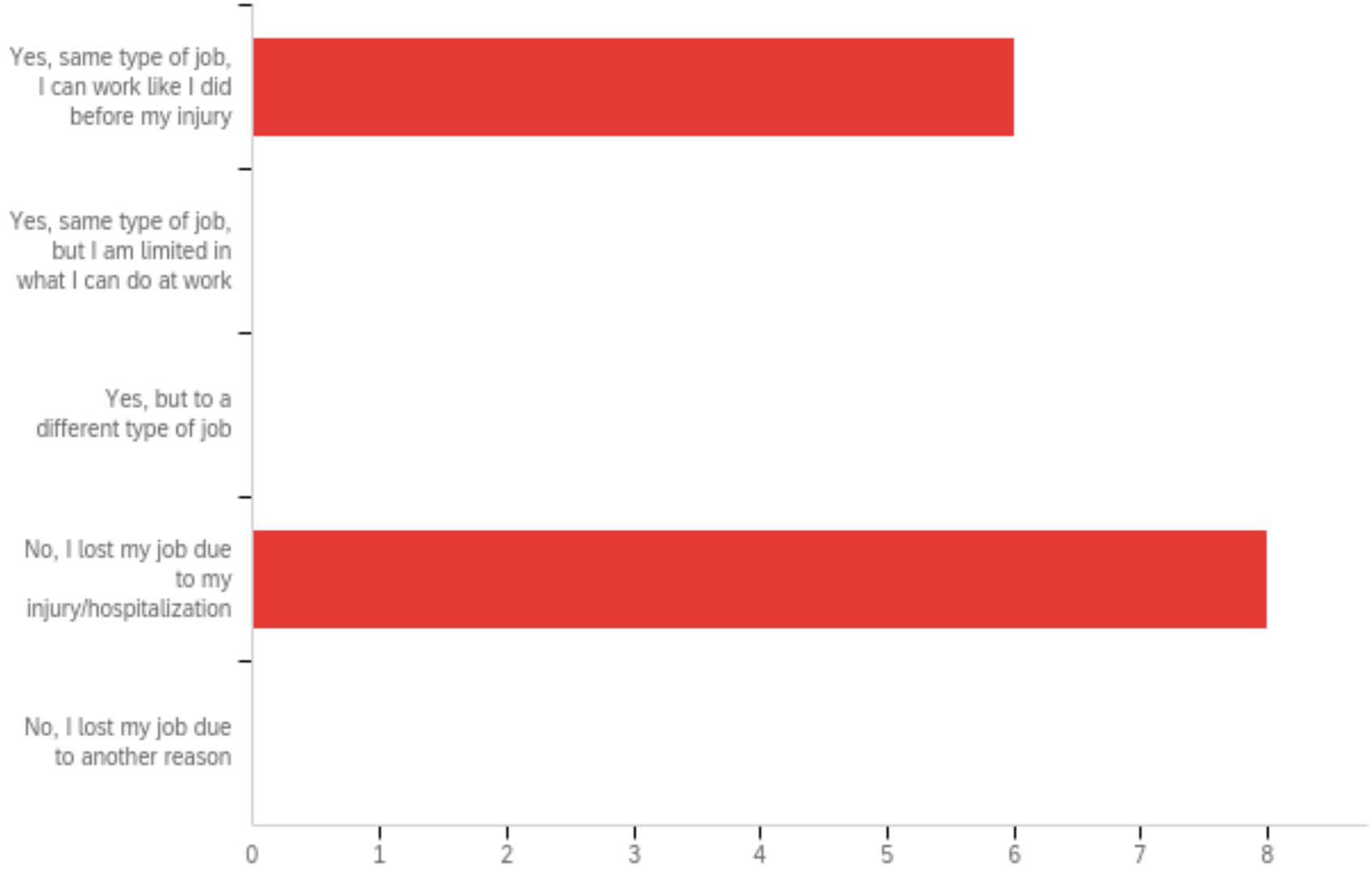
Did you take any opioid pain medication at any time in the year before your traumatic injury?



At the time of your injury, what was your employment status?

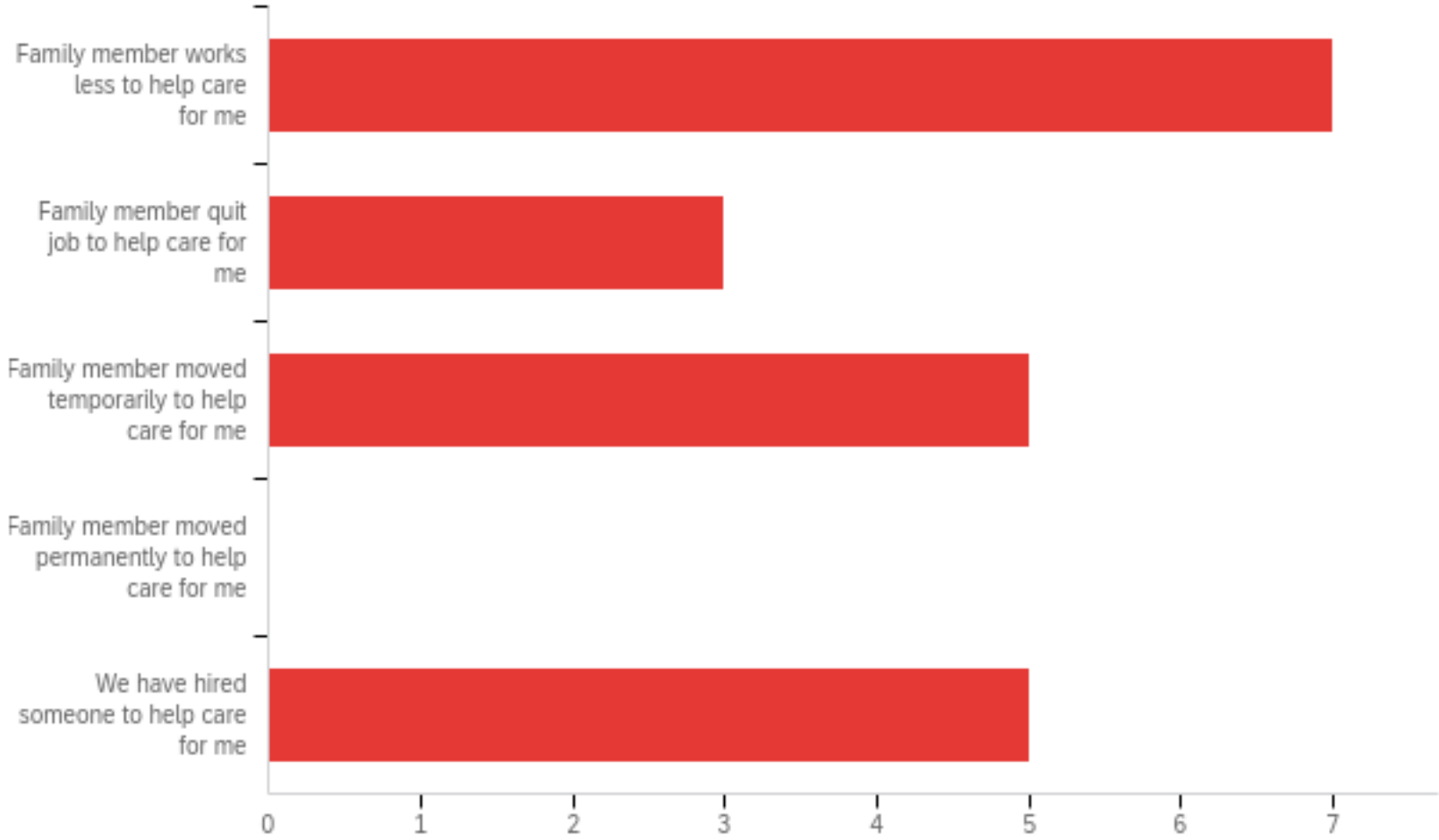


Since the time that you were hospitalized for your injury, have you gone back to working again?



57%
Workers Job Loss

Since the time that you were hospitalized for your injury, have any of the following events occurred so that other people can help care for you?



Discussion

Topics

- Box Migration
- Delirium Reporting
- Triage Build
- Patient-Reported Outcomes (PRO)
- Research in Progress

Research in Progress

Update	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	Oliphant	Timeliness of antibiotic administration	Abstract being submitted Central/Midwest Surgical
	Michigan Medicine	Hemmila	Pedestrian protection	Analysis
	Michigan Medicine	Wang	Injury prevention in vunerable populations	Analysis
	Michigan Medicine	Ward	Clinical decision support tools	
	Spectrum Health	Chapman	Outcomes in operative fixation of rib fractures	
	Spectrum Health	Little	Traumatic frontal sinus fractures	Abstract being submitted American Society of Plastic Surgery
	Spectrum Health	Miller	Outcomes in IMN of long bone fractures	Abstract being submitted Orthopedic Trauma Association
	St Joseph Mercy Ann Arbor	Hecht	Time to anticoagulant reversal	Analysis
	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	
	University of Minnesota	Parr	Effects of novel coronavirus on neurotrauma	
	University of Minnesota	Tignanelli	NEI-6 modeling prospective validation	Abstract being submitted Journal of Surgical Research


Thank You

Break

Back at 2:00 p

STAC/COVID Panel

Kelly Burns
Gaby Iskander
Allan Lamb
Wayne Van der Kolk

Panel Questions

1. What is STAC and what STAC is responsible for?

Panel Questions

2. How does a person get appointed to STAC?

STATE OF MICHIGAN

GRETCHEN WHITMER
GOVERNOR

DEPARTMENT OF HEALTH AND HUMAN SERVICES
LANSING

ROBERT GORDON
DIRECTOR

Application for Appointment
Statewide Trauma Advisory Subcommittee

Name: _____

Home Address: _____
Street City State Zip

Business Name: _____

Business Address: _____
Street City State Zip

Membership Represented (please check appropriate box):

- ☐ Trauma Surgeon who is a Trauma Center Director
- ☐ Trauma Nurse Coordinator
- ☐ Administrative Hospital Representative (Hospital designated as a Level I or II by ACS)
- ☐ Life Support Agency Manager (Member of EMSCC)
- ☐ Medical Control Authority Medical Director (Non-rural County)
- ☐ Trauma Registrar
- ☐ Emergency Physician
- ☐ Administrative Hospital Representative (Hospital NOT designated as a level I or II)
- ☐ Medical Control Authority Medical Director (Rural County)

Business Phone: _____

E-mail Address: _____

Previous Government Appointments:

Submit application and copy of current curriculum vitae to Michigan Department of Health and Human Services, attn.: Bureau of EMS, Trauma & Preparedness – State Trauma Manager, Eileen Worden, WordenE@michigan.gov

P.O. Box 30207, LANSING, MICHIGAN 48909
www.michigan.gov/mdhhs • 517-335-8150

Panel Questions

2. What are some current agenda items that STAC is tackling?

3. What kinds of issues does the Emergency Medical Services Coordination Committee or Bureau of EMS, Trauma, and Preparedness ask STAC to address?

Panel Questions

4. How could MTQIP assist STAC in its work?

What matters to state legislators?

Panel Questions

5. How do you think COVID has impacted trauma care across the State of Michigan?

Panel Questions

6. What has been the most challenging part of the past 12 mo. for your hospital's trauma group?

Panel Questions

7. Does STAC and the Trauma System have a role in Emergency Preparedness?

Panel Questions

8. A number of prehospital data elements were dropped from the NTDS for 2021. What is desired within the state trauma system as essential prehospital data?

What do we want to know that we do not know now?

Questions

MTQIP Program Manager Update

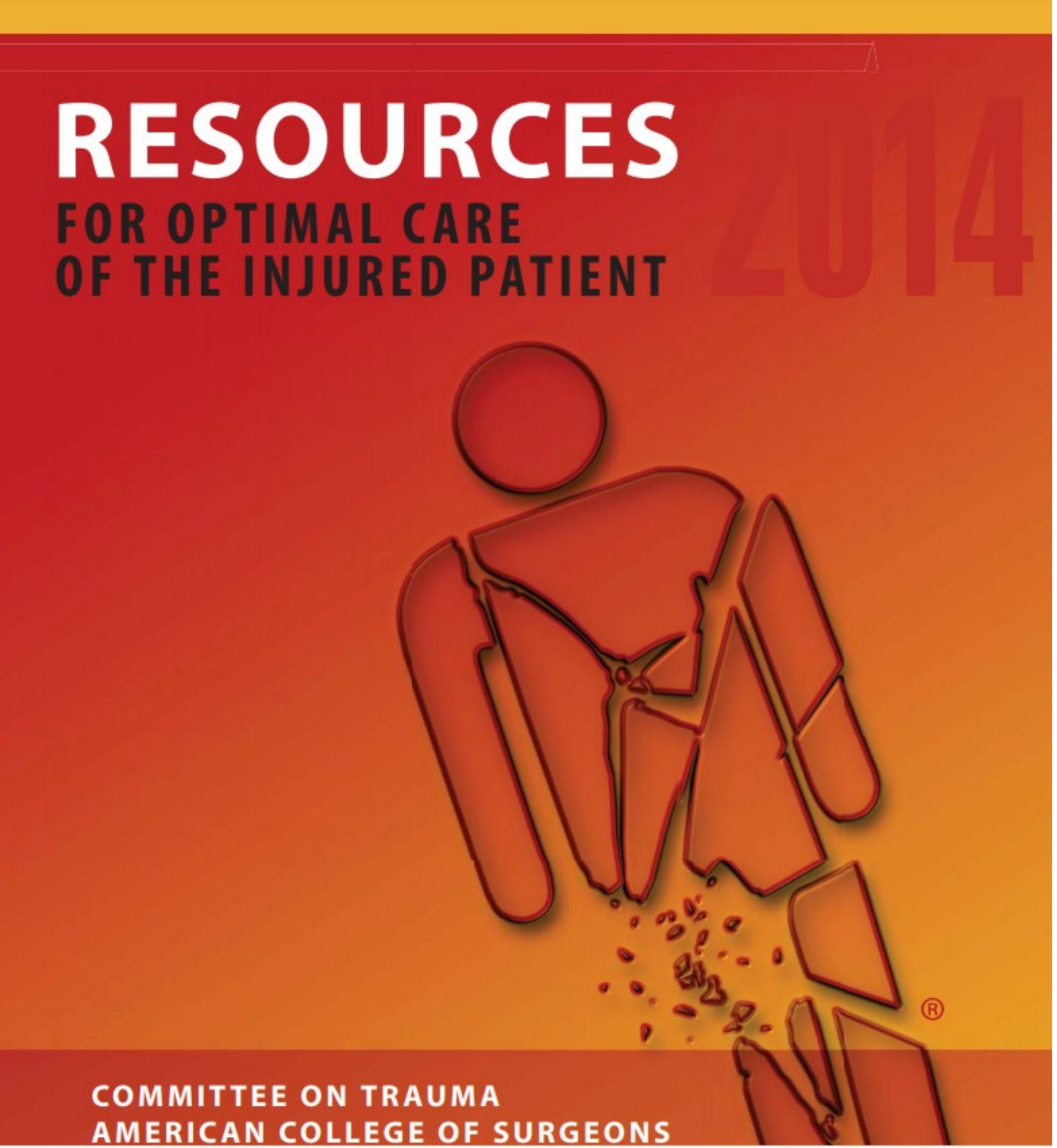
Judy Mikhail, PhD, MBA, RN

Trauma Activation Criteria: A Review of 34 Trauma Centers

Thank you to the MTQIP centers for generously sharing their activation criteria

Goal: Identify patterns and make recommendations for best practices

Disclaimer: This is my interpretation of center guidelines



Expectations

- Full Activations - Level I
  - Minimum 7 Criteria
  - Surgeon Response 15 min 80%
- Limited Activations – Level II
  - High risk mechanism criteria
  - Criteria set by center
  - Surgeon response set by center

Table 2 Minimum Criteria for Full Trauma Team Activation

- Confirmed blood pressure less than 90 mm Hg at any time in adults and age-specific hypotension in children;
- Gunshot wounds to the neck, chest, or abdomen or extremities proximal to the elbow/knee;
- Glasgow Coma Scale score less than 9 with mechanism attributed to trauma;
- Transfer patients from other hospitals receiving blood to maintain vital signs;
- Intubated patients transferred from the scene, - OR -
- Patients who have respiratory compromise or are in need of an emergent airway
  - Includes intubated patients who are transferred from another facility with ongoing respiratory compromise (does not include patients intubated at another facility who are now stable from a respiratory standpoint)
- Emergency physician's discretion

To meet this requirement, most trauma centers have a multitiered trauma team activation protocol. Even though facilities may have different nomenclature to identify various activation levels, the intent is that there will be levels commensurate with "full" and "limited" activation levels, as described in Table 3. The limited activation criteria should be based on high-risk mechanisms of injury.

Level I Activations

In Level I and II trauma centers, the highest level of activation requires the response of the full trauma team within 15 minutes of arrival of the patient, and the criteria should include physiologic criteria and some or several of the anatomic criteria (CD 5–14). In Level III and IV trauma centers, the team must be fully assembled within 30 minutes (CD 5–15). The limited response criteria may include some anatomic criteria, as well as high-risk mechanisms of injury.

Table 3 An Example of a Tiered Trauma Team Activation Protocol

<table>
<tr><th colspan="3">FULL Trauma Team Criteria
Persons who sustain injury with any of the following</th><th>LIMITED Trauma Team Criteria
Persons who sustain injury with any of the following</th></tr>
<tr><td colspan="3">PRIMARY SURVEY: PHYSIOLOGIC</td><td rowspan="2">MECHANISM OF INJURY
• Falls: adult >20 ft; child >10 ft or 3× height
• Fall from any height if anticoagulated older adult
• High-risk auto crash with:
- Intrusion of vehicle >12" in occupant compartment; >18" in other site
- Ejection (partial or complete) from automobile
- Death in same passenger compartment
• Auto vs. pedestrian/cyclist thrown, run over, or with significant (>20 mph) impact
• Motorcycle crash >20 mph
• High-energy dissipation or rapid decelerating incidents, for example:
- Ejection from motorcycle, ATV, animal, and so on
- Striking fixed object with momentum
- Blast or explosion
• High-energy electrical injury
• Burns >10% TBSA (second or third degree) and/or inhalation injury
• Suspicion of hypothermia, drowning, hanging
• Suspected nonaccidental trauma
• EMS provider judgment
• Blunt abdominal injury with firm or distended abdomen or with seatbelt sign</td></tr>
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<tr><td></td><td></td><td>Age
<1 y
1–10 y
>10 y
SBP (mm Hg)
<60
<70 + 2× age
<90</td><td></td></tr>
<tr><td>Deficit</td><td>GCS motor score ≤5, GCS ≤13</td><td>AVPU: responsive to pain or unresponsive</td><td></td></tr>
<tr><td colspan="3">• Deterioration of previously stable patient
• Transfers requiring blood transfusion</td><td></td></tr>
<tr><td colspan="3">SECONDARY SURVEY: ANATOMIC
• Penetrating injuries to the head, neck, torso, or extremities proximal to the elbow/knee
• Open or depressed skull fracture
• Paralysis or suspected spinal cord injury
• Flail chest
• Unstable pelvic fracture
• Amputation proximal to the wrist or ankle
• Two or more proximal long bone fractures (humerus or femur)
• Crushed, degloved, or mangled extremity</td><td></td></tr>
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- EMS provider judgment
- Blunt abdominal injury with firm or distended abdomen or with seatbelt sign

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		Age / SBP (mm Hg) <1 y / <60 1–10 y / <70 + 2× age >10 y / <90
Deficit	GCS motor score ≤4, GCS ≤13	AVPU: responsive to pain or unresponsive

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The Minimum 7 – Full Activation

	Class I Criteria	Centers
1	BP<90	34/34
2	GSW	34/34
3	GCS <9	34/34
4	Transfer-blood	34/34
5	ETT scene	32/34
6	Resp Comp	34/34
7	EM discretion	34/34

BP Discussion Points

- BP <90 34 centers
- BP <100 1 center
- Confirmatory BPs < 90 any time
  - 1 prehospital or
  - 2 consecutive ED

GCS

GCS	Centers
<8	1
<9	25
<10	2
<11	1
<12	2
<13	1
<14	1

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GSW (Do words matter?)

Neck Torso	Head Neck Torso	Head Neck Torso Groin Buttocks	Head Neck Torso Groin Buttocks
GSW/pen-1	All Pen-2 Pen-11 GSW-1 GSW/stab/pen-5	All Pen-1, Pen-4, GSW-3 GSW/stab/pen-7 GSW/Pen GSW GSW GSW Pen GSW/Pen/Stab GSW/Pen	 Pen Stab Stab Pen Pen

GSW (Do words matter?)

Pen Extremities Prox Elb/Knee	Pen Extremities Not Class I
Ext All Pen-2 Ext Pen-11 Ext GSW-2 Ext GSW/stab/pen-1 Ext GSW/stab upper ext only -1	Ext Prox elb/kn -3 Ext Distal elb/kn-6
No mention of extremities = 7 centers	

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SECONDARY SURVEY: ANATOMIC				• Suspicion of hypothermia, drowning, hanging • Suspected nonaccidental trauma • EMS provider judgment
• Penetrating injuries to the head, neck, torso, or extremities proximal to the elbow/knee • Open or depressed skull fracture • Paralysis or suspected spinal cord injury • Flail chest				

12 Centers

Traumatic Arrest = 12 Centers

Other Class I Criteria

Airway Hanging GCS<9	Airway Inhalation	Pulse	Scene Tourniquet
9 centers	10 centers	5 centers	5 Class I 1 Class II

Other Class I Criteria

Injury w/I 24 hrs	Transfer in Unstable	Transfer in known TBI	Helicopter	RN Discr
1 center	6 centers	3 centers	1 center	1 center

Geriatric Class I Criteria

Geri Age	Geri BP	Geri HR	Geri GCS	Distinct Geriatric Section	No Geriatric Mentioned
>55 -2 >60 -1 >65 -7	<110 – 6 <100 – 1	>90 -1	<14 – 1 <12 - 2	8	23

Table 3 An Example of a Tiered Trauma Team Activation Protocol

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- Blunt abdominal injury with firm or distended abdomen or with seatbelt sign

Anatomic Criteria

	Open Depr Skull Fx	Paralysis Ro SCI	Flail	Unstable Pelvis	>2 LB Fxs	Crush Mangle Pulseless
Class I	15	25	14	10	12	12
Class II	7	4	9	7	14	14
Not addressed	12	5	11	17	8	8

Class II MOI/injury with ↓ GCS

21 Centers

- GCS <14
- GCS <13
- GCS <12
- GCS 10-14
- GCS 9-13
- GCS 8-12
- Persistent aLOC

Is there one best way to state this?

Class II How to Capture High Risk Patient?

- Fall anticoags -3
- Any injury on anticoags – 2
- TBI in anticoagulated – 5
- TBI anticoagulated GCS 9-13
- Age>55,60,65 MOI anticoag – 5
- Age>55,60,65 Fall anticoag – 3
- Age>65 GrLevel Fall anticoag -3
- Age>65 Fall >standing
- Age>65, comorbids, anticoags, any injury – 1
- Age>65 fall, aLOC, GCS 9-14 -3
- Age>65 glfall,aLOC,<24 hr, TBI, anticoags -3
- Age>65 Fall w/I 24 hrs Ribs-1

Best way to state?

Age

Comorbids

MOI

GCS

Falls

Falls (ft)	Falls (ft)	Fall 1 Flight Stairs
20ft-1	30ft-1 20ft-19 15ft-5 12ft-1 10ft-7	6

MVC

mph	Intrusion	Eject	Death	Extricat	Rollover	Seatbelt sign
20-1 35-2 40-1 50-10 55-4 60-1 70-1	12” -9 12,18” 11 Extensive-2	32	30	15	11 Unrestrained rollover-3	7

Class II Pregnant Trauma

- Weeks Pregnant
- >19 wks 1
- >20 wks 18
- >22 wks 2
- >24 wks 1

Transfers In

Level I		Level II		Consult
Transfer In Unstable	Transfer In Known TBI	Transfers Stable	Transfer In With Known Injuries	Transfer In Not I or II
6	1	16	2	7

Discretion by Discipline

Class I	Class II	Consults
EM Physician- 34	EM Physician - 22	EM Physician – 12
ED RN- 1	ED RN - 2	ED RN - 1
	EMS - 6	

Time to Presentation

Is there a standard?

Class I	Class II	Consults
Injury within 24 hrs -1	Injury < 2 hr -2	<4 hr -1
	TBI aLOC < 72 hr -1	< 24 hr -1
	Injury < 8 hr -1	< 7 days – 3
	Injury < 12 hr -12	< 14 days -2

Trauma Consults – By Device/Test Ordered

Criteria
Anyone admitted with a C-Collar – 2
Head CT + -1
Trunk CTs Ordered – 1
Abd FAST or CT Ordered -1

Trauma Consults – By Placement Criteria

Criteria
Any trauma ED to OR – 2
Any trauma to ED Observation unit -2
Any trauma admit – 2
Any TBI admit – 2
Any OB trauma admit – 1
Any non surgeon admit - 7

Consults – Risk Criteria

Criteria
Persistent pain neck, chest, abd - 2
Multiple comorbidities - 3
Multi-Service Consults - 4

Level II Activations
Surgeon Response Expectations

Time	# Centers
On arrival	1
15 minutes	4
30 minutes	7
1 hour	2
2 hours	8
2 hours to ICU 6 hours to Floor	1 1
8 hours	1
12 hours	2

Questions?

Wrap Up

Judy Mikhail, PhD

Conclusion

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