

Quick Shots Session I

Paper #1
January 16, 2025
10:00 am

ANTIBIOTICS FOR FACIAL FRACTURES: HOW MUCH IS ENOUGH?

Taryn Dee, DO, Andrew Desio, PharmD BCPS BCCP BCCCP BCIDP, Margot Knight, DO, Michelle Mendiola, MD, Chad Purnell, MD, Pravin Patel, MD, Grace Chang, MD
Mount Sinai Hospital Chicago

Presenter: Taryn Dee, DO

Objectives: Surgical Infection Society guidelines limit prophylactic antibiotic use in patients with facial fractures to the perioperative period only. This contrasts with the extended duration of antibiotic use commonly seen in practice. The objective of this study was to determine whether limiting antibiotic usage to a perioperative course is associated with head and neck infection (HNI).

Methods: This retrospective cohort study included 258 patients initially treated with ampicillin-sulbactam for traumatic facial fractures in a community level 1 trauma center from October 2018 - December 2021. Patients either received a short course (SC, 0-1 days, n = 37) or a long course (LC, >2 days n = 221) of antibiotics. The primary outcome was HNI within 90 days. A Kaplan Meier survival analysis was performed to compare HNI risk over time followed by Cox proportional hazard regression analysis to determine univariate and multivariate hazard ratios (HR).

Results: Baseline demographics between SC and LC groups were well-balanced. A majority of patients were managed operatively (53.5%, n = 138). At 90 days, 5.4% of patients in both SC and LC groups experienced HNI. Receipt of a SC of antibiotics was not associated with a higher risk of HNI (HR 0.69, 95% CI 0.15-3.07, p = 0.62). On multivariate analysis, these results remained similar (HR 0.61, 95% CI 0.13-2.81, p = 0.52). Univariate analysis revealed mandibular fractures were associated with a higher risk of HNI (HR 17.92, CI 2.34-137.1, p = 0.005).

Conclusions: Receipt of SC antibiotics for prophylaxis in patients with facial fractures was not associated with a higher rate of HNI. Prospective randomized data is needed to clarify the role of antibiotics in this patient population.

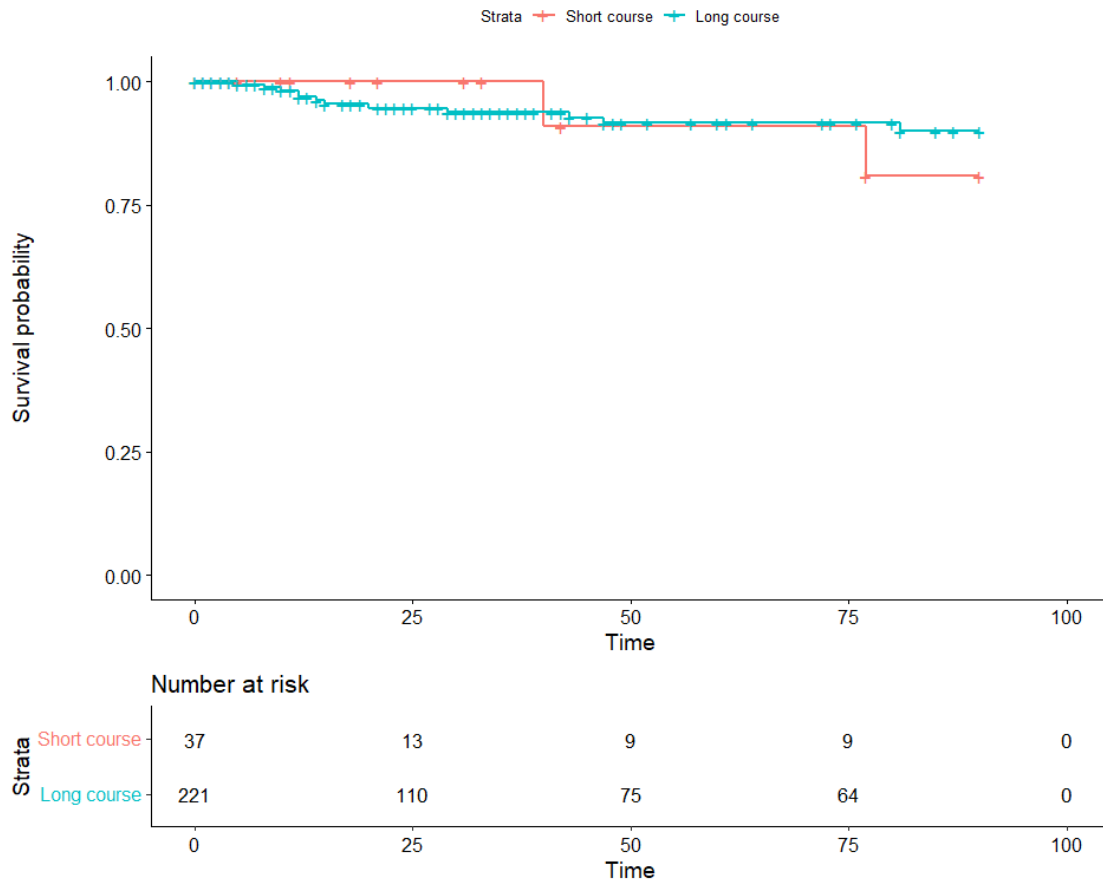


Figure 1. Kaplan-Meier Survival Curve – Short vs Long Courses of Antibiotics to 90 Days

Characteristic	Short Course (n = 37, 14%)	Long Course (n = 221, 86%)	p-value
Raw Infection Rate (90 days)	2 (5.4%)	12 (5.4%)	>0.9
Length of Stay	3.2 days (2.8) ¹	5.9 days (5.3) ¹	<0.001
Operative Management	9 (24%)	129 (58%)	<0.001
Medical Management	28 (76%)	92 (42%)	
Mechanisms of Injury			
Stab	0	4 (1.8%)	0.4
GSW	2 (5.4%)	40 (18%)	
MVC	6 (16%)	31 (14%)	
Assault	22 (59%)	96 (43%)	
Fall	5 (14%)	33 (15%)	
Peds vs Auto	2 (5.4%)	12 (5.4%)	
Unknown	0	5 (2.3%)	

Figure 2. Key Characteristics in Short Course vs Long Course Groups ¹Mean (SD)

Quick Shots Session I

Paper #2
January 16, 2025
10:06 am

TRUST, BUT VERIFY: THE IMPORTANCE OF CONFIRMATORY TESTING AFTER BCVI SCREENING

Jessica L Masch, MD, MS, Jarrett Santorelli, MD*,
Louis A Perkins, MD, Jessica L. Weaver, MD, PhD*
University of California San Diego

Presenter: Jessica L Masch, MD, MS

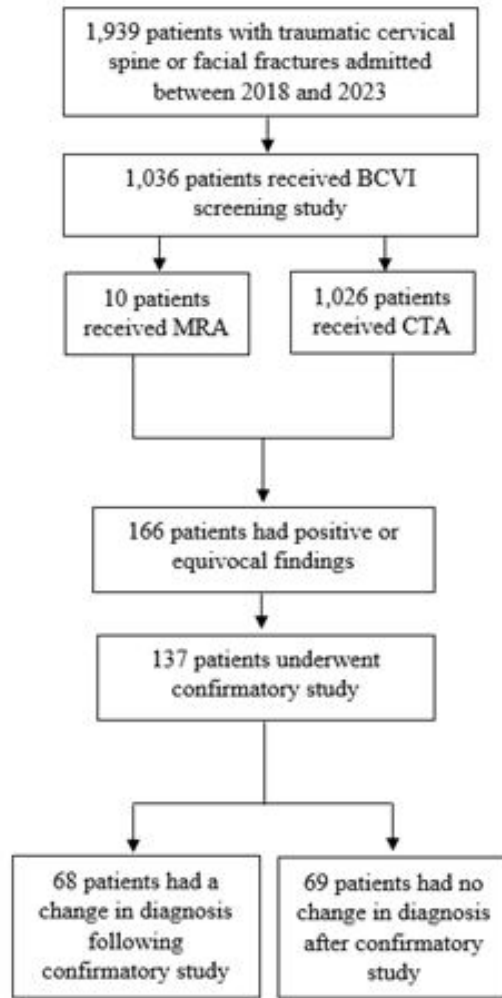
Objectives: Clinical practice guidelines recommend screening for blunt cerebrovascular injury (BCVI) based on the Denver Criteria. BCVI is typically treated with antithrombotic therapy, which may be high-risk in patients with concomitant brain or spine injuries. At our center, we often perform confirmatory imaging in high-risk patients after positive initial screening for BCVI. Our study investigates how frequently confirmatory studies change diagnosis and management of patients screening positive for BCVI.

Methods: A cross-sectional study of all trauma patients admitted to a level 1 trauma center with cervical spine or facial fractures between 2018 and 2023 was performed. Chart review was conducted to identify all patients who had a positive screening study for BCVI. Individual charts were reviewed for BCVI screening and confirmatory test modality and results, as well as timing and specifics of treatment recommendations.

Results: A total of 1,939 patients met inclusion criteria (Figure 1). 1,036 of these patients received BCVI screening, 10 with Magnetic Resonance Angiography (MRA) and 1,026 with Computed Tomography Angiography (CTA). Of those screened, 166 (16%) had with positive or equivocal findings, of which 137 (82.5%) patients received a confirmatory study, including 2 patients who received multiple studies (Figure 2). Confirmatory studies resulted in a change in the diagnosis in 68 patients (49.6%), including 49 studies (35.8%) that found no injury or chronic findings. 8 patients (5.8%) had studies that were non-diagnostic or aborted.

Conclusions: In our study, confirmatory BCVI imaging frequently identified false positive BCVIs in a third of patients. This suggests we should re-evaluate guidelines that would recommend antiplatelet or anticoagulation treatment in many high-risk patients based on screening studies alone.

Figure 1



Study cohort

Screening Study	Confirmatory Study	N	Diagnosis changed (N, %)
CTA	MRA	127	65 (51.2%)
CTA	Angiography	7	4 (57.1%)
CTA	Repeat CTA	2	1 (50%)
CTA	Ultrasound	1	1 (100%)
MRA	Ultrasound	1	1 (100%)
MRA	Angiography	1	1 (100%)

Diagnosis change based on imaging modality

Quick Shots Session I

Paper #3
January 16, 2025
10:12 am

PRE-HOSPITAL NEEDLE DECOMPRESSION: DOES LOCATION MATTER?

Sydney R. Willhite, MD, Tanner Wright, MD,
Shaun Rowe, PharmD, Catherine L. McKnight, MD*
University of Tennessee Medical Center-Knoxville

Presenter: Sydney R. Willhite, MD

Objectives: In 2018, Advanced Trauma Life Support guidelines changed their recommendation on the location at which needle thoracostomy for tension pneumothorax should be performed. We aimed to evaluate the success and injury rates when comparing the previously recommended 2nd intercostal space at the midclavicular line to the newly recommended 4th/5th intercostal space at the anterior axillary line.

Methods: A retrospective study was performed at a level 1 trauma center between January 1, 2018 and March 11, 2024. Patients 18 years and older who were involved in blunt or penetrating trauma with at least one attempt at needle decompression in the prehospital setting were included. Computed tomography was then reviewed to assess success and injury rates.

Results: After exclusion criteria, 157 attempts were reviewed on a total of 147 patients with mean age of 46 and with an 84.4% male population. When comparing success of entry into the chest cavity, the 4th/5th intercostal space at the anterior axillary line was more successful than the 2nd intercostal space at the midclavicular line, at 88.5% versus 46.1% respectively ($p < 0.001$). The 4th/5th intercostal space at the anterior axillary line was also associated with a lower rate of injury to underlying organs, with 11.5% of attempts causing injury in comparison to 37.7% ($p < 0.001$) when utilizing the 2nd intercostal space at the midclavicular line.

Conclusions: In patients with tension pneumothorax necessitating prehospital needle decompression, the 4th/5th intercostal space at the anterior axillary line has higher success rates and decreased injury rates, which is in concordance with new Advanced Trauma Life Support guidelines.

	ICS2-MCL (n=70)	ICS4/5-AAL (n=77)	p-value
Age, median (IQR)	46 (30, 59)	47 (33, 61)	0.67
Gender (female)	13 (18.6%)	10 (13.0%)	0.3755
ISS, median (IQR)	22 (14, 34)	22 (17, 29)	0.64
Mechanism of Injury			0.03
Blunt	70 (94.3%)	65 (84.4%)	
Penetrating	4 (5.7%)	12 (15.6%)	

Table 1. Comparison of demographics.

	ICS2-MCL (n=77)	ICS4/5-AAL (n=80)	p-value
Successful Chest Entry	35 (46.1%)	69 (88.5%)	<0.001
Organ Injury (all attempts)	29 (37.7%)	9 (11.5%)	<0.001

Table 2. Results comparing success and injury rates between ICS2-MCL and ICS4/5-AAL.

Quick Shots Session I

Paper #4
January 16, 2025
10:18 am

THE IMPACT OF VISION THERAPY ON POST-CONCUSSION SYMPTOM RESOLUTION

Francesca Andronic, BA, MD, Francesca Andronic, BA, MD, Eden K Hunt, MD,
David Clark, BS, Mitch Daniel, BS, Aaron Banwer, BS,
Megan Hammer, BS Candidate, Daniele Shollenberger, BS, NP,
Alison Sutter, MPH, Hope Kincaid, MPH, CPH, Mark D Cipolle, MD, PhD*
Lehigh Valley Health Network

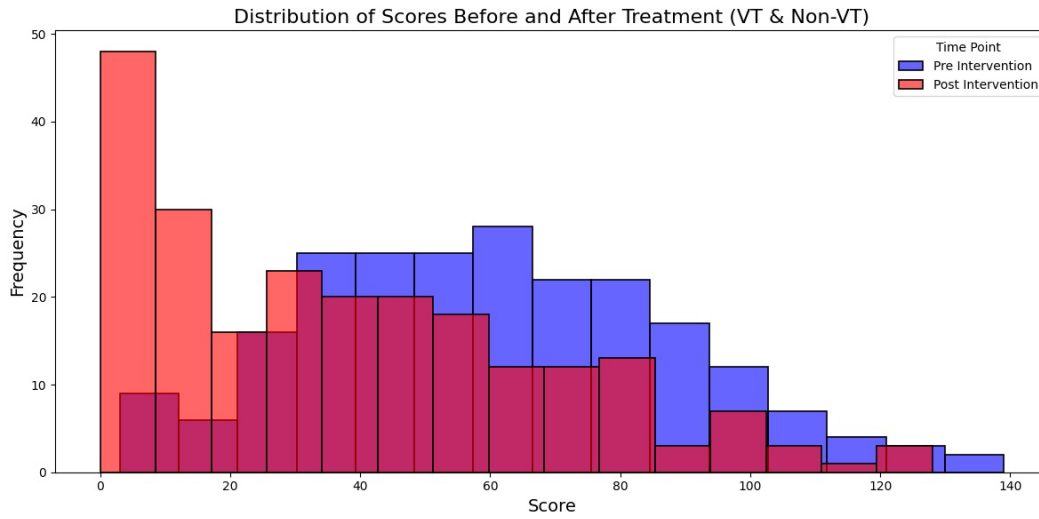
Presenter: Francesca Andronic, BA, MD

Objectives: Vision therapy has been identified as a treatment avenue for post-concussion symptoms, especially those associated with visual impairments. The correlation between concussive injury and visual symptoms has been demonstrated as a potential metric to quantify recovery. Current evidence exploring the efficacy of vision therapy suggests that it improves outcomes when used concurrently with other rehabilitation methods. The aim of this study is to evaluate the impact of vision therapy on post-concussive symptomatic recovery in comparison to standard treatment modalities.

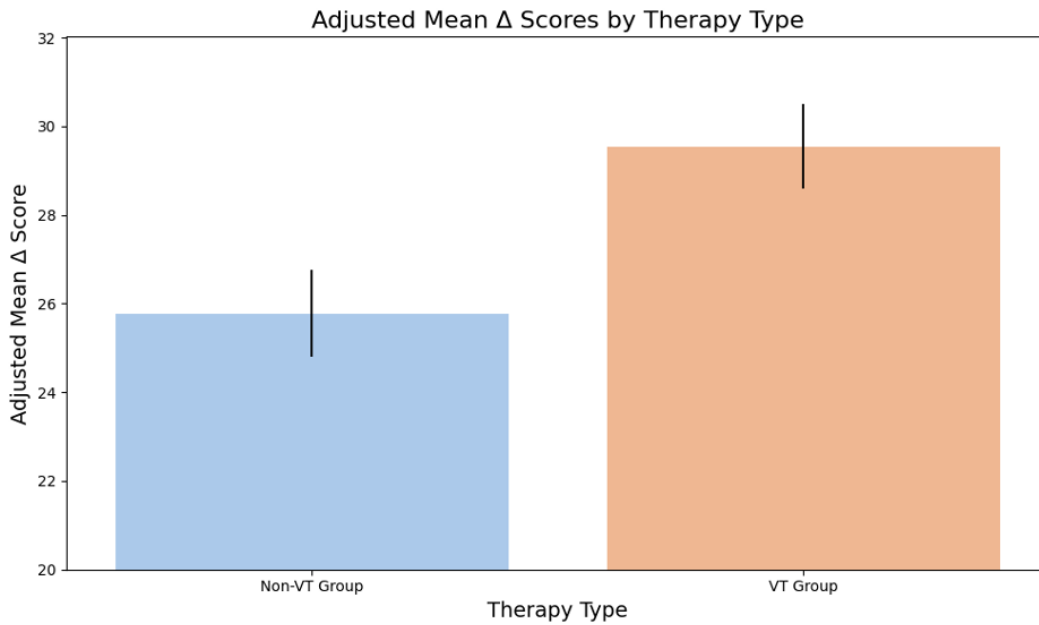
Methods: A retrospective chart review encompassing all patients who were evaluated in the concussion clinic from 1/1/2019-12/31/2021 was conducted. Patients were then stratified into two groups based on the treatment modality received: PT and OT (non-VT group) vs. PT, OT, and VT (VT group). Post-concussion syndrome symptoms were tracked utilizing a 24 item post-concussion checklist which was completed at each patient encounter. A preliminary ANCOVA analysis was performed comparing the magnitude of change in symptom scores between two therapy types, while adjusting for initial symptom severity.

Results: In our preliminary analysis, the ANCOVA model demonstrated that the mean and variance scores between the non-VT and VT groups are statistically significant ($p < 0.05$). Individuals with higher initial scores had a larger decrease over time when therapy type remained constant. When controlling for the variance in index checklist score, the VT group had an average final symptom checklist score of 10 points lower when compared with the non-VT group.

Conclusions: The addition of vision therapy as an adjunct to OT & PT in the treatment of PCS demonstrates a decrease in post-concussive checklist score in our preliminary analysis, suggesting that including vision therapy in PCS treatment regimen can improve clinical outcomes.



Distribution of Symptom Checklist Scores Before and After Treatment in All Treatment Groups



Adjusted Mean Change Scores by Treatment Group

Quick Shots Session I

Paper #5
January 16, 2025
10:24 am

EMERGENCY DEPARTMENT INTUBATION IS ASSOCIATED WITH HIGHER EARLY MORTALITY IN SEVERELY INJURED PATIENTS REQUIRING HEMORRHAGE CONTROL SURGERY

Jonathan P. Meizoso, MD, MSPH*, Michael Cobler-Lichter, MD,
Nicholas Namias, MBA, MD*, Bryan A. Cotton, MD, MPH,
Jeremy W. Cannon, MD, SM, FACS*, Martin A. Schreiber, MD, FACS*,
Ernest Eugene Moore, MD*, Joseph P. Minei, MD, MBA, FACS*,
Stephen R. Wisniewski, PhD, Francis X. Guyette, MD, MPH, Jason L. Sperry, MD, MPH*
University of Miami Miller School of Medicine

Presenter: Jonathan P. Meizoso, MD, MSPH

Objectives: Traditional priorities in the management of trauma patients emphasize securing the airway prior to considering need for hemorrhage control. This airway-first approach may result in postintubation hypotension and cardiac arrest. We hypothesize that emergency department (ED) intubation is associated with lower survival than OR intubation in trauma patients at risk for massive transfusion (MT) undergoing hemorrhage control surgery.

Methods: Secondary analysis of a prospective, multicenter observational cohort study. Adults at risk of MT (ABC score > 2) requiring blood products and hemorrhage control surgery within 60min of arrival were included. Exclusion criteria: age<15, penetrating brain injury, >5 min CPR, death before OR, prisoners, pregnancy, transfers, and prehospital intubations. Primary outcome was early mortality. Multivariate analysis was performed to control for potential confounders.

Results: 566 patients were included; 110 (19%) underwent ED intubation. ED intubation patients were more commonly blunt trauma with shock and TBI, required more transfusions, and had longer delays from arrival to OR. Mortality was higher in the ED intubation group at all time points (Table 1). On multivariate analysis after adjusting confounders, ED intubation was an independent predictor of mortality at 4-hours (aOR 3.26, 95% CI 1.23-8.64), 12-hours (aOR 3.73, 95% CI 1.33-10.49), and 24-hours (aOR 4.20, 95% CI 1.60-11.03) (Table 2).

Conclusions: ED intubation is independently associated with higher early mortality in trauma patients at risk of MT who require hemorrhage control surgery, suggesting a critical window where intubation may be more safely performed in the OR. Shifting the focus from airway to circulation first, with an emphasis on expedient hemorrhage control and simultaneous airway management, may improve outcomes in these patients.

Table 1. Study Population Stratified by ED Intubation.

	No ED Intubation (n = 456)	ED Intubation (n = 110)	p-value
Age, years	35 (27-49)	35 (25-47)	0.706
Female sex	82 (18.0%)	25 (22.7%)	0.254
Time to OR, min	16 (11-25)	25 (17-38)	<0.001
Penetrating trauma	325 (71.3%)	60 (54.5%)	<0.001
ISS	20 (10-29)	26 (13-33)	0.056
AIS Head	0 (0)	0 (0-3)	<0.001
AIS Chest	2 (0-3)	3 (0-3)	0.003
AIS Abdomen	3 (0-4)	2 (0-4)	0.165
Lowest SBP, mmHg	90 (76-110)	76 (60-93)	<0.001
Highest HR, bpm	110 (97-130)	134 (117-155)	<0.001
Lowest GCS	15 (14-15)	3 (3-12)	<0.001
4-hour total blood products, units	7 (3-17)	17 (7-30)	<0.001
24-hour total blood products, units	9 (4-21)	20 (8-43)	<0.001
4-hour mortality	19 (4.2%)	19 (17.4%)	<0.001
12-hour mortality	29 (6.4%)	25 (22.9%)	<0.001
24-hour mortality	30 (6.6%)	26 (23.9%)	<0.001
28-day mortality	37 (8.2%)	34 (31.2%)	<0.001

ED: emergency department; OR: operating room; ISS: Injury Severity Score; AIS: Abbreviated Injury Scale; SBP: systolic blood pressure; HR: heart rate; bpm: beats per minute; GCS: Glasgow Coma Scale. Categorical variables are expressed as frequency (percentage); continuous variables are expressed as median (interquartile range).

Table 2. Multiple Logistic Regression Results by Mortality Time-Point.

	4-Hour Mortality		12-Hour Mortality		24-Hour Mortality	
	aOR	95% CI	aOR	95% CI	aOR	95% CI
Penetrating trauma	2.590	0.988-6.787	3.466*	1.292-9.300	2.664*	1.058-6.704
Lowest SBP	0.979*	0.965-0.993	0.992	0.977-1.007	0.992	0.978-1.007
Highest HR	1.002	0.987-1.017	0.993	0.978-1.008	0.998	0.983-1.012
AIS Head	0.815	0.568-1.171	0.680	0.443-1.046	0.695	0.475-1.018
AIS Chest	0.998	0.764-1.302	0.906	0.690-1.188	1.009	0.782-1.303
AIS Abdomen	1.234	0.955-1.594	1.219	0.931-1.594	1.351*	1.045-1.745
Time to OR	0.982	0.949-1.016	0.997	0.864-1.031	0.993	0.963-1.024
4-hour WB	1.170*	1.045-1.311	1.315*	1.141-1.515	---	---
4-hour RBC	1.064*	1.014-1.117	1.156*	1.082-1.236	---	---
4-hour plasma	0.979	0.905-1.059	1.008	0.921-1.103	---	---
4-hour platelets	0.842	0.563-1.261	0.581*	0.380-0.889	---	---
24-hour WB	---	---	---	---	1.248*	1.093-1.426
24-hour RBC	---	---	---	---	1.149*	1.086-1.215
24-hour plasma	---	---	---	---	0.948	0.885-1.015
24-hour platelets	---	---	---	---	0.660*	0.490-0.888
ED intubation	3.256*	1.227-8.641	3.733*	1.329-10.487	4.201*	1.601-11.028
AUROC	0.890		0.917		0.908	

aOR: adjusted odds ratio; CI: confidence interval; SBP: systolic blood pressure; HR: heart rate; AIS: Abbreviated Injury Scale; OR: operating room; WB: whole blood; RBC: red blood cells; ED: emergency department; AUROC: area under the receiver-operator characteristic curve; * indicates statistical significance

Quick Shots Session I

Paper #6
January 16, 2025
10:30 am

SERUM TROPONIN HAS LIMITED UTILITY IN STABLE PATIENTS AT RISK FOR BLUNT CARDIAC INJURY

Hannah L. Cleary, Matthew Bernard, BS*, Andrew C. Bernard, MD, FACS*
University of Kentucky

Presenter: Hannah L. Cleary

Objectives: There are no gold standard criteria for diagnosing Blunt Cardiac Injury (BCI). Admission electrocardiogram (ECG) is standard. While the combination of serum troponin (cTnI) and ECG is considered the most sensitive screening method for those being considered for discharge, little evidence exists regarding the diagnostic value and clinical utility of initial and serial serum troponin levels in stable patients who are being admitted with a possible BCI. Therefore, this study seeks to determine if troponin level is an independent predictor of adverse cardiac events in stable, admitted patients at risk for BCI.

Methods: This was a 5-year retrospective study using the trauma database at a University Level I Trauma Center. The study population included adult trauma patients presenting with a physician diagnosis of BCI or a sternal fracture who met prespecified stability criteria (SBP>90mmHg, HR<110bpm, shock index<1, GCS>14). The main data points collected were troponin value and ECG interpretation. A patient had an adverse cardiac event if they were diagnosed with a new arrhythmia requiring treatment, had cardiac surgery, or suffered cardiac-related mortality. Comparison in the incidence of adverse cardiac events between patients with normal and abnormal ECG was analyzed using the independent samples z-test for proportions.

Results: 350 patients met inclusion criteria, and there were 12 adverse cardiac events (Table); each were new arrhythmias requiring treatment with 1 patient also requiring synchronized cardioversion. Patients with an abnormal ECG were more likely to have an adverse cardiac event ($p=1.47E-6$). No patients with a normal ECG and abnormal troponin had an adverse cardiac event.

Conclusions: In stable patients in this cohort, troponin level did not predict adverse cardiac events. Admitted patients at risk for BCI who meet stability criteria might be safely observed without measurement of serum troponin.

ECG	Troponin	Adverse Cardiac Events
Normal (n=243)	Normal (n=160)	1
	Abnormal (n=83)	0
Abnormal (n=107)	Normal (n=55)	6
	Abnormal (n=52)	5

Table. The incidence of adverse cardiac events in patients presenting with either a physician diagnosis of Blunt Cardiac Injury (BCI) or a sternal fracture categorized by electrocardiogram (ECG) interpretation and troponin value.

Quick Shots Session I

Paper #7
January 16, 2025
10:36 am

DIFFERENTIAL GENE EXPRESSION IN PATIENTS WITH MODERATE OR SEVERE TRAUMATIC BRAIN INJURY TREATED WITH TRANEXAMIC ACID

Ian McKinley, MD*, Matt Dapas, PhD., Andrew J. Benjamin, MD, MS*,
Tzintzuni Garcia, Ph.D., Lea Hoefler, MD*, Ann M. Polcari, MD, MPH, MSGH*,
Martin A. Schreiber, MD, FACS*, Susan E. Rowell, MD, MBA, MCR*
University of Chicago

Presenter: Ian McKinley, MD

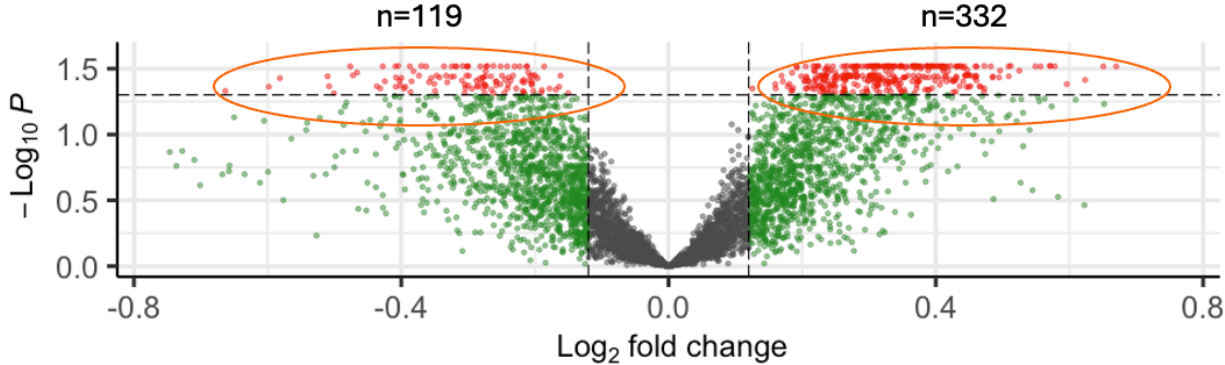
Objectives: A 2-gram bolus of tranexamic acid (TXA) decreases mortality in patients with traumatic brain injury (TBI) and intracranial hemorrhage (ICH), but the underlying mechanism remains unclear. We performed the first differential gene expression analysis in humans receiving TXA using peripheral blood samples to identify differences in gene expression between TXA-treated and untreated patients to direct future investigation into the mechanism by which TXA improves mortality.

Methods: Patients enrolled in the Prehospital TXA for TBI trial (GCS 3-12 and SPB > 90) with ICH who received either a 2-gm prehospital TXA bolus or placebo within 2 hours of injury with high-quality RNA samples available at baseline and 24-hours were included. Whole-transcriptome RNA-seq and gene set enrichment analysis were performed to identify relevant biological pathways. The primary comparison was the difference in gene counts between groups, accounting for individual baseline gene expression. Secondary analyses included differences between groups at baseline and 24 hours. A p-value < 0.05 was used for significance after correcting for multiple testing.

Results: Of 92 subjects who met inclusion criteria (placebo n=38, 2-gm TXA bolus n=54), no differences in baseline demographic/physiologic variables or gene counts were observed. When accounting for individual baseline expression, 451 genes were significantly differentially expressed between groups (332 increased, 119 decreased), primarily related to alternate RNA splicing, inflammatory cascade modulation, and transcriptional and cell-cycle control mechanisms.

Conclusions: Differentially expressed genes in patients with moderate or severe TBI and ICH treated with TXA are identifiable 24 hours after treatment using peripheral sampling. Pathways identified suggest TXA may be involved in inflammation, alternate RNA splicing, and cell cycle regulation.

Differentially Expressed Genes Between Placebo and 2-gram TXA Bolus



- Not significant
- Genes failing multiple testing correction
- Differentially expressed genes

Quick Shots Session I

Paper #8
January 16, 2025
10:42 am

TAKING THE LONG VIEW IN TRAUMATIC PERIPHERAL VASCULAR INJURY REPAIRS: AN ANALYSIS OF THE PROOVIT POST-DISCHARGE REGISTRY

Negar Nekooei, MD*, Justin Wang, M.S., Ajay Prasad, BS, Danielle Brabender, MD, Anaar Siletz, MD, PhD*, Kazuhide Matsushima, MD*, Kenji Inaba, MD, Joseph J. DuBose, MD*, Matthew J. Martin, MD, FACS, FASMBS*
LAC+USC Medical Center

Presenter: Negar Nekooei, MD

Objectives: Outcomes of peripheral arterial repairs (PAR) in trauma are well-studied but primarily limited to inpatient or 30-day complications. This study analyzes outcomes with extended post-discharge follow-up data after PAR.

Methods: A recently added post-discharge follow-up module to the PROspective Observational Vascular Injury Treatment (PROOVIT) registry (2012-2023) was queried for all PAR surviving to discharge. Demographics, injury severity, repair type, and PAR-related complications were collected. Rates of in-hospital and post-discharge vascular complications (VC) were analyzed and compared in subgroups including vascular repair type and those with and without an in-hospital VC.

Results: Of the total 1117 PAR identified, 483 (41%) had post-discharge follow-up data. 83% were male, and 70% sustained penetrating trauma. The median injury severity and mangled extremity severity score were 10 and 4, respectively. PAR included primary repairs, autologous grafts, and synthetic grafts. During the hospital stay, 16% experienced PAR-related complications (10% primary repair, 20% autologous, 27% synthetic, $p < 0.01$). An additional 8% experienced post-discharge PAR-related complications (6% primary repairs, 9% autologous, 14% synthetic, $p = NS$, Table 1). Among those with an in-hospital VC, 12% developed additional post-discharge VCs while those without an in-hospital VC had a 7% incidence of post-discharge VC ($p = NS$). Post-discharge VC (Table 2) in the latter cohort consisted of 1.2% reinterventions, 1.2% infections, 0.2% each of technical repair issues, stenosis, occlusion, thrombosis, and ischemia.

Conclusions: There is a significant incidence of peripheral arterial repair-related VC after trauma, with about one-third manifesting post-discharge and with the highest rates after synthetic repairs. Focused efforts to improve routine follow-up and data capture/analysis in this cohort are warranted.

	Primary repair N =195	Autologous N =266	Synthetic N=22	P value
In-hospital complication	19 (9.7%)	52 (19.5%)	6 (27.3%)	0.008
Post-discharge complication	11 (5.6%)	24 (9%)	3 (13.6%)	0.254

Table 1-Rates of in-hospital and post-discharge complications within each repair group.

Follow-up vascular complication types	Total N=483	In-hospital VC N=77	No in-hospital VC N=406	P-value
Follow-up time months <i>Median (IQR)</i>	2 (1-3)	2 (1-4)	2 (1-3)	0.338
Any complication	38 (7.9%)	9 (11.7%)	29 (7.1%)	0.174
Re-intervention	11 (2.3%)	6 (7.8%)	5 (1.2%)	0.003
Infection	5 (1.0%)	0 (0.0%)	5 (1.2%)	1.000
Ischemia	4 (0.8%)	3 (3.9%)	1 (0.2%)	0.014
Technical repair problem	3 (0.6%)	2 (2.6%)	1 (0.2%)	0.068
Stenosis	3 (0.6%)	2 (2.6%)	1 (0.2%)	0.068
Occlusion	2 (0.4%)	1 (1.3%)	1 (0.2%)	0.294
Thrombosis	2 (0.4%)	1 (1.3%)	1 (0.2%)	0.294
Amputation	1 (0.2%)	1 (1.3%)	0 (0.0%)	0.159
Aneurysm	1 (0.2%)	1 (1.3%)	0 (0.0%)	0.159
Stroke	0	0	0	N/A
Bleeding/ hematoma	0	0	0	N/A

Table 2- Rates of post-discharge complications in two cohorts: those with an in-hospital vascular complication versus no in-hospital vascular complication.

Quick Shots Session I

Paper #9
January 16, 2025
10:48 am

MORTALITY AFTER REPEAT ASSAULTIVE INJURY: A LONGITUDINAL STUDY OF POST-DISCHARGE OUTCOMES

Sarah JH Melin, Pranjal Srivastava, Sydney Timmer-Murillo, PhD, Jacey Kant,
Terri deRoon-Cassini, MS, PhD, Andrew Schramm, PhD
Medical College of Wisconsin

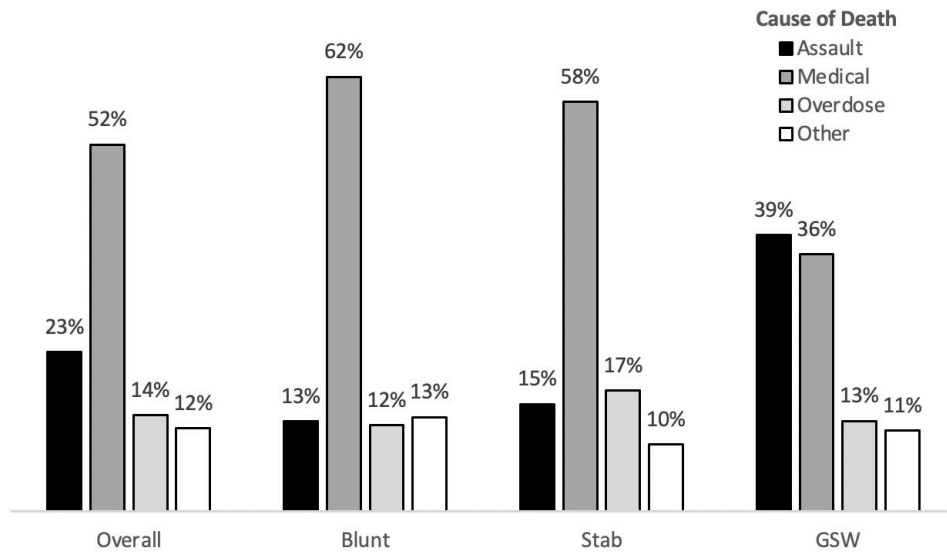
Presenter: Sarah JH Melin

Objectives: Assaultive injuries often repeat and tend to escalate. Prior studies have considered the risk factors and hospital outcomes of repeat assaultive injury, but no study has investigated post-discharge outcomes such as long-term mortality. This study considered the rates and manner of post-discharge mortality in patients presenting for assaultive injury, hypothesizing that patients with multiple assaultive injury encounters face an elevated risk of post-discharge mortality compared to a single encounter.

Methods: A retrospective review was conducted of patients included in the trauma registry for an assaultive injury at a Level I Trauma Center between 1/1/2004-12/31/2020. Patients were identified using ICD codes. The primary outcome was post-discharge mortality, which was obtained from the CDC National Death Index. Cox models and survival curves were constructed to compare the outcome across groups.

Results: There were 5797 patients who presented to the hospital for an assaultive injury during the study period, of which 5437 (94%) survived their initial encounter and 194 (3%) experienced multiple encounters. Overall, the primary cause of post-discharge mortality was medical disease; however, patients surviving a gunshot wound were more commonly deceased due to homicide when compared to blunt injury (HR=1.74, $p<0.001$) (Figure 1). Multiple assaultive injury encounters were associated with increased risk of post-discharge mortality (HR=1.91, $p<0.001$).

Conclusions: Patients that survive multiple assaultive injury encounters have significantly greater post-discharge mortality compared to a single encounter. Overall, patients suffering an assaultive injury are most commonly deceased by unrelated natural disease processes. However, gunshot wounds are associated with increased risk of future homicide. This information can be incorporated into hospital-based violence intervention programs to break the cycle of violence.



Cause of death in patients surviving an assaultive injury encounter by mechanism of initial injury.

Quick Shots Session I

Paper #10
January 16, 2025
10:54 am

LOW ENERGY, HIGH IMPACT: DOES MECHANISM OF INJURY CORRELATE WITH SEVERITY IN ISOLATED RIB FRACTURES IN ELDERLY PATIENTS?

Gabriela Dincheva, DO, Veronica Layrisse-Landaeta, MD, Victoria Yuan, MD,
Christopher Wong, Miroslav Kopp, DO*, Konstantin Khariton, DO*
New York Presbyterian Queens

Presenter: Veronica Layrisse-Landaeta, MD

Objectives: We hypothesized that elderly patients with isolated rib fractures due to high-energy transfer trauma (HETT) would have a higher rate of pulmonary complications and mortality than low-energy transfer trauma (LETT).

Methods: A retrospective study at a Level 1 trauma center between 1/2018-1/2023 categorized patients aged ≥ 65 years by mechanism of injury: LETT (falls from standing height or lower) and HETT (motor vehicle accidents, pedestrian strikes, falls from height). We compared the presence of at least one pulmonary complication: pneumonia, ARDS, intubation, pleural effusion, empyema, or death. Multivariate logistic regression assessed risk factors for pulmonary complications.

Results: Out of 567 patients, 458 were LETT and 109 were HETT. LETT were older (83 vs 78 years, $p < 0.001$), with higher Charlson Comorbidity Index (4.6 vs 3.76, $p < 0.001$). HETT had higher Injury Severity Scores (7.3 vs 8.3, $p = 0.048$). Rib fracture characteristics were similar except for frequency of sternal and first rib fractures (Table 1). LETT had lower incentive spirometer volumes (931 vs 1,122 cc, $p = 0.003$), longer ICU (4.06 vs 2.65 days, $p = 0.021$) and hospital lengths of stay (4 vs 2.9 days, $p = 0.005$). Pneumonia (9.4 vs 4.6%, $p = 0.11$) and intubation (2 vs 3.7%, $p = 0.3$) rates were similar. Pleural effusions were more frequent in LETT (27 vs 16%, $p = 0.012$), resulting in higher composite pulmonary complications (31 vs 20%, $p = 0.025$). Mortality was similar (1.5 vs 1.8%, $p = 0.7$). Risk for pulmonary complications was increased RibScore for both cohorts and lower baseline functional status for HETT. (Table 2)

Conclusions: LETT patients have poorer functional status than HETT patients resulting in higher risk for pulmonary complications and prolonged hospital courses. Severity of chest injury as measured by RibScore was the only significant risk for poor outcomes across both groups.

	High Energy, N = 109 ¹	Low Energy, N = 458 ¹	p-value ²
# Rib Fractures	3.94 (2.39)	3.47 (2.00)	0.10
# Displaced Rib Ractures	2.11 (2.40)	1.98 (1.91)	0.7
Sternal Fracture	11 (10%)	5 (1.1%)	<0.001
1st Rib Fracture	7 (6.4%)	7 (1.5%)	0.008
Flail Chest	4 (3.7%)	16 (3.5%)	>0.9
Pneumothorax	12 (11%)	42 (9.2%)	0.6
Hemothorax	16 (15%)	66 (15%)	>0.9
Pulmonary Contusions	8 (7.4%)	18 (4.0%)	0.13
RibScore			0.092
0	62 (57%)	260 (57%)	
1	30 (28%)	142 (31%)	
2	11 (10%)	47 (10%)	
3	4 (3.7%)	9 (2.0%)	
4	2 (1.8%)	0 (0%)	

¹ Mean (SD), Frequency (%)

² Wilcoxon rank sum test; Fisher's exact test; Pearson's Chi-squared test

Rib fracture characteristics of elderly patients after low and high energy transfer traumas

	High Energy			Low Energy		
	OR ¹	95% CI ¹	p-value	OR ¹	95% CI ¹	p-value
Age (years)	0.97	0.88, 1.07	0.6	1.01	0.98, 1.04	0.4
Partially Dependent Functional Status	6.89	1.63, 33.0	0.010	0.91	0.54, 1.55	0.7
RibScore	1.99	1.12, 3.79	0.023	1.70	1.25, 2.34	<0.001
Sternal Fracture	0.29	0.01, 2.23	0.3	2.73	0.42, 21.7	0.3
Charlson Comorbidity Index	1.56	0.74, 3.38	0.2	1.16	0.96, 1.40	0.11

¹ OR = Odds Ratio, CI = Confidence Interval

Risk factors for pulmonary complications after low and high energy transfer traumas in elderly patients

Quick Shots Session II

Paper #11
January 16, 2025
10:00 am

USING HUMAN FACTORS ENGINEERING TO ENHANCE NEW TRAUMA BAY EFFECTIVENESS

Don B. Scarboro, MD, Nate Jones, MBA, Laurie Wolf, PhD,
Bryan R. Collier, DO, FACS*, Daniel I. Lollar, MD*
Carilion Roanoke Memorial Hospital

Presenter: Don B. Scarboro, MD

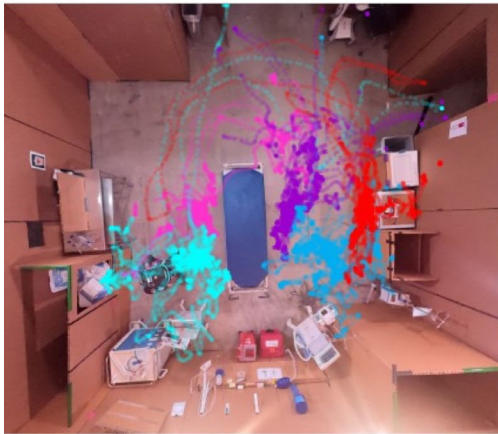
Objectives: Spatial design can contribute to patient harm and healthcare inefficiencies if the design process does not consider how workers interact with each other and their environments. Human factors engineering (HFE) applies human-centered design assessment to the built environment to evaluate implications for patients and staff. HFE assessment was applied to a proposed trauma bay design prior to construction. We hypothesized that HFE evaluation would produce significant changes to a new trauma bay layout that would improve provider safety and decrease errors and costs.

Methods: Cardboard mockup of the proposed trauma bay were created. Mock scenarios were performed with two interdisciplinary teams. An iterative process whereby the architectural plans were adapted by the trauma medical director and then each subsequent team was performed with changes made in real time. We utilized a mixed-methods analysis including pre/post surveys as well as video analyses including link analysis, bump analysis, and crossover analysis. Our results were integrated into layout design recommendations provided to the architects.

Results: Mockup cost was \$2986 and required 10 hours of labor. Two teams completed six scenarios. Staff simulation time was 70 hours while analysis took 36 hours. Survey data indicated improvements in “ability to do your job” from 3.85 to 4.25. Link analysis demonstrated areas in certain layouts that created work inefficiencies. Bump analysis demonstrated a decrease in bumps from 47 to 33. Crossover analysis showed a decrease in patient crossovers from 7 to 0. Estimated cost savings were estimated at \$333,200.

Conclusions: The opportunity for HFE assessment integration into the construction of new healthcare facilities is rare. We present a structured and iterative approach to testing new physical design changes prior to construction. We identified improvements in staff satisfaction, staff safety, and estimated cost.

Initial Layout



Team 2 Layout



- Pharmacist
- RN #1
- RN #2
- ACP #1
- ACP #2

Comparison of worker flow via link analysis (red = pharmacist, blue = RN 1, teal = RN 2, purple = ACP 1, pink = ACP 2) from initial layout to final/Team 2 layout.

Initial Layout



Team 2 Layout



- Equipment
- Pharmacist
- RN #1
- RN #2
- ACP #1
- ACP #2

Comparison of bumps via bump analysis (black = equipment, red = pharmacist, blue = RN 1, teal = RN 2, purple = ACP 1, pink = ACP 2) from initial layout to final/Team 2 layout.

Quick Shots Session II

Paper #12
January 16, 2025
10:06 am

SURROGATE DECISION MAKING IN OLDER ADULT PATIENTS WITH TRAUMATIC BRAIN INJURY: A PROSPECTIVE LONGITUDINAL TRIAL

Abdul Hafiz Al Tannir, MD, Rodney Sparapani, PhD, Patrick B. Murphy, MD, MPH, MSc*,
Ann Nattinger, MD, Edmund Duthie, MD, Krista Haines, DO*, Marc A. de Moya, MD*,
Christopher J Tignanelli, MD*, Nicole von Steinbuchel, Rachel S. Morris, MD, FACS*
Medical College of Wisconsin

Presenter: Abdul Hafiz Al Tannir, MD

Objectives: Surrogates are often required to make treatment decisions for older adults with traumatic brain injury (TBI). Assessing the accuracy of surrogates' predicted health-related quality of life (HRQoL) for older adults with TBI is paramount. One highly utilized previously validated HRQoL outcome measure is the Quality of Life After Brain Injury Overall Scale (QOLIBRI-OS). The aim of the present study is to evaluate the construct validity of the Patient-QOLIBRI-OS measure and Proxy-QOLIBRI-OS to evaluate concordance.

Methods: This is a single-center prospective longitudinal pilot study (09/2022-05/2024) of older adults with TBI (age \geq 65 years) admitted to a level I trauma center. The primary outcome measure for HRQoL utilized in the present study was QOLIBRI-OS (score ranges from 0 through 100 representing the lowest and highest HRQoL). Both patients and proxies were surveyed at index hospital admission and followed up at 3-months after injury. The internal consistency and construct validity of the Pt-QOLIBRI-OS and Proxy-QOLIBRI-OS was assessed with a Pearson correlation coefficient (Pcorr).

Results: A total of 117 patients and 117 proxies (52% spouse, 32% daughter, 9% son, 8% other) were surveyed. Most patients were of female sex (58%), the median age was 78 years, and the majority suffered a TBI due to a ground level fall (85%). The mean Pt-QOLIBRI-OS and proxy-QOLIBRI-OS at index hospitalization were 58 and 50, respectively, with a Pcorr of 0.77. A total of 73 patients and 73 proxies were followed up at 3-months. The mean Pt-QOLIBRI-OS and Proxy-QOLIBRI-OS at 3-months were 61 and 54, respectively, with a Pcorr of 0.71.

Conclusions: The overall HRQoL experiences after TBI in older adults are accurately reported by proxy caregivers at baseline and 3-months after injury. Accordingly, the results of the present study can aid in providing goal concordant care in older adults with TBI.

Quick Shots Session II

Paper #13
January 16, 2025
10:12 am

FROM A WINTER OF DESPAIR TO A SPRING OF HOPE - A TALE OF TWO TRAUMA CENTERS: A COMPARISON OF ADOLESCENT PATIENTS TRIAGED TO A PEDIATRIC VS. ADULT LEVEL 1 TRAUMA CENTER

Kevin J. Lang, MD, Rachel Landisch, MD, Saskya E. Byerly, MD, MS*,
Regan Williams, MD, MSE*, Dina M. Filiberto, MD*,
University of Tennessee Health Science Center - Memphis

Presenter: Kevin J. Lang, MD

Objectives: Adolescent firearm injury (AFI) victims are variably treated at pediatric (PTC) and adult trauma centers (ATC). Triage criteria guide emergency medical services to direct care towards the most appropriate hospital. We hypothesize that AFI patients triaged to the ATC are more severely injured, however access to post-trauma aftercare is superior at the PTC.

Methods: A post-hoc analysis of a prospective observational study was conducted for patients 12-18 years at two large, urban level 1 trauma centers. Patient and injury characteristics, outcomes, and social services provided were compared.

Results: Of 163 patients included, 105 (64%) were treated at the PTC and 58 (36%) treated at the ATC. Disparate resources and increased volume resulted in less capture of patients at the ATC. Patients managed at the ATC were older (17 vs 15, $p=.029$) and had a higher ISS (9 vs 2, $p=.0003$) compared to the PTC. The ATC cohort was more likely to go to the operating room (43% vs 19%) and intensive care unit (12% vs 3%), and less likely to be discharged home (64% vs 90%). ATC patients had a higher mortality (17% vs 3%, $p=.002$). Identification of adverse childhood events (ACEs) (10% vs 35%) and prior traumatic events (PTEs) (3% vs 45%) was more common at the PTC, however patients at the ATC had a higher rate of mental illness (16% vs 10%). Receipt of psychosocial ancillary services ($p<.0001$) was more common at the PTC, including social work/case management (2% vs 10%) and child protective services (0% vs 29%).

Conclusions: AFI victims managed at the ATC are more severely injured compared to the PTC. However, recognition of ACEs, PTEs and access to psychosocial ancillary services was greater at the PTC. A future prospective study evaluating AFI victims is needed to develop a pathway that optimizes immediate resuscitation and post-trauma social support.

Patient characteristics and outcomes of adolescent firearm injury victims treated at an adult trauma center and pediatric trauma center

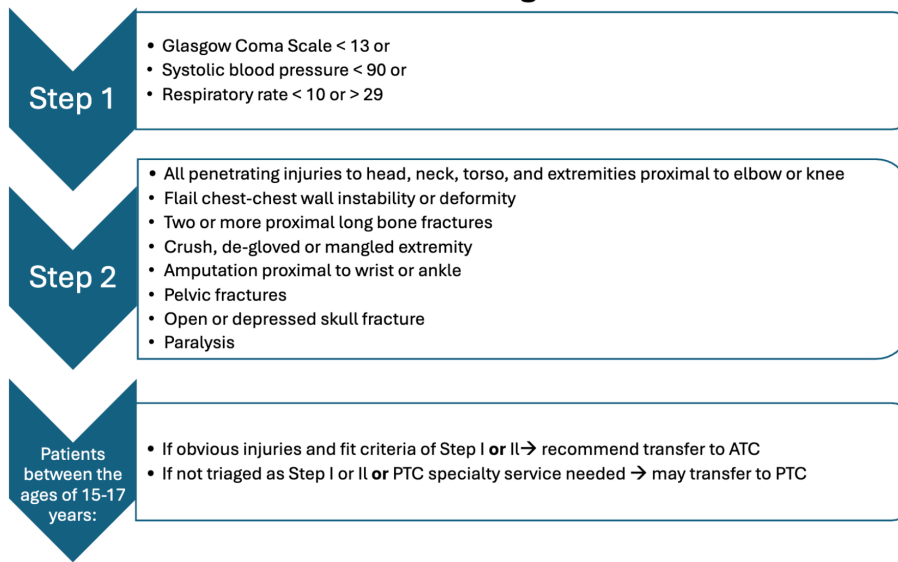
Variable	Adult Trauma Center	Pediatric Trauma Center	P-value
N	58	105	
Age	17 (SD 1.1)	15 (SD 1.5)	0.029
Male	53 (91%)	85 (81%)	0.077
Black	53 (91%)	88 (84%)	0.341
Systolic Blood Pressure	132 (IQR 115, 144)	140 (125, 154)	0.010
Injury Severity Score	9 (IQR 1, 18)	2 (IQR 1, 9)	0.0003
Length of Stay	2 (IQR 1, 7)	3 (IQR 2, 5)	0.485
Mortality	10 (17%)	3 (3%)	0.002

SD: Standard deviation

IQR: Inter-quartile range

Patient characteristics and outcomes of adolescent firearm injury victims treated at an adult trauma center and pediatric trauma center

Trauma Field Triage Guidelines



Trauma Field Triage Guidelines

Quick Shots Session II

Paper #14
January 16, 2025
10:18 am

MACHINE LEARNING ACCURATELY PREDICTS MORTALITY AND RESPIRATORY FAILURE IN PATIENTS ADMITTED WITH RIB FRACTURES

Travis J. Miles, MD, Jose Mendez-Reyes, MD MPH,
Chad T. Wilson, MD, MPH*, Ravi Ghanta, MD
Baylor College of Medicine

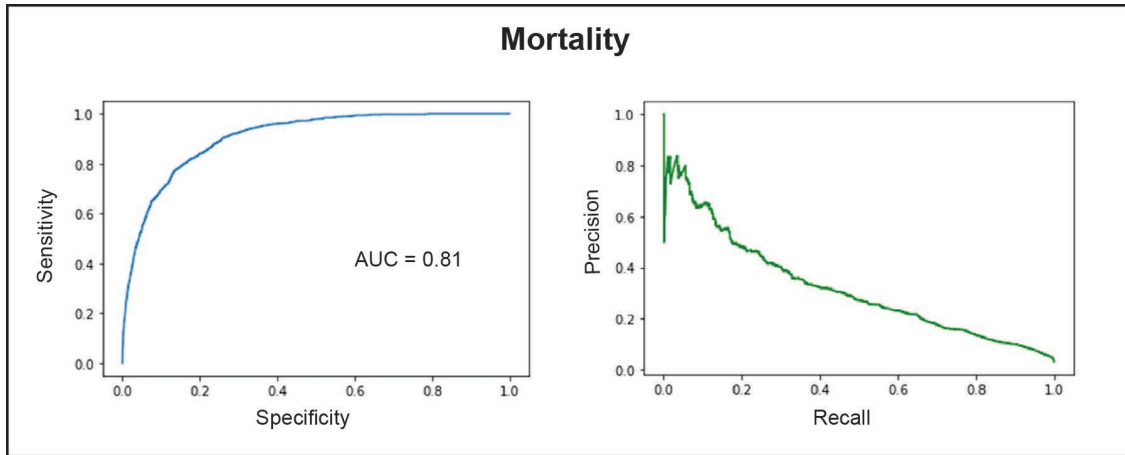
Presenter: Travis J. Miles, MD

Objectives: Accurate risk stratification is crucial in the management of rib fractures given early implementation of standardized clinical protocols based on risk have been shown to improve outcomes. However, identifying rib fracture patients at increased risk of clinical decompensation remains challenging as existing risk scores perform poorly on external validation. We hypothesize that machine learning methods can accurately prognosticate outcomes for patients with rib fractures.

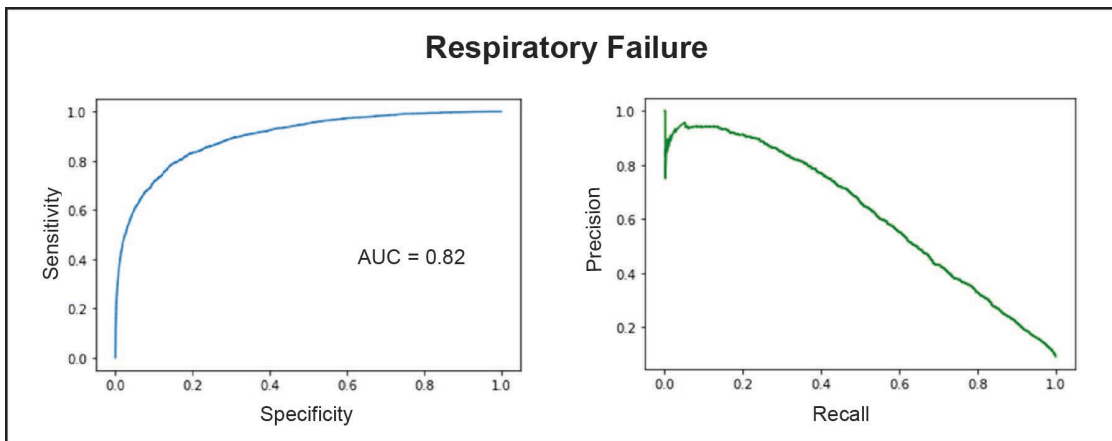
Methods: The National Trauma Data Bank (2021-2022) was queried for patients admitted to the hospital with rib fractures. The primary and secondary outcomes were mortality and respiratory failure. Random Forest (RF) and Extreme gradient boosting (XGB) models were developed and evaluated using 10-fold cross-validation with 1000-replication bootstrapping. Model performance was evaluated by the area under the receiver-operative characteristic curve (AUROC).

Results: Overall, 260,771 patients were admitted with at least one rib fracture over the study period (median [IQR] age: 60[43-73] years; 66.8% male). The majority (95.8%) sustained blunt trauma with 77.6% presenting with multiple rib fractures and 4.9% presenting with flail chest. The incidence of mortality and respiratory failure was 3.4% and 10.1% respectively. The classification accuracy in predicting mortality was 0.80 and 0.83 for RF and XGB respectively. Model performance was similar in predicting respiratory failure (RF: 0.85, XGB: 0.84). Models demonstrated good discriminatory performance in predicting mortality (AUCROC: 0.82 (RF), 0.81 (XGB)) and respiratory failure (0.80 (RF), 0.82 (XGB)).

Conclusions: Machine learning techniques can accurately predict mortality and respiratory failure in patients requiring admission with rib fractures. Machine learning enabled risk models may allow for early identification of trauma patients at risk for clinical decompensation.



Receiver operating characteristic curve and precision-recall curve for XGBoost model predicting mortality in patients admitted with rib fractures.



Receiver operating characteristic curve and precision-recall curve for XGBoost model predicting respiratory failure in patients admitted with rib fractures.

Quick Shots Session II

Paper #15
January 16, 2025
10:24 am

IMPACT OF A DEDICATED EMERGENCY OPERATING ROOM ON TRANSFERS FOR ACUTE APPENDICITIS AND CHOLECYSTITIS

Jill Kanney, Kevin Collopy, MHL FP-C NRP CMTE2,
Austin Gratton, BS2, William F. Powers IV, MD*
New Hanover Regional Medical Center

Presenter: Jill Kanney

Objectives: The purpose of this study was to analyze the resource utilization, time, and cost of EGS transfers before and after the creation of a dedicated EGS OR.

Methods: This was an IRB approved retrospective study of adult patients with appendicitis and gallbladder (GB) disease transferred from network hospitals to a single tertiary center, one year prior to the creation of an EGS OR and one year afterwards. A standardized T-test was used to compare transfers pre-EGS OR to transfers post-EGS OR. We hypothesized the advent of an EGS OR would decrease time to incision.

Results: 183 patient transfers with appendicitis and 101 with GB disease were included in the study. When the EGS OR was available, there was a substantial increase (29.7%) of patients with appendicitis who were taken directly to the OR and a substantial decrease (23.9%) transferred to the ED. There was also a substantial decrease in median time from arrival at the tertiary center to incision. A similar trend was identified for GB patients.

Approximately 10% of transfers with appendicitis chose to travel via private vehicle (PV). This cohort of patients had a 49 minute median decrease in length of stay, and a \$1923 decrease in median total charges. For patients with GB disease who traveled via PV, there was a 200 minute decrease in median time from arrival to incision in the OR, and an 894 minute decrease in median length of stay; this led to a \$3143 decrease in median total charge.

Conclusions: This study suggests that there is value in creating a dedicated EGS OR by optimizing transport resources, improving throughput, and decreasing transfer cost. This study also suggest added value in having cohorts of patients travel via PV. We plan to utilize this study to create a standardized algorithm that will guide decisions regarding EGS transfers.

		EGS Operating Room NOT available	EGS Operating Room available
Appendectomy	n	148	28
Arrival at 17th St to Incision (median [IQR])		177.50 [86.50, 347.00]	150.50 [92.75, 281.75]
Transport destination (%)	ED	45.3	21.4
	Floor	8.8	3.6
	OR	45.3	75.0
Cholecystectomy	n	89	23
Arrival at 17th St to Incision (median [IQR])		937.00 [511.00, 1268.00]	1117.00 [337.00, 1413.00]
Transport destination (%)	ED	33.0	65.2
	Floor	55.7	21.7
	OR	9.1	13.0

Impact of a Dedicated Emergency General Surgery Operating Room

Quick Shots Session II

Paper #16
January 16, 2025
10:30 am

PLATELET COUNT RECOVERY: A HIDDEN PROGNOSTIC SIGN

Revathy Pillai, BS, Jack K Donohue, Emily Mihalko, PhD, Susan M. Shea, PhD,
Philip C. Spinella, MD, FCCM*, Christine M. Leeper, MD, MS*,
Joshua B. Brown, MD, MSc, FACS*, Lucy Z. Kornblith, MD, FACS*,
Jason L. Sperry, MD, MPH*, Matthew Neal, MD
University of Pittsburgh Medical Center

Presenter: Revathy Pillai, BS

Objectives: Data are sparse regarding the impact of platelet count trajectory following injury. We sought to characterize platelet count trends following injury and hypothesized that platelet count recovery would be associated with improved outcomes.

Methods: A secondary analysis was performed using harmonized data from two prehospital trauma trials that enrolled patients at risk of hemorrhagic shock. Patients with a platelet count decrease between day 0-3 and who survived until at least day 5 were included in the current analysis. The primary outcome, 30-day mortality was compared between patients with platelet recovery (platelet count change > 0 between day 3-5) and those with platelet decline (platelet count change ≤ 0 between day 3-5). The secondary outcome was Denver Multiple Organ Failure (MOF) Score. Regression analyses were utilized adjusting for variables with $p < 0.15$ on univariate analysis.

Results: A total of 343 patients were included in the analysis. In the overall cohort, a median platelet count nadir was observed at day 3 and the first significant increase was at day 5 (Figure 1). The platelet recovery cohort (n=300) was significantly younger with lower rates of prehospital intubation relative to the platelet decline cohort. Demographics, injury characteristics, and trial interventions were similar between groups. The platelet recovery cohort had a marked reduced risk of 30-day mortality (HR: 0.23, 95% CI 0.10, 0.58, $p < 0.01$; Figure 2) and was associated with lower Denver MOF Scores (β : -1.69, 95% CI -2.37, -1.01, $p < 0.01$) after adjusting for prehospital vital signs, prehospital intubation, and age.

Conclusions: In this secondary analysis, platelet recovery was associated with increased 30-day survival and lower Denver MOF Scores compared to those with platelet decline. Platelet count trends may aid in identifying patients at risk of mortality allowing for increased timeliness of interventions, while simultaneously predicting those likely to survive.

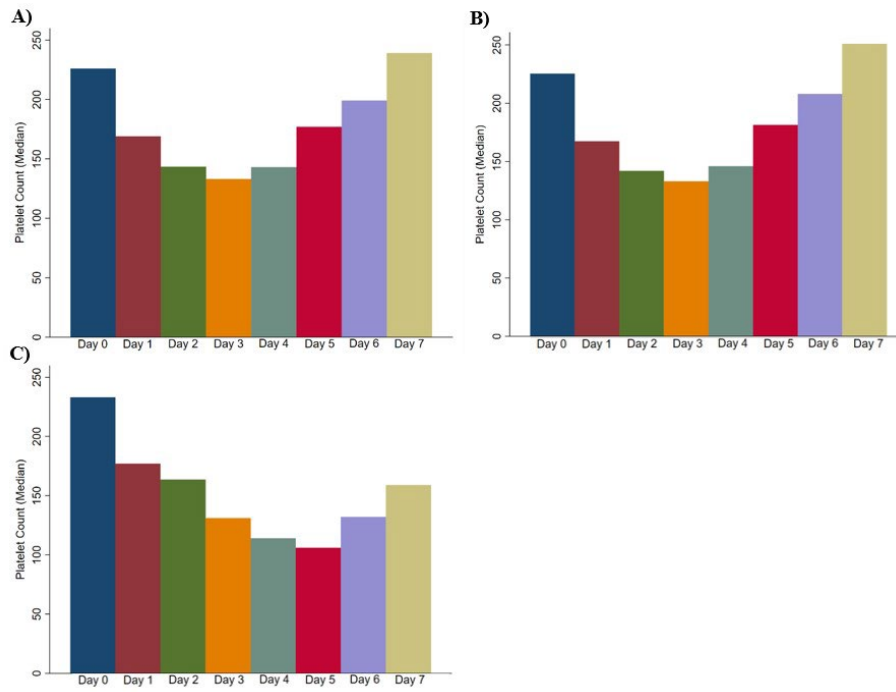


Figure 1. A: Median platelet count across 7 days in the overall cohort. B: Median platelet count across 7 days in the platelet recovery cohort. C: Median platelet count across 7 days in the platelet decline cohort.

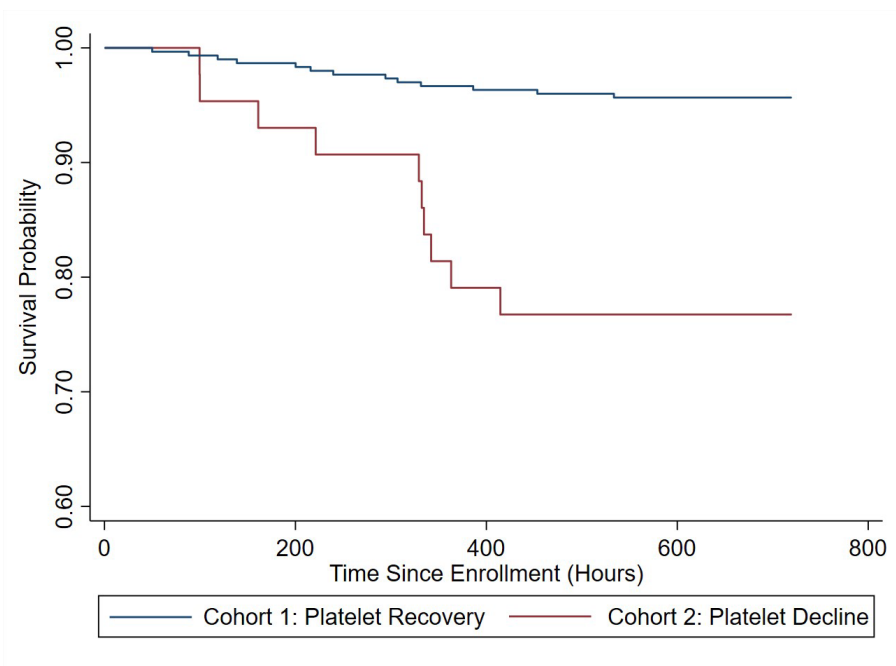


Figure 2. Kaplan-Meier survival analysis comparing platelet recovery and platelet decline cohorts at 30 days.

Quick Shots Session II

Paper #17
January 16, 2025
10:36 am

TENSION CHANGES OF THE ABDOMINAL WALL IN OPEN ABDOMENS: A PROSPECTIVE COHORT TRIAL

Sara M. Maskal, MD, Ryan Ellis, MD, Daphne Remulla, MD, Kimberly Woo, MD,
Robert Simon, MD, Ricard Corcelles Codina, MD, Lucas Beffa, MD, Clayton Petro, MD,
Ajita Prabhu, MD, Chao Tu, MS, Michael Rosen, MD, Benjamin T Miller, MD*
Cleveland Clinic

Presenter: Sara M. Maskal, MD

Objectives: Open abdomen management is frequently used to treat patients presenting in extremis from intraabdominal etiologies. Primary fascial closure can be difficult in these scenarios, but the relationship of open abdomen duration and tension on the abdominal wall is unknown. We sought to serially measure the tension needed to re-establish the linea alba over time in patients with open abdomens.

Methods: Adult patients without ventral hernias or prior component separation who were being managed with damage control laparotomy and open abdomen at a single institution were enrolled from October 2022 to March 2024. At subsequent reoperations, a proprietary, sterilizable tensiometer measured the tension (in pounds) needed to approximate the fascial edge to the midline. The primary outcome was the fascial tension over time, which was analyzed using multivariable regression, adjusting for body mass index, age, comorbidities, volume of crystalloid administered, volume of colloid administered, blood transfusion, cumulative fluid status, and vasopressor use. Baseline tension was assumed to be 1.94lbs based on data from primary laparotomies at our institution.

Results: A total of 45 patients were included. Mean patient BMI was 29.6 (SD 7.71) kg/m², and mean incision length was 23.54 cm (SD 5.54). Mean tension needed to bring both myofascial edges to the midline was 11.73 lbs (SD 8.80). Mixed-effect multivariable regression modeling found that increasing age and crystalloid fluid volume were associated with higher abdominal wall tension (coefficient 0.18, 95% CI [0.02,0.33]; p = 0.028, coefficient 0.00, 95% CI [0.00,0.00]; p = 0.044, respectively).

Conclusions: Fascial closure tension is suprphysiologic for patients with open abdomens, but time is not independently associated with closing tension. Further study is needed to elucidate if this high tension is a result underlying pathology versus the decision to leave the abdomen open.

Quick Shots Session II

Paper #18
January 16, 2025
10:42 am

RELATIONSHIP OF PROPHYLACTIC ENDOVASCULAR THERAPY AND STROKE IN THE MANAGEMENT OF BLUNT CEREBROVASCULAR INJURY: SUB-ANALYSIS OF AN EAST MULTICENTER TRIAL

Anthony J. DeSantis, MD*, William Kelley, BS, Emily Esposito, DO,
Thomas M. Scalea, MD, FACS, FCCM*, Margaret H. Lauerman, MD*,
Deborah M. Stein, MD, MPH, FACS, FCCM*
R Adams Cowley Shock Trauma Center, University of Maryland School of Medicine

Presenter: Anthony J. DeSantis, MD

Objectives: There are no clear guidelines for the use of prophylactic endovascular therapy (PET) in the management of blunt cerebrovascular injury (BCVI). We hypothesized that PET would be associated with fewer subsequent strokes in select patients with BCVI and high-risk lesions.

Methods: We performed a sub-analysis of a prospective, observational, 16 center trial of BCVI from 2018-2020. Internal carotid artery (ICA) BCVI were included. PET was defined as endovascular therapy prior to stroke. Endovascular therapy after stroke was excluded. Only strokes ≥ 6 hours after admission were included. We evaluated the relative rates of subsequent stroke in patients who had PET compared with patients who did not.

Results: 332 patients with ICA BCVI were included, of which 15 patients (4.5%) underwent PET. In patients with grade 2 ICA BCVI, stroke occurred in none of the 3 patients who underwent PET, and 10 of the 98 patients who did not (10.2%). In patients with grade 3 ICA BCVI, stroke occurred in none of the 11 patients who underwent PET (0%), and 8 of the 40 patients who did not (20%). Of the grade 3 patients who suffered a stroke, the stroke rate increased from 3/10 (30.0%) in those with >5 mm pseudoaneurysm to 2/3 (66.7%) in >10 mm pseudoaneurysm. Stroke rate also increased from 3/12 (25.0%) in those with $>25\%$ luminal stenosis to 1/2 (50.0%) in patients with $>75\%$ luminal stenosis.

Conclusions: The relative rarity of use of PET for carotid BCVI limits our ability to demonstrate statistical significance, but in select patients, use of PET was associated with no subsequent strokes compared to a 10-20% stroke rate in patients with Grade 2/3 BCVI not treated with PET. This should prompt further investigation of the use and safety of PET for BCVI.

BCVI Grade	Stroke (No PET)	Stroke (PET)	p-value
1	8/145 (5.5%)	0/0 (0%)	--
2	10/98 (10.2%)	0/3 (0%)	1.00
3	8/40 (20.0%)	0/11 (0%)	0.18
4	1/19 (5.3%)	0/1 (0%)	1.00

Table 1: Stroke rate > 6hours after admission with and without prophylactic endovascular intervention in multiple subgroups of BCVI

Quick Shots Session II

Paper #19
January 16, 2025
10:48 am

ASSESSING THE IMPACT OF ACA MEDICAID EXPANSION ON TRAUMA OUTCOMES: AN INTERRUPTED TIME SERIES ANALYSIS OF NATIONAL YEARLY TRENDS

Adham Makarem, MD, MPH, Zhiqian Song, MPH,
Fangyong Li, MS, MPH, Hani Mowafi, MD, MPH
Yale University School of Medicine

Presenter: Adham Makarem, MD, MPH

Objectives: Trauma-related mortality is a major public health issue. The Affordable Care Act (ACA) aimed to reduce disparities in healthcare coverage through Medicaid expansion, launched in 2014. This study evaluates the ACA's impact on trauma outcomes using an interrupted time series analysis.

Methods: This retrospective study used ACS-TQP-PUFs from 2010-2021. Adult trauma patients aged 18 or older were included, excluding those deceased on arrival, non-trauma cases, and records with missing data. The primary outcome was in-hospital mortality. Secondary outcomes were length of stay (LOS), time to first surgery, payment method, Abbreviated Injury Scale (AIS), and complications. Logistic regression & interrupted time series analysis assessed changes pre- and post-ACA Medicaid expansion.

Results: Patients post-ACA Medicaid expansion had lower odds of in-hospital death compared to pre-expansion [OR=0.97, 95% CI (0.96, 0.98), $p<0.001$]. The mean LOS & time to first surgery post-ACA increased by 5.7% & 0.8%, with other variables held constant ($p<0.001$). Patients post-ACA were less likely to pay via private insurance & self-pay [OR=0.85, 95% CI (0.84, 0.85) & OR=0.64, 95% CI (0.64, 0.65) respectively, $p<0.001$], and more likely to use Medicaid & Medicare (OR=1.33 & 1.44, $p<0.001$). The mean AIS post-ACA was 9% less than pre-expansion. After ACA, kidney & respiratory complications decreased by 0.06% & 0.97% each year ($p=0.011$ & 0.025) respectively, while accounting for covariates.

Conclusions: ACA Medicaid expansion improved trauma outcomes, reducing mortality & complications, shortening hospital stays, and increasing timely surgeries. Payment methods shifted towards Medicaid & Medicare, highlighting healthcare policy's role in enhancing trauma care & reducing disparities. Our findings underscore the importance of policy interventions in improving trauma care & access among vulnerable populations.

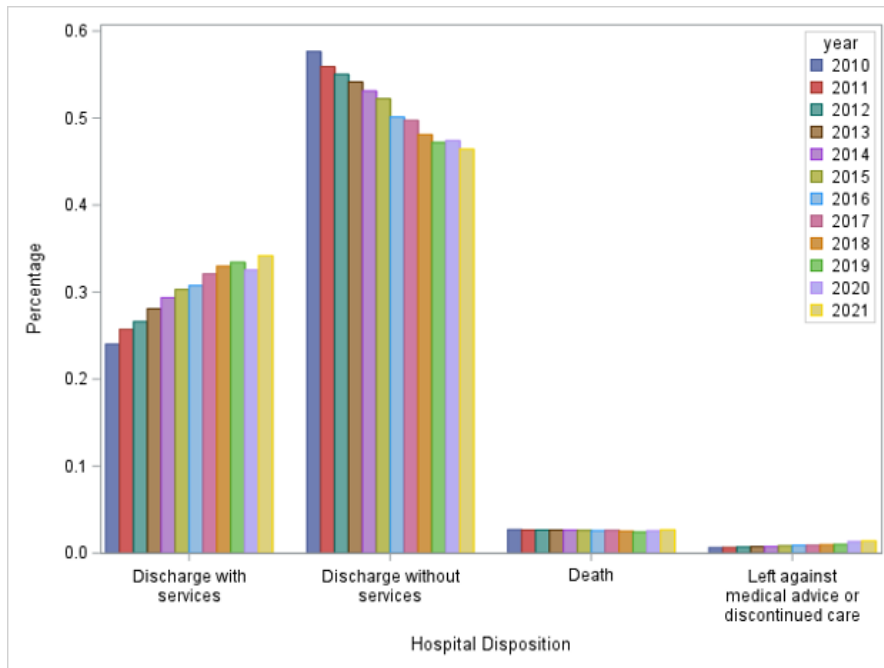


Figure 1 shows the percentage variation of hospital disposition from 2010 to 2021. The percentage of patients discharged with services significantly increased post-ACA, while the percentage of those discharged without services or who died in the hospital significantly decreased post-ACA compared to pre-ACA Medicaid expansion.

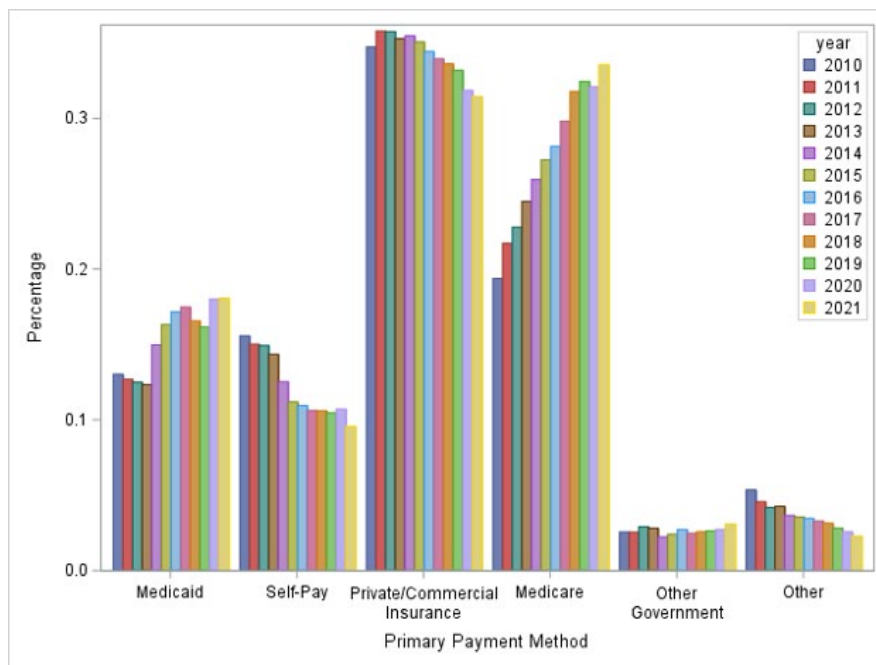


Figure 2 shows the percentage variation of each primary payment method from 2010 to 2021. Patients post-ACA were less likely to pay via private insurance and self-pay, and more likely to use Medicaid and Medicare.