Poster #1

NO TIME TO PLAY: RAPID POLICE TRANSPORT FOR URBAN PENETRATING TRAUMA

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Introduction: Rapid police transport (RPT) in the urban setting has shown promise in decreasing mortality associated with penetrating trauma, especially in the setting of acute hemorrhage. This is likely related to reduced response, scene, and transport times. The goal of this study was to quantify police transport times and characterize police officers (PO) participation.

Methods: A sample of PO transporting penetrating trauma patients was conducted from 4/1/2025 to 10/1/2025. Surveys and RPT times were obtained from PO at the time of drop off. Descriptive statistics summarized qualitative data. Mann-Whitney U tests compared RPT data with Emergency Medical Services (EMS) transport times over the designated period.

Results: There were 127 RPTs and 37 (29%) PO completed the survey. A majority of PO (28, 76%) had been in the department for $\geq$ 5 years and participated in > 10 RPTs. Most PO (28, 76%) had additional medical training as Stop the Bleed (9, 24%) or First Responder (19, 51%). Almost all PO (34, 92%) believe the RPT program improves PO relationships with the community. Other PO were present in 29 (78%) RPT, with EMS on scene in 3 cases (8%). Signs of life were present on hospital arrival in 29 (80%) RPT. Most PO (34, 92%) feel RPT is part of their job and find the practice rewarding. Median RPT times are noted in Table 1. Of included RPT, 32 (87%) were less than 10 minutes from notification to trauma center arrival. Compared to 38 penetrating trauma transports by EMS, median RPT to scene, to trauma center, and total times were significantly shorter (Table 1).

Conclusion: PO are invested in RPT policies and find the practice rewarding. In a majority of cases, RPT leads to transport times of less than 10 minutes between injury and definitive care. This reinforces the concept of scoop and run. Future research is needed to evaluate how this practice can be replicated in other urban areas with potential for ultra-short transport and faster time to hemorrhage control.

	RPT	EMS	p-value
Notification to Scene Time (min), median (IQR)	1 [1,2]	9 [7,15]	$p < 0.01$
Scene to Hospital Time (min), median (IQR)	5 [4,8]	8 [7,12]	$p < 0.01$
Total Response Time (min), median (IQR)	7 [5,9]	24 [18,37]	$p < 0.01$

Poster #2

GEOSPATIAL ANALYSIS OF NON-SCENE TRAFFIC FATALITIES IN RELATION TO BLOOD CENTERS IN THE UNITED STATES

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Introduction: Hemorrhage is the leading cause of early preventable mortality after motor vehicle collisions. Survival depends on timely and balanced resuscitation but there are known gaps in blood product distribution particularly in the rural US. The objective of this study was to evaluate variation in rates of non-scene traffic fatalities by region and proximity to blood centers (BCs) and trauma centers (TCs).
Methods: 30- and 60-minute drive time from level I-III TCs and accredited BCs (defined as blood banks and transfusion centers), as well as coordinates for non-scene traffic fatalities (01/2018-01/2024) were mapped in ArcGIS. Death rates per 100,000 total population were calculated and stratified by region and proximity to BCs and TCs.
Results: 102,611 non-scene traffic fatalities were recorded. Death rates in the South were consistently highest (47.2 in areas beyond 60 minutes from a BC compared to 22.3 in the Northeast) (Table 1). To account for potential confounding by proximity to TCs, death rates were calculated for areas within 60 minutes of a TC and BC (29.7) and compared to death rates for areas within 60 minutes of a TC but beyond 60 minutes from a BC (39.3), as well as areas beyond 60 minutes from a TC (40.5). Regional differences persisted, with a 32% increase in the death rates in the South and West when moving beyond 60 minutes from a BC compared to 17% and 13% increases in the Midwest and Northeast, respectively.
Conclusion: Non-scene traffic fatalities differ by region in the US. While distance from TCs and BCs are likely correlated, distance from a BC seems to play an independent role in mortality. Timely resuscitation with prehospital blood transfusion may offer a solution in rural areas.

Table 1. Death rate by region and proximity in minutes to a blood center

	Overall	Within 30	Beyond 30	Within 60	Beyond 60
Total	30.4	27.3	36.8	29.2	37.9
Midwest	28.3	26.7	31.1	27.5	33.0
Northeast	22.2	21.4	25.9	22.2	22.3
South	39.0	34.6	45.3	37.0	47.2
West	24.2	22.1	30.3	22.8	34.0

Poster #3

MECHANISM MATTERS: NATURAL LANGUAGE PROCESSING-DERIVED PHYSIOLOGIC SIGNALS REVEAL DISTINCT ERROR PATHWAYS IN TRAUMA TRIAGE

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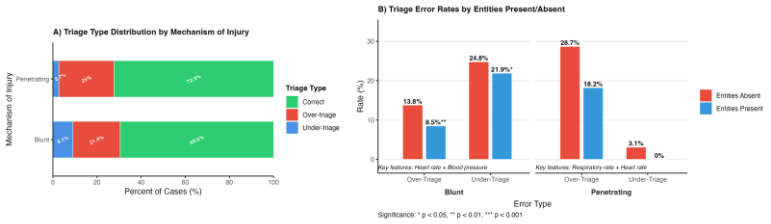
Introduction: Trauma triage errors, and the communication drivers of these errors, remain poorly understood. Pre-hospital handoffs occur under time pressure and often contain incomplete information. In this study, we applied computational language processing to EMS-to-hospital telephone communications to identify mechanism-specific triage "error signatures."
Methods: We analyzed 1,350 recordings of EMS-to-hospital trauma activation handoffs from an adult Level 1 trauma center. Automated speech recognition (*Whisper,* ~2-5% benchmark word error rate) converted audio to written transcripts. Injury Severity Score (ISS), determined post hoc, was used as the reference standard for triage level and compared with clinician activation decisions. Automated text analysis then identified clinical details present in transcripts and was captured as both numerical and qualitative representations of each entity.
Results: Triage performance differed by injury mechanism, with penetrating trauma demonstrating frequent over-triage (25.0%, CI 20.2–30.6%) but minimal under-triage (2.7%, CI 1.3–5.4%), whereas blunt trauma showed the inverse pattern; high under-triage (21.4%, CI 19.5–23.5%) and lower over-triage (9.1%, CI 7.8–10.6%) (Figure 1a). In penetrating trauma, the communication of respiratory rate and heart rate together reduced over-triage from 28.7% to 18.2% (p = 0.085). In blunt trauma, both heart rate and blood pressure together reduced over-triage from 13.8% to 8.5% (p=0.007) and under-triage from 24.8% to 21.9% (p=0.026) (Figure 1b).
Conclusions: Trauma triage errors follow structured, mechanism-specific patterns. Blunt trauma errors are linked to missed hemodynamic instability, while penetrating trauma errors relate to ventilatory risk. Identifying these communication "error signatures" supports development of mechanism-focused handoff checklists to reduce triage error.



Poster #4

POST-INJURY IMMUNE DYNAMICS IN PATIENTS WITH BLUNT TORSO TRAUMA: A PROSPECTIVE COHORT STUDY

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Introduction: Cytokines regulate hemodynamic and immune responses post-trauma to maintain homeostasis. Dysregulated cytokine release triggers systemic inflammation. However, individual variation often complicates the predictive model, as patients with comparable injury severity exhibit divergent clinical trajectories and initial treatment responses. This study evaluates early immune dynamics in blunt torso trauma by characterizing temporal changes in plasma cytokines and their associations with injury severity.

Methods: In this prospective study, 45 hemodynamically stable patients with blunt torso trauma were analyzed. Plasma samples were collected on days 1, 3, and 5 post-injury and analyzed to assess a Human essential 13-cytokine panel using flow cytometry bead-based methods using BD FACSAria TM Fusion Cell sorter. The complement anaphylatoxins C3a and C5a were measured using ELISA.

Results: The severe injury cohort (ISS>15, n=25)was significantly younger (median 30 years) and primarily involved in road traffic injuries. Severe injuries were associated with longer hospital stays, elevated leukocyte counts, and neutrophil-predominant responses with an elevated neutrophil to lymphocyte ratio (NLR) of 8.3. Plasma cytokine levels revealed a time-dependent inflammatory signature, marked by early elevations in IL-6, IL-8, IL-10, MCP-1, TGF-β1, and TNF-α. The cytokines showed an association with severity analysis. The complement anaphylatoxin C3a were also increased.

Conclusion: Early cytokine profiling reveals distinct, time-dependent immune alterations following blunt torso trauma. IL-6, IL-10, IP-10, TNF-α, TGF-β1, and IL-8 were elevated in severe chest injury, and MCP-1 for abdominal and combined injuries. This suggests that molecular signatures could enhance clinical precision. Integrating these markers with clinical parameters may allow early identification of patients at risk for immune dysregulation.

Poster #5

SAME STORM, DIFFERENT DATASET: REPRODUCIBILITY OF DYNAMIC LEUKOCYTE TRANSCRIPTOME CHANGES AFTER BLUNT TRAUMA

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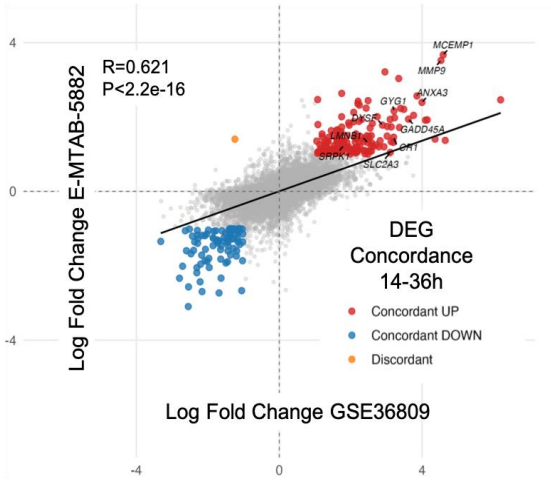
Introduction: Dysregulation of the inflammatory "genomic storm" in response to severe trauma is thought to contribute to multiple organ failure, yet reliable molecular features distinguishing maladaptive from appropriate responses remain unclear. We hypothesized that a core, conserved molecular program of dynamic transcriptional changes would emerge across independent human datasets.
Methods: Secondary analysis of three publicly-available transcriptomic datasets was performed. Severe trauma patients with ISS ≥15 and evidence of shock on arrival were included. Mild trauma patients with ISS<15 were analyzed separately. Time points were binned as 0-6h (immediate), 14-36h (early) and 60-90h (late) postinjury. Differentially-expressed genes (DEGs) were defined by log2 fold change ≥1 and p-value <0.05. The intersection between DEGs independently identified in each dataset maximized specificity. In parallel, a meta-analytic approach maximized sensitivity for detecting shared injury-associated transcriptional changes.
Results: 372 severe trauma patients were included. Overlap between leukocyte datasets was highly significant (immediate, p=2.85e-64, early, p=1.76e-179, late p=3.39e-125). Specific genes implicated immediate increased neutrophil function and decreased interferon-gamma signaling, with increased adaptive immune function and hypoxia-inducible factor signaling and decreased T cell function at early and late timepoints. An attenuated response was seen in mild trauma patients. Notably, genes previously implicated in neutrophil invasiveness were consistently upregulated not only in neutrophil-specific datasets but also in whole blood leukocyte transcriptomes, suggesting that neutrophil-driven programs are detectable at the level of bulk circulating immune cells.
Conclusion: There is high concordance in gene expression changes within 90 hours of severe blunt trauma, despite differences in patient population, transcriptional assay platform, and evolution of resuscitation techniques over time. This conservation reveals a distinct, early and reproducible transcriptional program that may help distinguish regulated and maladaptive inflammation after severe injury.



Poster #6

POLYTRAUMA AND INNATE IMMUNE CELL DYSFUNCTION DELAY WOUND HEALING IN A MODEL OF SOFT TISSUE INJURY AND INFECTION

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Introduction: While the dynamics of wound healing have been extensively studied, the contribution of polytrauma has not been well established. In this study, we characterize the effect of intraabdominal trauma on the immune process of soft tissue healing of a remote wound.

Methods: C57Bl6 and G-Protein Receptor-2 (GRK2)-myeloid-specific null mice underwent a 6mm dorsal punch wound ± *S. aureus* inoculation with and without standardized liver crush injury. Wound healing was measured by calipers daily over 14 days with future plans to include automated image-based measurement of wound size, depth, tissue classification, temperature, and presence of bacterial autofluorescence. Skin was harvested for further analyses.

Figure 1

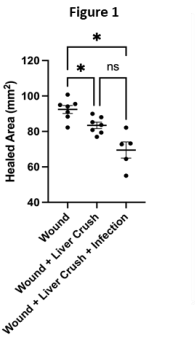
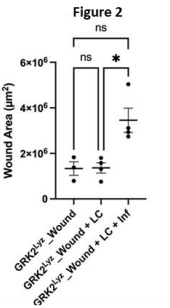


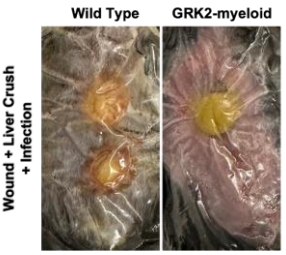
Figure 2



Results: Animals subjected to soft tissue injury with concomitant liver crush injury showed significantly delayed wound healing with less healed wounds at 14 days compared to soft tissue injury alone with a trend (p=0.0930) to even slower healing in the polytrauma+ inoculated mice (**Figure 1**). To study the contribution of GRK2, a GPCR critical for signaling in innate immune cell function, GRK2-myeloid cell null mice were studied. In the absence of GRK2, application of *S. aureus* significantly impaired wound healing (**Figure 2&3**).

Conclusion: In a novel 2-hit skin punch wound+liver crush injury that wound healing was significantly slowed compared to wound only which was further slowed in the presence of a bacterial infection. Further, GRK2 in myeloid cells (macrophages and neutrophils) plays an important role in wound healing in the presence of superficial infection. Based on this and published work, we find that sterile tissue injury releases Danger Associated Molecular Pattern molecules (DAMPs) that render the innate immune response dysfunctional, leaving barrier sites like the skin susceptible to bacterial infection. Ongoing work is investigating specific functional changes in innate immune cells caused by DAMPs that lead to poor wound healing.

Figure 3



Poster #7

IMMEDIATE POST-INJURY EXTRACORPOREAL CO2 REMOVAL AS A PH STABILIZATION INTERVENTION ASSOCIATED WITH SURVIVAL IN A HIGH-MORTALITY POLYTRAUMA MODEL

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Introduction: Increased Lactate (Lac) is associated with mortality, and its clearance with survival. We evaluated Lac clearance trajectories in injured swine, with or without immediate post-injury extracorporeal CO_2 removal ($ECCO_2R$), and hypothesized that failure to achieve Lac<2 mmol/L by or before 24 h is associated with increased mortality.
Methods: Anesthetized mechanically ventilated swine (56.14 ± 0.74 kg, n=53) received ICU care alone (n=19), or ICU + bilateral pulmonary contusion (PC, n=22), or PC + traumatic brain injury (TBI, n=12). Animals were randomized to $ECCO_2R$ n=42 or non-$ECCO_2R$, n=11. Statistics: Mann–Whitney U test; Fisher's exact test with odds ratios (OR); multivariable logistic regression.

Results:

Variable	Overall (S: 68% NS: 32%)	$ECCO_2R$ (S: 74% NS: 26%)	Non-$ECCO_2R$ (S: 45% NS: 55%)
Baseline Lac (mmol/L)	S 2.08±0.83 vs NS 2.64±2.52; ns	S 2.13±0.84 vs NS 2.41±1.19; ns	S 1.78±0.72 vs NS 3.07±4.15; ns
Peak Lac (mmol/L)	S 8.68±4.47 vs NS 11.16±4.05; ns	S 8.43±4.33 vs NS 10.47±4.19; ns	S 10.2±5.52 vs NS 12.42±3.81; ns
pH	S 7.50±0.09 vs NS 7.41±0.14; *	S 7.51±0.08 vs NS 7.44±0.13; *†‡	S 7.43±0.09 vs NS 7.34±0.14; *†‡
pCO_2 (mmHg)	S 30.22±8.22 vs NS 32.17±9.04; *	S 28.55±6.92 vs NS 28.71±6.55; †‡	S 39.67±8.63 vs NS 39.62±9.18; †‡
Lac <2 mmol/L by 24 h	OR 0.23 [CI:0.07, 0.81] *	OR 0.13 [CI:0.03:0.65] *	OR 0.5 [CI:0.06, 6.66] ns
Lac <2 mmol/L by 18 h	OR: 0.21 [CI:0.07, 0.74] *	OR 0.13 [CI:0.03:0.65] *	OR 0.67 [CI:0.08, 6.43] ns
	Multivariable Logistic Regression		
Survival Model	$ECCO_2R$ (vs Non-$ECCO_2R$)	OR: 4.74 [CI:1.06, 21.27] *	
	Time to Lac <2 mmol/L (per h)	OR: 0.88 [CI:0.78, 0.99] *	
Acid/Base-Adjusted Model	$ECCO_2R$ (vs Non-$ECCO_2R$)	OR: 1.09 [CI:0.10, 11.69] ns	
	Time to Lac <2 mmol/L (per h)	OR: 0.94 [CI:0.80, 1.10] ns	
	min pH (per 0.1 pH units)	OR: 2.69[CI:1.13, 6.36] *	
	mean pCO_2	OR: 0.95 [CI:0.80, 1.13) ns	

Key
S: Survivors; NS: Non-Survivors
* $p < 0.05$ (w/in cohort S vs NS)
† $p < 0.05$ (S $ECCO_2R$ vs S Non-$ECCO_2R$)
‡ $p < 0.05$ (NS $ECCO_2R$ vs NS Non-$ECCO_2R$)
ns, $p > 0.05$
p-values are unadjusted

Conclusion: Lac<2 mmol/L by 18 and 24h, and $ECCO_2R$ were significantly associated with survival. In a multivariate regression model, pH normalization was a predictor of survival. $ECCO_2R$ is an early potent pH stabilization intervention in trauma with severe lactic acidosis and should be considered for rapid metabolic correction in polytrauma. Studies are ongoing to demonstrate the lifesaving potential of early $ECCO_2R$.

Poster #9

MACHINE LEARNING-BASED CORRELATION OF VENOUS MORPHOLOGY WITH HEMORRHAGIC SHOCK STAGES USING VOLUMETRIC M-MODE ULTRASOUND IN A SWINE MODEL

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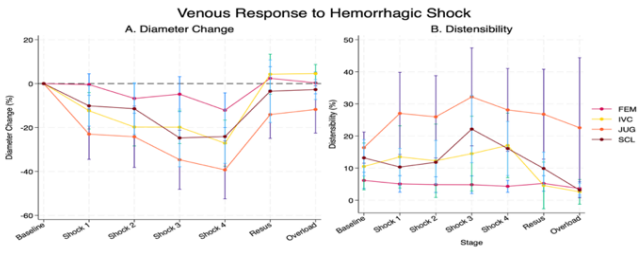
Introduction: Hemorrhagic shock remains a leading cause of preventable death, with recognition often delayed until compensatory failure. We sought to define reproducible central venous static and dynamic physiologic signatures of hemorrhage and resuscitation. To enable quantitative multi-vessel assessment, we developed volumetric M-Mode (VMM), a novel ultrasound method generating continuous venous datasets via lateral sweep and tilt.

Methods: Thirteen female Yorkshire pigs underwent staged hemorrhage (15%, 30%, 40%, 50% blood loss) followed by crystalloid resuscitation and fluid overload. The subclavian (SV), inferior vena cava (IVC), internal jugular (IJV), and femoral veins (FV) were imaged with VMM at baseline and each stage. Static collapse was defined as percent change in mean diameter from baseline; dynamic compliance as respiratory distensibility. Stage effects were analyzed across vessels.

Results: Progressive hemorrhage (Stages 0–4) produced a monotonic decline in venous diameter (−6% per stage; $p<0.001$), with maximal reductions of ~25–40% at Stage 4, most pronounced in the IJV and IVC; diameters partially normalized after resuscitation. Respiratory distensibility varied by stage (global $p=0.026$), increasing during intermediate-to-severe shock in the IJV and IVC, with minimal FV change, and decreasing after resuscitation and fluid overload. VMM datasets also permitted extraction of heart and respiratory rates consistent with intraoperative measurements.

Conclusion: Progressive hemorrhage and resuscitation generate reproducible central venous static and dynamic signatures that track shock severity across vessels. VMM provides a volumetric, operator-independent platform to quantify these patterns, supporting its potential for earlier hemorrhage detection and physiologic monitoring in trauma.



Poster #8

PHYSIOLOGY MATTERS: WHOLE BLOOD OUTPERFORMS PACKED RED BLOOD CELLS IN PREHOSPITAL TRAUMA

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Juan Duchesne, MD; Babak Sarani, MD
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Introduction: Recently, prehospital care has shifted towards early resuscitation with blood products. However, literature lacks adequate comparison between the various products in the prehospital setting. We compared the use of prehospital whole blood (WB) to packed red blood cells (pRBC) and hypothesized that WB would better normalize shock index and reduce overall mortality.

Methods: This was a retrospective analysis of prehospital blood (PHB) transfusion data (2021-2025) from two urban EMS systems serving multiple level I trauma centers. Adult patients who sustained any traumatic injury and received PHB were included. Patient and injury variables, change in shock index (SI) from prehospital to hospital, prehospital time intervals, and mortality were abstracted. Multivariate regression controlled for differences in baseline characteristics.

Results: A total of 626 patients (WB=252; pRBC=374) were included for analysis. The pRBC group was older (30 vs 38 years, p<0.01), more frequently White (9.1 vs 25.8%, p<0.001), and more frequently bluntly injured (6.0 vs 30.7%, p<0.01). There was no statistical difference in injury severity or prehospital/ED vital signs between groups. Median change in SI was significantly lower in the pRBC group (-0.54 vs –0.33, p=0.01). 24-Hour mortality (19.0 vs 27.0%, p=0.02) and in-hospital mortality (23.4 vs 34.8, p<0.01) were lower in the WB group. On subgroup analysis of penetrating injuries only, 24-Hour mortality (19.0 vs 31.7, p<0.01) and in-hospital mortality (22.4 vs 35.5, p<0.01) remained lower in the WB group. When controlling for age, injury mechanism, and prehospital SI, WB significantly reduced odds of in-hospital mortality when compared to pRBC (OR 0.52; p<0.01).

Conclusion: Prehospital resuscitation with either WB or pRBC normalizes shock index at ED arrival following injury. However, WB more significantly lowers shock index and reduces odds of in-hospital mortality.

Variable	Whole Blood (n=252)	PRBC (n=374)	p-value
Male, n (%)	216 (85.7)	323 (86.4)	0.818
Blunt, n (%)	15 (6.0)	115 (30.7)	<0.001
Injury Severity Score	18 (10-30)	22 (12-34)	0.061
PH GCS	13 (7-15)	13 (3-15)	0.053
PH SBP	80 (69-91)	82 (66-107)	0.182
PH Heart Rate	108 (87-121)	102 (70-130)	0.161
PH Shock Index	1.30 (0.97-1.65)	1.20 (0.88-1.50)	0.011
Average (SD) Units PHB	1 (1)	2 (1)	0.042
ED GCS	15 (13-15)	15 (12-15)	0.671
ED SBP	107 (80-128)	102 (63-130)	0.354
ED Heart Rate	82 (106-62)	84 (47-110)	0.889
ED Shock Index	0.74 (0.62-1.09)	0.84 (061-1.06)	0.300
Average (SD) transfusion requirements			
pRBC	3 (6)	6 (12)	<0.001
FFP	2 (5)	6 (12)	<0.001
Platelets	2 (1)	4 (1)	0.002
24 Hour Mortality	48 (19.0)	101 (27.0)	0.022
Penetrating Only	45 (19.0)	82 (31.7)	0.001
In-hospital Mortality	59 (23.4)	130 (34.8)	0.002
Penetrating only	53 (22.4)	92 (35.5)	0.001

Poster #10

UNDER-REPORTING CONFLICTS OF INTEREST IN THE TRAUMA LITERATURE

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Introduction: Medical journals rely on authors to self-report any potential conflicts of interest (COI). With the advent of the Open Payments Program (OPP), there is an opportunity to publicly evaluate for potential COIs. We hypothesize that COIs are under reported in academic literature.

Methods: All publications in the Journal of Trauma and Acute Care Surgery (JTACS) during 2025 were queried for a list of authors. All US physicians were included. Physicians from outside of the US and non-physicians were excluded. Each author's general (non-research) payments were abstracted from the OPP database. Sources of payments were compared to the publication for relevancy and verified against the respective author's COI disclosure form. A subgroup analysis was performed for authors receiving over $10,000 in total payments in the OPP during 2022 to 2024.

Results: 320 papers and 3086 authors were identified, of which 1378 (45%) authors met the inclusion criteria. 857 (62%) authors had payments in the OPP database, totaling $12,586,752.78. 156 (11%) authors accepted more than $10,000 in payments, accounting for $7,142,527 in payments between 2022 and 2024. Forty-six (29%) of these higher compensated authors received payments from a company selling products related to the manuscript, totaling $1,649,000 in relevant payments. Of these relevant payments, $831,000 (50%) were disclosed while $818,000 (50%) were undisclosed.

Conclusion: Only half of highly compensated industry-sponsored American surgeon scientists report conflicts of interest in JTACS publications. Editors should consider using OPP data to ensure reporting guidelines are followed and to reduce the potential for funding and publication bias.

Poster #11

NATIONAL VARIABILITY IN POST-ACUTE TBI CARE: A NATIONAL SURVEY OF U.S. TRAUMA CENTERS

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Introduction: Post-discharge follow-up after traumatic brain injury (TBI) is essential to identify ongoing symptoms and recovery needs; however, outpatient care for these patients is variable and poorly described. This study evaluated current practices, barriers, and opportunities for improvement in post-discharge TBI follow-up.

Methods: We conducted a cross-sectional survey of U.S. trauma center leadership to assess inpatient service involvement, discharge education, outpatient care ownership and scheduling, telehealth use, follow-up tracking, and perceived barriers to follow-up care for TBI patients. Data were analyzed descriptively.

Results: A total of 127 respondents completed the surveys, the majority of which were trauma medical directors (89.0%). Most TBI patients are admitted by trauma surgery (92.1%), and the common consulting services included neurosurgery (93.7%), physical therapy (92.1%), case management/social work (84.3%), occupational therapy (82.7%), and speech language pathology (80.3%). Standardized TBI discharge education was routinely provided by 55.9% of centers; however, 35.4% reported no specialized TBI discharge instructions. Follow-up was scheduled before discharge in 54.3% of centers; others relied on patient self-scheduling (19.7%) or reported no standard process (11.8%). The first outpatient appointment was most frequently conducted by neurosurgery (62.2%) or trauma surgery (18.1%). Over half of the respondents were unsure as to what percentage of their patients (TBI or otherwise) were following up in any clinic. Interest in managing long-term TBI care was modest among Trauma Surgery providers (mean score 4.28/10). Telehealth was rarely used for follow-up: only 1.6% used telehealth routinely, and 60.6% never used telehealth. Barriers to TBI follow-up noted by respondents included: insurance delays (48.8%), financial constraints (40.9%), clinic capacity constraints (40.9%), and lack of standardized pathways (30.7%).

Conclusion: Trauma centers report multidisciplinary inpatient TBI care; however, substantial variability and gaps exist in outpatient follow-up infrastructure and outcome tracking. Standardized post-discharge pathways that incorporate multi-disciplinary outpatient care may improve long-term recovery from TBI, particularly for patients with greater post-acute needs.

Poster #12

AAST ORAL PRESENTATIONS: ARE WE HEARING THE END OF THE STORY, OR THE BEGINNING?

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Introduction: Scientific meetings showcase research prior to peer-reviewed publication and provide a platform for authors to present to national experts and potentially integrate feedback prior to publication. Recent studies have highlighted publication rates of conference presentations; however, little attention has been given to the discrepancies between key elements of the abstracts. We evaluated concordance between American Association for the Surgery of Trauma (AAST) oral presentations in 2023 and their published manuscripts, focusing on alignment of reported data, outcomes, and overall interpretation.

Methods: The 2023 AAST proceedings booklet was used to identify oral presentations. We evaluated the presentation-to-publication rate using AI-assisted identification methods and assessed concordance between conference abstracts and corresponding peer-reviewed manuscripts on the following: title, author, primary objective, study design, sample size, hypothesis, and results. All AI-identified matches were independently reviewed and manually verified by the research team to ensure accuracy. Descriptive statistics on discrepancies are reported.

Results: 66 oral presentations were listed in the proceedings booklet. 29 months following the conference, 55 (83.3%) were published; all but 1 of these were published within 15 months of the conference. Of the published manuscripts, 44 (80%) were published in the conference journal or open version of the conference journal. Discrepancies between the proceedings booklet and published manuscript abstracts were as follows: sample size 25 (46%), title 25 (46%), author list 19 (35%), hypothesis 3 (6%), primary objective 5 (9%), statistics 36 (66%). The interpretation of the main study finding differed in 2 (4%) studies. There were no discrepancies in 12 (22%) studies.

Conclusion: The majority of manuscripts are published with changes from the abstracts recorded in the conference proceedings. Although most changes were found to be marginal, differences were substantial in some cases.

Poster #13

BYSTANDER SUPPORT AND ADVOCACY FOR VICTIMS OF VIOLENCE IN THE EMERGENCY DEPARTMENT (BSAFE): AN EFFECTIVE TRAINING FOR IMPROVING LAW ENFORCEMENT INTERACTIONS IN THE TRAUMA BAY

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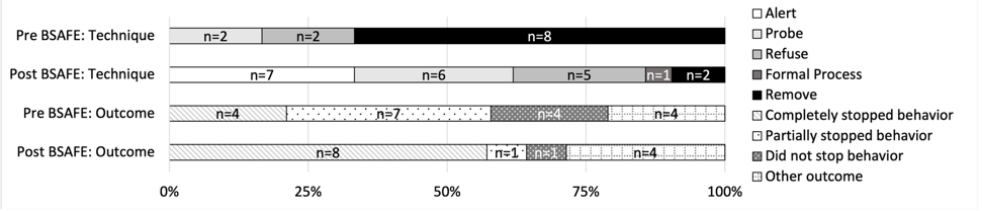
Introduction: LE presence during trauma resuscitations may inadvertently interfere with patient care delivery and create privacy concerns. In conjunction with trauma nurses and an organization with LE bystandership training experience, the BSAFE curriculum was developed to equip nurses with skills to address concerning LE behaviors. We hypothesized BSAFE would increase the use and effectiveness of bystander interventions.

Methods: Month long structured observations of LE–nurse interactions were conducted pre- and post-BSAFE training at a Level I trauma center. Interactions were any verbal exchange. Bystander interventions were defined a priori in ascending order of escalation (alert, probe, refuse, formal process, removal). Outcomes included intervention counts, types, and outcomes (partial or complete cessation of LE behavior). Proportions were compared using Fisher's exact tests.

Results: 58 LE-nurse interactions were observed over 216 hours pre-BSAFE and 30 over 564 hours post-BSAFE. Low-escalation techniques increased (alert: 0% vs 33.3%, p=0.03) while higher-escalation decreased (removal: 66.7% vs 9.5%, p<0.01). Intervention success increased (57.9% vs 64.3%, p=1.0) (Figure 1).

Conclusion: BSAFE training increased use of low-escalation bystander strategies and improved mitigation of concerning LE behaviors. Structured bystander training may support trauma teams in managing LE interactions, optimizing patient care, and decreasing stress among staff.

Figure 1. Intervention Techniques and Outcomes



Poster #14

TWO DECADES OF URBAN RURAL DIVERGENCE IN GERIATRIC TRAUMA MORTALITY: A MECHANISM SPECIFIC CDC WONDER NATIONAL ANALYSIS

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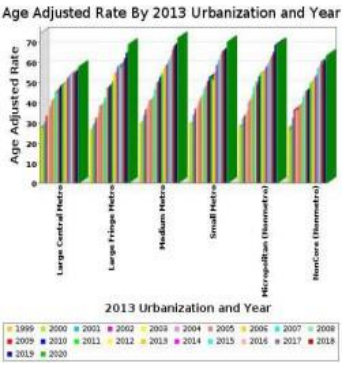
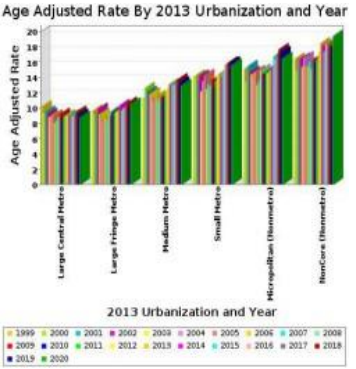
Introduction: Geriatric trauma mortality continues to rise in the United States; however, the degree to which mechanism-specific deaths have diverged across the urban–rural spectrum remains poorly defined. We hypothesized that rural regions demonstrate disproportionately greater growth in age-adjusted mortality, particularly for fall-related injuries.

Methods: Using CDC WONDER data (1999–2020), we identified adults ≥65 years with injury-related deaths due to falls, firearms (suicide and homicide), and motor vehicle traffic crashes. Mortality was stratified by the 2013 NCHS urbanization categories. Age-adjusted rates per 100,000 were calculated using the 2000 U.S. standard population.

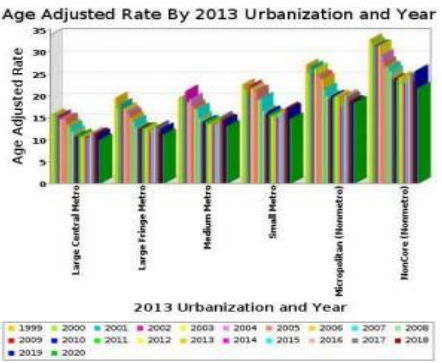
Results: A total of 722,772 geriatric trauma deaths occurred between 1999 and 2020. Although metropolitan regions accounted for the majority of deaths (79.8%), age-adjusted mortality rates demonstrated a consistent urban–rural gradient across all mechanisms. Overall mortality increased 143% during the study period (20,704 in 1999 to 50,342 in 2020).





Falls represented the predominant and fastest-growing mechanism, with disproportionately higher age-adjusted rates in nonmetropolitan regions. By 2020, fall-related mortality demonstrated a clear stepwise increase from large central metropolitan areas to noncore rural counties. Firearm mortality demonstrated a persistently elevated burden in rural regions across all study years, with widening disparities after 2010. Motor vehicle traffic mortality showed a more modest increase and less pronounced urban–rural separation. The most significant divergence over time was observed in fall related mortality, suggesting mechanism-specific amplification of rural vulnerability in the geriatric population.

Conclusions: The rise in geriatric injury mortality over two decades reflects not only increasing fall deaths but also a sustained rural burden of firearm mortality. These findings suggest a mechanism-specific rural amplification effect and underscore the need for targeted fall prevention and firearm suicide mitigation strategies in aging rural populations.



Poster #15

HIDDEN DELAYS: RACIAL INEQUITIES IN HIGH-VULNERABILITY COMMUNITIES' PREHOSPITAL TRAUMA TIMES

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Introduction: Inequities in prehospital care may contribute to downstream disparities in trauma outcomes. The CDC Social Vulnerability Index (SVI) captures community-level factors associated with structural disadvantage, yet its relationship to prehospital time intervals remains poorly understood. We evaluated how SVI and race intersect and relate to EMS response, scene, transport, and total prehospital times among injured patients.
Methods: We analyzed adult trauma patients transported from the field by EMS to a Level I trauma center (2009–2023). Injury locations were geocoded to census tracts and linked to SVI quartiles. Predicted travel time was derived from distance and historical traffic patterns and was incorporated to account for geographic variation in time-to-hopsital. Univariable and multivariable linear regression assessed associations between SVI, race, ethnicity, and prehospital intervals, adjusting for age, sex, mechanism, and field GCS. A Race×SVI interaction term evaluated differential associations across communities.
Results: Among 6,156 patients, higher SVI quartiles were associated with shorter overall prehospital times ($p<0.001$). Compared with White patients, Black patients had shorter scene times (–1.78 minutes; 95% CI –3.38 to –0.17) and total times (–5.07 minutes; 95% CI –7.66 to –2.48). However, interaction analysis revealed that in the highest-SVI communities, Black patients experienced *longer* scene times relative to White patients (Q4 +6.09 minutes; $p<0.005$)
Conclusion: Although higher community-level vulnerability was associated with shorter prehospital times overall, Black patients in the most socially vulnerable neighborhoods experienced disproportionately longer scene times. These findings highlight persistent racial inequities that are not explained by geography or injury alone and point to the need for deeper examination of operational practices, structural factors, and EMS decision-making in high SVI communities to improve health equity.

Poster #16

EDUCATING FOR PREVENTION: A SCHOOL INTERVENTION TO ADDRESS YOUTH FIREARM VIOLENCE

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Introduction: There is a significant gap in school-based firearm violence prevention education for adolescents. We hypothesized that a comprehensive, school-based intervention would improve firearm safety knowledge and behavior among high school students.
Methods: This prospective pre–post matched study (February–May 2025) at two schools evaluated a structured, module-based intervention including firearm violence data, safety education, advanced bleeding-control training, and an applied case scenario. Outcomes were measured using mixed-method survey assessments.
Results: 49 students completed pre- and post-intervention surveys. Participants were between 13–22 years old. Of these 46% reported previously having fired a gun, 67% knew someone who was had been a victim of gun violence, and 14% reported personal victimization. 41% stated that active shooter drills somewhat prepare them but also increased anxiety. Students demonstrated improved knowledge after the intervention, particularly regarding firearm prevalence in U.S. homes, with correct responses increasing from 33% to 61% post-survey ($p<.001$). The proportion who agreed or strongly agreed that they could personally reduce gun violence increased from 37% to 44%. Recognition of the long-term consequences of gun violence remained high, with 73% pre-intervention and 80% post-intervention agreeing or strongly agreeing that gunshot injuries can result in lifelong harm. Prior to the intervention, 89% of students agreed that firearm violence prevention should be taught in schools.
Conclusion: A school-based firearm safety intervention improved student knowledge and modestly increased confidence to address gun violence. These findings support integrating structured firearm violence prevention education into high school curricula as a feasible strategy to strengthen youth safety literacy.

Poster #17

REGIONALIZATION OF TRAUMA CARE: PEDIATRIC ACCESS AND FINANCIAL IMPLICATIONS IN NORTH CAROLINA

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Introduction: Trauma systems are designed to regionalize specialty care and improve access to care. Whether these trauma systems address disparities in access and financial implications for injured children is unknown.

Methods: A retrospective cohort study of North Carolina pediatric trauma admissions from 2007 to 2023 was performed. Admitted pediatric patients (≤18 years) with traumatic injury and an ISS of 9-16 were included. Outcomes among rural and urban children were examined using bivariate and multivariable regression analyses.

Results: 13,097 patients were included, rural children (n=4034, 30.8 %) were increasingly admitted to a trauma center (TC) for management of moderate traumatic injury, from 60.4% in 2007 to 92.1% in 2023. Rural children traveled farther for care at a TC than at a non-trauma center (NTC) (median Euclidean distance: 39.4 vs 12.0 miles). All children admitted to a TC incurred higher charges, even after adjusting for operative management, Figure 1. After adjusting for pertinent covariates, rural and urban children experienced higher daily charges at TC, $2,678 (95% CI: $1,796-$3,560) and $1,731 (95% CI: $1,061-2,402), respectively. Rural and urban children admitted to TC experienced a 25.9% and 16.2% longer LOS, respectively, than those admitted to NTCs.

Conclusions: This is the first study to examine the role of regionalization in pediatric trauma care. We show increasing utilization of TCs. However, there is a significant increase in travel distance, higher charges, and longer lengths of stay. Further investigation on potential overtriage and outcomes in this patient population is imperative.

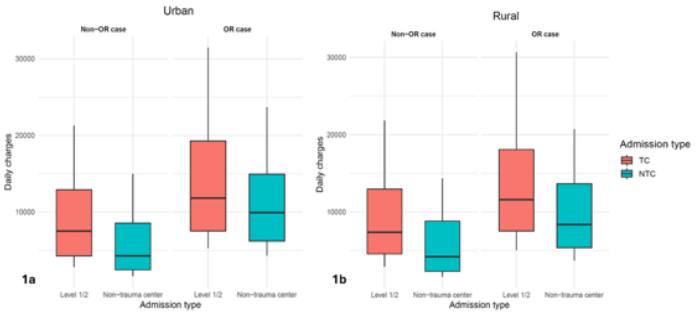

Figure 1a-1b. Daily charges for urban-residing (1a) and rural-residing (1b) pediatric patients admitted for moderate traumatic injuries, comparing children admitted to a Level 1 or Level 2 trauma center (TC) vs non-trauma center (NTC), stratified by whether they underwent operative intervention (OR case) during their admission

Poster #18

AUTOPSY REVEALS PROFOUND MEASUREMENT BIAS IN INJURY SEVERITY SCORES FOR PATIENTS ARRIVING IN TRAUMATIC ARREST

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Introduction: Injury Severity Score (ISS) underpins trauma registry reporting, risk adjustment, and benchmarking. These rely on uniform injury ascertainment – often violated in traumatic cardiac arrest (TCA), where early death prevents full evaluation. As a result, ED-based ISS may underestimate true injury burden, introducing structural measurement bias.
Methods: We performed a retrospective analysis of consecutive trauma patients arriving in TCA at a single Level 1 trauma center from January 2023 to June 2025 (N=115). All patients underwent autopsy; pre-autopsy ISS was derived from ED-available information at time of death. Patients were stratified by CT acquisition in the ED (CT, n=55; No CT, n=60). The primary outcome was change in ISS after autopsy (ΔISS = post − pre-autopsy ISS). Secondary outcomes included reclassification across ISS thresholds (≥16 and ≥25) and process measures reflecting diagnostic opportunity (ED length of stay [LOS], ED disposition). Paired comparisons used Wilcoxon signed-rank testing; between-group comparisons used Mann–Whitney U and χ^2 tests.
Results: Among CT patients, pre-autopsy ISS was 35 (IQR 26–43) and remained unchanged after autopsy (post-autopsy ISS 35 [26–43]); all had ΔISS=0. In contrast, patients without CT exhibited marked underestimation at ED arrival: pre-autopsy ISS 9 (IQR 1–10.5) increased to post-autopsy ISS 34 (26–75), with median ΔISS 26.5 (12–49.25) ($p<0.01$). ISS discordance differed markedly by CT status ($p<0.01$). In the No-CT group, autopsy-driven reclassification was frequent: proportion meeting ISS≥16 rose from 20% to 90% (42/60 crossing) and ISS≥25 from 15% to 80% (39/60 crossing). Patients without CT had shorter ED LOS (0.21 h [0.15–0.49] vs 2.5 h [1.6–3.82], $p<0.01$) and were more often pronounced in the ED (morgue disposition 93.3% vs 16.4%, $p<0.01$).
Conclusions: In TCA, ISS is highly dependent on diagnostic opportunity conditioned on short term survivorship. When CT is not obtained, ED-based ISS substantially underestimates autopsy-confirmed injuries, leading to widespread misclassification across severity thresholds used for registry reporting. These findings suggest that risk-adjusted mortality and inter-center benchmarking may be distorted in early trauma deaths. Reporting ED-available and autopsy-informed ISS separately for TCA populations may improve the validity of this performance assessment.

Poster #19

A PROTOCOL FOR EARLY VTE PROPHYLAXIS IN OPERATIVE ORTHOPEDIC TRAUMA PATIENTS IS SAFE AND EFFECTIVE

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Introduction: Delayed initiation of venous thromboembolism prophylaxis (VTEp) increases VTE risk in trauma patients. VTEp is often held for operative fixation (OF) of extremity orthopedic injuries due to concerns of bleeding. We developed a protocol to initiate VTEp at admission and continue without interruption perioperatively. We hypothesized VTE rates would decrease without any difference in postoperative complications.
Methods: This is a retrospective study of patients age ≥18 years admitted to a level 1 trauma center, 2016-2025, who underwent OF for extremity fractures. Intracranial hemorrhages and spinal epidural hematomas were excluded. Pre-(2016-2019) and post-(2021-2025) implementation (I) outcomes were compared: time from admission to VTEp and OF, VTE rates, transfusions needed in admission, post-OF bleeding, gastrointestinal bleeds (GIB), and mortality. To assess safety, outcomes were assessed for all years and stratified by time from VTEp to OR: <24h pre-OF, <24h post-OF and ≥24h post-OF.
Results: Post-I patients had shorter times to VTEp (23.2h vs. 48.2h, $p<0.001$) and a lower VTE rate (2.6% vs. 4.9%, $p<0.05$; aRR=2.4%, 95% CI: 0.6-4.1%, NNT=42), with no difference in time to OF, need for transfusion, post-OF bleed, or mortality. There were more GIB post-I (6 vs. 0, aRR=0.4%, 95% CI: 0.1-0.7%, NNH=250), but chart review did not find that VTEp was the primary cause of any GIB. Initiating VTEp <24h pre-OF or <24h post-OF had lower VTE rates than initiating ≥24 hours post-OF (2.7% and 2.0% vs. 5.7%, $p<0.001$), with no increased risk of transfusion, post-OF bleed, GIB, or mortality.
Conclusion: Early VTEp in trauma patients undergoing operative fixation of extremity fractures is safe and improves time to initiation of VTEp and VTE rates. Our results should encourage other trauma and orthopedic groups to collaborate on similar VTEp protocols.

Poster #20

RETAINED UNEXPLODED ORDNANCE: A SAFETY ANALYSIS OF DIAGNOSTIC ULTRASOUND ON PIEZOELECTRIC FUZES

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Introduction: Retained unexploded ordnance (UXO) is a rare but high-stakes problem in trauma surgery, and current Joint Trauma System guidelines prohibit diagnostic ultrasonography for UXO evaluation because of a theoretical risk of piezoelectric fuze actuation. This restriction forces reliance on plain radiography and limits real-time assessment of soft tissue and neurovascular structures. We aimed to determine whether diagnostic ultrasound generates voltages sufficient to actuate piezoelectric fuzes in a worst-case experimental model.

Methods: In partnership with an explosive ordnance disposal technology laboratory, we tested seven electrically functional piezoelectric fuze assemblies wired to a continuous-monitoring oscilloscope with a conservative 4-volt safety threshold, far below the approximately 400-volt firing requirement for military-grade fuzes. A Philips EPIQ 7 system with C5-1 and L12-5 transducers was used at maximal gain in B-mode, color Doppler, and harmonic modes under the following conditions: immersion in transmission gel, direct probe contact with exposed piezoelectric elements, varied standoff distances, and a dynamic hand-hold model to introduce tissue heterogeneity. Positive controls using mechanical impact confirmed fuze and oscilloscope functionality between ultrasound iterations.

Results: Across all fuze types, probe frequencies, imaging modes, and standoff distances, no ultrasound-associated voltage exceeded the 4-volt threshold. Observed signals remained below the detection baseline (< 1 volt), including during direct contact with unshielded piezoelectric elements, and small deflections were attributable only to mechanical handling rather than ultrasound energy. Mechanical impact testing consistently produced large voltage spikes, validating that the system would have detected a clinically meaningful acoustoelectric response.

Conclusion: In this experimental model, diagnostic ultrasound did not generate voltages sufficient to actuate tested piezoelectric fuzes. Therefore, diagnostic ultrasound may be reasonably considered as an adjunct for soft-tissue and neurovascular mapping in select retained UXO cases provided careful standoff technique minimizes mechanical manipulation. These data support reconsideration of current trauma system guidelines towards more nuanced, risk-aware use of ultrasound in UXO management.

Poster #21

ANTI-XA GUIDED ENOXAPARIN DOSING IN TRAUMA ICU PATIENTS: A PRAGMATIC PROSPECTIVE TRIAL

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Introduction: Trauma patients remain at high risk for venous thromboembolism (VTE) despite standard low-molecular-weight heparin (enoxaparin) prophylaxis. Anti-factor Xa guided dosing may improve prophylaxis, but prospective trauma data are limited and predictors of subtherapeutic levels are poorly defined.
Methods: This single-center randomized trial enrolled adult patients at a Level 1 trauma ICU requiring enoxaparin. Patients were randomized to standard care (fixed-dose with predefined weight/BMI adjustments) or an anti-Xa arm in which peak anti-Xa levels were obtained and enoxaparin was subsequently adjusted per protocol. All patients underwent scheduled bilateral lower-extremity ultrasound approximately 5 days after prophylaxis initiation, with additional imaging as clinically indicated. The primary endpoint was VTE. Secondary endpoints included early anti-Xa category (subtherapeutic, therapeutic, supratherapeutic) and need for dose adjustment. Multivariable regression evaluated predictors of subtherapeutic initial anti-Xa level (age, sex, BMI, ISS, ventilator days, and total blood products).
Results: A total of 140 patients were analyzed (66 standard care, 74 anti-Xa). Median age was 56 years, median ISS was 21, and 67% were male; baseline characteristics and transfusion requirements were similar between groups. Enoxaparin was initiated at a median of 36.9 hours (IQR 15.8-50.1) from admission. Initial anti-Xa levels were subtherapeutic in 47%, therapeutic in 48%, and supratherapeutic in 3%, with no difference between groups. In the anti-Xa arm, 29/74 (39%) underwent at least one dose adjustment. Despite 90 screening duplex ultrasounds and clinically indicated imaging, no lower-extremity DVT or pulmonary embolism occurred in either arm; the trial was stopped early for futility with respect to VTE outcomes. In multivariable analysis, higher BMI also increased the odds of having a subtherapeutic initial anti-Xa level (OR 1.06 per BMI unit, 95% CI 1.0-1.13, $p=0.04$), as did male sex (OR 6.1, 95% CI 2.5–14.3, $p<0.001$).
Conclusion: In this randomized trauma ICU trial, anti-Xa guided enoxaparin dosing was feasible but did not demonstrate a difference in clinically evident or screened VTE, as no events occurred in either group. Nearly half of patients were subtherapeutic after standard dosing, and higher BMI and male sex predicted the need for dose escalation. In the setting of a contemporary, risk-adapted prophylaxis protocol, these findings suggest that routine anti-Xa monitoring of unselected trauma patients may have limited clinical yield, and future studies should focus on high-risk subgroups where VTE events are more frequent.

Poster #22

IMPACT OF HYPERBARIC OXYGEN THERAPY ON 30-DAY MORTALITY AND MORBIDITY IN NECROTIZING FASCIITIS: A NATIONAL PROPENSITY MATCHED COHORT STUDY

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Introduction: Necrotizing soft tissue infections (NSTI) remain a surgical emergency with high morbidity and mortality. While hyperbaric oxygen therapy (HBOT) has been proposed for NSTI, limited data exists . We hypothesized that the addition of HBOT to usual care would improve outcomes.

Methods: We conducted a retrospective cohort study using the TriNetX United States Network from 2008–2025, restricting inclusion to academic medical centers (AMCs) given that 90.4% of HBOT for NSTI occurred at AMCs. Adults with first-episode NSTI requiring surgery were stratified by at least one HBOT session within 30 days of debridement. Nearest neighbor 1:1 propensity score matching (PSM) adjusted for age, sex, race, ethnicity, chronic conditions or medications impeding wound healing, , anticoagulation, history of organ failure or cancer, sepsis, mechanical ventilation, severity of illness, and negative pressure wound therapy use. The primary outcome was 90-day mortality (HR [95% CI]).

Results: A total of 28,263 patients met inclusion criteria. Of these, 921 (3.3%) had utilized HBOT within 30 days, with a median time to HBOT of 1 day after initial debridement, and 27,342 (96.7%) had not. Median age of the HBOT cohort was younger (53.7 vs. 55.5 years). After PSM, there were 917 patients in each cohort, with excellent goodness of fit. At 90 days, HBOT was associated with lower mortality 0.71[0.51-0.99], amputation 0.70[0.53-0.94], and need for ICU 0.66[0.54-0.80].

Conclusions: HBOT is associated with significantly better outcomes in patients with NSTI. Prospective studies are needed to confirm its efficacy as adjunctive therapy.

Poster #23

PRACTICE MANAGEMENT GUIDELINES REDUCE LENGTH OF STAY AND HOSPITAL COSTS FOR NECROTIZING SOFT TISSUE INFECTIONS

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UPMC

Introduction: Necrotizing soft tissue infections (NSTI) have a high morbidity and healthcare system burden. Length of stay (LOS) is driven by the need for multiple operations and complex wound management. We developed a multidisciplinary practice management guideline (PMG) to streamline evaluation, treatment, and multidisciplinary care team involvement. We hypothesize that PMG implementation would reduce LOS for NSTI.
Methods: As part of the ACS Emergency General Surgery Verification Program, we devised a PMG for patients with suspected NSTI. In parallel, we instituted multidisciplinary care teams to direct inpatient care and discharge planning. We retrospectively reviewed patients with NSTI admitted to our institution between December 2021 and February 2025 and performed a multivariable linear regression to evaluate the effect of PMG implementation on LOS. A cost-savings analysis was performed using institutional and national estimates on cost-per-hospital-day.
Results: Among 285 patients identified (53% male, median age 55 [IQR 43–66], 60% diabetic), with 144 pre-PMG and 141 post-PMG, PMG implementation was associated with a reduced median LOS from 15.4 to 12.5 days ($p<0.05$). After controlling for demographics, comorbidities, and complexity of care, PMG implementation remained significantly associated with a decreased LOS of -4.5 days (95% CI -7.28, -1.72; $p<0.05$). Estimated cost savings ranged from $25,448 to $145,168 per 100,000 persons. In-hospital mortality, discharge disposition, number of operations, and readmission rates were unchanged.
Conclusions: Implementation of a PMG for complex soft tissue infections significantly reduced hospital LOS without increasing complications, demonstrating both clinical and economic benefits. These findings highlight the value of coordinated, guideline-driven care and support broader adoption, as well as future multicenter validation.

Poster #24

LIFE AFTER DRAINAGE: CLINICAL OUTCOMES AFTER PERCUTANEOUS CHOLECYSTOSTOMY FOR ACUTE CALCULOUS CHOLECYSTITIS

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Introduction: Percutaneous cholecystostomy (PC) is a less invasive method for achieving source control in acute calculous cholecystitis when cholecystectomy may be initially prohibitive. Interval cholecystectomy (IC) is definitive management, but not all patients with a PC will undergo IC and the optimal timing for IC remains uncertain. We aim to assess the morbidity associated with PC and to evaluate how the timing of IC after PC impacts surgical outcomes within our healthcare system.
Methods: We retrospectively evaluated all patients undergoing PC for acute cholecystitis between 2024-2025 in our health system. Patients with a history of hepatobiliary malignancy or acalculous cholecystitis were excluded. Outcomes included PC tube related complications, rates of IC, and post-operative complications (reoperation, readmission, image-guided interventions, endoscopic interventions, or death).
Results: Two hundred fifteen patients with a median age of 78 (IQR 69-85) and calculous cholecystitis underwent PC. Almost all (92.6%) had severe comorbidities (Charlson Comorbidity Index > 4), 63.3% presented with sepsis, and 66.0% had severe cholecystitis (AAST grade ≥ III). PC was associated with 30-day mortality in 5.6% of patients (12/215). 197 patients were discharged with PC and 47.2% (93/197) had ≥1 tube-related emergency room visit. The rate of IC was 39.5% (85/215) with median time to surgery of 59 days (IQR 42–96). Multivariate analysis showed DNR status (adjusted OR 0.34, 95% CI 0.18–0.63; p=0.001) and cirrhosis (adjusted OR 0.15, 95% CI 0.04–0.43; p=0.001) are independently associated with lower likelihood of surgery. For patients undergoing IC, subtotal cholecystectomy was performed in 15.3%, 5.9% required conversion to open, and 40.0% had drain placement. The composite post-operative complications rate was 18.8% (16/85). The time interval between PC and IC (0–7, 8–13, and >13 weeks; p=0.33) did not influence postoperative outcomes.
Conclusions: Patients who undergo PC for acute calculous cholecystitis are elderly with significant medical comorbidities and severe cholecystitis. Less than half of patients ultimately undergo IC. Finally, IC is associated with a high postoperative risk, but prolonged waiting for IC may not improve postoperative outcomes.

Poster #25

BREAKING THE WEEKEND BOTTLENECK: DEDICATED EGS COVERAGE REDUCES DELAYS TO CHOLECYSTECTOMY

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Introduction: Prior to 2025, a single attending surgeon covered both trauma and emergency general surgery (EGS) services during weekend days at our institution, resulting in significant resource strain. To address this issue, a dedicated EGS weekend attending was added. We hypothesize that this practice change is associated with decreased hospital length of stay (HLOS) and time to surgery (TTS) for inpatient cholecystectomy.

Methods: We retrospectively analyzed all patients undergoing cholecystectomy following weekend admission (Friday-Sunday) during pre-intervention (2023) and post-intervention (2025) periods. Patients who were pregnant, had gallstone pancreatitis, preoperative ERCP, or postoperative HLOS > 48 hours were excluded. Demographic and clinical characteristics were compared between groups and multivariate regression was performed to assess the independent effect of a dedicated EGS attending on HLOS and TTS.

Results: In 111 patients, 51 (46%) were in the pre-intervention group. The cohort was 73.9% female with a median age of 40 years. There were no differences between groups in sex, age, presenting vital signs, or leukocytosis (all p>0.25). The post-intervention group had shorter but non-significant median HLOS (58.0 hours vs. 65.4 hours, p = 0.093) and median TTS (30.8 hours vs. 38.6 hours, p = 0.100). After controlling for confounders, the addition of a dedicated EGS attending was independently associated with shorter HLOS (Table 1, p = 0.048) and TTS (p = 0.045).

Conclusion: Implementation of a dedicated weekend EGS attending was associated with decreased HLOS and decreased TTS for patients admitted at our institution. This operational model may enhance care efficiency and reduce hospital resource utilization and costs.

Table 1: Linear Regression Results

Covariate	Unstandardized B for HLOS (95% CI)	Unstandardized B for TTS (95% CI)
Post-Intervention	-8.8 (-17.43 to -0.1)*	-7.8 (-15.5 to -0.2)*
Age at Surgery	0.2 (-0.1 to 0.5)	0.1 (-0.2 to 0.4)
SBP	-0.03 (-0.2 to 0.2)	-0.1 (-0.2 to 0.1)
HR	0.2 (-0.1 to 0.6)	0.2 (-0.1 to 0.4)
Female Sex	-5.9 (-15.9 to 4.0)	-5.8 (-14.6 to 3.0)
Total Bilirubin	3.1 (-5.3 to 11.4)	4.8 (-2.6 to 12.1)
Leukocytosis	0.5 (-8.4 to 9.4)	1.2 (-6.6 to 9.0)
ALT	0.02 (-0.02 to 0.06)	0.02 (-0.01 to 0.06)

CI: confidence interval; SBP: systolic blood pressure; HR: heart rate; ALT: alanine aminotransferase

Poster #26

PERIOPERATIVE OUTCOMES FOLLOWING ADOPTION OF ROBOTIC CHOLECYSTECTOMY BY AN ACUTE CARE SURGERY SERVICE

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Introduction: Robotic cholecystectomy (RC) is increasingly utilized for benign gallbladder disease; however, its role within Acute Care Surgery (ACS) remains incompletely defined. We evaluated the adoption of RC in an ACS practice and compared perioperative outcomes with traditional laparoscopic cholecystectomy (LC).

Methods: All patients undergoing cholecystectomy performed by ACS surgeons at a Level I trauma center between Jan 2024 and Dec 2025 were retrospectively reviewed. Demographics, operative indication, operative approach (RC vs. LC), conversion to open, operative time, hospital length of stay (LOS), postop complications, and 30-day readmission were abstracted from the medical record. Continuous variables were compared using Mann–Whitney U testing and categorical variables using Fisher's exact test.

Results: A total of 778 cholecystectomies were performed: 271 RC (34.8%) and 507 LC (65.2%). There were no differences in age or sex between groups; however, RC patients had a higher median BMI (31.7 vs. 30.7 kg/m², p=0.003). LC was more frequently performed for acute cholecystitis (37.9% vs. 29.5%, p=0.022), whereas RC was more commonly utilized for symptomatic cholelithiasis (39.1% vs. 26.6%, p<0.001). RC was associated with a lower rate of conversion to open cholecystectomy (0.7% vs. 3.6%, p=0.017) and shorter LOS (median 2 vs. 3 days, p<0.001). There were no significant differences in operative time (75 vs. 79 minutes, p=0.257), overall complication rate (6.3% vs. 9.7%, p=0.137), or 30-day readmission (5.9% vs. 8.5%, p=0.255). Rates of biliary leak, common bile duct injury, retained stone, and postoperative hemorrhage were similar between cohorts.

Conclusion: Early adoption of RC by an ACS practice demonstrated safe perioperative outcomes, lower open conversion, and reduced LOS without an increased in operative time, complications, or readmissions. RC presents a viable option for ACS services managing benign gallbladder pathology. Further investigation should assess cost-effectiveness and long-term value.

Table 1: Comparison of Robotic vs. Laparoscopic Cholecystectomy

	Operation length (mins)	LOS (days)	Acute Cholecystitis	Symptomatic Cholelithiasis	Open Conversion	Complications
RC	75.0(57–100)	2.0 (1–4)	80 (29.5%)	106 (39.1%)	2 (0.7%)	17 (6.3%)
LC	79.0(59–108)	3.0 (2–4)	192 (37.9%)	135 (26.6%)	18 (3.6%)	49 (9.7%)
p value	0.2571	<0.001*	0.0221*	<0.001*	0.0169*	0.1367

Poster #27

EXTREMITY COMPARTMENT PRESSURE MEASUREMENT ON THE BATTLEFIELD: TOWARD EVIDENCE-BASED MANAGEMENT OF TOURNIQUET SYNDROME

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Introduction: Drone warfare in Ukraine has led to casualty sequestration near the point of injury, unprecedented delays in evacuation, and a substantial rise in tourniquet (TQ) use and compartment syndrome (CS). We undertook an objective assessment of compartment pressure (CP) and perfusion pressure (ΔP) in combat casualties using an FDA-approved/CE-marked portable, field-deployable CP monitor, based on micro-electromechanical system (MEMS) sensor inserted via a needle.
Methods: Anesthetized male combat casualties (n=9) with severe extremity injuries underwent sterile placement of a CP monitor at the discretion of forward surgical teams. Deidentified demographics, injury mechanism/location, time from injury to CP measurement, TQ use time, systolic/diastolic/mean arterial blood pressure (SBP/DBP/MAP), heart rate (HR), diagnosed CS, CPs, affected compartments, and fasciotomy occurrence were recorded as available. ΔP =DBP-CP. No CS diagnosis was made based on device data.
Results: Age 44 yrs (IQR 34-46); blast-polytrauma n=7, gunshot n=1, crush syndrome n=1; injuries to lower extremity n=8, upper extremity n=1. ≥1 TQ in n=5 cases; median TQ time: 3h (IQR 2-13; max 23). Time to CP-monitor: 23h (IQR 13-46; max 95). MAP=88mmHg (IQR 86-95) and HR=75 bpm (IQR 72-78; n=7). CS diagnosed n=7, all in the leg anterior compartment; with n=3 multi-compartment (superficial posterior or lateral). Highest CP: 54.6mmHg (IQR 32.2-67.1; n=8). ΔP=21.3mmHg (IQR 11.3-31.6; min -32; n=7). Fasciotomy in n=8 cases; post-fasciotomy CP=4.5mmHg (IQR 2.0-5.2; n=6).
Conclusions: This is the first study documenting CP and ΔP in combat casualties with CS. We identified heterogeneous intercompartment CP and extremely low ΔP in affected compartments. CPs decreased after fasciotomy. Objective assessment of CP and ΔP in austere environments with prolonged TQ use will enable evidence-based decisions on TQ revision, amputations, and management.

Poster #28

AN OFF-THE-SHELF BIOLOGIC VASCULAR GRAFT FOR EXTREMITY ARTERIAL TRAUMA: COMBINED LONG-TERM OUTCOMES FROM CIVILIAN AND CONFLICT SETTINGS

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Introduction: Extremity arterial trauma frequently occurs in contaminated, time-critical settings where autologous vein may not be available, and prosthetic grafts carry high infection risk. Trauma surgeons require a readily available vascular conduit that enables rapid revascularization without added logistical burden. The acellular tissue engineered vessel (ATEV, Symvess™) is an off-the-shelf biologic vascular graft designed to address this need.

Methods: We evaluated long-term outcomes of Symvess for extremity, non-iatrogenic arterial trauma repair by combining data from two clinical studies: a prospective civilian trauma trial conducted in the United States and Israel (V005; n=54) and a retrospective real-world conflict experience in Ukraine (V017; n=16). All patients sustained extremity arterial injuries requiring open repair. Symvess is supplied refrigerated, shelf-stable for up to 18 months, requires no thawing or preparation, and is available in a single configuration suitable for most extremity repairs (6-mm inner diameter, 40-cm length). Kaplan–Meier analyses were performed through 36 months.

Results: Seventy patients were included. Mean Injury Severity Score was 21.0, and mean graft length implanted was 12.2 cm. At 36 months, primary patency was 50%, secondary patency 63%, infection-free rate 95%, and limb salvage 87%. Patency loss was driven predominantly by early thrombosis, reflecting trauma-related factors. Over 36 months, safety events included 3 graft infections, 5 graft ruptures due to insufficient or compromised tissue coverage, 18 thromboses, 2 pseudoaneurysms, 1 aneurysm, and 7 limb losses. Most adverse events occurred within the first year, with no late safety signals. No cases of graft rupture, limb loss, or death were attributed to Symvess.

Conclusion: Symvess provides trauma surgeons with an immediately available, off-the-shelf biologic conduit for extremity arterial repair, demonstrating durable limb salvage and low infection rates despite severe injury. These data support Symvess as a practical and effective option for urgent vascular reconstruction when vein is unavailable. *Includes data previously reported.* (V005: NCT03005418; V017: NCT05873959).

Poster #29

HUFFING AND PUFFING AND FRAIL: CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND FRAILTY ARE ASSOCIATED WITH HIGHER MORTALITY RISKS FOLLOWING SURGICAL STABILIZATION OF RIB FRACTURES

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Introduction: The geriatric population has been shown to benefit from surgical stabilization of rib fractures (SSRF), including the frail subset. However, it is unclear whether those benefits extend to all subsets of frail patients. Frailty is commonly assessed using the Modified Frailty Index-5 (mFI-5). Chronic obstructive pulmonary disease (COPD) has been associated with disproportionately higher mortality, despite similar mFI-5 scores, raising concern for a unique risk. The National Trauma Data Standard (NTDS) was used to evaluate whether COPD was independently associated with increased mortality or worse clinical outcomes among frail patients with rib fractures managed with SSRF.
Methods: Patients aged ≥65 with frailty (mFI-5 ≥1) and abbreviated injury score (AIS) ≥3 in the thorax who were managed with SSRF in 2017-2022 NTDS were included in this study. A stepwise backward selection with a Wald test multivariate logistic regression identified predictors of hospital mortality.
Results: Of the identified 1,960 patient records, 320 (16.3%) had COPD. Patients with COPD were more likely to have severe frailty (77.5% vs. 35.5%; p<0.001), higher risks of unplanned intubation (14.7% vs. 9.2%; p=0.003), need for post-operative ventilation (44.7% vs. 33.9%; p<0.001), increased hospital length of stay (IQR 10-20, <0.001 and hospital mortality (7.8% vs. 2.4%; p<0.001).COPD patients had increased AIS (odds ratio [OR]: 2.8; p=0.020), unplanned admission to intensive care unit (ICU) (OR: 4.8; p<0.001) and use of ventilator (OR: 3.7; p=0.001). COPD was associated with higher risk of mortality (OR: 4.1; p<0.001); whereas diabetes mellitus (OR: 0.2; p=0.002), hypertension (OR: 0.2; p=0.001), and functional dependence (OR: 0.1; p=0.002) were associated with lower risks of mortality.
Conclusion: Of the mFI-5 risk factors, COPD contributes to increased mortality despite comparable mFI-5 scores. COPD is associated with worse unadjusted outcomes among frail geriatric patients undergoing SSRF, its effects mediated by frailty severity and postoperative complications. This should be considered when evaluating this patient population for SSRF and preoperative counseling.

Poster #30

FROM THE PATIENT OR THE PACKAGE?: COMPARISON OF AUTOLOGOUS VS SYNTHETIC CONDUIT FOR EXTREMITY ARTERIAL BYPASS FOLLOWING PENETRATING TRAUMA

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Introduction: Polytetrafluoroethylene (PTFE) and autologous vein conduits are commonly used for peripheral arterial repair. While prior trauma literature showed no inpatient differences between conduit type, post-discharge outcomes remain limited. We evaluated pre- and post-discharge outcomes after penetrating peripheral arterial repair, hypothesizing no difference between vein and PTFE.
Methods: Patients undergoing open bypass for penetrating peripheral arterial injury at an urban Level 1 center were grouped by conduit type. Upper and lower extremities were included. Cohorts were propensity score matched, and inpatient and post-discharge outcomes were assessed.
Results: Overall, 178 vein and 32 PTFE patients were identified; after matching, 32 vein patients were compared with 32 PTFE patients with similar baseline characteristics. For vein vs. PTFE, there were no differences in inpatient vascular complications requiring reoperation (25.0% vs. 21.9%, p=1.00), graft infection (12.5% vs. 9.4%, p=1.00), early graft revision (0% vs. 3.1%, p=1.00), extremity compartment syndrome (9.4% vs. 6.3%, p=1.00), amputation (0% vs. 3.1%, p=1.00), or mortality (3.1% vs. 3.1%, p=1.00). Among patients surviving without early revision or amputation, postop follow-up rates (90.3% vs. 96.7%, p=0.61) and median follow-up duration were comparable (91 vs 94 days, p=0.96) for vein and PTFE, respectively. Vascular imaging ≥ 2 weeks post-op were obtained in 45% of vein vs 53% of PTFE (p=0.61) at a median of 124 vs 110 days (p=0.85), respectively. Delayed graft occlusion (7.1% vs. 17.2%, p=0.43) and stenosis (3.6% vs. 6.9%, p=1.00) were comparable for vein vs PTFE.
Conclusion: Vein and PTFE conduits yielded comparable inpatient outcomes following penetrating peripheral arterial repair. While PTFE was associated with a higher rate of delayed graft occlusion after discharge, this difference was not statistically significant.

Poster #31

CT-QUANTIFIED PULMONARY CONTUSION SEVERITY PREDICTS ARDS AND PROLONGED VENTILATION AFTER BLUNT TRAUMA

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Introduction: Pulmonary contusions after blunt thoracic trauma are associated with significant respiratory morbidity; however, predictors of respiratory failure and ARDS remain incompletely defined. We evaluated factors associated with mechanical ventilation and ARDS in patients with blunt trauma–related pulmonary contusions.
Methods: This was a retrospective cohort study of adults (≥18 years) admitted to two Level I trauma centers between January 1, 2022, and December 31, 2023, with ICD-10–coded pulmonary contusion following blunt trauma. Penetrating injuries were excluded. Contusion severity was quantified on admission chest CT using the Blunt Pulmonary Contusion–18 (BPC-18) score (0–18), with each lung lobe graded 0–3 based on extent of involvement (>50% = 3). Patients were stratified as mild/moderate (BPC-18 1–6) or severe (7–18). The primary outcome was respiratory failure requiring mechanical ventilation. Secondary outcomes included pneumonia, ARDS, tracheostomy, ICU length of stay (LOS), and hospital LOS. Multivariable analysis evaluated associations controlling for fluid balance and concomitant injuries.
Results: The mean age of the sample was 44.7 (SD=19.4) years, 74.3% were male, with the majority white (59.7%) and non-Hispanic (80.1%). Of 191 patients, 157 (82.2%) had mild/moderate and 34 (17.8%) had severe contusions. Severe contusions were associated with increased pneumonia (38.2% vs 12.1%, $p<0.001$), longer mechanical ventilation (17 vs 3 days, $p=0.028$), longer ICU LOS (13 vs 5 days, $p=0.022$), and longer hospital LOS (30 vs 14 days, $p<0.003$). ARDS occurred more frequently in the severe group (50% vs 12.7%, $p<0.001$). Tracheostomy was significantly more prevalent (48.6%) in those with ARDS compared to those without ARDS (3.2%, $p<0.001$). In the multivariable model, neurologic injury independently predicted ARDS ($p=0.049$), whereas rib fractures ($p=0.444$), orthopedic injuries ($p=0.821$), and pre-existing pulmonary diseases did not ($p=0.999$). Severe BPC-18 score remained independently associated with ARDS after adjusting for positive fluid balance ($p<0.001$).
Conclusion: CT-quantified pulmonary contusion severity independently predicts pneumonia, ARDS, prolonged ventilation, and increased resource utilization. Early severity stratification may inform risk-adjusted respiratory management.

Poster #32

DATA VS DOGMA: A DATA-DRIVEN REAPPRAISAL OF PROPHYLACTIC FASCIOTOMY IN LOWER EXTREMITY VASCULAR TRAUMA

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Introduction: Prophylactic fasciotomy is commonly performed in penetrating lower extremity vascular trauma. Despite the known morbidity of this procedure, surgical dogma suggests liberal prophylactic fasciotomy, particularly in combined arteriovenous injury. We performed a single-center evaluation of injury patterns associated with development of compartment syndrome requiring delayed fasciotomy.
Methods: We examined 138 consecutive patients with penetrating lower extremity arterial trauma (2016-2024). Patients who underwent up front revascularization without prophylactic fasciotomy were included. Those with blunt trauma, injury distal to the popliteal artery, or temporary vascular shunt were excluded. The primary outcome was development of compartment syndrome requiring delayed fasciotomy.
Results: After excluding 51 patients, including those who underwent prophylactic fasciotomy (25), 87 patients remained. Of those meeting criteria, 23/87 (26.4%) had popliteal artery injury and 64/87 (73.6%) had common femoral artery or superficial femoral artery injury. Patients with popliteal injury had a significantly higher rate of delayed fasciotomy (43.4% v 6.3%, $P<0.001$), but lower injury severity score (4 v 9, $P<0.001$) when compared to those with femoral injury. The groups were otherwise similar in age; sex; bone or nerve injury; mechanism; repair technique; initial operative time, length of stay (LOS) and venous injury rate. All vein injuries were ligated. Among patients with popliteal injuries there were no differences between those who required delayed fasciotomy and those who did not, including no difference in rate of venous injury (46% v 50%, $P=0.85$). Among patients with femoral injury, those who required delayed fasciotomy had longer LOS ($P=0.038$), but were otherwise similar, including no difference in rate of venous injury (37% v 50%, $P=0.59$).
Conclusions: Delayed fasciotomy was required in less than one-fifth of all patients with sharp distinction between femoral (6.3%) and popliteal (43.4%) injuries. Combined arteriovenous injury did not predispose patients to delayed fasciotomy. These findings support injury-specific risk stratification when determining need for prophylactic fasciotomy and high index of suspicion among popliteal arterial injuries regardless of vein status.

Poster #33

SAVING FACE - THE ROLE OF PROPHYLACITC ANTIBIOTICS IN BALLISTIC MANDIBULAR FRACTURES

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Introduction: Ballistic facial fractures are at high risk for infection due to bony and/or soft-tissue destruction, contamination from oropharyngeal flora, and environmental exposure. Lacking definitive data, recommendations for prophylactic regimens vary from 24 hours to 7 days. We evaluated the relationship between antibiotic administration and infectious complications in ballistic mandibular fractures.

Methods: This is a retrospective cohort study from a Level 1 trauma center of patients admitted with a ballistic mandibular fracture from January 2020 to December 2025. Patients were excluded if they had an infection present on admission or never received antibiotics. Data collected included age, time to antibiotic exposure (including face-specific coverage), time to first operation, number of operations, duration of antibiotic exposure, and development of infection. Using univariate and multivariate logistic regression analyses, we evaluated the relationship between antibiotic exposure, operative intervention, and infection.

Results: 108 patients met inclusion criteria. 89% of patients underwent surgery with a median time to OR of 2 d [IQR 1-3], median time to facial antibiotic prophylaxis 4 hrs [IQR 2-9.8], and median duration of antibiotic exposure 81 hrs [IQR 32-219]. 28 (25.9%) patients developed an infection. On univariate analysis, there was an inverse association between duration of antibiotic exposure and development of infection ($p = 0.003$). There was no correlation between infection and time to any antibiotic administration ($p = 0.158$), time to face antibiotic coverage ($p = 0.147$), or time to operation ($p = 0.104$). On multivariate analysis, higher cumulative duration of antibiotic exposure was associated with a decrease in infections (OR 0.993, 95% CI 0.988-0.998) while time to antibiotics and time to OR were not.

Conclusions: Infectious complications of ballistic mandible fractures are common. In our cohort, we found that extended antibiotic prophylaxis was associated with a reduction of infectious complications suggesting that a shorter duration of prophylaxis may be insufficient.

Poster #34

EARLY SPINAL FIXATION REDUCES MAJOR IN-HOSPITAL COMPLICATIONS IN TRAUMA PATIENTS WITH CONCOMITANT CHEST INJURIES: AN INSTRUMENTAL VARIABLE ANALYSIS OF THE AMERICAN COLLEGE OF SURGEONS TRAUMA QUALITY IMPROVEMENT PROGRAM

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Introduction: While early fixation of spinal fractures is associated with improved outcomes in the majority of injured patients, the timing of operative fixation in those with concomitant severe chest injuries is uncertain. The risk of perioperative mechanical ventilation and prone positioning in patients with severe chest trauma may outweigh reductions in immobility-related complications associated with early spine surgery. We evaluated the association between early spinal fixation and major in-hospital complications or death among trauma patients with concomitant severe chest injuries.

Methods: We conducted a retrospective cohort study using the American College of Surgeons Trauma Quality Improvement Program database. Adults with spinal fractures requiring operative fixation and severe chest injury (AIS≥3) between 2017-2023 were included. Early fixation was defined as surgery within 24 hours of admission. The primary outcome was major in-hospital complications or death. To address unmeasured confounding, we performed an instrumental variable (IV) analysis using hospital-level early fixation rates as the instrument. Subgroup analyses were conducted among patients with and without spinal cord injury (SCI).

Results: Among 25,812 patients (mean age 49, 72% male, median ISS 22) treated at 385 trauma centers, 9,168 (36%) underwent early fixation. In IV analyses, early fixation yielded an absolute risk reduction (ARR) for major complications or death of 7.6% (95% CI 1.3%-13.9%) compared with late fixation. This effect held among patients without SCI (ARR 10.2% [1.0%-19.6%]) and those with SCI (ARR 7.3% [0.1%-14.4%]).

Conclusion: Among patients with severe chest injuries requiring spinal fixation, surgery within 24 hours is associated with fewer major in-hospital complications and death. Our findings support early spinal stabilization even in physiologically complex patients.

Poster #35

BCVI RISK IN PATIENTS WITH BLUNT FACIAL FRACTURES

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Introduction: Facial Fractures are commonly associated with Blunt Cerebrovascular Injury (BCVI), yet it remains unclear which specific facial fracture confers the highest BCVI risk.
Methods: A retrospective analysis of ACS-TQIP 17-23 was done to identify adult (≥18years) patients with a blunt facial fracture. We excluded patients with AIS ≥3 injuries in Abdomen, Thorax and Extremity. Fractures were categorized into mandible, maxilla, nasal, orbital and zygomatic and pan facial fractures based on AIS codes. Multivariable Logistic Regression was performed to adjust for age, sex, race, mechanism, GCS, SBP, ISS & presence of cervical injury. Primary Outcome was risk of BCVI. Secondary outcome was Hospital LOS and mortality.
Results: Of 511,509 patients with a blunt facial fracture, 6,359 (1.2%) had BCVI. 69.7% of the population were male and median age was 49[32-68]. BCVI rates were highest among patients with mandible fractures, 2,588 (2.3%). After regression analysis, mandible fractures (aOR 1.78, $p<0.001$) and maxillary fractures (aOR 1.33, $p=0.036$) were significantly associated with increased odds of BCVI while nasal, orbital and zygomatic fractures were not. Among patients with facial fractures, BCVI was independently associated with increased in-hospital mortality (aOR 1.26, $p<0.001$) and was associated with an increase in hospital LOS of (2.7 days, $p<0.001$).
Conclusion: These findings support a more selective BCVI screening strategy, suggesting that routine screening may be unnecessary for patients with isolated nasal, orbital, or zygomatic fractures. While maxillary fractures, particularly Le Fort fracture types II and III, are already included in the Denver screening criteria, our analysis demonstrated that isolated mandibular fractures also confer a clinically significant risk of BCVI and warrant consideration for routine vascular imaging.

Poster #36

ENDOVASCULAR AND OPEN INTERVENTIONS HAVE EQUIVALENT OUTCOMES IN TRAUMATIC BLUNT POPLITEAL ARTERY INJURY

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Introduction: Traumatic popliteal artery injuries carry the highest risk of limb loss among peripheral vascular injuries. While open repair remains the gold standard, endovascular techniques are increasingly used. We aim to compare outcomes between endovascular and open repair in a large cohort of blunt popliteal artery injuries, hypothesizing equivalent amputation rates but reduced transfusion requirements and shorter length of stay with endovascular repair.
Methods: Patients with blunt popliteal artery injuries were identified from the National Trauma Data Bank (2023-2025) and stratified by repair type using ICD-10 procedure codes. Primary outcome was amputation. Secondary outcomes included transfusion volume, length of stay, and mortality. Chi-square and t-tests were used with $p<0.05$ for significance.
Results: Of 1452 patients, there were 204 (14%) endovascular and 1248 (86%) open repairs. When comparing endovascular to open patients, there was no difference in male gender (64% vs 69%, p=.18), White, non-Hispanic race (62% v. 63%, p=0.82), admission systolic blood pressure (127 vs. 129, p=0.49), heart rate (98 vs. 96, p=0.27) , or ISS (13 vs. 13, p=0.61), but endovascular patients were older (43 vs 40, p=.04). Amputation rates were comparable (14% vs 19%, p=0.14), as were transfusion volumes (357mL vs 505mL, p=0.09), length of stay (21 vs 20, p=.38), and mortality (5% vs 3%, p=.27).
Conclusion: Endovascular and open repair of traumatic popliteal artery injuries demonstrate comparable outcomes including amputation rates, transfusion requirements, length of stay, and mortality. These findings support endovascular repair as a viable alternative in appropriately selected patients. Further studies should identify patient-specific factors that optimize treatment selection.

Poster #37

INTESTINAL TRANSPLANTATION FOR ABDOMINAL TRAUMA

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Introduction: Abdominal trauma may lead to intestinal failure (IF) through multiple pathways. A direct injury to the superior mesenteric vasculature may render a patient with immediate IF with short gut syndrome (SGS). Alternatively, a severe complex abdominal injury may result in multiple operative procedures, enterocutaneous fistula (ECF), a frozen abdomen, and consequently IF. Intestinal transplantation (ITx)- either isolated intestine (iITx) or multivisceral (MVTx), has emerged as a life-saving intervention for these patients when conventional total parenteral nutrition (TPN) fails due to complications like central venous thrombosis, catheter-related sepsis, or intestinal failure associated liver disease (IFALD). ITx is a rare procedure with less than 75 adult cases per year performed in the last two decades in the U.S, and thus many surgeons may not be familiar with the current outcomes of ITx.
Methods: Retrospective analysis of all adult ITx performed at a single transplant institution with the etiology of IF from abdominal trauma.
Results: From November 2003 to December 2025, 385 ITx have been performed. 16 (4.2%) transplants were performed for IF from abdominal trauma at a median time of 3.02 years (range 1.07-26.07 years) after traumatic event. Mean age at time of transplant was 37.4 ± 7.5 years, 12/16 (75%) were male sex, mean recipient BMI was 23.6 ± 6.23. 9/16 (56%) were due to penetrating trauma (7 gunshot, 1 stab, 1 bomb blast in Iraq) and 7/16 (44%) from blunt injury (4 MVA, 2 MCA, 1 assault). 9/16 (56%) were due to direct vascular injury (6 SMA;2 SMA/SMV; 1 SMA+Aorta). 7/16 (43.7%) had IF complicated by chronic ECF.
Grafts included 11 iITx+colon, 4 iITx, and 1 MVTx. Mean donor age was 19.4 ± 11.5 years, 9/16 (56%) donors were male sex, mean donor BMI 18.7 ± 2.6. Mean case time was 6.42 ± 1.48 hours, and mean LOS was 34.9 ± 24.8 days. All graft survivors achieved full TPN independence with mean postop TPN duration of 21.1 ± 11.6 days. 1- and 5-year patient survival was 87.5% and 80.2%. 2 of the 3 deaths were on POD 0: 1 intraoperative death (MVTx) from massive transfusion (127 units pRBC) and intracardiac thrombus/PE, and 1 from sudden massive hemorrhage in ICU 6 hours post-transplant. The third death occurred 2.54 years post-transplant from cervical cancer. 1 graft loss occurred at 298 days post-transplant due to refractory cellular rejection from non-compliance with immunosuppressants.
Conclusion: Transplantation of the intestine is a rare transplant procedure and is infrequently performed for abdominal trauma. Despite the high complexity of these cases, excellent outcomes, including TPN independence, can be achieved, offering a return to normal life for survivors of severe abdominal trauma.

Poster #38

TIMING MATTERS: DELAYED SURGERY INCREASES MORTALITY FOR BLUNT HOLLOW VISCUS INJURY

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Introduction: Immediate surgical exploration is recommended for suspected hollow viscus injury (HVI) following blunt trauma. However, diagnostic uncertainty can lead to delayed operative management. We aimed to evaluate if delayed bowel resection (DBR), defined as >8 hours after emergency department arrival, was independently associated with increased mortality in blunt trauma patients. We also sought to identify clinical factors associated with DBR.

Methods: The TQIP database (2017-2023) was queried for admitted adults with blunt abdominal trauma (abbreviated injury scale grade >2) who underwent bowel resection. Patients who died or were discharged within 8 hours were excluded. Patients undergoing early bowel resection <8 hours (EBR) were compared to patients undergoing DBR (>8 hours). Multivariable logistic regression evaluated the association between DBR and mortality, controlling for age, injury severity score (ISS), severe head injury, and intubation within 1 hour of arrival. A sensitivity analysis excluded patients with severe head injury.

Results: Of 10,939 patients, 4,556 (41.6%) underwent DBR. Compared to EBR patients, the DBR cohort had a higher median ISS (24 vs. 19) and increased incidence of brain (19.3% vs. 15.3%), and solid organ injuries including the liver (24.7% vs. 17.7%), spleen (29.1% vs. 19.8%), and kidney (12.1% vs. 6.0%) (all $p<0.001$). DBR had increased mortality (17.2% vs. 8.1%, $p<0.001$) and was independently associated with increased mortality (OR 1.81, 95% CI 1.58-2.06, $p<0.001$), including a subgroup analysis of patients without severe head injury (OR 2.30, 95% CI 1.96-2.70, $p<0.001$).

Conclusion: Delayed operative management for blunt HVI occurs more often in patients with solid organ injuries and is independently associated with increased mortality. These findings highlight the importance of early detection and timely surgical management of HVI.

Poster #39

LAPAROSCOPY IN TRAUMATIC ISOLATED COLORECTAL INJURIES IS A SAFE OPTION: A PROPENSITY MATCHED ANALYSIS

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Introduction: Laparoscopic management of colorectal trauma is challenging in the acutely injured patient and risks include missed or inadequately managed injuries.
We hypothesized that laparoscopic management of isolated colorectal injuries would be associated with an increased rate of return to the operating room.
Methods: The National Trauma Data Bank (NTDB) was queried from 2021-2023 for patients who underwent colon or rectum surgery with no other intra-abdominal injury. Patients were then propensity matched into laparoscopic or open surgery by trauma type, injury severity score (ISS), and comorbidities. Clinical characteristics and outcomes including unplanned return to the operating room (uROR), mortality, were compared.
Results: The propensity matched sample had 1410 patients with 705 patients in each group. Median age, ISS, Abbreviated Injury Score (AIS) Abdomen, and mechanism were similar between the two groups. The laparoscopic group had similar resection (53% vs 51%, p = 0.5) and repair (45% vs 47%, p=0.5) rates compared to the open group. uROR (10% vs 14%, p=0.01) and mortality (4% vs 9%, p<0.001) were lower in the laparoscopic group compared to the open group. Median hospital length of Stay (23 [22] vs 25 [30], p<0.001) and ICU length of stay (10 [12] vs 12 [13], p=0.02) was lower in the laparoscopic group. On multivariate regression, laparoscopic surgery (OR 0.5, 95% CI 0.3-0.8 p=0.01) and penetrating mechanism (OR 0.6, 95% CI 0.4-0.9, p=0.02) independently predicted lower odds of uROR. Predictors of higher odds of uROR were higher ISS (OR 1.03, 95% CI 1.01-1.05 p <0.001), creation of colostomy (OR 2.7 95% CI 1.7– 4.2, p<0.001), and resection during surgery (OR 1.9 95% CI 1.1– 3.3, p=0.01)
Conclusion: Laparoscopic surgery for isolated traumatic colorectal injuries is associated with lower rates of uROR and in-hospital mortality and decreased ICU and hospital length of stay compared to open surgery. Laparoscopy should be considered when managing isolated traumatic colon injuries in stable patients.

Poster #40

ANGIOEMBOLIZATION FOR SOLID ORGAN INJURY IN PENETRATING ABDOMINAL TRAUMA: A SINGLE CENTER EXPERIENCE FROM A HIGH VOLUME TRAUMA CENTER

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Introduction: Angioembolization(AE) is increasingly utilized to control hemorrhage in solid organ injuries within nonoperative management (NOM) strategies. While extensively validated in blunt abdominal trauma, evidence supporting AE in penetrating trauma remains limited. We evaluated the AE for solid organ hemorrhage control in a population with a high proportion of penetrating trauma(PT).

Methods: Retrospective cohort study of patients >14 years with abdominal solid organ injuries who underwent AE between 2022 and 2025 at a Level I trauma center with 24/7 interventional radiology. Data included demographics, injury severity, CT findings, embolized organs, complications, therapeutic success rate, and in-hospital mortality

Results: 115 patients were included: median age 26 years (IQR 22-36), 77.4% male. PT occurred in 56.5%. Median ISS was 26 (IQR 18-35). CT was performed in 95.7% of cases, revealing active contrast extravasation (59.1%), vascular transection (14.6%), and pseudoaneurysm (10.9%). Embolized organs were liver (53.9%), kidney (45.2%), and spleen (27.0%), with organ distribution and therapeutic success stratified by trauma mechanism shown in Table 1. Therapeutic success was 74.8%. Laparotomy was performed in 37.4% (before AE: 62.8%; after AE: 37.2%). Re-embolization rate was 6.1%. Post AE laparotomy (17.4%) was mainly indicated for hollow viscus perforation (40.0%). Complications occurred in 7.8% (organ ischemia, abscesses). In-hospital mortality was 7.8%. Median hospital stay was 9 days (IQR 6-21).

Conclusion: AE is safe and effective for hemorrhage control in solid organ injuries, including PT. Concomitant hollow viscus injury limits NOM. These findings support integrating AE into hemorrhage algorithms and highlight the need for endovascular skills training among trauma surgeons in high-volume penetrating trauma settings.

Table 1. Organ embolized and therapeutic success according to trauma mechanism

Trauma mechanism	Liver, n (%)	Spleen, n (%)	Kidney, n (%)	Success, n/N (%)
Penetrating (n=65)	43 (66.2%)	9 (13.8%)	32 (49.2%)	60 / 84 (71.4%)
Blunt (n=50)	18 (36.0%)	22 (44.0%)	17 (34.0%)	46 / 57 (80.7%)

Poster #41

BEYOND "EARLY VS LATE": DEFINING OPERATIVE TIMING THRESHOLDS AFTER BLUNT INTESTINAL INJURY

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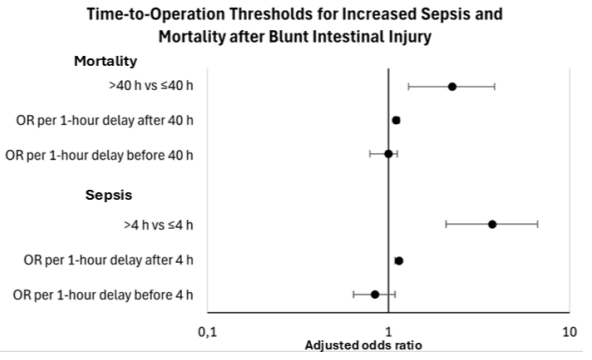
Introduction: Blunt intestinal injury is rare and difficult to diagnose clinically or radiographically. While delayed recognition worsens outcome, it is unclear whether initial watchful waiting is safe. We aimed to study how much time delay results in worsening outcomes**.**

Methods: Using ACS-TQIP data from 2017 to 2020, adult (≥18 years) blunt trauma patients with small or large bowel injury who underwent intestinal resection or repair were identified. Time to operation was measured in hours from ED arrival to the first bowel procedure. Clinical outcomes included sepsis and in-hospital mortality. Mixed-effects logistic regression models were adjusted for demographics, comorbidities, injury severity score (ISS), and hospital factors. Time was modeled using a prespecified two-slope function, selecting the best-fitting inflection point (1–48 hours) by Akaike Information Criterion.

Results: Out of 4,005,762 patients, 2,268 were included. Median age was 36 years, median ISS was 22, median time to surgery was 2.57 hours (IQR 1.32-7.78) and 75% underwent intestinal resection. The best-fitting inflection point after which the risk for sepsis increased significantly was 4 hours. Surgery more than 4 hours after ED presentation was associated with significantly higher odds of sepsis compared to surgery sooner (aOR 3.71, 95% CI 2.09–6.58), with each additional hour of delay associated with 5% increased odds of sepsis (per-hour aOR 1.05, 95% CI 1.03–1.06). For mortality, the best-fitting inflection point was 40 hours, after which there was more than double the odds of in-hospital mortality (aOR 2.23, 95% CI 1.30–3.80) (Figure).

Conclusions: Although surgeons are mindful of the risks of delaying operative intervention in blunt intestinal injury, this work is the first to identify intrinsic, data-driven 4- and 40-hour marks for increased sepsis and mortality. These marks can be used as process measures for benchmarking the quality of care.



Poster #42

DELAYED LAPAROTOMY AND MORTALITY AFTER MOTOR VEHICLE CRASHES: A NATIONWIDE ANALYSIS OF HOSPITAL OWNERSHIP USING PROPENSITY SCORE MATCHING

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Introduction: Investor-owned hospitals treat a growing share of trauma patients, yet prior studies report shorter stays and higher readmission rates at these facilities. Whether hospital ownership influences the timeliness of definitive surgical intervention and patient survival after motor vehicle crashes remains unclear. We hypothesized that patients at investor-owned hospitals experience higher rates of delayed laparotomy and mortality.

Methods: Using the Nationwide Readmissions Database (2016-2022), we identified patients ≥15 years of age undergoing laparotomy after motor vehicle crashes. Primary outcome: mortality during index admission or readmission. Secondary outcome: delayed laparotomy (>5 days post-admission). Propensity score matching (1:1, nearest-neighbor, caliper 0.2 SD) compared investor-owned to non-investor-owned hospitals, controlling for demographics, injury severity, and comorbidities. Delayed laparotomy occurring during readmission to a different hospital was analyzed as a separate subgroup to capture inter-facility transfer delays.

Results: Among 26,339 patients, overall mortality was 17.31%; delayed laparotomy occurred in 8.19%. Before matching, investor-owned hospitals (10.78% of cohort) showed higher mortality (19.20% vs 17.08%, $p<0.01$), more delayed laparotomies (10.71% vs 7.89%, $p<0.01$), and increased delays during readmission to different hospitals (11.51% vs 5.72%, $p<0.01$). After 1:1 propensity matching (n=5,678), investor-owned hospitals maintained significantly higher mortality (OR 1.21, 95% CI 1.05–1.38), delayed laparotomy (OR 1.27, 95% CI 1.06–1.52), and delayed laparotomy during readmission to a different hospital (OR 2.32, 95% CI 1.20–4.49).

Conclusion: Even after propensity score matching, investor-owned hospitals demonstrated higher rates of delayed laparotomy and mortality, with the strongest association seen among patients readmitted to a different hospital for surgery. Quality improvement initiatives targeting timely operative intervention and coordinated inter-facility transfers are needed across all hospital types.

Poster #43

ALCOHOL AND PSYCHOACTIVE SUBSTANCE USE DO NOT DELAY SURGICAL INTERVENTION, NOR ALTER THE OUTCOMES IN PENETRATING ABDOMINAL TRAUMA. A PROSPECTIVE BICENTRIC COHORT STUDY

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Introduction: Penetrating abdominal trauma (PAT) frequently occurs in patients under the influence of alcohol or psychoactive substances (SPA). It may influence the reliability of the physical exam, potentially delaying surgical decision-making, resulting in increased morbidity and mortality. The impact of substance use on time-to-surgery and surgical outcomes remains poorly characterized. We hypothesized that alcohol/SPA use is not associated with delayed surgical intervention, nor with surgical outcomes.

Methods: Adults with PAT admitted to two Level I trauma centers, where surgical decision-making is guided by hemodynamic stability, clinical findings, and CT in selected cases, were prospectively enrolled from 2020 to 2025. A similar evaluation protocol was followed, independent of the intoxication status. For the analysis, patients were stratified by alcohol/SPA use at admission. The time from admission to surgical decision was analyzed using Cox proportional hazards regression, adjusting for relevant covariates. Prespecified sensitivity analyses were performed. The study was registered at ClinicalTrials.gov (NCTXXXX).

Results: Among 277 patients (135 alcohol/SPA users, 142 non-users), injury severity scores were similar between groups. Substance users sustained more gunshot wounds (76.3% vs 65.5%, p=0.05). The proportion of patients operated on was similar in the alcohol/SPA users and the non-users (67.4% vs 69.0%, p=0.589). Time to surgical decision was equivalent between groups (median 118 vs 121 minutes, p=0.854). Alcohol/SPA use was not associated with surgical decision timing in adjusted analysis (HR 1.02, 95%CI 0.75-1.37, p=0.917), and results were consistent across all sensitivity analyses. Non-therapeutic interventions were less frequent in substance users (12.1% vs 21.4%), but the difference did not reach statistical significance (p=0.087). The rates of intraabdominal infection (15.4% vs 11.2%, p=0.399), multiorgan failure (MOF) (2.2% vs 2.1%, p=1.00), and mortality (1.5% vs 2.1%, p=1.00) were similar in alcohol/SPA users, and non-users.

Conclusion: Alcohol/SPA use in PAT patients did not delay surgical decision-making. Infectious complications, MOF, and mortality were not affected. Concerns that intoxication impairs clinical assessment and delays surgical decision are not supported by our data.

Poster #44

SEX-BASED DIFFERENCES IN MORTALITY BY AGE GROUP AMONG PEDIATRIC PATIENTS WITH TRAUMATIC BRAIN INJURY

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Introduction: Traumatic brain injury (TBI) is a leading cause of pediatric mortality; previous studies of the impact of sex on mortality and functional outcomes have produced mixed results. We investigated sex-based differences in mortality by age group in children with TBI.
Methods: In this cohort analysis of the 2020-2023 ACS TQIP registry, pediatric (age < 18 years) patients with head AIS 1-5 and non-missing data for sex, age, and 30-day mortality were included. The primary outcome was 30-day mortality. Subjects were categorized by age group: 0-4, 5-10, 11-13, and 14-17 years. Multivariable logistic regression with a sex-by-age group interaction adjusting for mechanism, TBI severity, GCS, polytrauma, shock, interfacility transfer, prehospital arrest, prehospital intubation, trauma center level, and year, clustered by facility was performed. Adjusted predicted probabilities of 30-day mortality were estimated.
Results: Overall, 134,857 subjects were included. Subjects were mostly male (65%) with blunt injuries (85%), median [IQR] age 11 [5-15] years, ISS 9 [4-14], and maximum head AIS 2 [1-3]. In the youngest age group, female sex was associated with increased 30-day mortality compared with male sex ($\beta = 0.24$, 95% CI 0.00–0.48; $p = 0.046$), though with minimal difference in adjusted predicted mortality: 2.50% (95% CI 2.29–2.72%) vs 2.54% (95% CI 2.36–2.73%). Among children 5-10 and 11-13 years, there was no statistically significant difference in adjusted odds of 30-day mortality by sex ($p = 0.109$ and $p = 0.362$, respectively). Among adolescents 14-17 years, there was a statistically significant sex-by-age interaction ($\beta = -0.38$, 95% CI −0.67 to −0.09; $p = 0.010$), which translated into a clinically meaningful difference in adjusted predicted mortality: 2.74% (95% CI 2.56–2.92%) among females versus 4.65% (95% CI 4.48–4.82%) among males.
Conclusion: In a large national cohort of pediatric TBI subjects, the relationship between sex and 30-day mortality varied significantly by age, with lower mortality for female sex in the oldest age group. The etiology is likely multifactorial, and may include hormonal, behavioral, mechanistic, or care-related factors. Further research should include translational aims to investigate potential etiologies for this association.

Poster #45

EXPEDITED FREE-STANDING EMERGENCY DEPARTMENT-TO-OPERATING ROOM PATHWAY REDUCED TIME TO APPENDECTOMY

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Introduction: Patients diagnosed with acute appendicitis at free-standing emergency departments (FSEDs) require transfer for operative management. Our institution implemented an expedited FSED-to-OR pathway for patients presenting to network FSEDs with image-confirmed acute appendicitis. The purpose of the study was to evaluate whether pathway utilization reduced time from FSED arrival to operating room (OR) start.
Methods: A retrospective review of adult patients presenting with acute appendicitis to two affiliated FSEDs from July 2025 to January 2026, following pathway implementation, was performed. Patients were divided into two cohorts: those with pathway utilization and those without pathway utilization. The pathway involved direct transfer to the Surgical Preoperative Unit (SPU), with pre-arrival operative scheduling and coordinated multidisciplinary communication between FSED, Acute Care Surgery, and OR teams. Demographic, clinical, and time-interval data were analyzed using t-test and chi-square tests where appropriate. Significance was set at $p<0.05$.
Results: A total of 65 patients presented to our FSEDs with acute appendicitis during the study period. Of these, 24 (36.9%) underwent FSED-to-OR pathway transfer, while 41 (63.1%) did not. Comparison of demographic variables including, age, gender, co-morbidities, and physiologic parameters including, temperature, heart rate, systolic blood pressure, and white blood cell count, was similar between groups (all $p>0.05$). Utilization of the FSED-to-OR pathway significantly reduced time from FSED arrival to SPU arrival (4.73 ± 1.47 vs 9.85 ± 4.22 hours, $p<0.001$) and FSED arrival time to OR start time (7.81 ± 3.15 vs 10.54 ± 4.39 hours, $p=0.0096$). Total length of stay was also significantly shorter in the pathway utilization group (9.25 ± 3.24 vs 12.09 ± 4.76 hours, $p=0.012$). There were no significant differences in operative duration, postoperative complications, emergency department revisits, or readmissions (all $p>0.05$).
Conclusion: Implementation of an expedited FSED-to-OR pathway at our institution significantly reduced time to SPU and operative intervention without increasing complications. Standardized transfer protocols with preoperative activation represent an effective systems-based intervention to improve efficiency and timeliness of surgical care for patients requiring interfacility transfer for acute appendicitis.

Poster #46

EVALUATING THE CLINICAL IMPLICATIONS OF VARIABILITY IN TIMING OF ERCP IN CHOLEDOCHOLITHIASIS: A RETROSPECTIVE STUDY USING THE ACS EGS TARGETED DATABASE

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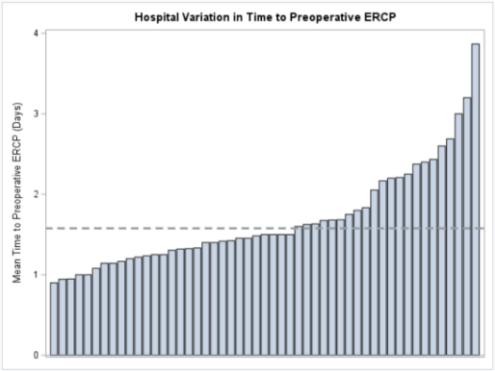
Introduction: Treatment of choledocholithiasis requires clearance of bile duct and cholecystectomy. The current standard, pre-operative ERCP before laparoscopic cholecystectomy (LC), may delay surgery when ERCP access is limited. LC with intraoperative cholangiography (LC+IOC) followed by ERCP offers a potential alternative. We sought to evaluate (1) hospital variability in time to pre-operative ERCP and (2) the safety and efficiency of LC+IOC with post-operative ERCP.

Methods: We performed a retrospective cohort study using ACS NSQIP EGS Targeted database (2022–2024). Adults with choledocholithiasis who underwent LC during the index hospitalization were included and stratified into: (1) pre-operative ERCP before LC or (2) post-operative ERCP within 4 days after LC+IOC. Primary outcomes included complications, mortality, ICU admission, readmission, return to OR, and ED visits. Secondary outcomes included length of stay (LOS). Hospitals with ≥5 pre-operative ERCP cases were grouped into quartiles by mean time to ERCP and compared using Wilcoxon rank-sum tests. Outcomes were compared using multivariable regression adjusted for patient and hospital factors.

	Number of Cases (%) Average	P-value	Unadjusted OR (95% CI)	P-value	Adjusted OR (95% CI)*	P-value	Adjusted OR (95% CI)* with Hospital Level Clustering	P-value
Complications								
Pre-Op ERCP > Lap Chole	32 (2.8%)	0.53	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	10 (3.6%)		1.26 (0.61 - 2.59)	0.53	2.03 (0.58 - 7.14)	0.27	3.23 (1.17 - 8.89)	**0.02**
Mortality								
Pre-Op ERCP > Lap Chole	2 (0.2%)	0.48	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	0 (0.0%)		<0.00 (<0.00 - >999.9)	0.97	2.33 (<0.00 - >999.9)	1.00	2.04 (0.26 - 14.79)	0.48
ICU Admission								
Pre-Op ERCP > Lap Chole	45 (4.0%)	**0.04**	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	4 (1.4%)		0.35 (0.12 - 0.97)	**0.04**	0.04 (<0.00 - 1.40)	0.08	0.13 (0.013 - 1.36)	0.09
Readmission								
Pre-Op ERCP > Lap Chole	51 (4.5%)	0.95	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	13 (4.6%)		1.02 (0.55 - 1.90)	0.95	1.39 (0.43 - 4.48)	0.58	1.26 (0.57 - 2.76)	0.57
Return to OR								
Pre-Op ERCP > Lap Chole	9 (0.8%)	0.66	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	3 (1.1%)		1.34 (0.36 - 4.97)	0.67	<0.001 (<0.001 - >999.9)	0.97	0.58 (0.04 - 8.37)	0.69
ED 30 Visit								
Pre-Op ERCP > Lap Chole	111 (9.8%)	0.57	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	31 (11.0%)		1.13 (0.74 - 1.73)	0.57	0.76 (0.33 - 1.76)	0.53	1.14 (0.59 - 2.20)	0.69
LOS in Hours (Mean ± SD)								
Pre-Op ERCP > Lap Chole	111.1 ± 79.5	**0.00**	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	91.5 ± 49.3		0.65 (0.50 - 0.86)	**0.00**	0.63 (0.35 - 1.13)	0.12	0.74 (0.39 - 1.41)	0.35
LOS in Days (Mean ± SD)								
Pre-Op ERCP > Lap Chole	4.9 ± 3.3	**0.00**	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	4.1 ± 2.1		0.65 (0.49 - 0.86)	**0.00**	0.63 (0.35 - 1.13)	0.12	0.74 (0.39 - 1.41)	0.35
Time to OR in Hours (Mean ± SD)								
Pre-Op ERCP > Lap Chole	84.4 ± 49.7	**<0.00**	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	39.4 ± 30.7		0.14 (0.10 - 0.20)	**<0.00**	0.13 (0.07 - 0.25)	**<0.00**	0.14 (0.07 - 0.29)	**<0.00**
Time to OR in Days (Mean ± SD)								
Pre-Op ERCP > Lap Chole	3.3 ± 2.1	**<0.00**	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	1.4 ± 1.3		0.18 (0.11 - 0.29)	**<0.00**	0.19 (0.08 - 0.47)	**0.00**	0.21 (0.10 - 0.45)	**0.00**
Time to ERCP in Days (Mean ± SD)								
Pre-Op ERCP > Lap Chole	1.5 ± 1.9	**<0.00**	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	2.9 ± 1.7		4.57 (3.45 - 6.08)	**<0.00**	5.97 (3.35 - 10.64)	**<0.00**	7.26 (4.20 - 12.54)	**<0.00**
Time to First Procedure in Days (Mean ± SD)								
Pre-Op ERCP > Lap Chole	1.5 ± 1.9	0.08	REF	REF	REF	REF	REF	REF
Lap Chole w/ IOC- Post-Op ERCP	1.4 ± 1.3		0.96 (0.68 - 1.39)	0.89	1.29 (0.68 - 2.55)	0.46	1.65 (0.77 - 3.55)	0.19

Results: Among 4,290 patients, 1,128 underwent pre-operative ERCP and 282 underwent LC+IOC followed by post-operative ERCP. Complications, mortality, and readmissions were similar between groups (Table 1). Pre-operative ERCP was associated with longer unadjusted LOS. Mean time to pre-operative ERCP was 1.5 days longer in fourth- vs first-quartile hospitals (2.6 vs 1.1 days, p<0.001), demonstrating significant variability in timeliness of ERCP across the 51 included hospitals (Figure 1).

Conclusion: These results demonstrate variability across hospitals in time to pre-operative ERCP for patients with choledocholithiasis. Proceeding with LC+IOC prior to ERCP appears safe and may reduce delays and improve efficiency when timely ERCP access is limited.



Poster #47

PRACTICE VARIATION IN THE MANAGEMENT OF CHOLEDOCHOLITHIASIS: IMPLICATIONS FOR EMERGENCY GENERAL SURGERY

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Introduction: 20% of patients undergoing cholecystectomy have concomitant choledocholithiasis requiring multidisciplinary collaboration between surgeons and gastroenterologists. The American Society of Gastroenterology (ASGE) offers pragmatic guidelines for the work-up and treatment of choledocholithiasis based on risk. Despite this shared guidance, care is often driven by local expertise and procedural availability, resulting in non-guideline-directed care (NGDC). This study aims to understand contributors to NGDC for patients undergoing treatment for choledocholithiasis.

Methods: 272 patients were identified using ICD-10 and CPT codes as being treated for choledocholithiasis using endoscopic and/or surgical intervention from 2019 to 2023 at a single institution. Patients were stratified based on presence of care consistent with the 2019 ASGE Guidelines for the Treatment of Choledocholithiasis. Groups were compared across key clinical characteristics and outcomes. A multivariate model was developed to assess independent predictors of NGDC.

Results: Of the 272 patients included, 133 (51.5%) and 124 (45.6%) were categorized as being at high and moderate risk of choledocholithiasis at time of presentation, respectively. 63 (23.2%) patients received NGDC. No significant differences in age, sex, race, primary insurer, day of admission, admitting team, or initial laboratory studies were seen between patients receiving NGDC and GDC. Patients receiving NGDC were significantly more likely to have CT (75.0% vs. 60.8%, $p=0.043$) or MRCP (71.0% vs. 22.4%, $p<0.001$) imaging as part of their work-up, more likely to be high risk at time of presentation (66.1% vs. 46.5%, $p=0.031$), and more likely to have undergone only surgical treatment (28.6% vs. 6.2%). Multivariate analysis identified high risk class (aOR 10.6, CI 4.4-28.5), utilization of MRCP (aOR 24.7, CI 10.5-64.5), and isolated surgical treatment (aOR 58.4, CI 15.6-249.8) as independent predictors of NGDC.

Conclusions: The use of guideline-directed care (GDC) is critical to ensure timely risk stratification and appropriate use of treatment modalities for patients with choledocholithiasis. This study identified the use of MRCP and isolated surgical treatment as potential targets for quality improvement measures to improve rates of GDC in this patient population.

Poster #48

LEVERAGING ARTIFICIAL INTELLIGENCE TO AUGMENT REGISTRY ABSTRACTION IN EMERGENCY GENERAL SURGERY

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Introduction: A key challenge in establishing an Emergency General Surgery (EGS) registry is the time and cost needed to track patient data and outcomes. Artificial intelligence (AI) could address this gap through data abstraction from clinical notes and reduce registrars' workload. Brim is an AI platform designed to assist with chart abstraction using a large language model to extract variables from unstructured data with a focus on using human-in-the-loop approach. Here, we evaluated the performance of Brim in abstracting variables for an EGS registry as a proof-of-concept study.
Methods: We conducted our study on a random sample of 500 EGS patients admitted to an academic level 1 trauma center in 2025. The variables evaluated were chronic obstructive pulmonary disease (COPD), cirrhosis, congestive heart failure (CHF), hypertension (HTN), acute kidney injury (AKI), delirium, and unplanned return to operating room (RTOR). We selected these variables because they are common pre-existing conditions and hospital events that are important for most registries. Results were compared to manual chart review to obtain sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).
Results: Brim had high sensitivity across all 7 variables – 86% to 100%, and specificity – 83% to 98% (see chart below). It had 100% sensitivity and NPV for COPD and RTOR. Completing this task required 29 minutes and cost $390 USD. In comparison, manual chart review required 16 hours.
Conclusion: We show that AI can abstract unstructured variables with high sensitivity and NPV. This could minimize the need for registrars to review all negative cases and be a cost-effective tool for building an EGS registry.

	Sensitivity	Specificity	PPV	NPV
COPD	100% (59/59)	92% (404/441)	61% (59/96)	100% (404/404)
Cirrhosis	96% (22/23)	98% (415/424)	71% (22/31)	99% (415/416)
CHF	96% (73/76)	96% (407/424)	81% (73/90)	99% (407/410)
HTN	96% (289/302)	93% (184/198)	95% (289/303)	93% (184/297)
AKI	86% (83/96)	91% (366/404)	69% (83/121)	97% (366/379)
Delirium	93% (27/29)	96% (451/471)	57% (27/47)	99% (451/453)
RTOR	100% (14/14)	83% (407/486)	15% (14/93)	100% (407/407)

IMMEDIATE (LESS THAN 24 HOURS) VERSUS EARLY (25-72 HOURS) LAPAROSCOPIC CHOLECYSTECTOMY: A META-ANALYSIS OF OPERATIVE DIFFICULTY AND RESOURCE UTILIZATION

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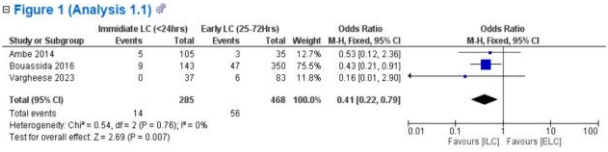
OSF Healthcare

Introduction: Early laparoscopic cholecystectomy (LC) is recommended for acute cholecystitis; however, whether surgery performed within 24 hours of presentation confers additional benefit over delayed early intervention (25–72 hours) remains unclear. We hypothesized that immediate LC reduces operative difficulty and resource utilization without increasing morbidity.

Methods: A systematic review and meta-analysis was performed of comparative studies evaluating immediate (<24h) versus early (25–72h) LC in adult patients with acute cholecystitis. The primary outcome was conversion to open surgery. Secondary outcomes included abdominal drain utilization, overall complications, and postoperative hospital length of stay (LOS). Pooled odds ratios (OR) and mean differences (MD) were calculated using fixed-effects modeling. Heterogeneity was assessed using I^2 statistics.

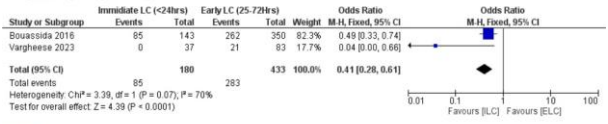
Results: Three comparative studies comprising 753 patients (Immediate: 285; Early: 468) were included. Immediate LC was associated with significantly lower conversion to open surgery (OR 0.41, 95% CI 0.22–0.79; p=0.007; I^2=0%). Abdominal drain placement was significantly reduced in the immediate group (OR 0.41, 95% CI 0.28–0.61; p<0.0001; I^2=70%). Overall complications were also lower with immediate LC (OR 0.31, 95% CI 0.13–0.74; p=0.008; I^2=0%). Importantly, postoperative LOS was reduced by 1.33 days in the immediate cohort (MD −1.33 days, 95% CI −1.54 to −1.12; p<0.00001), despite substantial heterogeneity (I^2=98%).

Conclusions: Laparoscopic cholecystectomy performed within 24 hours of presentation is associated with reduced conversion to open surgery, decreased drain utilization, lower complication rates, and shorter postoperative LOS compared with surgery performed between 25–72 hours. These findings suggest that operative delay even within traditionally accepted “early” windows may increase inflammatory progression and operative complexity. Institutional protocols prioritizing immediate operative intervention may improve both surgical outcomes and resource utilization.



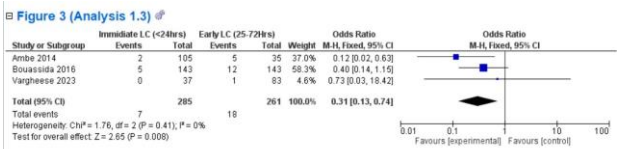
Caption

Forest plot of comparison: 1 Conversion to open, outcome: 1.1 Conversion to Open Surgery.



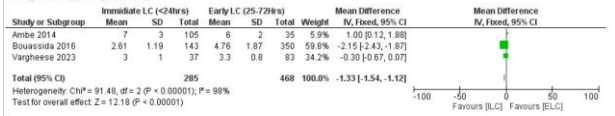
Caption

Forest plot of comparison: 1 Conversion to open, outcome: 1.2 Abdominal Drainage.



Caption

Forest plot of comparison: 1 Conversion to open, outcome: 1.3 Overall Complication.



Caption

Forest plot of comparison: 1 Conversion to open, outcome: 1.4 Postoperative Hospital Stay.

Poster #50

THE APPLICATION OF A 10-FACTOR GERIATRIC TRAUMA FRAILTY INDEX TO A NATIONAL DATABASE OF INJURED ELDERLY PATIENTS

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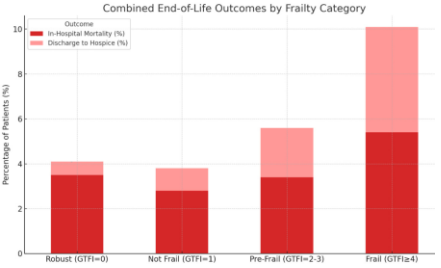
Introduction: Most validated frailty indices require patient participation or data that may be unreliable or unobtainable from elderly patients with advanced medical diseases or severe injuries. A 10-variable Geriatric Trauma Frailty Index (GTFI-10) provides a comorbidity-based approach to stratifying patient frailty, but its effectiveness has not been evaluated in a large national trauma cohort. Herein, we evaluate the association between GTFI-10 frailty stratification and clinical outcomes of injured elderly patients using a national trauma database.

Methods: A retrospective cohort study was conducted using the American College of Surgeons TQIP Participant Use File data from 2017–2023. Adults aged ≥ 65 years admitted with blunt or penetrating injuries were included. Frailty was stratified using the GTFI-10 adapted from the modified frailty index (mFI-5) with additional comorbidities (myocardial infarction, stroke, dementia, bleeding disorder, and admission do-not-resuscitate status). Each variable was binary coded (present = 1, absent = 0), producing a cumulative frailty score from 0 to 10. Frailty was categorized as baseline (score 0), not frail (1), pre-frail (2–3), and frail (≥4). Primary outcomes included in-hospital mortality.

Results: Among 1,897,058 patients, 9.4% were baseline, 30.9% not frail, 41.8% pre-frail, and 8.4% frail. Mortality increased stepwise with frailty: unadjusted mortality (baseline 4.3%, not frail 3.7%, pre-frail 5.6%, frail 10.2%) and adjusted mortality (pre-frail OR 1.31 [95% CI 1.26–1.35]; frail OR 2.28 [2.18–2.38]; $p < .001$.

Conclusions: Comorbidity-based GTFI-10 frailty stratification strongly and independently correlated with mortality, complications, and undesirable discharge disposition of injured elderly patients. GTFI-10 may enable early identification of vulnerable injured elderly patients, allowing for multidisciplinary interventions to improve elderly patient outcomes. The low implementation burden of GTFI-10 allows for broad utilization.



Poster #51

INTEGRATING FRAILTY AND SARCOPENIA FOR RISK STRATIFICATION IN GERIATRIC TRAUMA: A SINGLE-CENTER PILOT STUDY

Riddhi Mehta, MD; Kartik Prabhakaran, MD; Anna Jose, MD;
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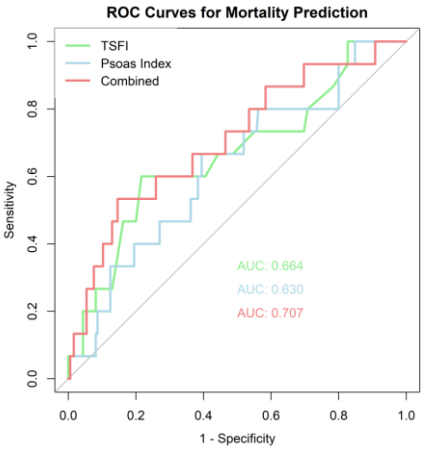
Westchester Medical Center

Introduction: Sarcopenia and frailty are established predictors of poor outcomes in older trauma patients, but their comparative and combined utility remain debated. We aimed to assess the predictive performance of the Trauma-Specific Frailty Index (TSFI), the Psoas Index (PI), and a combined model (CM) incorporating both metrics to identify mortality risk.

Method: We conducted a retrospective analysis of geriatric (≥65 years) blunt trauma patients at a single academic center. Frailty was assessed using the TSFI, and sarcopenia was measured with PI on admission CT scans. Inverse PI was used to align directionality and correlation was assessed using Spearman's coefficient. Predictive performance of TSFI, PI and CM for in-hospital mortality was evaluated using area under the curve (AUC) and DeLong's test. Optimal cutoffs were determined using Youden's Index, and model calibration was checked using Hosmer-Lemeshow goodness-of-fit test and bootstrap confidence intervals.

Result: 200 patients were included (median age: 80, males: 55%, falls: 67%). Overall in-hospital mortality was 7.5%. There was a weak, non-significant correlation between TSFI and Inverse PI (Spearman's ρ=0.08, p=0.24) suggesting that they capture distinct aspects of vulnerability. AUCs were 0.664 for TSFI, 0.630 for Inverse PI, and 0.707 for CM. DeLong's test showed no statistically significant difference. CM demonstrated good calibration between predicted and observed mortality (p=0.93; mean absolute error=0.011) and stable performance (bootstrap 95% CI: 0.566–0.845). At optimal cutoffs, CM showed improved specificity (85%), compared to TSFI (78%) and PI (61%).

Conclusion: TSFI and PI measure different but complementary domains of physiologic reserve. While CM did not significantly outperform individual scores in discrimination, its superior specificity and calibration make it particularly valuable for informed decisions involving resource allocation and goals-of-care discussions. These findings support integrating a combination of frailty and sarcopenia assessment in trauma care and warrant validation in larger, multicenter studies.



Poster #52

POSTOPERATIVE BLEEDING AFTER FRACTURE FIXATION: THE ROLE OF SEX AND CHRONIC ASPIRIN THERAPY

Kristin Salottolo, MPH; Chad Corrigan, MD; Emmett McGuire, MD;
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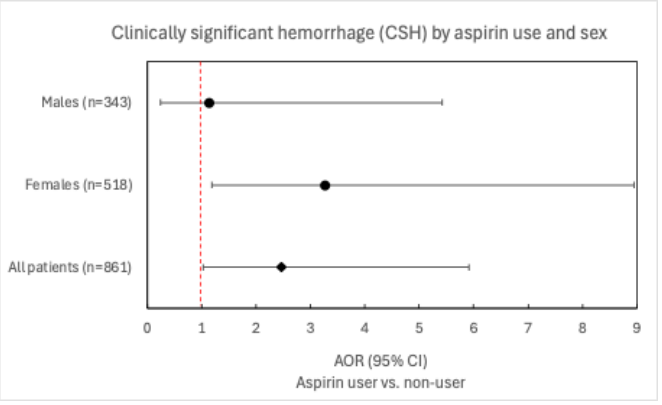
Swedish Medical Center

Introduction: Aspirin irreversibly inhibits platelet cyclooxygenase-1 (COX-1) and thromboxane A_2 production, increasing bleeding risk. This powered study examined whether the association between chronic aspirin use and postoperative clinically significant hemorrhage (CSH) differs by sex for trauma patients undergoing operative fracture fixation.
Methods: This multicenter retrospective cohort study included adult trauma admissions with hip, femur, or pelvic fractures; patients with penetrating injury, chronic anticoagulant use, bleeding disorders, or severe head/neck injury were excluded. The primary outcome was CSH within 48 hours postoperatively based on consensus definition. Multivariable logistic regression with Firth correction assessed the association between aspirin use and bleeding, including sex-stratified analyses and interaction testing.
Results: Among 861 patients (60% female; median age 76 years; 70% hip fracture), 22% were chronic aspirin users. Overall rate of CSH was 3.5%; 13 of 30 CSHs required a second intervention. After adjustment, aspirin use was associated with increased odds of CSH (AOR: 2.5 [1.0-5.9]), but a significant sex interaction was observed. In females, aspirin use was associated with CSH (AOR: 3.3 [1.2-9.0]) but not in males (AOR: 1.1 [0.2-5.4].
Conclusions: These findings suggest that perioperative antiplatelet risk assessment should incorporate biological sex. This association has broad clinical relevance due to prevalence of chronic aspirin therapy in this population.



Poster #53

PRECISION VTE PROPHYLAXIS IN HIGH-RISK TRAUMATIC BRAIN INJURY: WEIGHT-BASED DOSING WITH ANTI-XA MONITORING

Rachel Davis Bouvette, MD; Kara Kubbs, PharmD; Laiba Akhtar, BS; Danielle Harris, BS; Luke Myers, BS; Katy Rogers, BS; Heather Grubbs, MD; Christopher Luschen, MD; Matthan Tharakan, BS; Zoona Sarwar, MS; Kenneth Stewart, PhD; Tabitha Garwe, PhD, MPH; Emily Switzer, MD; Chance Nichols, MD; Alisa Cross, MD
Swedish Medical Center

Introduction: VTE prophylaxis (VTEp) schemes in traumatic brain injury (TBI) patients require careful precision to balance the high risk of VTE with a need to avoid devastating bleeding complications. Weight-based dosing of enoxaparin VTEp is associated with superior VTE prevention compared to standard dosing, but its use is controversial in TBI patients. Our study evaluates the safety of a weight-based enoxaparin VTEp scheme with dose adjustments to meet goal anti-Xa levels in this patient population.
Methods: Our institutional registry was queried for all patients admitted to the trauma service with TBI from July 1, 2023 to December 31, 2024 who received at least 48hrs of enoxaparin VTEp. 220 patients with complete data were included for analysis. All patients received 0.5mg/kg weight-based enoxaparin dosing on a twice-daily schedule, with anti-Xa levels monitored for dosing adjustment. Patients were stratified by modified Parkland Protocol (MPP) severity and by initial Xa level into goal or sub-/supra-therapeutic.
Results: Of the 220 TBI patients, 148 (67.3%) were classified as high and 72 (33.7%) as low MPP. VTEp was started at a median time of 48 and 60 hours for high and low MPP, respectively. Weight based dosing achieved goal anti-Xa in 73.0% of patients with 7.6% having a supratherapeutic level. Goal anti-Xa was achieved on 96.8% of patients within one dose adjustment. Newly diagnosed VTE occurred in 0.9% of patients. Although 17 (11.5%) high-risk patients exhibited radiologic progression of their TBI after VTEp initiation, only 2 (1.4%) of these patients required procedural intervention. There was no significant association between initial Xa level and radiologic TBI progression ($p=0.135$), need for procedural intervention ($p=0.463$), new VTE ($p=1.000$), or in-hospital mortality ($p=0.9461$).
Conclusions: Goal Xa was achieved initially in 73.0% of patients, and in 96.8% of patients after one dose adjustment. Use of weight-based enoxaparin VTEp with dose adjustments to meet goal anti-Xa levels appears safe, even in a high-risk TBI patient population. This dosing scheme could offer improved protection from VTEp with no additional bleeding risks. Future work should focus on multi-institutional efforts to further delineate the clinical implications of weight-based enoxaparin dosing in this high-risk population.

Poster #54

TIME-TO-KNIFE: IMPACT OF A NOVEL 30 MINUTE BENCHMARK TIME FOR ARRIVAL TO INCISION FOR TRAUMA PATIENTS AT RISK OF EXSANGUINATION REQUIRING EMERGENT TRUNCAL OPERATION

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Brandon Kiel, MD; Hannah Dice, MS; Jessica Brady, DAT, MEd;
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Chippenham Hospital

Introduction: Time dependent quality benchmarks are a common tool both to improve patient outcomes and in trauma center verification. Hemorrhage is the leading cause of preventable death after injury and causes death within hours. Hemorrhage control operations via laparotomy or thoracotomy are commonly required to salvage patients with exsanguinating hemorrhage. However, no time dependent quality benchmarks exist regarding time to incision for truncal hemorrhage control operations. We established a time-to-knife benchmark of 30 minutes for hypotensive patients at risk of massive truncal hemorrhage (FAST+, massive hemothorax, or penetrating chest/abdominal injury). We sought to compare outcomes between pre- and post-implementation periods with the hypothesis that a time-to-knife benchmark may decrease hemorrhage mortality.
Methods: Single center retrospective cohort study from 01/2015-02/2026 of patients requiring emergent thoracotomy or laparotomy (PRE: 01/2015-04/2025; TTK: 04/2025-02/2026). Patients with hypotension (systolic blood pressure (SBP) $\leq$ 90 mmHg) any time prehospital or upon ED arrival were eligible for inclusion. Time-to-knife calculated from arrival to incision if prehospital hypotension or from time of first hypotension for those patients with ED hypotension only. Hemorrhage mortality independently confirmed by two trauma surgeons. Primary outcome was hemorrhage mortality with secondary outcomes of 6- and 24-hour mortality.
Results: 115 patients were included (TTK=14; PRE=101). There were no differences in average age (45 vs 41 years; p=0.58), gender (100% vs 78%; p=0.11), or penetrating injury (36% vs 49%; p=0.54) between TTK and PRE. Almost all patients underwent laparotomy (100% vs 95%; p=0.88). Average time-to-knife was significantly lower in TTK compared to PRE (28 vs 56 minutes; p=0.003) with significantly more (79% vs 32%; p=0.002) with incision within 30 minutes. Hemorrhage (0% vs 28%; p=0.053), 6-hour (7% vs 26%; p=0.23), and 24-hour (7% vs 30%; p=0.14) mortality rates were less in the TTK compared to PRE, although not statistically significant.
Conclusion: Initiation of a time-to-knife benchmark of 30 minutes for hypotensive patients requiring emergent truncal operation was associated with significantly lower times to incision. Rates of hemorrhage mortality and 6- and 24-hour mortality were lower, but not statistically significant.

Poster #55

FINANCIAL HARDSHIP: GUN INJURIES EXPENSIVE TOLL ON AN URBAN LEVEL 1 TRAUMA CENTER

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Charlotte Kvasnovsky, MD; Diane Haddad, MD, MPH
University of Chicago Medicine

Introduction: Firearm injury causes devastating physical and psychological effects, but the economic burden of firearm-related injury is poorly understood. Previous studies have reported hospital charges and costs to individual patients, but the cost to the health system remains unknown. This study describes the financial burden of firearm injury on a health system, evaluating hospital costs and reimbursement to inform future policy.
Methods: From July 1, 2020-December 31, 2024, patients presenting with firearm-related injuries to an urban, level 1 trauma center were identified. All post-discharge follow-ups up to 1 year after injury were assessed. Demographic and clinical characteristics were reviewed for all encounters. Hospital-level costs were compared including hospital contribution margin (net revenue-direct costs) and operating income (net revenue-total cost).
Results: There were 4,656 firearm-injured patients, with the majority discharged home from the ED (n=2,146, n=46.1%). Median age was 28 (IQR 22-37) with 82% Black and 71% with Medicaid as primary insurance. The cost of initial hospital care for victims of firearm injury was $147 million with the majority of index costs (92%) resulting from inpatient care ($135 million). Median contribution margin was -$257 per patient (IQR -$1,290 to $12,135) and median operating income was -$1,628 (IQR -$3,653 to $4,532). In the one year after injury, 57% of patients (n=2,647) had an encounter within the health system with a median of 7 encounters per patient (IQR 3-12). Total cost of post-discharge hospital care was $29 million, including 8,506 outpatient visits (83.4%), 521 inpatient readmission (5.1%) with a median LOS of 5 days (IQR 3-9 days). Median operating income for follow up care 1-year post-injury was -$123 (IQR -$304 to $12).
Conclusion: Firearm injury is an expensive disease, costing a single hospital system $176 million in care costs over a 5-year period. Understanding these costs is essential for trauma systems and policy makers. Investments in primary, secondary and tertiary prevention efforts offer opportunities for substantial cost savings at the health system level.

Poster #56

CHARACTERIZING TRAUMA CENTER PROLIFERATION ACROSS THE UNITED STATES

Renee C. Groechel, PhD; David Bar-Or, MD; Christopher Zaw-Mon, MD;
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Steven Morgan, MD; Ray Fulp, MD;
Carlos Palacio, MD; David Acuna, MD
South Texas Health System

Introduction: The number of trauma centers in the U.S. continues to increase, with potential implications for trauma care access and building a more unified trauma care system. This study provides an update on trauma center categorization and proliferation over the past 20+ years.
Methods: The number and level of adult trauma centers as of January 2026 were identified via two certification pathways: 1) ACS verified centers (per the ACS website), and 2) state-designated centers (per state government websites and additional verified resources). Certification is not mutually exclusive and varies by state, though state-designation as level I-III is roughly aligned with ACS criteria. Data collected in 2026 were compared to data published in a previous study (MacKenzie et al., 2003 *JAMA*).
Results: As of 2026, there are 554 ACS verified trauma centers, an increase of 201% since 2003. There are 2,100 state-designated trauma centers, an increase of 95% since 2003. Across certifications, the largest growth occurred among lower-level centers (levels III-V), a total increase of 139% since 2003. Forty-seven states and DC participate in ACS certification and the number of states with formal trauma systems using ACS-based designation criteria increased by 26% from 35 in 2003 to 44 in 2026.
Conclusion: Since 2003, U.S. trauma center growth has been substantial, with notable expansion of lower-level trauma centers. The introduction of more entry points into the trauma system may lead to better outcomes in rural communities. These findings are alongside increased state participation in both certification pathways. While more widespread use of the ACS-based designation criteria is encouraging, further standardization is needed to minimize discrepancies between the two certification pathways and to create a unified trauma system.

Level of Center	ACS Verified Trauma Centers 2003*	ACS Verified Trauma Centers 2026	State-Designated Trauma Centers 2003*	State-Designated Trauma Centers 2026
Level I	89	204	149	242
Level II	80	203	234	314
Level III	15	147	244	501
Level IV and V†	0	0	450	1043
Total	**184**	**554**	**1077**	**2100**

ACS, American College of Surgeons. *Estimates are from MacKenzie, Hoyt, Sacra, et al. (2003). National Inventory of Hospital Trauma Centers. *JAMA*, *289*(12):1515-1522. †ACS verification not performed for Level IV/V trauma centers.

Poster #57

DOES UPDATING THE ABBREVIATED INJURY SCALE (AIS) IMPROVE MORTALITY PREDICTION? A COMPARATIVE ANALYSIS OF AIS 2005 AND AIS 2015 USING TQIP DATA

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Ajou University School of Medicine

Introduction: The Abbreviated Injury Scale (AIS) is widely used to quantify anatomical injury severity in trauma patients. However, limited data exist comparing the performance of AIS 2005 and AIS 2015 in predicting mortality. This study aimed to compare mortality prediction using AIS 2005, converted AIS 2015, and native AIS 2015.
Methods: Data from the Trauma Quality Improvement Program (TQIP) database between 2021 and 2024 were analyzed. Using the official TQIP mapping algorithm, three datasets were constructed: AIS 2005, converted AIS 2015 (mapped from AIS 2005), and native AIS 2015. Injury Severity Score (ISS) distributions and mortality prediction using the Trauma and Injury Severity Score (TRISS) model were compared across AIS versions. Receiver operating characteristic (ROC) curve analysis with bootstrap resampling was performed to evaluate predictive performance.
Results: A total of 4,276,273 patients were included in the analysis; 3,821,817 (89.4%) were coded using AIS 2005 and 454,456 (10.6%) using AIS 2015. After conversion from AIS 2005 to AIS 2015, injury severity classification changed in 457,343 cases, with 138,404 showing increased ISS and 318,939 showing decreased ISS. In TRISS-based mortality prediction, the area under the curve (AUC) was significantly higher for native AIS 2015 than for AIS 2005 (0.892 vs. 0.876; $p < 0.001$) in bootstrap analysis, whereas converted AIS 2015 demonstrated performance similar to AIS 2005.
Conclusions: Converted AIS 2015 derived from AIS 2005 demonstrated mortality prediction performance comparable to AIS 2005. In contrast, native AIS 2015 provided superior mortality discrimination using the TRISS model. These findings suggest that direct AIS 2015 coding should be preferentially adopted in trauma registries and clinical research.

Poster #58

REAL WORLD PREDICTORS OF REQUESTING AIR MEDICAL TRANSPORT BY EMS

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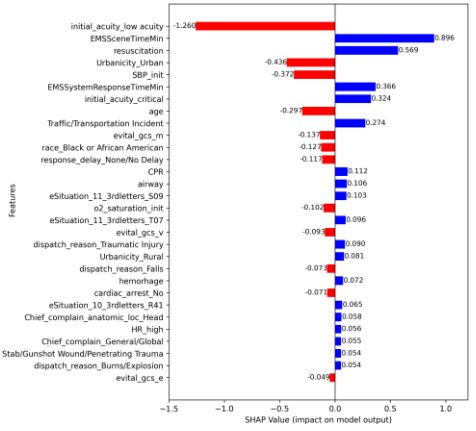
Introduction: We recently developed and validated a consensus definition of air medical transport (AMT) need after trauma (Table); however, the real-world drivers of AMT use remain unclear. Our objective was to compare predictors of AMT use with the consensus definition.
Methods: Injured adults transported by ground or air in 2024 NEMSIS dataset were included. Data for air patient was derived from ground EMS that requested AMT. Extreme gradient boosting modeling determined predictors of AMT use. Feature importance was quantified by SHAP values for contribution to predicting transport type.
Results: 3,173,439 patients were included with 0.25% AMT. Feature importance (Figure) identified several factors that align with the consensus definition including GCS, SBP, resuscitation needs, and time savings. However, acuity perception, age, and mechanism are not in the definition.
Conclusions: Data-driven analysis of AMT utilization factors highlight a gap between our validated consensus definition and real-world practice, identifying targets for education, implementation, and potential refinements of the definition. Future work will identify implementation barriers.

Specialized care or 30-min time savings by AMT for:		Operational/System Criteria:	
• SBP<90 • GCSm<6 • GCS<13 if age>65 • Chest injury + resp distress • Arrest with ROS • +FAST • Need for surgery	• Penetrating torso injury • Unstable pelvic fracture • Crush/mangled extremity • Amputation • Bleeding req tourniquet • Spinal cord injury • Multisystem trauma	• Terrain accessible only by AMT • # of patients exceed ground capabilities • Benefit from more distant specialized center	• Need for center with OB/PCI/Stroke services • Time savings for trauma + STEMI/LVO • Ground capabilities cannot transport to trauma center



Poster #59

CALCULATING TRAUMA UNDERTRIAGE RATES: SCHRODINGER'S CAT REVISITED

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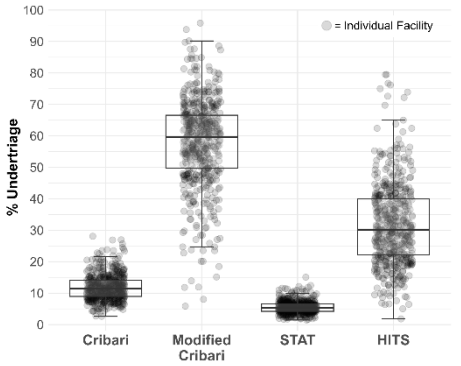
Introduction: Undertriage (UT) is central to trauma center quality improvement, yet UT definitions vary and no data-driven consensus target exists for inter-facility benchmarking. We compared facility-level UT rates across four methods and assessed the impact on facility benchmarking.
Methods: This retrospective study included patients aged 18-89 from Level I & II trauma centers in ACS TQP Files (2021-2023). Facility-level UT was calculated using Cribari Matrix Method, modified Cribari Matrix Method, Standardized Triage Assessment Tool (STAT) and the High-Intensity Time-Sensitive (HITS) intervention-based definition representing trauma team actions. Paired facility-level UT rates were compared across methods (Wilcoxon signed-rank). To estimate benchmarking impact, we calculated within-facility rank change (higher rank = higher UT) relative to Cribari.
Results: 2,718,519 patients and 514 facilities were included. Median facility-level UT significantly differed by method: Cribari 11% [IQR 9-14], Modified Cribari 60% [50-67], STAT 9% [7-11], and HITS 30% [22-40] (Fig, all $p<0.001$). At individual hospitals, the median range of UT values was 54% [45-62]. The median absolute facility rank change between the Cribari method and other tools was 129 [53.5-240] for Modified Cribari, 20 [3-38] for STAT, and 141.5 [60.3-251.8] for HITS.
Conclusion: These UT data highlight a concerning level of variation and uncertainty in the calculation and interpretation of a key trauma center performance metric. Until a UT definition is standardized and data-driven UT target goals established, cross-center benchmarking using UT should be interpreted cautiously and may be better suited for within-center trending.



Poster #60

DISTANCE AND BLOOD MATTER: GEOSPATIAL ANALYSIS OF PREHOSPITAL BLOOD AVAILABILITY AND TRAUMA CENTER ACCESS FOR FATAL MOTOR VEHICLE CRASHES IN THE UNITED STATES

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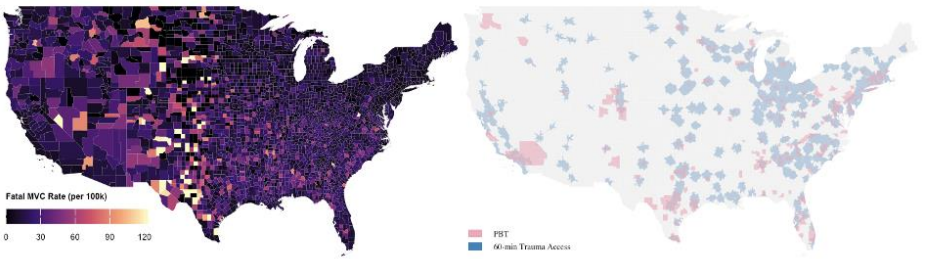
Introduction: Early hemorrhage control through prehospital blood transfusion (PBT) and timely definitive trauma care are central to modern trauma systems, yet national access to these capabilities remains poorly defined. Fatal motor vehicle crashes (MVCs) may serve as a population-level marker of severe injury burden. We hypothesized that county-level PBT availability and proximity to trauma centers would be associated with lower fatal MVC incidence.

Methods: National geospatial analysis of MVC fatalities from the 2023 NHTSA Fatality Analysis Reporting System was performed. County-level fatal MVCs were spatially linked to EMS agencies providing PBT and 60-minute driving time catchment areas surrounding continental ACS-verified trauma centers (TCs). Negative binomial regression, offset by county population, was used to evaluate associations between PBT availability, TC proximity, rurality, and fatal MVC incidence.

Results: Among 37,355 MVC fatalities, 10,378 (27.8%) occurred in counties with PBT access and 25,397 (68%) occurred within 60-minute proximity of a TC. Urban counties were more likely than rural counties to have PBT capability (OR 7.3; 95% CI 6.68-7.95) and 60-minute TC access (OR 13.1; 95% CI 12.36-13.85). In population-adjusted models controlling for rurality, both PBT capability (IRR 0.87; 95% CI 0.81-0.94) and 60-minute TC proximity (IRR 0.79; 95% CI 0.74-0.84) were independently associated with lower fatal MVC incidence.

Conclusion: County-level access to PBT and timely TC proximity were independently associated with lower population-adjusted fatal MVC incidence. These resources remain disproportionately concentrated in urban regions, underscoring geographic disparities in trauma system capability and highlighting opportunities to enhance early life-saving resuscitative care.



Poster #61

BRIEF INTERVENTIONS ALONE ARE NOT ENOUGH FOR TRAUMA PATIENTS WITH HIGH-RISK SUBSTANCE USE

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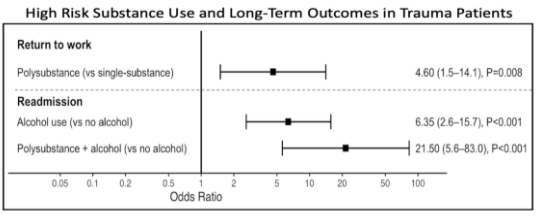
Introduction: Substance use, particularly alcohol use, is highly prevalent among trauma patients and associated with recurrent injury and worse in-hospital outcomes. ACS Level I trauma centers are required to implement Screening, Brief Intervention, and Referral to Treatment (SBIRT). We evaluated the association between substance use, SBIRT consults, and long-term patient-reported outcomes after trauma.

Methods: Retrospective cohort study linking SBIRT data, electronic health record data, and long-term outcomes from the Functional Outcomes and Recovery After Traumatic Injury (FORTE) registry. Adult trauma patients with moderate or severe trauma (Injury Severity Score ≥ 9) admitted to a Level I trauma center (2016-2022) were included. Multivariable regression assessed associations between substance use, SBIRT consult, and long-term health related quality of life, mental health, and return to work, adjusting for demographic, clinical, and injury-related characteristics.

Results: Among 1,334 trauma patients with long-term follow-up, 89.7% were tested for substance use, 32.6% tested positive, and 44.9% of those patients received an SBIRT consult. Polysubstance use was associated with higher odds of not returning to work (OR 4.6 [1.5–14.1], p=0.008). Alcohol use was associated with increased odds of readmission (OR 6.35 [2.6–15.7], p<0.001), which was markedly higher among patients with alcohol-involved polysubstance use (OR 21.5 [5.6–83.0], p<0.001) [Figure]. PTSD at 6 months was more prevalent among alcohol users (14.9% vs 8.9%, p<0.001) and highest among alcohol-involved polysubstance users (23.9% vs 8.9%, p<0.001). SBIRT was not associated with improved mental health or functional outcomes (all p>0.5).



Conclusion: Polysubstance use and alcohol-involved polysubstance use are associated with significantly worse long-term outcomes after trauma. SBIRT delivered as a single bedside intervention was not associated with improved recovery.

Poster #62

EARLY RESULTS OF A POST-TRAUMATIC STRESS DISORDER SCREENING PROGRAM AT A LEVEL 1 TRAUMA CENTER

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Introduction: In March 2022, The American College of Surgeons Committee on Trauma (ACS-COT) released the seventh edition of Resources for Optimal Care of the Injured Patient, which required screening and referral for mental health after trauma. Post-traumatic stress disorder (PTSD) is thought to be prevalent among trauma patients and thus warrants screening. The ACS-COT did not specify the way to screen, and thus we employed an automated screening tool. We sought to evaluate the feasibility of an automated screening and referral system designed to align with the ACS-COT guidelines at a level 1 trauma center.

Methods: A retrospective review of trauma patients screened from November 2024 - December 2025 was performed. All trauma patients were screened for PTSD via SMS texting or voice call after discharge. Using the Primary Care PTSD Screen for DSM-5, PTSD was defined as > 4 issues for males and > 3 or more issues for females. Our primary outcome was overall successful contact rate; secondary outcomes included screening completion rate, PTSD screening results, and referral outcomes.

Results: There were 1,010 patients screened; 586 patients were enrolled from the emergency department, 288 from inpatient services, 135 from the observation unit, and 3 from overnight recovery. There were 393 (67%) patients who answered at least one clinical screening question and 280 (48%) patients who completed all screening questions. Of those, 96 patients (43.3%) screened positive for PTSD. Outreach was primarily conducted via voice call (82.5%) with the remaining 17.7% via SMS. Successful referral was achieved in 38.9% of contacted patients: 24 patients were referred to the in-house Trauma Psych Program, 22 patients to community mental health workers, 41 patients were provided community resources, and 28 patients declined services.

Conclusion: Implementation of a technology-forward screening and referral program for PTSD in trauma patients is feasible with a substantial number of patients screening positive for PTSD. In line with Resources for Optimal Care of the Injured Patient (ACS-COT March 2022), mental health screening and referral are important and required parts of whole patient trauma care. Future efforts should include identifying the most effective modes of communication for patient engagement, qualitatively assessing barriers to completion of surveys, and optimizing ways for referral to mental health services.

Poster #63

RISK FACTORS FOR HYPONATREMIA IN ISOLATED GERIATRIC TBI AND THE IMPACT OF DDAVP

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Introduction: Early hyponatremia (HN) is common in hospitalized geriatric patient. In isolated traumatic brain injury (iTBI), both the injury itself and therapies such as desmopressin (DDAVP) augments the inherent risk of HN. Recent guidelines have recommended against DDAVP to counter antiplatelet (AP) effect due to risk of HN but the true impact of a single dose in iTBI is not known. Our primary objective was to determine incidence of early HN and secondarily to identify risk factors for early HN in geriatric iTBI.
Methods: After IRB exemption, a sub-analysis of an existing multicenter geriatric iTBI dataset (2021-2023) was performed. Patients admitted with normal serum sodium (135-145) were designated as either remaining eunatremic (EN) or HN (drop in serum sodium of 5 or a new serum sodium <135 within 2 days of admission). Cohorts were compared for demographics, injury characteristics including AIS head and type of intercranial hemorrhage (ICH), anticoagulant (AC) or antiplatelet (AP) status and reversal agents given, thiazide use or any history of previous or chronic hyponatremia. Length of stay (LOS), upgrade in level of care or neuro-intervention were also compared. Univariate, followed by multivariate, logistic regression was used to identify predictors of HN.
Results: 601 patients >/= 65 years old were admitted with iTBI and normal serum sodium across the study period. Median age was 77 years (IQR (64-85)) with a median AIS head of 3 (IQR 2-3). Incidence of AP or AC usage was 57% (n=340) with 35% receiving DDAVP (n=216) and 10% receiving PCC (n=62). History of hyponatremia was observed in 13% (n=77) and 18.5% used thiazides at home (n=77). 15.6% of patients developed early HN (n=94). Patient sex, AIS head, admission Glasgow coma score (GCS) and ICH type were similar between groups. On multivariate analysis the strongest predictors of HN were exposure to DDAVP (OR 2.16 (1.22 – 3.82), $p<0.01$) and history of hyponatremia (OR 3.39 (1.96 – 5.87), $p<0.01$). Median LOS was significantly different between HN and EN (3.5d IQR 2-6 vs. 3.0d IQR 2-5, $p<0.01$).
Conclusion: Early HN is a relatively common finding in geriatric patients with iTBI. Despite admission with normal serum sodium, the strongest predictors of early HN appears to be exposure to DDAVP and a history of hyponatremia prior to admission. A small but significant increase in LOS is observed in HN patients as well.

Poster #64

TRAUMATIC BRAIN INJURY IS THE STRONGEST PREDICTOR OF MORTALITY IN TRAUMA-ASSOCIATED ASPIRATION PNEUMONIA

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Introduction: Aspiration can be a devastating complication in trauma pts, yet national-scale data on incidence, outcomes, and risk factors remain limited. We sought to characterize the epidemiology of trauma-associated aspiration pneumonia, identify injury-specific predictors of mortality, and develop a temporally validated prediction model.
Methods: Retrospective cohort study using 2020-2022 NIS for model development and 2023 NIS for temporal validation. Aspiration pneumonia (ICD-10-CM J69.x) and trauma diagnoses were identified. ISS was calculated using ICDPIC. Case-control analysis compared trauma patients with/without aspiration (3:1 matching). Propensity score matching (1:1) assessed aspiration's independent mortality effect. Gradient boosting models predicted mortality.
Results: In 351,335 aspiration hospitalizations, 53,874 (15.3%) had trauma with 17.3% mortality. Aspiration increased mortality 5.9-fold vs controls (17.6% vs 3.0%; $p<0.001$). Propensity-matched analysis (9,976 pairs) confirmed aspiration's independent effect (OR 7.47; 95% CI 6.57-8.50). Traumatic brain injury (TBI) had highest mortality among major trauma types (20.3%) despite mid-range ISS (18.9). TBI mortality increased from 18.5% (2020) to 22.2% (2022). At ISS ≥25, TBI mortality was 29.1% vs 14.3% in non-TBI. The mortality model (AUC 0.720, 95% CI 0.715-0.724) was validated on 2023 data (n=28,534), demonstrating maintained discrimination (AUC 0.724, 95% CI 0.716-0.732) with sensitivity 75.3%, specificity 58.4%, NPV 92.7%. TBI mortality exceeding non-TBI was confirmed.
Conclusion: Aspiration pneumonia increased mortality > 7-fold. TBI emerged as the strongest predictor. The model demonstrated robust temporal stability (AUC 0.724) with high NPV (92.7%). These findings support prioritizing targeted aspiration prevention in TBI patients independent of injury severity.

Poster #65

EFFECTIVENESS AND SAFETY OF DOAC COMPARED TO LMWH FOR THROMBOPROPHYLAXIS IN TRAUMA PATIENTS WITH TBI

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Introduction: Low-molecular weight heparin (LMWH) is currently the standard of care for venous thromboembolism (VTE) prophylaxis in trauma patients who have no contraindication to the medication. Recently, direct oral anticoagulants (DOACs) started to become an option for VTE chemoprophylaxis of hospitalized patients. The use of DOAC for prophylaxis has been studied in hospitalized medical patients, hip fracture patients as well as patients with lower extremity fractures, showing DOACs to be noninferior in prevention of VTE compared to LMWH. To date, there have been no studies that evaluate the effectiveness and safety of LMWH and DOACs for traumatic brain injuries (TBI) patients. This study aims to evaluate the clinical outcomes of TBI patients who receive DOAC compared to LMWH as thromboprophylaxis while inpatient. We hypothesize that DOAC will be associated with similar VTE outcome with no increase in bleeding complication.

Methods: We queried the ACS-TQIP database from 2017 to 2023 for adult patients who suffered TBI and were started on either DOAC or LMWH for VTE prophylaxis. Given the large discrepancy between patients receiving DOACs compared to LMWH, propensity score matching was utilized to compare the effectiveness (symptomatic VTE) and safety (bleeding complications) between the two medications.

Results: 277,450 patients met criteria to be included in the study, with 270,260 patients receiving LMWH and 7,190 receiving DOAC. Following propensity score matching, 6,562 patients were included in the analysis. DOAC was given 44.6 (56.8) hours after admission while LMWH was given 47.6 (44.5) hours after admission ($p<0.01$). The DOAC cohort had 1.52% of patients diagnosed with a symptomatic VTE. This was significantly higher compared to the 0.84% of LMWH cohort with symptomatic VTE ($p<0.01$). There was no difference in bleeding control surgery or angioembolization between those who received DOACs and LMWH.

Conclusions: This study demonstrates a higher rate of symptomatic VTE when TBI patients were on DOACs for VTE chemoprophylaxis compared to LMWH. These results differ to previous medical and trauma literature showing DOACs to be superior or noninferior to LMWH in preventing VTEs. Bleeding complications were similar between the two groups, which is consistent with previous TQIP studies comparing DOACs and LMWH. Given these results, LMWH, rather than DOACs, should be utilized for VTE chemoprophylaxis in patients with TBI.

Poster #66

TIME TO INITIATION OF VENOUS THROMBOEMBOLISM PROPHYLAXIS IN TRAUMATIC SPINE INJURED PATIENTS - HOW EARLY IS EARLY?

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Introduction: Trauma patients, especially those with spine injuries, have a high venous thromboembolism (VTE) risk (up to 58%). Delays in VTE prophylaxis increase this risk. While guidelines advise initiating prophylaxis early, the optimal timing is unclear. Our goal was to determine the optimal time for prophylaxis to minimize VTE without increasing bleeding.
Methods: Adults aged ≥18 years admitted to a level 1 trauma center between 2022-2024 with any spine fracture or spinal cord injury who received VTE prophylaxis were included. Patients were grouped based on time to initiation of VTE prophylaxis; very early (0-24hours), early (25-48hours), late (49-72 hours), or delayed (> 72 hours). An adjusted logistic regression model was used to predict the primary endpoint of VTE. Predictors were time to prophylaxis and associated covariates.
Results: 650 patients were included (66.5% male, average age 54.7 ± 21.2 years, 47% with injury severity score ≥ 16, 15% with Glasgow Coma Scale < 13, 8.9% with spinal cord injury, 24.0% with traumatic brain injury). The distribution of VTE was very early (2.5%), early (3.5%), late (6.0%), delayed (5.4%) and was dichotomized into less than 48 hours (n=389, 59.8%) vs after 48 hours (n=261, 40.2%). VTE prophylaxis initiation > 48 hours predicted VTE occurrence, (OR = 2.3 [1.0 - 5.3], AUC 0.79[0.71-0.87]) when adjusted for ISS, TBI, creatinine clearance, penetrating injury, and missed prophylaxis doses. 43(6.6%) patients required ≥ 1 blood transfusion and 1 required unplanned neurosurgery.
Conclusion: The odds of VTE occurrence more than doubled when prophylaxis was initiated after 48 hours from admission. Clinically relevant bleeding events were rare, highlighting an acceptable bleeding risk profile supporting earlier initiation of VTE prophylaxis.

Poster #67

WHEN DO BEST PRACTICES STOP BEING BEST? DISPARITIES IN MANAGEMENT OF ADULTS WITH SEVERE TBI AND THE RELATIONSHIP BETWEEN INTERVENTIONS AND MORTALITY

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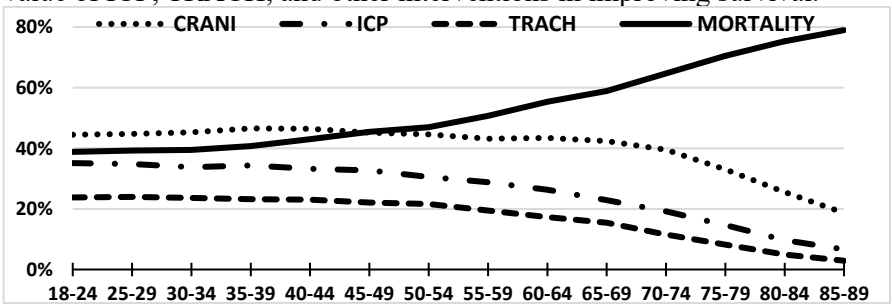
Introduction: There are known disparities in care- e.g., intracranial pressure monitoring (ICP), craniotomy (CRANI), and tracheostomy (TRACH)- between older (age 65+; OLD) and younger adults (YOUNG) with severe TBI. This is presumably due in part to a patient-centered approach based on goals of care. However, while 65 is used as a definition for "older," the age at which intervention rates change is not clear. Further, the relationship between interventions and mortality is unknown. We hypothesized that interventions decrease and mortality increases at age >65.
Methods: Retrospective review of Trauma Quality Improvement Program (TQIP) data (2016-2021) on patients age ≥18 with severe TBI, defined as Glasgow Coma Score <8, head Abbreviated Injury Scale ≥4, and requiring mechanical ventilation. Primary outcomes were mortality, ICP, CRANI, and TRACH. Age groups were compared with various appropriate statistical tests. "Change point" was defined as the point at which a group had a different outcome than the next younger group ($p<0.05$).
Results: 98,606 patients were studied; 24,998 (25%) were OLD. Mortality was 50% overall, with change point at age 55-59. Intervention change points were: CRANI, age 70-74; ICP, age 50-54; TRACH, age 55-59 (see Figure).
Conclusion: In this population of severe TBI patients, interventions decrease and mortality increases well before age 65. While there may be a palliative approach in the oldest age groups, these findings raise questions about factors driving care in the 50s-70s. Although CRANI did not decrease significantly until age >70, the data indicate that it is not sufficient by itself to result in improved survival. Further study is necessary to determine the value of ICP, TRACH, and other interventions in improving survival.



Poster #68

SEX-SPECIFIC IMPACT OF VENOUS THROMBOEMBOLISM PROPHYLAXIS TIMING IN SEVERE TRAUMATIC BRAIN INJURY

Luc Albuisson, BS; Luc Albuisson, MS; Kevin Harrell, MD;
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Robert Reily, MD; Clifton McGinness, MD;
Braden Ellis, MS; Dara Bruce, MS
Tulane School of Medicine

Introduction: Patients with severe traumatic brain injury (sTBI) face high venous thromboembolism (VTE) risk, yet optimal chemoprophylaxis (PPX) timing remains unclear. Literature also remains contradictory regarding the impact of biological sex on VTE incidence in this population. We sought to evaluate sex-based differences in the association between VTE PPX timing and VTE incidence in TBI patients. We hypothesized that early initiation of PPX would decrease VTE in both male and female sTBI populations.
Methods: A retrospective cohort study was conducted using the TriNetX United States collaborative research network to identify patients with sTBI, defined as Glasgow Coma Scale score of 3–8 in the presence of an acute intracranial injury (ICD-10 S02, S06, S09). This combined diagnosis was used as the index event. Early PPX initiation was investigated at 1 days and 2 days after injury. The primary outcome was VTE incidence within one month of sTBI. A 1:1 propensity score matching (PSM) was performed to adjust for neurologic injury, comorbidities, age and race. Patients were stratified by sex.
Results: The 2-day cohort included 6,772 patients (74.7% male); the 1-day cohort included 4,982 (74.3% male). In the combined male and female sTBI analysis, early PPX within 2 days (OR 0.78, p=0.006) showed significant VTE incidence reduction, while the 1-day definition showed no significant impact (OR 0.83, p=0.088). In the male cohort, early PPX was protective at both definitions (1 day: OR 0.74, p=0.017; 2 day: OR 0.72, p=0.002). No significant protection was observed in the female cohort at either definition (1 day: OR 1.207 p=0.36; 2 days: OR 0.94, p=0.73).
Conclusion: In male sTBI patients, VTE PPX initiation within 1 day of injury may significantly reduce VTE incidence. While the protective effect of early PPX in females is unclear. In the total sTBI population, early VTE PPX within 2 days of injury was associated with a lower VTE incidence. These findings suggest that sex-specific protocols may optimize VTE prevention strategies in sTBI.

Poster #69

IMPACT OF PROTOCOLIZED ANTI XA GUIDED ENOXAPARIN PROPHYLAXIS ON VENOUS THROMBOEMBOLISM AND INTRACRANIAL BLEEDING PROGRESSION IN PATIENTS WITH TRAUMATIC BRAIN INJURY: A PRE-POST ANALYSIS

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Introduction: Venous thromboembolism (VTE) remains a major preventable complication in traumatic brain injury (TBI) yet concerns regarding hemorrhagic progression often hinder pharmacologic prophylaxis (VTEp). We aimed to evaluate the effect of an anti-Xa guided VTE prophylaxis protocol in TBI patients.
Methods: Pre-post study compared TBI patients admitted to the Trauma ICU one year before (November 2022–November 2023) and one year after (November 2024–November 2025) implementation of a VTE prophylaxis protocol in a Level-1 trauma center. Pre-implementation cohort received fixed doses of dalteparin (5000IU/24h), while the post-implementation cohort received anti-Xa guided enoxaparin doses starting at 30 mg twice daily. Primary outcomes were VTE (deep venous thrombosis, pulmonary embolism, or both) and progression of intracranial bleeding. Secondary outcomes included ICU length of stay, ventilator days, and VTEp interruptions.
Results: 417 patients were analyzed (207 pre-implementation; 210 post-implementation). Demographics and injury severity were similar except for more initial hypotension and spinal cord injuries in the pre-implementation cohort. VTE incidence was significantly reduced following protocol implementation (3.4% vs 0.5%, p=0.03). Time to VTEp initiation was similar in both cohorts. Intracranial bleeding progression remained infrequent and did not differ significantly between the two groups (1.9% vs 0.5%, p=0.21). Post-implementation cohort demonstrated fewer VTEp interruptions, without increase in transfusion requirements or major systemic bleeding episodes. Days on mechanical ventilation were significantly reduced in the post-implementation group.
Conclusion: Implementation of an anti-Xa guided enoxaparin VTEp protocol was associated with a significant reduction in thromboembolic events with no increase in intracranial bleeding progression among critically injured TBI patients. These findings support the safety and clinical benefit of a protocolized anti-Xa guided enoxaparin prophylaxis in this high-risk population.

Poster #70

BURRHOLE VERSUS CRANIOTOMY IN ISOLATED GERIATRIC TRAUMATIC SUBDURAL HEMATOMA: A PROPENSITY-MATCHED NATIONAL ANALYSIS

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Introduction: Traumatic SDH is a major cause of mortality in the older trauma population. Surgical evacuation is commonly performed, but the optimal operative strategy in geriatric patients is unclear. We aim to compare burrhole vs. craniotomy in isolated traumatic SDH in ≥ 65 years old.

Methods: We conducted a retrospective cohort study using data from the ACS TQIP (2017-2023). Adults (≥65 years) with isolated SDH receiving burrhole or craniotomy were included. We excluded patients with penetrating trauma, AIS ≥ 3 in non-head regions, ED deaths, and pre-hospital deaths. The primary outcome was in-hospital mortality. The secondary outcomes are discharge disposition, unplanned intubation, ICU admission, stroke, surgical site infections (SSI), and hospital and ICU LOS. A 1:1 propensity-score match was performed using patient characteristics, GCS, midline shift, pupillary status, ICP monitoring, AIS, mechanism of injury, mFI-11, and shock index.

Results: There were 4,597 isolated TBI cases selected, with a median age of 77. 43.2% of the cases received burrhole. After matching (n=1373 per group), Burrhole was associated with decreased mortality (OR 0.451, CI 0.32-0.64, p<0.001), unplanned intubation (OR=0.631, CI 0.43-0.92,p=0.015), return to the OR (OR=0.518, CI 0.36-0.74,p<0.001) and unplanned return to the ICU (OR=0.693, 0.52-0.93,p=0.013). Burrhole also had a higher routine discharge rate (OR 1.464, CI 1.21-1.77). The craniotomy group had prolonged hospital and ICU LOS (p<0.001). Stroke and ventilator days were similar between the groups.

Conclusion: In isolated SDH in geriatric patients, burrhole use was associated with decreased mortality, in-hospital complications, LOS, and better discharge disposition.

Poster #71

FUNCTIONAL COAGULOPATHY, NOT ANTICOAGULANT HISTORY, PREDICTS TRAUMATIC INTRACRANIAL PROGRESSION: A TEG R-TIME STUDY

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Introduction: Reversal of anticoagulants (AC) following traumatic intracranial hemorrhage (tICH) based on medication history rather than objective assessments may miss clinically relevant "physiologic" (non-AC-associated) coagulopathy. We hypothesized that R-time would identify patients at risk for hemorrhagic progression and improve outcomes via TEG-guided reversal.
Methods: We reviewed all adult (≥18 years) patients admitted to a Level I trauma center from 2019-2023 with computer tomography (CT)-confirmed tICH and TEG testing. AC use was confirmed by a pharmacist. Patients were stratified based on R-time ≥ 7 minutes ("highR") vs <7 ("lowR").
Results: Among 290 patients (mean age 67.0±1.0), 148 (51.0%) had severe tICH. HighR patients were more often on AC (25 (83.3%) vs 151 (58.1%), p=0.0073), but incidence of severe tICH was not different. HighR was associated with hemorrhage progression on follow-up CT (15 (50%) vs 78 (30.1%), p=0.0273) and higher in-hospital mortality (9 (30% vs 28 (10.8%), p=0.0028). Correction of coagulopathy (R<7) was associated with improved follow-up CT in 181 (92.4%) vs 77 (82.8%) patients, p=0.0142. After adjusting for age, gender, injury severity score and tICH severity, R≥7 predicted CT worsening (OR 2.6 [95%CI 1.2-5.9]). Correction of coagulopathy was independently associated with lower odds of CT worsening (OR 0.347, 95% CI ([0.155-0.774]), 18.2% absolute and 63% relative risk reduction. AC history was not associated with mortality.
Conclusion: TEG R-time identifies functional coagulopathy associated with tICH progression and mortality, independent of AC history. TEG-guided reversal with achievement of R<7 was associated with less hemorrhage progression and improved outcomes, supporting the need for physiologic, assay-driven reversal protocols over history-based reversal.