

Quick Shots Parallel Session III

Quick Shot Paper #21
January 11, 2018
4:15 pm

LOGISTICS OF AIR MEDICAL TRANSPORT: WHEN & WHERE DOES HELICOPTER TRANSPORT REDUCE PREHOSPITAL TIME?

Joshua B. Brown, MD, MSc*, Mark L. Gestring, MD, FACS*, Matthew R. Rosengart, MD, MPH, FACS*, Xilin Chen, Andrew B. Peitzman, MD*, Timothy Billiar, MD, Jason L. Sperry, MD, MPH*
University of Pittsburgh Medical Center

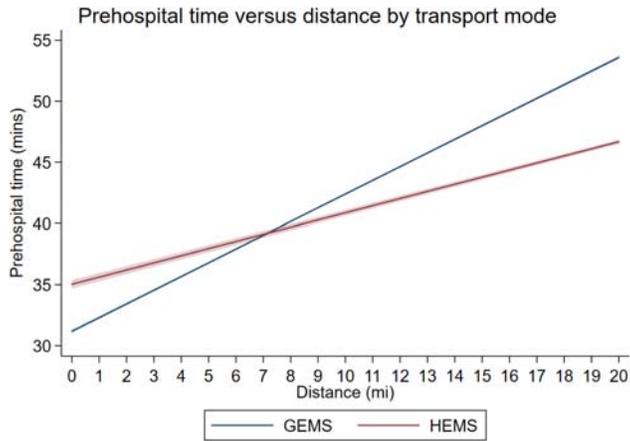
Presenter: Joshua B. Brown, MD, MSc

Objectives: Trauma is a time sensitive disease. Helicopter emergency medical services (HEMS) have shown benefits over ground EMS (GEMS), and may be partly due to reducing prehospital time. The distance at which this time benefit emerges depends on many factors that can vary across regions. Our objective was to determine the threshold distance at which HEMS has shorter prehospital time than GEMS under different conditions.

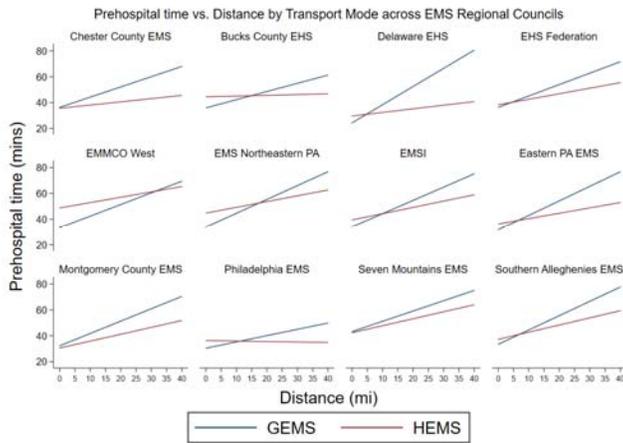
Methods: Patients in the PA trauma registry 2000-13 were included. Distance between zip centroid and trauma center was calculated using straight-line distance for HEMS and driving distance from GIS network analysis for GEMS. Contrast margins from linear regression identified the threshold distance at which HEMS had a significantly lower prehospital time than GEMS indicated by non-overlapping 95% confidence intervals. The effect of peak traffic times and adverse weather on the threshold distance was evaluated. Geographic effects across EMS regions were also evaluated.

Results: 144,741 patients were included with 19% transported by HEMS. Overall, HEMS became faster than GEMS at 7.7 miles from the trauma center ($p < 0.05$, FIG1). When evaluating traffic times, HEMS became faster at 6.5 miles during peak traffic compared to 7.9 miles during off-peak traffic ($p < 0.05$). Adverse weather increased the distance at which HEMS was faster to 17.1 miles from 7.3 miles in clear weather ($p < 0.05$). Significant variation occurred across EMS regions, with distances ranging from 4.4 miles to 31.6 miles (FIG2).

Conclusions: This is the first study to demonstrate that traffic, weather, and geographic region can significantly impact the threshold distance at which HEMS is faster than GEMS. HEMS was faster at shorter distances during peak traffic while adverse weather increased this distance. The threshold distance varied widely across geographic region. These factors must be considered to guide appropriate HEMS triage protocols.



Total prehospital time versus distance by transport mode from linear regression. Shaded areas represent 95% confidence intervals.



Total prehospital time versus distance by transport mode from linear regression across Pennsylvania state EMS regional councils.

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Quick Shot Paper #22
January 11, 2018
4:21 pm

COMPARISON OF UNCROSSMATCHED WHOLE BLOOD AND BLOOD COMPONENT THERAPY DURING TRAUMA RESUSCITATIONS IN A LEVEL 1 TRAUMA CENTER: A CASE MATCH CONTROLLED STUDY

Catherine M. Zatorski, BA, Justin Slotman, Charlene Bierl, John Porter, Joshua P. Hazelton, DO, FACS*
Cooper University Hospital

Presenter: Catherine M. Zatorski, BA

Objectives: The objective of this analysis is to compare outcomes after trauma resuscitation, using either uncrossmatched whole blood (UWB) or blood component therapy (BCT).

Methods: This is a retrospective, case-match study of patients who received UWB or BCT between September 2016 and February 2017. Criteria to receive UWB included age \geq 18, male gender, any SBP $<$ 90 mm Hg, and identifiable source of hemorrhage. Patients undergoing prehospital CPR, CPR in the trauma bay, age $<$ 18 years, and female patients were excluded. Participants were matched by mechanism of injury, injury severity score (ISS), and age against any patient who received \geq 1u of PRBCs in the trauma bay between 2013-2016. Exact or best match was used for analysis. Variables on demographics, blood product usage, mortality, and length of stay were collected. Comparisons were made using the independent t and Fisher exact test for significance. SPSS 24.0 (IBM Analytics) was used for all analyses. A $p<0.05$ was significant.

Results: 15 patients received UWB in the first 6 months of product availability with 1 retrospectively deemed inappropriate for UWB transfusion as he did not meet inclusion criteria. Of the 14 study patients, 3 died within 24-h of admission in contrast to the 6 who received BCT ($p=0.225$). UWB patients required fewer PRBC transfusions during the initial resuscitation when compared to BCT patients (9.43 ± 11 vs. 24.21 ± 22.2 , $p=0.03$). Mean ICU length of stay for those who received UWB was less than half when matched to BCT (2.82 ± 3 days in the ICU vs. 7 ± 6.4 , $p=0.121$). Mean ISS was nearly identical (34.36 ± 24 vs. 34.29 ± 24 , $p=0.99$).

Conclusions: Our data suggest that UWB decreases the need for additional blood product during a trauma resuscitation. Major limitations include sample size as well as the need to include females in the BCT group to obtain optimized matching.

		Uncrossmatched Whole Blood	Blood Component Therapy
N		14	14
Gender	Male	14	9
	Female	0	5*
Age		31.85±14.16	34.36±17.40
Race	Black	7	8
	White	3	5
	Hispanic	0	1
	Other	4	0
Injury severity score		34.36±24	34.29±24
Injury classification	Penetrating	10	10
	Blunt	4	4
Mechanism of injury	GSW	9	9
	KSW	1	1
	Fall	0	1
	MVC	2	3
	MCC	1	1

*significant (p<0.05)

Table 1: Patient characteristics

		Uncrossmatched Whole Blood	Blood Component Therapy
Blood product given	PRBCs	9.43±11*	24.21±22.2*
	Plasma	7.36±13.8	16.79±18
	Platelet	1.21±3.22	3.5±3.82
Need for extra blood during stay?	Yes	7	7
	No	7	7
24-hour mortality	Yes	3	6
	No	11	8
30-day mortality**	Yes	2	1
	No	6	3
	Lost to follow up	3	4
ICU Length of Stay**		2.82±3	7±6.4
Total Length of Stay**		14.55±13.59	19.75±10.38

*significant (p<0.05)

**excludes those that died within 24-hours of admission

Table 2: Patient outcomes

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Quick Shot Paper #23
January 11, 2018
4:27 pm

A NOVEL PREHOSPITAL TRAUMA SMARTPHONE APP FOR IMPROVED EMS TO HOSPITAL COMMUNICATION

William M. Hallinan, RN, MSBA, Mark L. Gestring, MD, FACS*, Jeremy Cushman, Francis Manzo
University of Rochester Medical Center

Presenter: William M. Hallinan, RN, MSBA

Objectives: Prehospital reports informing trauma team activation require clear communication of information with timely transmission of data across a system that avoids degradation. The most common method is cellular voice communication which can compromise accurate trauma team activation by lacking complete or objective information, is not convenient for providing updates, and is prone to misinterpretation by background environmental noise. The objective of this project was to improve completeness of vital sign and mechanism information and increase timeliness of prehospital trauma notifications through the development of a smartphone application.

Methods: The Trauma and Prehospital Medicine Programs of a large academic Level 1 Trauma Center in collaboration with a local emergency response software vendor developed and tested an application designed to improve prehospital communication. The application provides a seamless flow of information from the 911 center, updates from responders, patient vital signs, common injury descriptors, GPS tracking, and scene imaging that can be securely transmitted to the emergency department. Using a comparison group of conventional communication (CC) cases, those using the application (AC) were compared for completeness of information and time from alert to hospital arrival.

Results: 780 patient transports resulted in an alert over a 6 month period. Fifty random trauma team activations using CC were compared to fifty using AC. The mean time from notification to arrival for CC was 5:55 while for AC it was 12:37 representing a 44% mean increase in prehospital notification time 84.3% of patients notified using AC had complete vital sign information compared to 46% using CC.

Conclusions: A smartphone application provides enhanced transmittal of trauma patient data in a more timely fashion and offers an innovative solution to prehospital communication.

Quick Shots Parallel Session III

Quick Shot Paper #24
January 11, 2018
4:33 pm

GERIATRIC INJURY INSTITUTE: THE VALUE OF A MULTIDISCIPLINARY, COORDINATED CARE MODEL FOCUSED ON THE NEEDS OF INJURED ELDER.

Shea C. Gregg, MD*, Andrew Francis, Andrew Stone, Walter Cholewczynski, MD*, Alisa Savetamal, MD*,
Roselle Crombie, Kristen Glasgow, Paul P. Possenti, PA-C*, Ann Dyke, Vivian Argento,
Roseanne Prunty, Sheikh Hoq, Rockman Ferrigno, Nabil A. Atweh, MD*
Bridgeport Hospital-YaleNHH

Presenter: Shea C. Gregg, MD

Objectives: To determine if our Geriatric Injury Institute (GII) model which, uses a multidisciplinary approach involving coordinated pre-hospital, in-hospital and case management resources would reduce length of stay (LOS) and total hospital costs.

Methods: A retrospective review of our Level II trauma registry & medical records was performed on all trauma activations >age 65. The Geriatric Injury Institute (GII) was established in early July 2015. Patients presenting from July 1, 2014 to June 30, 2015 were grouped as pre-GII, while those presenting from July 1, 2015 to June 30th, 2016 were grouped as post-GII. Primary outcomes were length of stay (LOS) and hospital costs.

Results: A total of 663 patients met activation criteria, with 319 in the pre-GII group and 344 in the post-GII (8% increase). Of admitted patients, there was an 8% increase in trauma service admissions (173 pre-GII vs. 186 post-GII). Overall Pre vs. Post GII mean ages (82 ± 8 vs. 81 ± 9) and median ISS with interquartile ranges (8 (4-13) vs. 8 (1-14)) were not statistically different. In regards to LOS, discharges were more efficient in the post-GII cohort with LOS ≤ 2 days occurring in 40% of admissions, whereas only 25% had a LOS ≤ 2 days in the pre-GII cohort. This was observed despite the mean age and median ISS not being statistically different ($p > 0.05$). Although the overall median LOS did not reach significance ($p = 0.07$), overall median per-patient hospital costs were significantly less (\$1200) in the post-GII group (pre-GII: \$8808, IQR: \$5700-\$17500 vs. post-GII: \$7602, IQR: \$4700-\$13700; $p = 0.04$).

Conclusions: Our philanthropy-supported, Geriatric Injury Institute has >50 care providers committed to maximizing care for our injured elders. This scalable model has contributed to increased patient volume and has demonstrated value through efficient discharge processes and significant reductions in hospital costs.

Quick Shots Parallel Session III

Quick Shot Paper #25
January 11, 2018
4:39 pm

DETERMINING SUICIDE RISK IN TRAUMA PATIENTS USING A UNIVERSAL SCREENING PROGRAM

Jonathan Imran, MD, Robyn Richmond, MD*, Tarik Madni, MD, Kimberly Roaten, Emily Huang, Audra Clark, Ali Mokdad, Michael W. Cripps, MD*, Kareem AbdelFattah, MD*, Alexander L. Eastman, MD, MPH, FACS*
University of Texas Southwestern Medical Center

Presenter: Jonathan Imran, MD

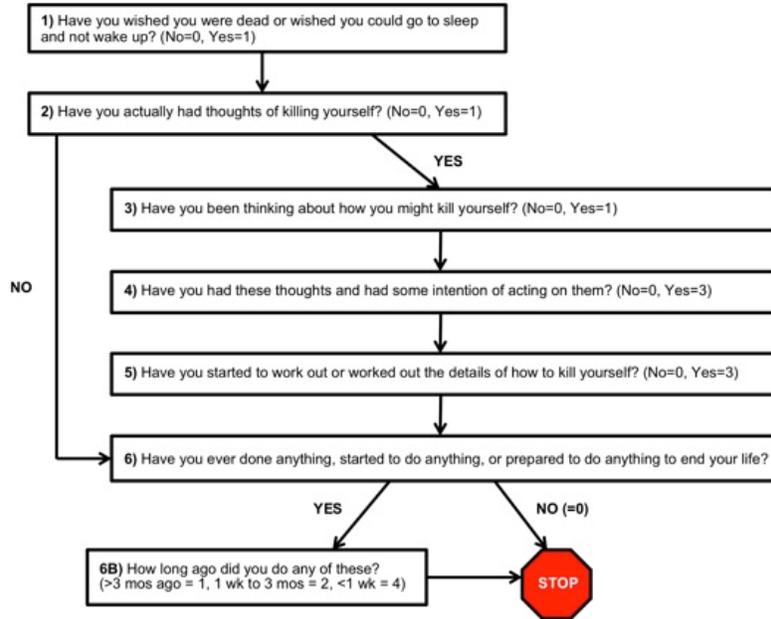
Objectives: Trauma patients may be at elevated risk for subsequent suicide; however, it is unclear whether patients at risk can be identified during their initial presentation following injury. The objective of this study was to evaluate the use of an easy-to-perform suicide risk assessment and the incidence of a positive suicide risk score in our trauma population.

Methods: A universal screening protocol was initiated at our level I trauma center and performed by our Trauma Nurse Clinicians on presentation to the hospital (Figure 1). Adult trauma patients who had a suicide risk assessment completed from February 2015 to November 2015 were evaluated retrospectively. Patients were divided into cohorts consisting of those with positive and negative screening assessments. Statistical analysis was performed using Student's *t* test, and a chi-squared test. Significance was set at $\alpha = 0.05$.

Results: Overall, 3691 of 3780 patients (98%) had a suicide risk assessment screen completed during the study period. Those who went unscreened were not evaluated due to altered mental status/intubation (97%), death (1%), or an unwillingness to cooperate (2%). In 164 of 3691 patients (4%), the screening assessment score was =1, indicating a positive assessment. On univariate analysis, patients with a positive suicide risk assessment were more likely to be of non-Hispanic ethnicity (67% vs. 55%; $P < 0.01$), use English as their first language (91% vs. 73%; $P < 0.01$), have insurance coverage (47% vs. 29%; $P < 0.01$), and were more likely to be a low-level trauma activation (27% vs. 16%; $P < 0.01$) than those who had a negative screening assessment. There were no differences in mean age, race, gender, marital status, injury severity score, blunt vs. penetrating trauma, or hospital discharge disposition between the cohorts.

Conclusions: Universal suicide screening assessment identifies a previously missed at-risk subpopulation of trauma patients.

Figure 1. Parkland Algorithm for Suicide Screening using the C-SSRS, Screen Version, Recent



Parkland Hospital Algorithm for Suicide Screening

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Quick Shot Paper #26

January 11, 2018

4:45 pm

A CALL TO FOLLOW UP; FOLLOW-UP PRACTICES OF THE MEMBERS OF THE EASTERN ASSOCIATION FOR THE SURGERY OF TRAUMA

James Cooros, MD, Samantha J. Chesney, Terri deRoos-Cassini, Colleen Trevino, David J. Milia, MD*
Medical College of Wisconsin

Presenter: David J. Milia, MD

Objectives: To assess the current practice pattern regarding follow up of trauma patients among the members of the Eastern Association for the Surgery of Trauma (EAST).

Methods: Anonymous, online, multiple-choice survey of EAST members in 2016. Ten questions relating to the follow-up care of injured patients were presented to the Active, Senior and Associate members of EAST. Data were screened for quantitative anomalies and problematic response styles.

Results: Of the 1611 members surveyed, 289 participants responded. Approximately 52% of respondents stated that their institution has a dedicated trauma follow-up clinic where most injured patients are seen after discharge. Fewer than 20% reported that non-trauma, multidisciplinary providers are present in clinic. Most (89.5%) reported that follow-up is a single visit, unless a patient has longstanding issues. Only three respondents stated that patients are regularly seen greater than 3 months from injury, and a significant minority (17.7%) acknowledged no set follow-up timeline. Pain management was most commonly (43.3%) the responsibility of the trauma team exclusively. When asked about mental health treatment, most respondents indicated that psychiatry (26.6%) or a clinical psychologist separate from the trauma team (26.6%) were responsible. Only 3.6% of participants indicated that they have a psychologist embedded in the trauma team, and 11.5% reported that no system is currently in place to manage mental health.

Conclusions: Despite over 20 years of literature highlighting the long-term physical and mental health sequelae after trauma, and the improvement in outcomes with the identification and treatment of these sequelae; the results of our survey indicate there remains a lack of standardized and multidisciplinary follow up. Greater attention should be paid to functional recovery, social and psychological well-being and chronic pain.

Quick Shots Parallel Session III

Quick Shot Paper #27
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4:51 pm

COMBAT NEUROSURGERY IN RECENT CONFLICTS: 2002-2016

Zsolt T. Stockinger, MD, FACS*, Caryn A Turner, MPH, Jennifer M. Gurney, MD*
DoD Joint Trauma System

Presenter: Zsolt T. Stockinger, MD, FACS

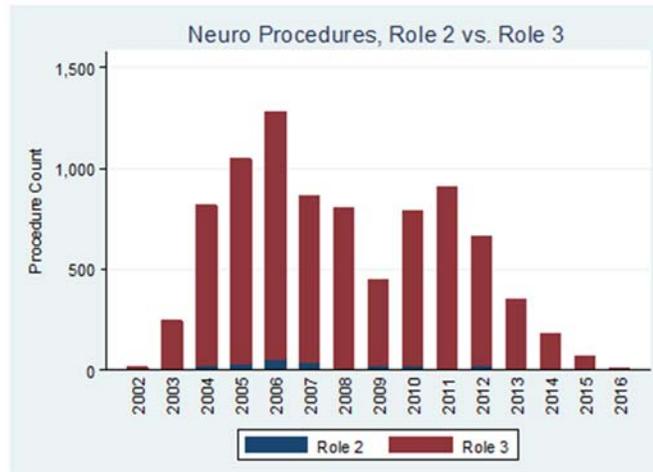
Objectives: Approximately 4.5% of surgical procedures performed at Role 2 and Role 3 MTFs are neurosurgical. These procedures are foreign to the routine daily practice of the military general surgeon. We examined the neurosurgical workload in Iraq and Afghanistan to identify surgical training gaps.

Methods: Retrospective analysis of the Department of Defense Trauma Registry (DoDTR) for all Role 2 (forward surgical) and Role 3 (theatre) military facilities, from January 2002 to May 2016. The 107 neurosurgical ICD-9-CM procedure codes identified were grouped by anatomic location. Select groups were further subdivided. Procedure grouping was determined by surgical subject matter experts. Data analysis used Stata Version 14 (College Station, Texas).

Results: A total of 8,488 neurosurgical procedures were identified. The majority (8,211, 97%) occurred at Role 3. Cranial was the most common procedure at both Role 2 (121, 43.7%) and Role 3 (4,484, 54.6%). Spine procedures were performed almost exclusively at Role 3, with 60% being fusions/stabilizations, and being spinal decompression alone. Neurosurgical caseload was variable over the 15 year study period, dropping to almost zero in 2016.

Conclusions: Neurosurgical procedures were performed primarily at larger Role 3 theatre hospitals where neurosurgeons are assigned if present in theatre; however, over 100 cranial procedures were performed at forward Role 2s where neurosurgeons are not deployed. Considering this, and that Role 3s arrive later in theatre or sometimes not at all, deploying surgeons should have familiarity with trauma neurosurgery.

	Role 2 N (%)	Role 3 N (%)	Total N (%)
Cranial	121 (43.7)	4,484 (54.6)	4,605 (54.3)
Craniotomy/-ectomy	90 (74.4)	2,332 (52)	2,422 (52.6)
Cranioplasty	3 (2.5)	292 (6.5)	295 (6.4)
Monitor	14 (11.6)	1,119 (25)	1,133 (24.6)
Ventriculoperitoneal Shunt	0 (0)	187 (4.2)	187 (4.06)
Lobectomy/ Resection	14 (11.6)	554 (12.36)	568 (12.3)
PNS	119 (43)	968 (11.8)	1,087 (12.8)
Spine	1 (0.4)	638 (7.8)	639 (7.5)
Decompression	0 (0)	170 (26.6)	170 (26.6)
Insertion of Prosthesis	0 (0)	2 (0.3)	2 (0.3)
Fusion	0 (0)	386 (60.5)	386 (60.4)
Cervical	0 (0)	41 (10.6)	41 (10.6)
Thoracolumbosacral	0 (0)	119 (30.8)	119 (30.8)
Unspecified	0 (0)	226 (58.5)	226 (58.5)
NOS	1 (100)	80 (12.5)	81 (12.7)
Other	36 (13)	2,121 (25.8)	2157 (25.4)
Total	277 (100)	8,211 (100)	8,488 (100)



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Quick Shot Paper #28
January 11, 2018
4:57 pm

ASSOCIATION OF THE AFFORDABLE HEALTHCARE ACT WITH INSURANCE STATUS AT A LEVEL I TRAUMA CENTER IN A MEDICAID NON-EXPANSION STATE

Kyle Cunningham, MD, MPH*, Michael Nahouraii, Ronald F. Sing, DO*,
Kelly Sing, A. Britton Christmas, MD, FACS*
Carolinas Medical Center

Presenter: Kyle Cunningham, MD, MPH

Objectives: The intended purpose of the Patient Protection and Affordable Care Act (ACA) was to expand access to health care insurance for all Americans. Trauma centers, especially those in urban areas, historically faced the financial burden of uninsured and underinsured patients. In our study, we examine the association of the ACA with trauma patient insurance status at a Level I urban trauma center in a state that did not expand Medicaid coverage.

Methods: We retrospectively reviewed trauma patient admissions to our institution from 2008-2016, via the trauma registry (n=54,184). The patient population was compared for changes in selected variables and demographics following ACA implementation. Insurance assignments were consistent with 2016 National Trauma Data Bank nomenclature. Chi-square analysis was used to compare the association of the ACA, by three-year average (n=36,250), on payor mix. Students t-test and Mann-Whitney tests were used to compare secondary descriptive patient characteristics.

Results: The three-year mean uninsured patient rate increased following implementation of the ACA (25.4% vs 23.5%, $p<0.001$), as did the commercially insured patient rate (31.4% vs 21.0%, $p<0.001$). The rate of patients insured by Medicaid decreased (16.2% vs 24.0%, $p<0.001$). Patients were older (42.5yr vs 40.3yr, $p<0.001$), admitted longer (4.6d vs 4.2d, $p<0.001$), more injured (ISS 9.5 vs 8.8, $p<0.001$), and were charged more (median \$32,656 vs \$24,068, $p<0.001$).

Conclusions: Failure to adopt Medicaid expansion was associated with an increase in uninsured patient rates, however it was also associated with a greater increase in commercially insured patients. Moreover, patients were charged 36% more for care. Additional study of this relationship is warranted.

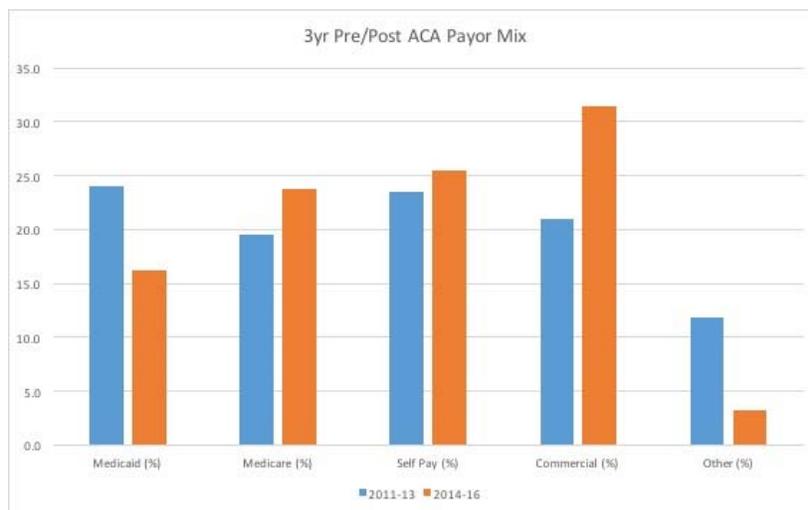


Figure 1. 3yr Mean Pre/Post ACA Payor Mix

Quick Shots Parallel Session III

Quick Shot Paper #29

January 11, 2018

5:03 pm

NATIONWIDE TRENDS IN MORTALITY FOLLOWING PENETRATING TRAUMA: ARE WE UP FOR THE CHALLENGE?

Joseph V. Sakran, MD, MPH, MPA, FACS*, Ambar Mehta, M.P.H., Avery B. Nathens, MD, PhD, MPH*, Bellal Joseph, MD*, Alistair Kent, MD, MPH*, Christian Jones, MD*, Elliott R. Haut, MD, PhD, FACS*, Raymond Fang, MD, FACS*, David T. Efron, MD*
Johns Hopkins School of Medicine

Presenter: Joseph V. Sakran, MD, MPH, MPA, FACS

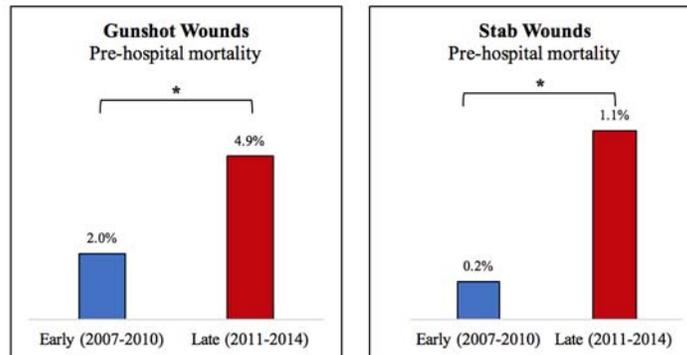
Objectives: Despite a focus on improved pre-hospital care, penetrating injuries contribute substantially to trauma mortality in the U.S. We analyzed trends in pre-hospital mortality from penetrating trauma in the past decade.

Methods: We identified patients suffering gunshot (GSW) and stab wounds (SW) in the NTDB database from 2007-2010 ("early period") and 2011-2014 ("late period") treated at hospitals recording dead-on-arrival statistics. Multivariable logistic regressions assessed differences in body locations of trauma, pre-hospital mortality, and in-hospital mortality between the early and late periods. Models accounted for hospital clusters and adjusted for age, pulse, hypotension, NISS, GCS, and number of injured body parts.

Results: There were 437,398 patients experiencing penetrating traumas from 2007-2014, with equal distributions of GSW and SW. The overall pre-hospital mortality rate was 2.1% (GSW: 3.5%, SW: 0.7%). After adjustment, patients in the late period relative to those in the early period were associated with significantly higher odds of pre-hospital death after both GSWs (aOR 4.41 [95%-CI 3.23-6.03]) and SWs (aOR 8.84 [5.26-14.86]) (Figure). Sensitivity analyses assessing GSWs and SWs by locations of body injury found similar results (Table). Additionally, patients in the late period were more likely to experience penetrating injuries to the spine (aOR 1.13 [1.08-1.18]) and face (aOR 1.06 [1.02-1.09]) but not neck (aOR 1.02 [0.98-1.06]). For patients arriving to the hospital alive, in-hospital mortality decreased from the early period to the late period (4.0% vs 3.6%, aOR 0.83 [0.78-0.88]).

Conclusions: In the U.S., the prevalence of penetrating traumas remains a nationwide burden and the odds of pre-hospital mortality in 2011-2014 relative to 2007-2010 has increased up to 9-fold. Examining violence intensity, improvements in hospital care, and data collection may explain these findings.

Figure: Increases in Pre-hospital Death After Penetrating Trauma During the Late Years (2011-2014) Relative to the Early Years (2007-2010).



After adjustment, there were significantly higher odds of pre-hospital death in the late period (2011-2014) relative to the early period (2007-2010, reference). **P<0.001 for both GSW and SW. Regressions accounted for correlations of outcomes within individual hospitals and adjusted for patient age, pulse, hypotension, the New Injury Severity Score, Glasgow Coma Scale, and number of injured body parts.*

Table: Increases in Pre-hospital Death for all Body Locations of Penetrating Trauma

	Gunshot Wounds	Stab Wounds
	<i>*Adjusted Odds Ratio [95%-Confidence Interval]</i>	
Face	4.27 [2.64-6.90]	10.24 [5.31-19.77]
Head	3.54 [2.38-5.26]	10.73 [4.72-24.39]
Neck	5.06 [2.87-8.93]	6.54 [4.01-10.68]
Thorax	5.13 [3.57-7.38]	7.40 [4.89-11.22]
Abdomen and Pelvis	6.10 [4.17-8.93]	12.75 [6.67-24.38]
Spine	5.34 [3.28-8.70]	28.34 [4.43-181.54]
Upper Extremities	5.48 [3.59-8.38]	9.15 [5.48-15.29]
Lower Extremities	5.71 [3.69-8.85]	10.98 [5.44-22.15]
Overall	4.41 [3.23-6.03]	8.84 [5.26-14.86]

For all body locations of penetrating trauma, there were greater adjusted odds of pre-hospital death in the late period (2011-2014) relative to the early period (2007-2010, reference). **P<0.001 for both GSWs and SWs. Regressions accounted for correlations of outcomes within individual hospitals and adjusted for patient age, pulse, hypotension, the New Injury Severity Score, Glasgow Coma Scale, and number of injured body parts.*

Quick Shots Parallel Session III

Quick Shot Paper #30
January 11, 2018
5:09 pm

HEALTHCARE UTILIZATION & COST OF POST-TRAUMATIC ARDS CARE

Anamaria J. Robles, MD, Lucy Z Kornblith, MD, Benjamin Howard, Amanda Conroy, Ryan Kunitake, Carolyn Hendrickson, Farzad Moazed, Carolyn Calfee, Mitchell J. Cohen, MD, FACS, Rachael Callcut, MD, MSPH, FACS*
University of California San Francisco

Presenter: Anamaria J. Robles, MD

Objectives: Acute respiratory distress syndrome (ARDS) after injury is associated with lengthy hospitalizations but the financial burden associated with increasing ARDS severity has not been studied. We examined cost differences of post-traumatic ARDS severity classified by Berlin criteria.

Methods: All adult highest level trauma activation patients enrolled in an ongoing prospective cohort study were included. For patients with PaO₂:FiO₂ ratio (P/F) ≤300mgHg during the first 8 days of admission, two blinded physicians reviewed chest radiographs for ARDS adjudication by Berlin criteria. ARDS severity was classified according to degree of hypoxemia: mild (200<P/F≤300), moderate (100<P/F≤200), and severe (P/F≤100). Hospital charge data was used to perform standard costing analysis.

Results: Adjudicated ARDS was present in 13.1% (203/1552) of patients surviving ≥6 hours. Those with ARDS were older (41 vs 35 years, p<0.01), had higher median ISS (30 vs 10, p<0.01), more likely to have chest injury (AIS>=3: 51% vs 21%, p<0.01), and blunt mechanism of injury (85% vs 53%, p<0.01). Of the ARDS patients, 33% had mild, 42% moderate and 25% had severe disease. A correlation between ARDS severity, higher ISS and mortality was observed. Compared to mild/moderate ARDS, patients with severe ARDS had increased multi-organ failure and mortality. Standardized total hospital charges were four-fold higher in those with ARDS (\$434K vs. \$96K, p<0.01), and highest charge per day was associated with severe ARDS (mild \$20,451; moderate \$23,994; severe \$33,316, p<0.01).

Conclusions: The development of ARDS after injury is associated with higher healthcare costs. Among trauma patients who develop ARDS, total hospital charges per day increase with worsening disease severity. Protective strategies to prevent or mitigate ARDS after trauma are essential to controlling health care costs and should be prioritized.

Demographics/Outcomes by ARDS severity	Mild ARDS (n=67)	Moderate ARDS (n=86)	Severe ARDS (n=50)	P
Percent intubated on admission day	93%	98%	98%	<0.01
Percent transfused within 24h	64%	76%	84%	0.05
Ventilator free days	10 (0-21)	3 (0-15)	0 (0-10)	0.03
Multi-organ failure	23%	45%	58%	<0.01
ICU days	14 (7-24)	14 (8-24)	10 (4-22)	0.14
Hospital days	24 (11-51)	21 (11-42)	14 (5-25)	0.01
Total hospital charge (\$)	462,417 (264,993-920,018)	489,330 (254,829-773,073)	311,017 (179,427-802,498)	0.35
Charge per day (\$)	20,451 (13,398-28,133)	23,994 (14,989-32,768)	33,316 (17,175-120,735)	<0.01
Standardized total hospital charge (\$)	579,528 (265,617-123,497)	495,013 (265,617-1,014,174)	338,058 (120,735-603,675)	0.01
Mortality at 28 days	21%	33%	50%	<0.01
Mortality at discharge	24%	36%	52%	<0.01

* Data are mean +/- SD, median (inter-quartile range), or n (%) as indicated. Data for skewed variables reported as median with inter-quartile ranges. Ventilator free days are counted for the first 28 days of hospitalization. Subjects who expired received 0 ventilator free days

Quick Shots Parallel Session III

Quick Shot Paper #31
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5:15 pm

30-DAY TRAUMA READMISSIONS: A CLINICAL ANALYSIS

Sarah K. West, MS, RN, ACNP-BC, Michael Shay O'Mara, MD, MBA, FACS*, M. Chance Spalding, DO, PhD*
Grant Medical Center

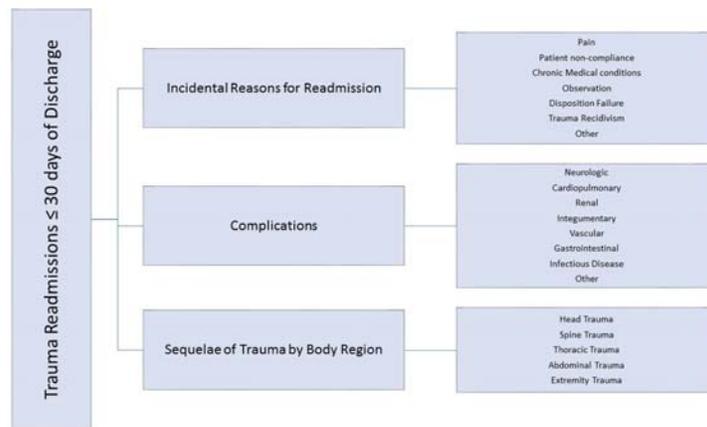
Presenter: Sarah K West, MS, RN, ACNP-BC

Objectives: We hypothesized that a structured methodology for abstraction of clinically meaningful variables describing 30-day trauma hospital readmissions will lead to identification of populations at risk and allow targeted process and quality improvement.

Methods: A three-year retrospective cohort study of 18,998 trauma patients at a level 1 trauma center. Excluded were initial hospitalization deaths, transfers, and isolated hip fractures. A systematic methodology was developed for conducting chart reviews. Identified were descriptive clinical variables associated with trauma readmission. The administrative data was also evaluated.

Results: Of 15,373 patients, 413 (2.7%) were readmitted. Readmissions were white males (71.2%), 16-44 years (56.7%), with ISS \geq 10 (68.3%). Mechanism of injury (MOI) was falls (27%), motor vehicle collisions (26%), and gunshot wounds (16%). Readmission rate was highest for gunshot wounds (11.0%) and motorcycle crashes (4.3%). There was no difference in time to readmission by MOI ($P=0.39$). 24.2% were compliant with outpatient follow-up, the strongest predictor being discharge to a skilled nursing facility (85%, $P=0.002$). Clinically abstracted readmissions were for complications (41.0%) and incidental (35.1%). Infection was the leading complication on readmission (63.7%). The incidental reasons were observation (25%) and pain (24.4%). The difference between clinically abstracted and administrative data was significant ($P<0.0001$).

Conclusions: We showed a significant difference between the reasons for 30-day trauma readmission when comparing clinically abstracted and administrative data. Data obtained from this study has assisted in the structuring of process improvement, clinical guidelines, and early proactive follow-up. Further research into the development of predictive models using clinically abstracted data for trauma patient readmission will allow preventative intervention and allocation of resources prior to hospital discharge.



Structured methodology for 30-day trauma readmission reviews.

Data Comparison

Readmission Category	Clinically Abstracted Variables	Administrative Data Codes	Significance (P<0.05)	Percent of Administrative variables that agreed with clinically abstracted variables
Complications	182 (41%)	181 (39%)	0.61	134 (74%)
Incidentals	156 (35%)	36 (8%)	<0.0001	27 (75%)
Head Trauma	54 (12%)	80 (17%)	0.027	46 (58%)
Spine Trauma	3 (1%)	13 (3%)	0.014	3 (23%)
Thoracic Trauma	25 (6%)	39 (8%)	0.095	23 (60%)
Abdominal Trauma	12 (3%)	44 (10%)	<0.0001	8 (18%)
Extremity Trauma	12 (3%)	32 (7%)	0.003	7 (22%)
*Other	0 (0%)	35 (8%)	<0.0001	0 (0%)
*Other: Unable to categorize based upon the information provided				
P<0.0001 overall, chi-square test				

Comparison of clinically abstracted versus administrative readmission data.

Quick Shots Parallel Session III

Quick Shot Paper #32
January 11, 2018
5:21 pm

“THAT CAN’T BE!” PERCEPTIONS OF HIV AND HEPATITIS C SCREENING DURING ADMISSION TO AN ACS SERVICE

Alicia R. Privette, MD, FACS*, Pamela Ferguson, Jama Olsen, Sarah Gay, ACNP-BC*, Lauren Richey
Medical University of South Carolina

Presenter: Alicia R. Privette, MD, FACS

Objectives: A large number of patients live with undiagnosed HIV and/or Hepatitis C despite broadened national screening guidelines. European studies, however, suggest many patients falsely believe they have been screened during a prior hospitalization. This study aims to define current perceptions among trauma and emergency general surgery (EGS) patients regarding HIV and Hep C screening practices during current and prior admissions.

Methods: Prospective survey administered to adult (>18 yo) trauma and EGS patients at a Level 1 academic trauma center. Survey consisted of 13 multiple choice questions: demographics, whether admission tests included HIV and Hep C at index and prior hospital visits, whether receiving no result indicated a negative result, history of primary care screening. Response percentages calculated in standard fashion.

Results: 100 patients surveyed: 61 trauma, 39 EGS. Overall, 34% and 30% of patients believed they were screened for HIV and Hep C at admission with trauma patients more likely to believe they were screened. 69% of patients had a hospital visit within 10 yrs. Of these, 45% and 37% believed they had been screened for HIV and Hep C. More EGS patients believed they received Hep C screening while HIV was equivalent. Among patients who believed they had a prior screen and didn't receive any results, 73% (HIV) and 75% (Hep C) believed a lack of results meant they were negative. Only 26% and 21% of patients had ever been offered outpatient HIV and Hep C screening.

Conclusions: A large portion of patients believe they received admission or prior hospitalization HIV and/or Hep C screening and the majority interpreted a lack of results as a negative diagnosis. Due to these factors, routine screening of trauma/EGS patients should be considered to conform to patient expectations and national guidelines, increase diagnosis and referral for medical management, and decrease disease transmission.

Patients	Admit HIV screening test (n=100)	Admit Hep C screening test (n=100)	Prior HIV screening test (n= 56)	Prior Hep C screening test (n=56)
Trauma	39.3% (24)	32.8% (20)	53.1% (17)	39.4% (13)
ACS	25.6% (10)	25.6% (10)	50% (12)	47.8% (11)

Table. Percentage of patients by service who believe they received screening at index admission and prior admission.