

## ORAL & POSTER PRESENTATION ABSTRACTS - Evidence-Based Practice

---

- CLICK ON THE NUMBER OR USE THE BOOKMARKS TO VIEW THE FULL ABSTRACT -

E1	<b>Tara Collins, MSN, CRNP</b>	<i>Advanced Practitioner Comprehensive Tertiary Survey including Incidental Findings: improved communication and reduction of missed injuries</i>
E2	<b>Elizabeth Schell, MSN, RN</b>	<i>Aeromedical Evacuation to Landstuhl Regional Medical Center: Opportunities for Improvement</i>
E3	<b>Sheri Stucke, PhD, APN</b>	<i>Buckle Up Tweens Program</i>
E4	<b>Pamela Bourg, RN, MS</b>	<i>Development of a Geriatric Trauma Resuscitation Protocol, Utilization Compliance, and Outcomes</i>
E5	<b>Trisha Klein, RN</b>	<i>Development of an Algorithmic Approach to Trauma Patients' Pain in the PACU</i>
E6	<b>Reda Willis, RN, MS, CCRN, MDiv</b>	<i>Development of Protocol to Detect At-Risk Drinking Behaviors in a Trauma Population</i>
E7	<b>Cynthia Mastropieri, RN, MSN, CNS, CCRN</b>	<i>Erase the Pain: Initial Pain Management in the Trauma Resuscitation Bay</i>
E8	<b>Lillian Aguirre, MSN, RN, CNS, CCRN, CCNS</b>	<i>Evaluation and Implementation of a New Treatment Modality for Rib Fractures: The Trauma Clinical Nurse Specialist's Role</i>
E9	<b>Michael Jordan, MSN, MBA</b>	<i>Financial Implications of Trauma: Development of a Trauma Billing Committee</i>
E10	<b>Theresa Snavely, RN, BSN</b>	<i>Implementation of a Geriatric Rib Fracture Protocol Improves Outcome</i>
E11	<b>Karen Rodriguez, RN, MN, CPNP-PC/AC</b>	<i>Implementation of a Pediatric Trauma Continuity Clinic Utilizing the Medical Home Concept</i>
E12	<b>Arielle Greenlee, RN, BSN, CCRN</b>	<i>Infection Control Practice among Intensive Care Unit Patient Families</i>
E13	<b>Alberto Bonifacio, RN, BSN</b>	<i>Nurse-driven Transformative Change in Trauma Culture: Lessons Learned from an Academic Level I Trauma Center</i>
E14	<b>Roni Robinson, RN, MSN, CRNP</b>	<i>SBIRT in a Pediatric Trauma Center: How and Why?</i>
E15	<b>Laurie Flowers, RN, MSN, CCRN, CCNS</b>	<i>To Reverse or Not to Reverse: Warfarin Reversal in the Traumatic Brain Injured Trauma (TBI) Patient</i>
E16	<b>Marla Vanore, RN, MHA</b>	<i>Trauma Boot Camp: Multidisciplinary Simulation Training Designed to Improve Resuscitation Care and Communication</i>
E17	<b>Melissa Hlavaty, RN, BSN, CCRN</b>	<i>Trauma Return Appointment Study</i>
E18	<b>Jan Simonson, MSN, RN</b>	<i>Under the Influence: Are We in Denial?</i>

## ORAL & POSTER PRESENTATION ABSTRACTS - Research

---

- CLICK ON THE NUMBER OR USE THE BOOKMARKS TO VIEW THE FULL ABSTRACT -

R1	<b>Lisa Fryman, RN</b>	<i>Brief Intervention: Risk Factors for Failure in a Level One Trauma Center</i>
R2	<b>Rose Bolenbaucher, MSN, RN</b>	<i>Caring for Wounded Warriors: Development of Performance Improvement (PI) Knowledge for Deployed Trauma Nurse Coordinators (TNCs)</i>
R3	<b>Maria McMahon, MS, RN, CPNP-AC</b>	<i>Compare Pediatric Bowel Injuries from Trauma Requiring Surgical Intervention to Help Predict Outcome</i>
R4	<b>Starre Haney, RN, MS</b>	<i>High Risk Alcohol Use: Initial AUDIT Score During Hospitalization Compared to AUDIT Score at 3-6 Month Follow Up Call</i>
R5	<b>Nancy Martin, RN, MS, ACNP</b>	<i>Is It Us or Them? Who Fails at Follow-up</i>
R6	<b>Michelle Marcum, RN, BS</b>	<i>Monitoring Motor Vehicle Passenger Restraint Usage at an Amusement Park</i>
R7	<b>Penelope Stevens, MSN, RN, APRN</b>	<i>Parental Recognition of Post-Concussive Symptoms in Children</i>
R8	<b>John Recicar, MBA, MHA, RN</b>	<i>Patient Patterns of Injury From Motor Vehicle Rollover Ejection Crashes</i>
R9	<b>Sheree Brown, BSN, RN</b>	<i>Patient Teaching Materials on the Risk of Falling While Anticoagulated: Is Consumer Input Useful?</i>
R10	<b>Philip Spandorfer, MD, MSCE</b>	<i>Rehydration Therapy in Children: Recombinant Human Hyaluronidase-Facilitated Subcutaneous vs Intravenous Administration</i>
R11	<b>Amber Kyle, RN, BSN</b>	<i>Seatbelt Compliance: Is Obesity a Factor?</i>
R12	<b>Daneen Mace Vadjunec, RN, BSN</b>	<i>The Silo Effect of a Trauma System in a Level I Trauma Center</i>
R13	<b>Heather Kulp, BSN, MPH</b>	<i>Unplanned Extubations in Trauma-related Intensive Care Units</i>

# Evidence-Based Practice-E1

Oral Presentation - Advanced Practice SIG – Thursday, April 8, 2010 – 1:30-3:00PM

---

## Abstract Title:

**Advanced Practitioner Comprehensive Tertiary Survey including Incidental Findings: Improved Communication and Reduction of Missed Injuries**

---

## Authors:

Amanda McNicholas, MSN, CRNP; [Tara Collins, MSN, CRNP](#); and Susan Butler, MSN, RN, CCRN

---

## Background & Purpose:

As the number of trauma patients escalate, CT scan as a screening tool has also increased, making the prevalence of incidental findings and the risk for missed injuries rise. Our Trauma Advanced Practitioner (AP) team initiated a comprehensive tertiary survey form which holds the AP accountable for both a tertiary physical exam as well as communication of all incidental findings to the patient.

---

## Study/Project Design:

This is a before/after observational study of a new documentation form.

---

## Setting:

Busy Level II community Trauma Center without surgical residents, APs responsible for daily care.

---

## Sample:

Convenience sample of all injured patients evaluated by Trauma Service, admitted from ED to critical care or a med/surg unit greater than 48 hours.

---

## Procedures:

The APs were charged with creating a plan for completing the Tertiary Survey consistently. Incidental findings needed to be communicated with written discussions and follow up plans. To enhance documentation review boxes were added to the standardized daily progress note including verification of a radiologic and laboratory data review. Incidental Finding Forms were developed as two layer forms with an original copy for the medical record and a copy for the patient or family. The APs have the responsibility for communicating findings. Compliance of form use was tracked weekly by the APs checking all admissions from the last 24 hours on a random day of the week. Threshold of compliance was 95%. Goal was reduction in missed injuries and improved communication of incidental findings.

---

## Findings/Results:

As the compliance to completing a Tertiary Survey increased, the number of overall missed injuries decreased. Over a three month period documentation compliance averaged 95% with missed injuries decreasing from 4% to 1%. This trend has continued over the next three month period signifying a true trend. Incidental Findings were successfully documented and communicated to patients, families, and their Primary Care Physicians for follow-up care. It has been of great value for the APs to play an active role in this process of instituting change to improve patient outcomes. The primary benefit of identifying missed injuries early in the hospital stay is the potential decrease in the overall length of stay in the institution with better rehabilitation outcomes. Equally important was the formal communication process documented for the Incidental Findings. Identification and improvement of follow-up of findings will enhance early treatment and improve patient outcomes.

---

## Discussion/Conclusions/Implications:

The implementation of the tertiary survey form by the APs correlated with a decreased rate of missed injuries. Additionally, the progress note requires the AP to be accountable for completing an incidental finding form when necessary as well as tracking the patients primary care provider. The use of this form can be easily implemented by APs at other institutions. Further research is needed on the rate of patients who follow up on their incidental findings as well as the rate and type of incidental findings that were found to be clinically significant after further workup.

## Evidence-Based Practice-E2

Oral Presentation - Military SIG – Thursday, April 8, 2010 – 1:30-3:00PM

---

### Abstract Title:

**Aeromedical Evacuation to Landstuhl Regional Medical Center: Opportunities for Improvement**

---

### Authors:

Kathleen Martin ,RN; [Liz Schell, RN](#); Raymond Fang, MD; Beth Cleek, RN; Connie Johnson, RN; Sean Kelley, RN; Sheryl Neal, RN ; and Pam Nyman, RN

---

### Background & Purpose:

Aeromedical evacuation (AE) is a crucial, highly orchestrated component of modern combat casualty care. AE enables rapid patient movement across a global military trauma care system to progressively higher echelons of care. Prior to 2008, collaborative performance improvement (PI) processes did not exist between military trauma centers and the AE system supporting them.

---

### Study/Project Design:

A descriptive study characterizing challenges in military aeromedical communication with LRMC.

---

### Setting:

Aeromedical transport from Iraq and Afghanistan to Landstuhl Regional Medical Center.

---

### Sample:

The charts of 724 patients evacuated via AE to LRMC were concurrently reviewed for PI events.

---

### Procedures:

In 2008, Landstuhl Regional Medical Center (LRMC) and the U.S. Air Force AE system increased cooperative efforts to identify, to review, and to respond to AE-related PI issues. Emphasis was placed on the concurrent identification of potential PI events and the increased communication between ground-based and in-flight providers caring for evacuated casualties. Both standard and critical care AE teams participated directly in LRMC PI activities. Reviews and corrective recommendations were forwarded to the AE leadership. Involved providers received timely feedback.

---

### Findings/Results:

In 2008, AE-related PI events captured in the LRMC Trauma Registry were reviewed relating to 34 patients (1.6 % of total patient transports). At times, more than one issue was identified per patient (Table 1). The PI event loop closure rate was 91%.

Table 1. Categories and incidence of AE-related PI Events

1. Improper AE care level (routine vs. critical care) – 6 (18%)
2. ICU team not activated for patient arrival – 15 (44%)
3. Equipment or supply issue – 3 (9%)
4. Significant clinical event
  - ICU team not activated for patient arrival – 15 (44%)
  - Equipment or supply issue – 3 (9%)
  - Decreased Respiratory Status – 13 (38%)
  - Decreased Systolic Blood Pressure – 8 (24%)
  - Vascular Event – 4 (12%)
  - Decrease in Hemoglobin – 2 (6%)
  - Decubiti developed – 3 (9%)
  - Medication Error – 2 (6%)

---

### Discussion/Conclusions/Implications:

Open, formal communication and collaboration between the LRMC Trauma Program, U.S. Air Force AE teams, and U.S. Air Force AE leadership facilitated identification and investigation of PI events and implementation of corrective actions. Lessons learned were quickly incorporated into initial and advanced AE training programs and led to the creation of clinical practice guidelines. This AE PI process with its high rate of PI event loop closure improved care across the system for all patients.

## Evidence-Based Practice-E3

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Buckle Up Tweens Program**

---

### Authors:

[Sheri Stucke, PhD, APN](#); Jeanne Cosgrove, RN; and Melinda Case, RN

---

### Background & Purpose:

Motor vehicle crashes are the leading cause of death in ages 8 to 15 years old. According to Clark County Child Death Review Team, Nevada, from 2005, tweens (ages 8 to 15) were the primary age group for motor vehicle related deaths. The baseline goal of implementing the Buckle Up Tween Program was to increase usage of seatbelts for ages 8 to 15 years old.

---

### Study/Project Design:

Observational field study.

---

### Setting:

School based elementary, middle and high schools.

---

### Sample:

Convenience sample of children ages 8 to 15 years old. 973 children pre observational and 1021 children post.

---

### Procedures:

Cars were stopped at a stop sign directly outside of the schools were preformed. A pre survey occurred first in which data was collected on whether the child/children in the car was wearing their seatbelt and the location of where they were sitting in the car along with demographic data was collected. The intervention of a classroom presentation at the schools was then performed after the pre survey. Finally, a post survey was conducted approximately one week after the classroom presentation was given at each of the schools. The plan was to determine the effectiveness of the Buckle Up Tweens Program.

---

### Findings/Results:

A total of 973 children were included in the Pre Survey Screening with 77% of males were buckled up, 81% of females were buckled up, 51% of males less than 13 years of age were in the back seat and 42% of females less than 13 years of age were in the backseat. Adults who were driving the vehicles were also evaluated which showed 90% of them were wearing seatbelts. Classroom presentations were held at 8 schools which included 8,666 children that participated in the program. Post survey results which occurred 1 week after the classroom presentations showed 89% of females were wearing seatbelts, 80% of males less than 13 years old were in the back seat, 76% of females less than 13 years old were in the backseat, and 94% of parents/adults driving the vehicles were wearing their seatbelts.

---

### Discussion/Conclusions/Implications:

The Buckle Up Tweens Program has been highly successful and very well received by the schools involved. In 2008, the program was implemented at 13 schools located in Clark County, Nevada. A large number of tweens sitting in the front seat in front of an air bag prematurely was identified. This program included an actual care stop at a stop sign, therefore, the child and adult were educated at the time of the stop. This method of education at the time of the stop was more successful than teaching adults and children outside the vehicle at another time.

## Evidence-Based Practice-E4

Oral Presentation – Concurrent Session – Thursday, April 8, 2010 – 10:30-11:30AM

---

### Abstract Title:

**Development of a Geriatric Trauma Resuscitation Protocol, Utilization Compliance, and Outcomes**

---

### Authors:

[Pamela Bourg, RN, MS](#); Melissa Richey, RN, BSN; Kristin Salottolo, MPH; and Charles W. Mains, MD

---

### Background & Purpose:

The active 65+ age group is a growing demographic in the trauma population, yet there are few published trauma resuscitation protocols for this group. The purpose of this study was to develop a geriatric resuscitation protocol and measure compliance and outcomes in our geriatric trauma patients.

---

### Study/Project Design:

Retrospective review of trauma geriatric patient clinical data from 1/2008 through 6/2009.

---

### Setting:

Urban ACS verified Level 1 community trauma center in which 23% of trauma patients are 65 and over.

---

### Sample:

All geriatric trauma patients (age 65+); patients who were DOA, discharged from the ED, transferred-out, or had no lactate record were excluded.

---

### Procedures:

A geriatric resuscitation protocol was developed in 2008 after an increasing number of preventable and potentially preventable (P/PP) deaths were identified via PIPS. First, trauma activation guidelines were revised for all trauma patients. Second, a geriatric resuscitation protocol was developed that specifies 1) Lactate draw at admission; 2) Trauma surgeon consult if lactate is elevated (>2.5 mmol/l); 3) Central line and CVP monitor for patients with shock or elevated lactate who are not responsive to fluid resuscitation. Compliance was determined for each of the above three specifications in 2009, after the protocol was implemented. We used chi-square tests and Wilcoxon rank-sum tests to examine pre- and post-implementation mortality, hospital length of stay (LOS), and P/PP deaths.

---

### Findings/Results:

There were 869 patients included in the analysis. The percentage of lactates drawn significantly increased across the six admission quarters (14%, 20%, 30%, 52%, 55%, 73%,  $p < 0.001$ ). Compliance with the geriatric guideline in 2009 was as follows: 1) Obtaining a lactate, 64.5% (189/293); 2) Trauma surgeon consult following elevated lactate, 95.7% (45/47); 3) Central line and CVP monitor following shock or elevated lactate, 15.6% (10/64). Elevated lactate was observed in 26% of all patients. Mortality was significantly higher in patients with an elevated lactate (19.6%) v. normal lactate (4.9%,  $p < 0.001$ ). Although not significant, unadjusted mortality was reduced approximately 40% in 2009 when examined by lactate levels (mortality in 2009 vs. 2008: normal lactate, 3.5% v. 6.4%; elevated lactate: 14.9% v. 24.4%). Mortality in patients with shock was 13.8% ( $n=4$ ) in 2008 and 0% in 2009. LOS was similar in 2008 vs. 2009. Lastly, five P/PP deaths were identified in 2008 v. zero in 2009.

---

### Discussion/Conclusions/Implications:

Our user friendly protocol is a clear roadmap for all specialties involved in the care of the geriatric trauma patient. The protocol can easily be disseminated to referring lower level trauma and non-trauma centers. Compliance with lactate draws significantly increased through development and implementation of the protocol. Compliance with the central line placement guideline might need improvement, while trauma surgeon consultation was high. Utilization of the geriatric protocol may have contributed to the reduced mortality in 2009. We will examine the remaining 2009 data in early 2010.

## Evidence-Based Practice-E5

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Development of an Algorithmic Approach to Trauma Patients' Pain in the PACU**

---

### Authors:

[Trisha Klein, RN](#) and Kathryn Von Rueden, MS, RN, FCCM

---

### Background & Purpose:

Pain in the trauma PACU is difficult to evaluate and manage since the patients may have challenging injuries, complex histories, and psycho-social issues. On a pain scale of 0 to 10, the average pain score was 6 in a sample of trauma PACU patients. A literature review revealed that a systematic approach to assessment and management can be effective.

---

### Study/Project Design:

This initiative uses a pre and post intervention patient satisfaction survey comparison.

---

### Setting:

Trauma PACU of a large, urban academic medical center.

---

### Sample:

Post-anesthesia care unit specializing in trauma patients.

---

### Procedures:

A team of trauma nurses met to discuss issues related to pain management practices. After brainstorming, problems with pain assessment were identified. From these sessions the need for standardized but flexible pain management approach evolved. The team then developed a systematic approach to assess and individualize treatment of the patients' pain. Five pathways or algorithms evolved. The first to be developed was the Pain Management Pathway. It addresses overall assessment of the pain and is used for all patients to categorize the type of pain the patient is having. Pain is classified into 4 categories and pathways, Aggressive, Acute, Supportive and PRN Pain Management Pathways. These allow individualization of the patients' pain management.

---

### Findings/Results:

Currently, patient satisfaction data specifically related to pain is being collected for the pilot study. This data showed that a significant dissatisfier with care was pain control. 2008 patient satisfaction data showed an average satisfaction score of 4.25 out of 5. To date, 2009 satisfaction data shows an average score of 4.40 to the question: "your pain was under control by the end of your stay in the trauma PACU," where 1 is strongly disagree and 5 is strongly agree. These data is an improvement of 0.15 on the satisfaction surveys compared with 2008 average. Patients have frequently stated having pain but identify that "the nurses really did all they could." Nurses report improved autonomy regarding their ability to adequately address their patients' pain. Also, patient care techs can take part in this model, increasing teamwork on the unit.

---

### Discussion/Conclusions/Implications:

Implications for practice and research: Evaluation and appropriate management of pain in trauma patients is critical. Initial efforts to implement a standardized approach have had positive impact on staff and patients. This process has evolved into a research protocol to formally evaluate the impact of standardized pathways and nurse driven pain assessment and management.

## Evidence-Based Practice-E6

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Development of Protocol to Detect At-Risk Drinking Behaviors in a Trauma Population**

---

### Authors:

[Reda Willis, RN, MS, CCRN, MDiv](#); Amy Krichten, RN, BS, CEN; Keith Clancy, MD, FACS; and Kim Shoff, RN, BS, CCRN

---

### Background & Purpose:

Excessive drinking is a risk factor for injury. Trauma centers need to have protocols in place identifying and intervening for at-risk drinkers, to prevent further injury. Previously this was addressed by obtaining a BAL on trauma patients and intervening if the BAL was positive. The goal of this project was to develop a protocol identifying patients for at-risk drinking regardless of their BAL.

---

### Study/Project Design:

Beginning 2008 all trauma patients were screened for at-risk drinking with the Audit-C tool.

---

### Setting:

Community teaching hospital (Level II designation) being upgraded to a Level I center Oct. 2009.

---

### Sample:

This was a convenience sample (N = 1,201) of trauma patients admitted from February, 2008, to August, 2009.

---

### Procedures:

A literature search was done on the best practices for screening and implementing a SBI program. At the same time, an expert speaker for SBI provided some educational groundwork to our staff on SBI. A protocol was developed in collaboration with our Social Work Department. A SBI documentation form and patient educational materials were developed. Education and a competency were developed for the staff. Accuracy and compliance with the protocol were monitored on a daily basis by the CNS. Feedback to the staff was given concurrently. The following outcome information was collected on each patient; age, BAL, Audit-C score, CAGE assessment, motivation to change score, willingness to comply with safe drinking limits, SA referral, or a recommendation to follow-up with SA upon discharge.

---

### Findings/Results:

The total number of patients that were reviewed was 1,472. Of these patients, 1,201 had the screening completed. Two hundred seventy-one were not assessed due to cognitive issues, or the protocol was not completed prior to discharge. The number of patients with a BAL level over the legal limit was 334 (29%). However the total number of At-Risk patients numbered 463 (39%). The number of patients that scored At-Risk but had BAL of 0 or less than the legal limit, totaled 197 or 16.4% of the total population, or 42.5% of the total at-risk population. With our previous protocol of providing interventions and education only for patients with BAL over the legal limit, this group of patients would not have received education about "At-Risk Drinking" and Safe Drinking limits. This becomes an important group for injury prevention programs. By providing interventions and education on Safe Drinking, we may be able to change this group's behavior and prevent future injury.

---

### Discussion/Conclusions/Implications:

Assessing all trauma patients for At-Risk Drinking, regardless of the BAL is extremely important. Our data suggests that many patients with BAL of 0 are At-Risk drinkers and may sustain a future injury. This aspect of injury prevention cannot be overlooked in our trauma centers.

We have now started to do follow-up phone calls with our patients who are At-Risk drinkers to assess their knowledge retention of safe drinking habits. This data will help us determine if we were successful with our educational program related to alcohol and trauma, as well as safe drinking limits.



## Evidence-Based Practice-E7

Oral Presentation – Concurrent Session – Thursday, April 8, 2010 – 10:30-11:30AM

---

### Abstract Title:

**Erase the Pain: Initial Pain Management in the Trauma Resuscitation Bay**

---

### Authors:

[Cynthia J Mastropieri, RN, MSN, CNS](#); Ginger Cunningham, RN; Dana R. Kennedy, RN, BSN; and Michael Foreman MD, FACS

---

### Background & Purpose:

Pain was adopted as the 5th vital sign to improve management of pain. According to the literature, the time to administration of the first dose of analgesia in trauma patients in the Emergency Department (ED) exceeds 90 minutes. The purpose of this project was to determine if development of a pain protocol would decrease the time to initiation of analgesia and improved care in trauma patients.

---

### Study/Project Design:

This is a before and after observational project design.

---

### Setting:

An urban level I trauma and teaching center.

---

### Sample:

The sample size included review of 35 charts of trauma activations before and after implementation of a pain protocol.

---

### Procedures:

A multidisciplinary committee evaluated current pain management practices in patients admitted to the trauma resuscitation bay. The committee's goal was to develop and implement an analgesia protocol (Erase the Pain Protocol) to increase the percentage of trauma patients receiving analgesia during resuscitation and decrease the time from arrival to the first dose of analgesia. Inclusion criteria included trauma activations, hemodynamic stability, Glasgow coma score greater than 8, age greater than 12 years and a positive pain score. Trauma patients that met inclusion criteria were given weight base Fentanyl IV push within 30 minutes of bed placement with continuous monitoring of vital signs.

---

### Findings/Results:

Review of 35 charts prior to initiation of Erase the Pain protocol revealed that 25% received analgesia administration within 30 minutes of arrival, 29% received analgesia administration greater than 30 minutes after arrival and 46% did not receive analgesia. After initiation of Erase the Pain protocol, 66% met the goal of analgesia administration within 30 minutes of arrival, 17% received analgesia administration greater than 30 minutes of arrival and 17% received no analgesia. There was a (41%) improvement in earlier administration of analgesia after initiation of Erase the Pain protocol which resulted in an average administration time of 16 minutes with a range of (6-30 minutes). In addition, trauma patients not receiving analgesia decreased by 31%. Challenges to the implementation of this protocol were affected by a newly redesigned ED, inexperience of ED nurses, open vacancies, extensive amount of ED nurses and surgical residents to educate and high ED volume.

---

### Discussion/Conclusions/Implications:

Despite 25 years of research, pain management continues to be a challenge in trauma patients in the ED. Reasons for inadequate pain management include failure to assess initial pain, acknowledge the patients' pain, re-assess treatment adequacy and failure to meet the patients' pain management expectations. The implementation of an analgesia protocol (Erase the Pain protocol) resulted in a marked reduction in time to initial analgesia and improvement in the number of trauma patients receiving analgesia in the trauma resuscitation bay without adverse effects.

## Evidence-Based Practice-E8

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Evaluation and Implementation of a New Treatment Modality for Rib Fractures: The Trauma Clinical Nurse Specialist's Role**

---

### Authors:

[Lillian Aguirre, MSN, RN, CNS, CCRN, CCNS](#) and Ernest F. Block, MD, MBA, EMT-P, FACS, FCCM

---

### Background & Purpose:

Patients (pts) with uncontrolled pain from rib fractures (fxs) can lead to pulmonary complications. Transfers to higher level of care is a quality indicator and a target for improvement at our trauma center. Effective pain control may reduce these complications and transfers. Clinical nurse specialists (CNS) evaluate products and integrate their use as part of their role.

---

### Study/Project Design:

Process Evaluation after implementation of a new therapy (tunneled catheter pump infusion).

---

### Setting:

Community Hospital; Level 1 Trauma Center in the southeastern United States.

---

### Sample:

The product and process for its use was evaluated on 5 adult trauma pts with multiple rib fxs and respiratory compromise.

---

### Procedures:

The Trauma Quality team wanted to evaluate the use of tunneled catheters and an elastomeric pump for the infusion of bupivacaine to the rib fx site as an adjunct to systemic pain management for pts with rib fxs. The trauma CNS led efforts to evaluate the introduction of this new product, coordinate its use, and the impact on transfers to higher level of care. A multidisciplinary approach was used to develop a plan and process sequence for the device's use, electronic orders and documentation, and education of the physician, nursing and pharmacy staff. The CNS evaluated and reviewed all pts who had tunneled catheters inserted and tracked their outcomes during its implementation. Pain control and respiratory function was also assessed.

---

### Findings/Results:

The product was evaluated on 5 pts, 3 were on a step-down unit, 1 on a general unit and 1 in the ICU that was intubated and on ventilatory support. None required transfer to the ICU or a higher level of care. The pt on the ventilator was successfully extubated 6 hours later. Both critical care and non-critical care pts with painful rib fx benefited from this therapy mode. They experienced relief from rib fx pain allowing them to increase their spontaneous volume, increase volume measurements during incentive spirometer exercises and ambulate in the absence of lower extremity trauma. It proved to be effective in managing rib fx pain. The coordinated efforts of the CNS with the surgeons, nursing, pharmacy and information services led to processes for safe bedside insertion, storage and retrieval of the catheters, filling of the pump and integration of documentation into the electronic medical record.

---

### Discussion/Conclusions/Implications:

The evaluation process provided a test ground to consider potential future use of the therapy in this population. The CNS was pivotal for coordination and evaluation of this new pain management strategy. The CNS was able to demonstrate safe and organized use of the product and a procedure that could be implemented system-wide as an adjunct therapy for pain management that can lead to improved clinical outcomes. In conclusion, the CNS is in an ideal position to lead a comprehensive product evaluation and integration of this therapy with a multidisciplinary team.

## Evidence-Based Practice-E9

Oral Presentation – Concurrent Session – Thursday, April 8, 2010 – 10:30-11:30AM

---

### Abstract Title:

**Financial Implications of Trauma: Development of a Trauma Billing Committee**

---

### Authors:

[Michael Jordan, MSN, MBA, HC](#)

---

### Background & Purpose:

Trauma billing capture is essential for maintaining a trauma program. A billing committee ensures the accuracy documentation for national regulations for trauma billing. The purpose of this abstract is to discuss a trauma charge performance program that specifically monitors charges against the Uniform Billing Codes for Trauma Care.

---

### Study/Project Design:

We reviewed documentation and charges in a level 1 trauma program.

---

### Setting:

Free standing, not-for-profit, 250 bed, ACS verified Level I Pediatric Trauma Center.

---

### Sample:

Our team reviewed patient charges and documentation twice weekly (n= 133 patients per quarter).

---

### Procedures:

We evaluated trauma program financial statements, emergency department charge slips, and trauma flow sheets and identified an opportunity for performance improvement. We created a trauma billing committee to examine documentation for accuracy and consistency. The committee includes the trauma program manager, emergency department manager, emergency department education manager and revenue manager. Our team identified inaccuracies and provided feedback to providers. The review ensures charge accuracy based on UB 68X requirements. We found that there are opportunities for improved charge entry and capture documentation.

---

### Findings/Results:

The committee reviews all trauma entries into the hospital within 1 week. We found that 14% (19/133) of charts lacked appropriate support documentation. Surprisingly, we noted that 38% (51/133) of the charge sheets reviewed failed to capture all chargeable nursing interventions and procedures. Our team routinely presents these errors to staff for reeducation. Based on our work, we modified emergency department charge sheets in accordance with the trauma team response revenue code (UB68X). Our team also shifted charge entry to revenue management staff. Our trauma team management is prospectively monitoring these changes.

---

### Discussion/Conclusions/Implications:

Prior to the trauma billing committee, we inconsistently reviewed documentation for charge accuracy. Full time trauma coverage at verified/designated trauma centers is extremely costly. Between 1990 and 2005, over 300 trauma centers closed due to poor reimbursement and cost of care. We postulate that a trauma billing committee is essential for ensuring accuracy and additional performance improvement opportunities. Future health care reform will require improved fiduciary responsibility by trauma programs in the US.

## Evidence-Based Practice-E10

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Implementation of a Geriatric Rib Fracture Protocol Improves Outcome**

---

### Authors:

[Theresa Snavelly, RN BSN](#); Jamie Miller, MSN, CRNP; Pamela Nichols, RN, BSN; Patricia Palubinsky, RN, BSN, Bonnie Wilson, MSN, CRNP; and Kazuhide Matsushima, MD

---

### Background & Purpose:

Identification of UIC is a critical indicator of Trauma Performance. UIC is a clinical change warranting transfer of a patient to a higher level of care. We hypothesized that implementation of a geriatric rib fracture protocol would improve patient outcome by various discrete measures including decreased rate of UIC.

---

### Study/Project Design:

Pre/post intervention study of blunt injured trauma patients over 55 with 2 or more rib fractures.

---

### Setting:

Rural Level 1 Trauma Center, 500 bed academic medical center.

---

### Sample:

Pre/post intervention (implementation of geriatric rib fracture protocol) of 401 patients requiring 139 UIC for the time period of 2005 versus 2006-8.

---

### Procedures:

Analysis of trauma patient UIC in 2005 revealed the majority (74%) to be related to respiratory decompensation in the setting of rib fractures (55%). Thus, an interdisciplinary team of physicians, nurses and respiratory therapists developed a comprehensive Geriatric rib fracture protocol, comprising interdisciplinary educational forums, standardized order sets and daily patient updates. Concurrent variance monitoring and compliance was documented into Trauma PI database and fallout cases reviewed at weekly PI conference with aggregated outcome results reported quarterly at Trauma Quality Committee. Statistical analysis was via students testing or chi-square, as appropriate.

---

### Findings/Results:

72 patients were studied in the PRE period compared to 329 in the POST. There was no statistical difference between average injury severity score 24.56 vs. 21.51 ( $p=0.09$ ) or age 71 in both PRE and POST periods. Protocol compliance increased from 44% in 2006, and 96% in 2007 and 2008. ( $p = 0.001$ ) There was a decrease in overall respiratory related UIC for trauma patients from 74% PRE to 43% POST ( $p=0.01$ ). UIC for those over age 55 with 2 or more rib fractures decreased from 50% to 26% pre to post ( $p=0.04$ ). ICU length of stay was reduced from 5.9 to 3.4 days ( $p=0.004$ ) and vent days from 4.9 days to 1.9 days ( $p=0.09$ ). Respiratory failure dropped from 20% to 16% PRE to POST. ( $p=0.38$ ).

---

### Discussion/Conclusions/Implications:

These data suggest an opportunity to address a special population with an empiric approach to pain management, pulmonary toilet and alert criteria to avoid UIC. Standard order set development and implementation ensured protocol compliance. A geriatric rib fracture protocol was effective in reducing UIC and improving outcome in a target patient population.

## Evidence-Based Practice-E11

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Implementation of a Pediatric Trauma Continuity Clinic Utilizing the Medical Home Concept**

---

### Authors:

[Karen A. Rodriguez, RN, MN, CPNP-PC/AC](#); Michael Jordan, MSN, MBA, HC; and Jeffrey S. Upperman, MD, FAAP, FACS

---

### Background & Purpose:

Trauma is the leading cause of pediatric death and disability in our country. There are known gaps in access to pediatric trauma care and rehabilitation services. We postulate that aftercare is fragmented or non-existent. We propose that post-discharge medical home style care, championed by a pediatric nurse practitioner, leads to improved short term outcomes, caretaker and provider satisfaction.

---

### Study/Project Design:

A descriptive study exploring patient, caretaker, and primary care provider verbal satisfaction.

---

### Setting:

American College of Surgeons verified level I pediatric trauma center, outpatient surgery clinic.

---

### Sample:

350 pediatric trauma patients evaluated since clinic inception, August, 2007.

---

### Procedures:

Prior to the Trauma Continuity Clinic, the child's caretaker coordinated and ensured follow-up with specialty services involved during the acute trauma phase. The majority of our trauma patients required prior authorization from their primary care providers for subspecialty care. This resulted in fragmented or delayed aftercare.

After obtaining institutional and trauma program committee support, we instituted our trauma continuity clinic utilizing the medical home concept. All patients admitted and subsequently discharged from the pediatric general surgery trauma service were given a follow up appointment in our trauma continuity clinic 2-4 weeks after their discharge. Trauma continuity clinics are offered twice monthly and staffed by our Trauma Director and Trauma Nurse Practitioner.

---

### Findings/Results:

After more than two years of providing this on-going service we find that patients and caretakers are gaining better access to not only their trauma related care needs but also their primary care health needs. By serving as the hub or home for these children and their caretakers, we ensure that the child is assigned to a primary care provider in their community.

Patients and caretakers report: fewer issues and barriers with access to care; improved understanding of their child's trauma related needs; and satisfaction with ability to access primary care health resources in their respective communities. In addition, community primary care providers are now referring their post-trauma patients, who were treated at other trauma centers, to our clinic for management and care coordination.

---

### Discussion/Conclusions/Implications:

The goal of our clinic is to ensure that patients have access to subspecialty care. Transition of care is managed by the trauma nurse practitioner and we follow the case as needed to support the PCPs in determining proper access to services.

Trauma Continuity Clinic is essential to the ultimate recovery of our pediatric patients and their caretakers. We continue to face challenges related to reimbursement and recognition of these services as essential to the care of the trauma patient. These challenges as well as others will be presented.

## Evidence-Based Practice-E12

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Infection Control Practice among Intensive Care Unit Patient Families**

---

### Authors:

[Arielle Greenlee, RN, BSN, CCRN](#)

---

### Background & Purpose:

Why not have patient families' become a more positive aspect of an ICU patients' recovery process. A two month long observation revealed that <1% of family members consistently completed hand hygiene either before, during, or after visiting the patient bedside. Hand hygiene has been proven to reduce spread of infectious disease, reduce length of patient stay, and decrease accrued patient cost.

---

### Study/Project Design:

Two month hand hygiene observational study completed before and after intervention implementation.

---

### Setting:

One large university hospital 16 bed ICU setting with a very vulnerable patient population.

---

### Sample:

Convenience sample of 30 patient family members before and 30 patient family members after hand hygiene brochure implementation within defined setting

---

### Procedures:

An evidence based hand hygiene brochure was created addressing when, how, what, when, and why to wash hands, after interview data of patient families revealed a general ignorance of hand hygiene importance and impact. Brochure was implemented during the month of June 2009. Brochures were provided and taught to patient families by the bedside nurse during the first 24 hours of patient admission. After one month of brochure rollout, repeat observation and interview data would be completed.

---

### Findings/Results:

100% adherence and amplified understanding among patient families' as evidence by improved audit and interview data after June 2009 brochure rollout. Family members have recently been witnessed holding physicians and other clinical and non-clinical staff accountable, acting as the patient advocate, and voicing institutional hand hygiene expectations. Readability, accessibility, easy of use, and visual appeal of brochure has added to consistency and compliance.

---

### Discussion/Conclusions/Implications:

Including and educating family members during a time of crisis has proven difficult. Reliability of the bedside nurse to consistently use hand hygiene brochure can waver during times of stress and high workload. Positive reinforcement has shown to increase self-efficacy, and has added to consistency and compliance, although further tactics need to be explored. Future infection rate data needs to be collected to determine long term effectiveness and efficiency of hand hygiene brochure.

## Evidence-Based Practice-E13

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Nurse-driven Transformative Change in Trauma Culture: Lessons Learned from an Academic Level I Trauma Center**

---

### Authors:

[Alberto. Bonifacio, RN, BSN](#); Jennifer Haynes, RN, BSN; and Jeffery Strickler, RN, MA

---

### Background & Purpose:

Trauma resuscitations require exceptional leadership, communication, and teamwork to ensure quality care. This presentation aims to share the experiences and insights from a nurse driven campaign to affect comprehensive transformative change in trauma culture through implementation strategies, leadership, educational tools, and outcome measurement in negotiating institutional change barriers.

---

### Study/Project Design:

This is a third party pre-and post-implementation observational field study.

---

### Setting:

90 bed emergency department of a 726 bed academic, accredited Level I Trauma and state burn center.

---

### Sample:

Prospective cohort of (n=29 pre and n=28 post implementation) all adult and pediatric trauma alert resuscitations occurring weekdays 0700-1900.

---

### Procedures:

A Team STEPPS approach to changing culture was used in guiding our nurse-led campaign to improve trauma care. An eight-step plan with strategies focused heavily on team development and collaboration among leaders from eight clinical and ancillary services to achieve consensus of a shared vision and action plan. The emergency department implemented a Primary Trauma Nurse (PTN) Program from which to train, develop, and optimize nursing practice. A third party baseline and post-implementation study was conducted to assess change in both teamwork and clinical skills using the Team Event Non-technical Tool Skills (TENTS) and clinical management checklist derived from existing trauma protocols. Qualitative data was gathered via personal interviews and survey of program participants.

---

### Findings/Results:

Our study revealed improvement in both teamwork and clinical performance. The TENTS criteria revealed the largest gains in leadership, situational monitoring and awareness, mutual support, overall teamwork, and communication. Clinical improvements were achieved in sequential physical assessment, pre-trauma huddles, PPE compliance, administration of warm fluids, and use of urine meters. Though overall teamwork and leadership means were improved, the Mixed Model Test applied revealed no statistical significance in either category ( $p>0.05$ ). The data collected from the focus group of program participants was largely positive indicating performance in trauma has greatly improved. Though the pre-and post-assessments yielded non-significant statistical results, the raw gains, positive focus group feedback, establishment of the PTN Program, and resulting wealth of nurse-developed training methods suggest a resounding practical significance.

---

### Discussion/Conclusions/Implications:

In this ambitious project, impassioned nurses transcended their traditional roles to challenge inherent institutional obstinacy. Precious lessons were learned in the application of Team STEPPS, trauma field research, and the creation of a trauma nurse program. Vital insights were also gathered in nurse-driven multidisciplinary collaboration, policy development, trauma education, and political awareness. Our most profound discovery, however, was the potential for nurses, through effective leadership, innovation, and tenacity, to shift not only departmental, but institutional trauma culture.

## Evidence-Based Practice-E14

Oral Presentation – Injury Prevention SIG – Thursday, April 8, 2010 – 1:30-3:00PM

---

### Abstract Title:

**SBIRT in a Pediatric Trauma Center: How and Why?**

---

### Authors:

[Roni L. Robinson, RN, MSN, CRNP](#) and Kara Noto, MSW, LSW

---

### Background & Purpose:

Nationwide, the trauma center is becoming the setting for substance abuse screening, and until recently, the adolescent trauma patient was not routinely screened. In an effort to decrease the incidence of trauma morbidity and mortality, as well as decrease health care costs, our facility recently implemented new SBIRT standards of care for adolescents.

---

### Study/Project Design:

Implementation process for new SBIRT standard of care for the adolescent trauma patient.

---

### Setting:

Level 1 Pediatric Trauma Center, acute care trauma population.

---

### Sample:

All admitted trauma patients to the acute care ward that are 12 years of age and older.

---

### Procedures:

An SBIRT Task force made up of 2 Trauma Advanced Practice Nurses and a Trauma Social Worker was created. A thorough review of the literature was performed including: published methods of performing SBIRT in the trauma setting, benefits and efficacy of brief interventions, review of screening tools available, and local and national age of onset for substance use. Subsequently the group defined the target population and developed a screening and charting protocol. Staff was identified to monitor and evaluate the program. Lastly, the Task Force developed an information sheet for both patients and parents. Legal and Health Information Systems were consulted to ensure all hospital, local and federal regulations were followed. The program was initiated on March 23, 2009 with data collection.

---

### Findings/Results:

Chart review established SBIRT was performed on 115 of 219 adolescent trauma patients in a 7 month time span, screening 25% of our target population. Positive screens (defined as answering yes to at least 1 of 6 questions about at risk behaviors about substance abuse) were found in 25% of respondents, displaying some type of risky behavior. Results demonstrated 62% of those screened answered yes to 1 question, 17% to 2 questions, 6% to 3 questions, 10% to 4 questions, 0% to 5 questions and 3% to 6 questions. All positive screens received a brief intervention (BI), except 2 patients who were discharged early. One referral was made for outpatient counseling. The SBIRT Program is reviewed every 3 months with all staff involved in the process. Trauma nurses are pleased with this program and eager to join in this area of trauma prevention. The trauma social worker, who provides majority of the BIs is considering ways to improve administration of the BI during high patient volume.

---

### Discussion/Conclusions/Implications:

In light of the new ACS-COT standards for Level 1 Trauma Centers to identify individuals for substance use-related problems, our new SBIRT program has been extremely successful and a vital part of trauma prevention. With 25% of screens positive, the results demonstrate that the trauma nurse can use the SBIRT program to identify adolescents who may be on a path towards substance abuse and provide a much needed intervention in hopes of redirecting them. It only holds true that if you decrease the number of substance abusers, trauma-related injury due to substance abuse will decrease as well.



## Evidence-Based Practice-E15

Oral Presentation - Neurotrauma SIG – Thursday, April 8, 2010 – 1:30-3:00PM

---

### Abstract Title:

**To Reverse or Not to Reverse: Warfarin Reversal in the Traumatic Brain Injured Trauma (TBI) Patient**

---

### Authors:

[Laurie L. Flowers, RN, MSN, CCRN, CCNS](#) and Daneen Mace-Vadjunec, RN, BSN, ONC

---

### Background & Purpose:

Adults receiving pre-injury warfarin are at risk for sustaining severe TBI as a result of medically-induced coagulopathy. Concurrent chart audits revealed that TBI patients receiving warfarin were inconsistently reversed or not reversed in a timely fashion. The purpose of this guideline is to correct the patients' coagulopathy, prevent further hemorrhage and promote hemostasis.

---

### Study/Project Design:

Measurement after implementation of a new practice management guideline.

---

### Setting:

Level 1 Trauma Center.

---

### Sample:

The sample includes all trauma registry patients admitted with a TBI who were receiving pre-injury warfarin for 9 months in 2009.

---

### Procedures:

A multi-disciplinary team developed a reversal guideline and monitoring indicators. Warfarin reversal includes administration of plasma and intravenous vitamin K prior to transport to CT scan. The Blood Bank provides 2 units of thawed plasma immediately. Trauma Services implemented the guideline with an educational blitz to include surgical residents, physicians and nursing staff of the Emergency Department (ED) and SICU. Trauma Services shared the guideline with other regional trauma centers. Each trauma registry patient has a concurrent chart audit completed including warfarin reversal indicators. If warfarin is not/inconsistently reversed, the patients' care is reviewed at weekly trauma performance improvement meetings, which includes the Multidisciplinary Peer Review Committee.

---

### Findings/Results:

38 trauma registry patients were admitted with pre-injury warfarin use and TBI. 31 patients were in compliance with the warfarin reversal guideline. The remaining 7 patients were discussed in-depth at weekly trauma performance improvement meetings. Two did not have timely warfarin reversal due to treatment delays in ED. Two were admitted to medical services. Three patients were admitted by trauma services. Of those patients, in 1, the trauma surgeon chose not to reverse the warfarin based on the patients' minor injury and clinical presentation. A communication breakdown between the trauma surgeon and the ED physician delayed treatment in another patient. Lastly, the third patient was not reversed based on a history of severe congestive heart failure. Of the 31 patients who were reversed per the practice management guideline, two patients developed an acute exacerbation of congestive heart failure during the administration of thawed plasma. There were zero transfusion reactions.

---

### Discussion/Conclusions/Implications:

At discharge, 35 patients had GCS > 9 and 3 were GCS < 5. Coagulation factor VIIA role warfarin reversal is unclear and platelet inhibitors, aspirin and clopidogrel pose challenges in TBI patients. Trauma Services is developing a guideline for platelet inhibitor reversal and continues to share the guideline with medical physician(s). Ongoing education includes refreshing the various staff within the hospital and referring hospitals. As the patient advocate, nurses play a pivotal role in prompt identification of the medically-induced coagulopathic patient and informing physicians.

## Evidence-Based Practice-E16

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Trauma Boot Camp: Multidisciplinary Simulation Training Designed to Improve Resuscitation Care and Communication**

---

### Authors:

[Marla L. Vanore, RN, MHA](#); Marie Campbell, RN, MEd, MS; Kristine Biggie, RN, MSN, CRNP; and Roberta Hales, MHA, RRT-NPS, RN

---

### Background & Purpose:

Pediatric trauma resuscitation requires a high level of expertise and team performance to rapidly assess and treat the injured child. High fidelity simulation is a tool being used to enhance healthcare training and education. After 1 year of trauma simulations, an innovative Trauma Boot Camp was designed and implemented to orient new physicians and as a refresher for nurses and others.

---

### Study/Project Design:

Education session including didactic, trauma simulation, skill stations and written evaluations.

---

### Setting:

An academic Level I Pediatric Trauma Center.

---

### Sample:

50 attendees: Emergency Medicine (EM), Trauma, Surgery and Critical Care(CC) Fellows, ED Nurses, Respiratory Therapists, Radiology Technologists.

---

### Procedures:

Monthly trauma activation simulations using high fidelity patient simulators have been conducted for one year at this Pediatric Trauma Center. With the start of a new academic year, an intensive 5 hour interactive education program was designed and implemented. Course objectives included: Describe specific pediatric considerations to be considered in trauma activations and demonstrate successful communication techniques. The schedule of the day included: didactic lectures given by physicians and nurses which included communication techniques, clinical care and institutional specific processes; 2 trauma scenarios based on actual cases (an infant head injury from abuse and an adolescent GSW) and skill stations (chest tubes, intraosseous insertion and hare traction splints).

---

### Findings/Results:

Attendance at the Trauma Boot Camp was excellent from most areas. This included all 10 EM Fellows, 18 ED nurses, 8 CC Fellows, 3 Respiratory Technicians, 8 Radiology Technologists. The neighboring adult trauma center sent 3 trauma fellows. The 3 Surgery Fellows did not attend due to patient care time conflicts.

A 5 point Likert Scale was used to evaluate the educational session. Overall evaluations were positive. A sample of the results is as follows:

- The objectives of the Boot Camp were clearly stated 4.55
- The Boot Camp was appropriate for my level of learning 4.25
- The format of the Boot Camp was effective 4.58
- I would like this type of Boot Camp again 4.39
- The Boot Camp was challenging 3.69
- I plan to utilize what I learned into my practice 4.67

The discipline that rated the experience lowest were Radiology Technologists since only one scenario allowed their participation and the skill stations did not address their needs.

---

### Discussion/Conclusions/Implications:

Trauma Boot Camp utilizing high-fidelity simulation and skill training is perceived to be an effective method to educate a multidisciplinary group of pediatric fellows, nurses and allied health providers. Lessons were learned; 1) Time commitment for interactive group education is considerable and must be anticipated; 2) All disciplines need to have roles in scenarios. 3) Logistics such as size of the space, availability of equipment in multiple sites, equipment budget commitment and need for further development of pre-course handouts were noted. Annual Trauma Boot Camps are planned.

## Evidence-Based Practice-E17

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Trauma Return Appointment Study**

---

### Authors:

[Melissa Hlavaty, RN, BSN, CCRN](#) and Christina Wargo, RN, MSN

---

### Background & Purpose:

Patient complaints identified a lack of appointments. Johnson et al 1 reported strategies to improve patient compliance as education, reminders, sanctions, and open scheduling. Chung et al 2 reported obstacles as wait times and quality of exam. Murdock et al 3 reports forgetting as the number 1 reason for missing a return. C. Gainer 4 reports communication as the key to patient return.

---

### Study/Project Design:

Prospective patients were reviewed and follow-up appointment scheduling evaluated as a PI initiative.

---

### Setting:

Geisinger Medical Center serves > two million residents of central and northeast Pennsylvania.

---

### Sample:

Geisinger Medical Center serves > two million residents of central and northeast Pennsylvania.

---

### Procedures:

Trauma patient logs admitted to GMC are reviewed daily. 88% of patients returned for follow-up. Non compliant patients were called by a RN for follow-up.

#### Four categories were identified:

1. Appointment scheduled, patient complied
2. Appointment scheduled, patient not compliant
3. Appointment not scheduled, patient called to schedule
4. Appointment not scheduled, patient did not call, no patient follow-up

#### Priority was given to the 2nd, 3rd and 4th categories with a performance improvement (PI) plan.

1. Appointments were verified electronically, missed appointments were scheduled.
2. The process for scheduling appointments was clarified.
3. A 91% compliance achieved by October 2007.
4. All non-compliant patients were called by an RN as follow-up.

---

### Findings/Results:

1. 10 % of patients do not return to our trauma clinic, but rather preferred follow-up with a provider closer to home.
2. Multiple appointments on one day are a positive for patients and families decreasing travel time and patient expense.
3. An integrated system improved compliance for scheduling appointments.
4. Updates in the hospital electronic chart occurred between October of 2007 and December 2007. Scheduling appointments became entirely electronic and upon review of data from January 2008 and February 2008 the follow-up appointment compliance rate increased to 99.2% with 0.8% of the patients following up at outside facilities closer to home or with primary care physician.

---

### Discussion/Conclusions/Implications:

The most important learning opportunities are:

1. Integrated systems improve patient care.
2. Including discharge appointments as part of the discharge instructions help reinforce to patients the priority of the return appointment. The halo effect of scheduling return appointment on discharge is increased staff awareness.
3. Matching multiple department appointments on the same day increased compliance for all appointments.

## Evidence-Based Practice-E18

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Under the Influence: Are We in Denial?**

---

### Authors:

[Jan Simonson, MSN, RN](#)

---

### Background & Purpose:

Alcohol and other drugs use/abuse is a significant, preventable health issue that contributes to the escalating incidence of traumatic injury, costing society nearly \$200 billion annually. For northern and central WI trauma patients, alcohol and other drug use is a contributing factor in nearly 25% or ¼ of the population. It was essential to develop a process to address these issues in a timely manner.

---

### Study/Project Design:

AODA report demonstrating CAGE assessment completion, frequency of AODA consults/brief intervention.

---

### Setting:

Saint Joseph's Regional ACS Verified Level II Adult and Pediatric Trauma Center.

---

### Sample:

All trauma registry candidates > 10 yrs. of age were screened for alcohol/other drug usage with subsequent AODA consultation for any positive results.

---

### Procedures:

The collaboration of the Trauma Team, AODA Leadership Team and Health Information System Team brought the following items to discussion: CAGE assessment completion, Tox Screen results, standard consult to the Certified Addictions RN, and brief intervention completion. RN and trauma staff education was facilitated through a self-guided Power Point. Pre-printed admission orders were updated to include an AODA consult. Guidelines for Trauma Patient referral to AODA screening was implemented utilizing literature evidence. An automated report was built to monitor the above components and is generated monthly to identify gaps in the management of patients with alcohol//other drug issues. This report is analyzed monthly by the Trauma PI RN and Certified Addictions RN for process gaps.

---

### Findings/Results:

Staff RN education improved completion of the CAGE assessment. Inclusion of the AODA consult on the pre-printed admission orders facilitated appropriate consults in a timely manner. Monthly reports indicate improvement in CAGE assessment from the 70th percentile to the 90th percentile. AODA consults have increased to nearly 60% with brief intervention completion near threshold of 65%. Gaps in consultation continue to be addressed on a case by case basis. Short weekend stays when AODA staff is not readily available is addressed in a variety of methods.

---

### Discussion/Conclusions/Implications:

Development/implementation of AODA management guidelines was pivotal to improved holistic care of the trauma population. Open communication among trauma team members has decreased gaps from admission to AODA consult. The benefit of standardized serum and urine toxicology screening of all trauma patients needs to be further explored. As there is no follow-up method established, effectiveness of the brief interventions are unclear. Development of follow-up protocols needs to be explored to fully understand the effectiveness of screening and brief intervention.

## Research-R1

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Brief Intervention: Risk Factors for Failure in a Level One Trauma Center**

---

### Authors:

David C. Maynard, MA, LPCC, NCC; Andrew Bernard, MD, FACS; and [Lisa J. Fryman, RN](#)

---

### Background & Purpose:

Drug (DR) and alcohol (ALC) abuse is common among trauma victims. Brief interventions (BI) are performed to garner internal motivation for behavioral change (BC), which is associated with lower trauma recidivism. BI results in BC in more than half of trauma victims using ALC but the level of commitment to BC after BI in patients using DR other than ALC has not been established.

---

### Study/Project Design:

This is a retrospective study.

---

### Setting:

University of Kentucky Chandler Medical Center, Level One Trauma Center.

---

### Sample:

Trauma patients admitted from August 2008 - July 2009.

---

### Procedures:

The trauma database at our ACS-verified level I trauma center was queried from August 2008 - July 2009 (12 months) to identify patients with positive serum ALC or urine DR. BI data obtained by our Licensed Professional Clinical Counselor (PC) were analyzed to determine rate of commitment to behavioral change. Comparison of groups was performed with Student T-test.

---

### Findings/Results:

The University of Kentucky Trauma Center admitted 2980 in the aforementioned timeframe and 1192 were found to have abnormal serum ALC or urine DR assay. BI was administered to 342 patients, with 46 being eliminated due to the patient's medical condition or medical information being unavailable. One patient was admitted twice, with one visit being eliminated. Intervention was delivered to 102 patients for ALC-use alone and 194 for other DR (+/- alcohol). The mean age of those admitted was 42.5  $\pm$  22.09, with females accounting for 32.19%. The mean age of those receiving BI was 35.02  $\pm$  11.98, for ALC alone was 37.61  $\pm$  13.4 and 33.38  $\pm$  10.9 for other DR,  $p < 0.01$ . Each patient was categorized by the PC into the various Stages of Change. Of those using ALC, 71.6% were rated at Contemplation and above and 55.7% for those using DR (chi-square test of difference  $p < 0.01$ ).

---

### Discussion/Conclusions/Implications:

BI is not more challenging in DR patients than in ALC. Younger patients, however, may need alternative forms of BI. Because the rate of change is insignificant, it would appear recidivism after discharge would be the same. However, these data reinforce the need for a fully integrated BI program in trauma centers and greater scrutiny of some substance using trauma victims.

## Research-R2

Oral Presentation - Military SIG – Thursday, April 8, 2010 – 1:30-3:00PM

---

### Abstract Title:

**Caring for Wounded Warriors: Development of Performance Improvement (PI) Knowledge for Deployed Trauma Nurse Coordinators (TNCs)**

---

### Authors:

[Rose Bolenbaucher, MSN, RN](#); Captain Lisa Compton, BSN, RN; Nancy Molter, RN, PhD; Joanna Moore, MPH; Mary Ann Spott, MPA, MBA; and Tracy Cotner-Pouncy, RN

---

### Background & Purpose:

In 2003 the Joint Theater Trauma System (JTTS) with an integrated Joint Theater Trauma Registry (JTTR) for military operations was initiated. The primary goal of the system is PI with TNCs working with staff to integrate PI initiatives. The purpose of this review was to determine if the evolution of education of TNCs in PI concepts reduced the number of audit filters identified.

---

### Study/Project Design:

A descriptive study to explore the evolution of the JTTS TNC PI curriculum.

---

### Setting:

Combat casualty care environment within the context of a military theater trauma system.

---

### Sample:

Randomized sample of 583 individual records with Military ISS scores between 16-50 reviewed for PI audit filters.

---

### Procedures:

During the time period of Oct 2007-September 2009 there were four teams of TNCs deployed to theater in 6-month rotations. Within the 4 teams, 3529 wounded warriors were identified in the JTTR with valid ISS scores. Of these, 583 had Military(MIL) ISS scores between 16-50 (10%-20% per team). The 583 records were then randomized within teams to 50 records per team. Each of the 50 records per team were reviewed for audit filters identified only in theater. Each record represented care to an individual patient.

---

### Findings/Results:

The 583 records with MIL ISS scores of 16-50 were categorized by the time frame each team was in theater: Team 1(Oct 07-Mar 08)-158 records; Team 2 (Apr 09-Sep08)-176 records; Team 3 (Oct 08-Mar09)-94 records; and Team 4 (Apr-09-Sep-09)-155 records. Fifty (50) records were randomly chosen for each team for review. Records reviewed represent, for each team respectively, 32%, 28%, 53% and 32% of the team records with MIL ISS scores of 16-50. Team 1 identified 26 filters in 16 records (32%); Team 2 identified 17 filters in 13 records (26%); Team 3 identified 9 filters in 9 records (18%) and team 4 identified 10 filters in 7 records (14%).

TNC PI education evolved from 1-2 hrs to a more integrated approach over two weeks involving approximately 40 hrs of PI content. Although there is a trend of finding less audit filters from the first team to the fourth, there are no statistical differences between teams.

---

### Discussion/Conclusions/Implications:

There is evidence that the frequency of patient records with audit filters has decreased as the education program for TNCs has evolved in the PI content. The lack of statistical significance may be due to the low volume of records reviewed and the short time span of curriculum changes. Currently, a concurrent feedback mechanism of the PI data entered in the JTTR is being developed to evaluate accuracy and the relationship of the audit filters to the complications as a reflection of the quality of PI activities. This training curriculum may be a model for consideration in the civilian sector.

## Research-R3

Oral Presentation – Concurrent Session – Thursday, April 8, 2010 – 9:15-10:15AM

---

### Abstract Title:

**Compare Pediatric Bowel Injuries from Trauma Requiring Surgical Intervention to Help Predict Outcome**

---

### Authors:

[Maria F. McMahon, MSN, RN, CPNP-AC](#) and David P. Mooney, MD, MPH

---

### Background & Purpose:

There are few research studies comparing pediatric small bowel and colon injuries. The purpose of this data review was to compare patients who sustained a small bowel injury, colon injury or combined injury and required surgical intervention. We looked at the number of complications and outcomes. This information could help anticipate complications and outcomes based on bowel injury diagnosis.

---

### Study/Project Design:

Multi-center, retrospective cohort study.

---

### Setting:

Level 1 Pediatric Trauma centers, multi-center project.

---

### Sample:

Multi-center convenience sample of 328 pediatric patients  $\leq$  15 years of age.

---

### Procedures:

Data consolidated by a group of pediatric trauma centers on all patients admitted with a bowel injury requiring surgical intervention was evaluated. The patients were sorted into categories of small bowel injury, colon injury and combined (both small bowel and colon). Excluded were patients with a stomach, duodenal or rectal injury. Demographics included were age, gender, ISS, mechanism of injury and other injuries sustained. Whether a laparoscopy and/or laparotomy was done, the surgical repair performed, length of hospital stay (LOS) in days, early and late complications were all reviewed. The total number of patients and percentage for categories were tallied and evaluated. The demographics, complications and outcomes were summarized. A literature search and review was also completed.

---

### Findings/Results:

Of 328 participants, 246 met the criteria to be included in this study. There were 126 small bowel, 42 colon, and 78 combined injuries. The highest percentage from mechanism included 58% from a motor vehicle crash, 12.6% bicycle, and 7% ATV accidents. More males sustained small bowel and combined injuries where more females sustained colon injuries. The average age and GCS for all three categories were statistically the same 8 - 9 years of age and GCS of 13 - 14. Average LOS was 9 days, 14 days and 13.7 days respectively for small bowel, colon and combined injuries. The average ISS for small bowel 13, colon 15 and the highest for a combined injury was 18. Small bowel and combined injuries had a higher percentage of both early (22% and 28%) and late (8% and 16%) complications than colon injury (12% and 2.4%) alone. There were 6 deaths from the abdominal injuries, 4 had small bowel injuries, 1 colon and 1 combined.

---

### Discussion/Conclusions/Implications:

We found that patients with combined small bowel and colon injuries have a higher ISS score, a longer LOS and a higher percentage of early and late complications. It was also shown that small bowel injuries had a higher percentage of complications compared to colon injury yet the LOS was shorter. These results suggest that more research needs to be done to identify the reasons for and prevent complications especially for the small bowel and combined injury groups. Length of stay is one aspect of care for the small bowel injured group that should be evaluated more closely.

## Research-R4

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**High Risk Alcohol Use: Initial AUDIT Score During Hospitalization Compared to AUDIT Score at 3-6 Month Follow Up Call**

---

### Authors:

[Starre Haney, RN, MS](#); Fred Beyer, BA, CL; and Kimya Felton Tambuzi, BS, CL

---

### Background & Purpose:

High risk alcohol use is a factor in many trauma patients, and injury event. The purpose of this study was to examine the effectiveness of brief interventions conducted with hospitalized patients that screen positive for high risk alcohol use. Their inpatient Alcohol Use Disorders Identification Test (AUDIT) score was compared to their score after discharge.

---

### Study/Project Design:

This is a single center pre and post observational study.

---

### Setting:

An Academic, Urban, Safety Net, Level I Trauma Center .

---

### Sample:

This was a convenience sample of 40 patients that received alcohol screening and brief intervention who were available by telephone after discharge.

---

### Procedures:

The Trauma Services Alcohol and Drug Intervention program utilized Interventionalists who conducted screenings and brief interventions with hospitalized patients. High Risk Alcohol Screening was completed using the Alcohol Use Disorders Identification Test (AUDIT). A numerical score (from 0 to 40 points) was calculated based on patient self-reported alcohol use habits. Patients received appropriate referrals after intervention. A post discharge telephone call was made 90 to 180 days after discharge and another screening was completed. At least 3 attempts were made to contact discharged patients. The primary outcome was the change in scores from hospitalization to discharge. In addition to the AUDIT scores, age, gender, ethnicity, BAL, ISS and MOI was recorded for analysis.

---

### Findings/Results:

Of the 40 patient that were reached by telephone, 27 were trauma patients and 13 were medical admissions. A paired samples t test revealed post AUDIT scores were significantly lower than pre-AUDIT measurements ( $p < 0.001$ ). The mean initial AUDIT score was 23.98 and the mean of the 2nd AUDIT score was 10.13. One way ANOVAs determined there was no change in AUDIT scores by ethnicity or gender. There was a significant effect for age group ( $p < .05$ ). Follow up comparisons revealed that the decrease in AUDIT scores was significantly greater for the 46+ age group versus the 31-45 age group and the 30 and under age group. There was also a correlation between the BAL and the 46+ group with BAL increasing with age. In examining the mechanism of injury (MOI) vs. the medical admission group 3 groups were utilized (MVC, Medical & Other) due to the low samples in various MOI categories. The Medical group decrease in AUDIT scores was greater than the Other group. BAL and ISS did not vary by ethnicity.

---

### Discussion/Conclusions/Implications:

The significant decrease in AUDIT scores is encouraging. The program may be effective for both trauma and medical patients. The age group 46+ had higher alcohol levels and also had the most significant change in AUDIT scores. The Alcohol and Drug Intervention program is new and evaluation of its effectiveness is ongoing. As part of the resource referral process, patients are now being informed of the follow up phone call. This may increase the number of telephone contacts/second AUDITS that are performed. A future study looking at interventions by age group may improve patient outcomes.



## Research-R5

Oral Presentation – Concurrent Session – Thursday, April 8, 2010 – 9:15-10:15AM

---

### Abstract Title:

**Is It Us or Them? Who Fails at Follow-up**

---

### Authors:

[Nancy Martin, RN, MS, ACNP](#); Ajai K. Malhotra, MD; Melanie Jacoby, RN, BSN; Janie Tarrant, RN, BSN; Kelly Guilford, RN; and Rao Ivatury, MD

---

### Background & Purpose:

Poor follow-up by trauma patients results in a lack of knowledge of post discharge health related issues. In the current study we hypothesize that there are significant institutional barriers at the trauma center (TC) preventing patient follow-up.

---

### Study/Project Design:

Telephonic survey of trauma patients post hospital discharge over a one year period.

---

### Setting:

State designated and American College of Surgeons verified Level I academic urban Trauma Center.

---

### Sample:

All trauma patients discharged to home from the trauma service over the one year study period (n=940).

---

### Procedures:

All patients meeting entry criteria had telephonic follow-up attempted three times within four weeks of discharge to:  
1. evaluate the general well being of the patient; 2. enquire about follow-up; and 3. question if the patient had experienced any difficulty following up at the TC.

---

### Findings/Results:

Among the 940 patients meeting entry criteria, contact was established with 755. From the details of injury, follow-up was deemed important in 744. Among these, 123 (16%) chose to follow-up outside of the TC, 588 (79%) followed up at the TC, and 33 (5%) chose not to follow-up at all. 147/744 (20%) of the patients reported some barrier to follow-up at the TC. The barriers to follow up were: language-36, poor discharge instructions-52, call center difficulty-52, affordability-4, and other-3. Twenty of these patients had significant medical issues requiring follow-up (casts-2; sutures-6; hard collar-12).

---

### Discussion/Conclusions/Implications:

Institutional barriers at the TC play a significant role in poor follow-up by trauma patients. These barriers need to be identified and addressed in order to provide optimal care post-discharge.

## Research-R6

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Monitoring Motor Vehicle Passenger Restraint Usage at an Amusement Park**

---

### Authors:

[Michelle Marcum, RN, BS](#); Gordon Lee Gillespie, RN, PhD, PHCNS-BC, CEN, CCRN, CPEN, FAEN; and Margot Daugherty, RN, MSN, MEd, CEN, EMT-P

---

### Background & Purpose:

Motor vehicle restraint use is one strategy to prevent death and disability following a motor vehicle crash. As a result, Ohio will require children 5-7 years to be restrained in a booster seat in motor vehicles. The compliance to the pending law change was not known. The study purpose was to determine if age appropriate restraint use occurred in motor vehicle occupants prior to law initiation.

---

### Study/Project Design:

An observational, non-experimental design was used in a community-based setting.

---

### Setting:

Data were collected at the parking lot exit of an amusement park in a large Midwestern U.S. city.

---

### Sample:

A convenience sample was used with park patrons exiting the parking lot. Data included 549 drivers and 410 passengers occupying 261 motor vehicles.

---

### Procedures:

Trained observers used the Motor Vehicle Passenger Restraint Tool to document age-appropriate restraint use for passengers in motor vehicles over an eight week period during summer 2009. Business vehicles were excluded. Drivers were then encouraged to buckle themselves or appropriately restrain passengers as warranted. Stickers were provided to child passengers. Data were double-data entered into a spreadsheet and a cross-case analysis to identify and correct data entry errors. Descriptive statistics (counts, frequencies) were used to analyze the data. Exempt IRB approval was granted prior to study initiation.

---

### Findings/Results:

Data were collected from 549 motor vehicles. Mean age for children was 8.6 years (standard deviation 4.778). Mean age of adult drivers was 38.8 years (standard deviation 12.7). Driver's seatbelt compliance was 85.8% (n=471). Passenger data were collected from 261 motor vehicles. Passenger's age appropriate restraint compliance was 75.6% (n=310). Passenger's age appropriate restraint use included infants in rear facing infant car seats (n=3 of 3, 100%), children ages 1 to 4 in weight appropriate convertible car seats with a five-point harness (n=65 of 71, 91.5%), children ages 5-7 in booster seats (n=49 of 75, 65.3%), and persons 8 through adulthood (n=193 of 241, 80.1%).

---

### Discussion/Conclusions/Implications:

State motor vehicle restraint legislation does not automatically translate to age appropriate restraint use in motor vehicle passengers. It may be necessary to target public health education for populations such as children ages 5-7 in school settings, allowing their participation in their own safety outcomes. It may also be necessary to make motor vehicle restraint use a primary traffic offense. This legislative change could further increase restraint use compliance. Research is needed to test school-based interventions aimed at increasing booster seat compliance for children ages 5-7.

## Research-R7

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Parental Recognition of Post-Concussive Symptoms in Children**

---

### Authors:

[Penelope Stevens, MSN, RN, APRN](#); Barbara Penprase, PhD, RN; James Dunneback; and John Kepros, MD

---

### Background & Purpose:

Many children who have a mild TBI will have persistent post-concussive symptoms. Parents may not always attribute these symptoms to their child's head injury. Recognition and treatment is essential to help the child reach optimum cognitive potential. The purpose of this study is to identify if parents of children who have a mild TBI are able to recognize post-concussive symptoms in their child.

---

### Study/Project Design:

This is a descriptive study, which surveyed parents of children discharged from the ED with mild TBI.

---

### Setting:

Pediatric Emergency Department in a Level 1 Trauma Center.

---

### Sample:

A convenience sample of 120 consecutive ED patients between 5 and 17 years of age with mild TBI was identified, and their parents surveyed.

---

### Procedures:

Parents with a child who was seen and discharged from the ED with mild TBI were given standard written and oral discharge instructions. These parents were surveyed by telephone two to five days after injury to determine if they were aware of any post-concussive signs or symptoms in their child based on their discharge instructions. They were then read a list of signs and symptoms commonly seen in post-concussive children, and asked if their child had exhibited any of these. Results for each parameter were analyzed in aggregate to determine parental recall, reported frequency of each sign or symptom, and to identify any relationships between gender, age, type of injury and symptomatology if data permits.

---

### Findings/Results:

Consent was obtained from parents of 105 children who met inclusion criteria. Mean age of the children was 10.4 years (range 5-17 years), with 2:1 male predominance. Mechanisms of injuries included being struck (48.6%), falls (40%), ATV/dirt bike/motorcycle (6.7%), and MVC (4.8%). Of those who were struck, 80.3% were sports-related, with football and soccer injuries most commonly reported. A total of 66 (62.9%) children had post-concussive signs and symptoms. Of these, 32 (48.5%) had parents who had identified and were aware of their symptoms. Parents of the remaining 34 (51.5%) children denied any symptomatology, but when read a list of post-concussive signs/symptoms, identified one or more symptoms in their child. In both groups the most commonly reported symptom was headache, followed by nausea, and feeling slow or sluggish.

---

### Discussion/Conclusions/Implications:

Although the majority of children seen and discharged from the emergency department with mild TBI exhibited post-concussive symptoms, only about half of their parents were able to identify and relate those symptoms to the head injury, despite verbal and written discharge instructions. Further research is needed to determine the most effective method and timing of education, in order to properly identify and treat those children at highest risk. Follow-up telephone calls may prove useful in identifying symptomatic children, and arranging for appropriate referral when indicated.

## Research-R8

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Patient Patterns of Injury from Motor Vehicle Rollover Ejection Crashes**

---

### Authors:

[John Recicar, MBA, MHA, RN](#) and Kimball Maull, MD

---

### Background & Purpose:

The under utilization of safety belts increases the likelihood of morbidity, mortality and can result in temporary or permanent disability when patients are involved in motor vehicle crashes. This study was to determine if there is a specific pattern of injury associated with motor vehicle rollover ejection crashes in Qatar, a quickly developing oil and gas rich nation in the Middle East.

---

### Study/Project Design:

This is a retrospective review of trauma registry data.

---

### Setting:

Hamad General Hospital, the State of Qatar's only trauma center and tertiary care center.

---

### Sample:

All patients who were involved in motor vehicle rollover ejection crashes for a two year period from 1 November 2007 to 31 October 2009.

---

### Procedures:

The patient data abstracted included demographics, crash characteristics, injury pattern data, operative procedures during the hospital course and length of stay.

---

### Findings/Results:

One hundred twenty seven patients were admitted after rollover ejection crashes. 93% were male and 7% were female with a median age of 26 years. The location within the vehicle was unable to be determined in seven patients. Multi-system injuries occurred in 77% of patients and involved head injuries 65%, neck injuries 3%, spinal injuries 39%, facial fractures 20%, chest injuries 66%, abdominal injuries 33%, extremity injuries 60%, and external injuries 22%. Operative procedures were required in 38% with orthopedic 17%, abdominal 8% and neurosurgical 8% being the most common.

Single system injuries involved the head 67%, spine 10%, abdomen 10%, extremities 3% and external 10%. Operative procedures were required in 7% with orthopedic 50% and abdominal 50% procedures being the most common. Mean hospital length of stay (LOS) was 20 days for multi-system vs. 4.7 days for single system. The mean ISS was 23 vs. 18 and the in-hospital adjusted mortality was 25% vs. 21%.

---

### Discussion/Conclusions/Implications:

Motor vehicle rollover ejection crashes cause injuries with high injury severity and result in multi-system injuries in most patients. Compared to those with single system injury, patients injured in crashes with multi-system involvement had increased hospital LOS and utilization of resources. Head injuries predominate and appear to determine mortality, which was similar in both groups. Enhanced enforcement of current seatbelt laws, and the utilization of safety belts by all vehicle occupants may reduce the impact of such violent crashes.

## Research-R9

Oral Presentation – Injury Prevention SIG – Thursday, April 8, 2010 – 1:30-3:00PM

---

### Abstract Title:

**Patient Teaching Materials on the Risk of Falling While Anticoagulated: Is Consumer Input Useful?**

---

### Authors:

[Sheree Brown, BSN, RN](#); Madonna R. Walters, MS, RN; Mary-Anne Purtill, MD, FACS; and Richard Pomerantz, MD, FACS

---

### Background & Purpose:

Anticoagulated trauma patients present major challenges. While many trauma centers have protocols to rapidly reverse anticoagulation, there is greater promise for improved outcomes if these patients seek prompt medical care after a fall or injury. The study's purpose was to evaluate the design and readability of an original educational brochure, produced to improve patient awareness.

---

### Study/Project Design:

This was an 8-item consumer survey, using a 4-point Likert scale and administered on paper.

---

### Setting:

The study took place in a Level-II trauma center and the surrounding urban and rural community.

---

### Sample:

This was a convenience sample of 65 adults (age 18 and older), consisting of 32 registered nurses and 33 non-nurse residents of the community.

---

### Procedures:

While a panel of hospital experts had initially evaluated the content of the educational handout, this survey specifically targeted input from consumers. The survey asked respondents to rate the brochure's ease of understanding, reading ease, usefulness, amount of information, and an overall rating. Likert scale ratings ranged from strongly disagree (1) to strongly agree (4). The survey's Flesch-Kincaid reading grade level was 6.2. The survey and an introductory cover letter were distributed to 2 groups of adults: 1) Nurses from the Level-II trauma center, and 2) Non-nurse adult community residents. Participants were asked to review the brochure, complete the anonymous survey, and return it in a stamped, self-addressed envelope (SASE).

---

### Findings/Results:

Of the 65 surveys returned, 32 were registered nurses and 33 were non-nurses. As this was the final step in creating a consumer-friendly educational product, the investigators aimed for a cross-section of opinions from the population that included a range of ages among nurses and non-nurses and a sample of both anticoagulated and non-anticoagulated persons. Five study participants (7.7%) were taking anticoagulation medications. The non-nurses were significantly older than the nurses ( $p=.001$ ), with mean age 53.3 years ( $\pm$ SD 18.5) compared to 40.0 years ( $\pm$ SD 9.4) for non-nurses. Age ranged from 22 to 92. Ratings of the 8 items were consistently very positive, with mean scores for each survey item ranging from 3.409 to 3.906, out of a possible score of 4.0. The item ratings did not differ by group (nurses/ non-nurses), with all  $p$ -values  $>0.05$ . The mean score of the overall rating item was 3.613 ( $\pm$ SD 0.56) for nurses as compared to 3.788 ( $\pm$ SD 0.42) for non-nurses,  $p=0.163$ .

---

### Discussion/Conclusions/Implications:

This survey was useful in validating the content, readability, and acceptance of an educational product prior to public dissemination. The results verified that consumers in our sample found the educational material to be understandable and readable, with the right amount of information. Public education gains importance as the elderly demographic and the number of anticoagulated patients in the population increases. Survey sampling should not be overlooked by trauma centers as they embark on public education initiatives, in an effort to produce easy-to-read materials with meaningful content.

## Research-R10

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Rehydration Therapy in Children: Recombinant Human Hyaluronidase-Facilitated Subcutaneous vs Intravenous Administration**

---

### Authors:

[Philip R. Spandorfer, MD, MSCE](#); Harold K. Simon, MD; and George Harb, MD, MPH

---

### Background & Purpose:

Establishing intravenous (IV) access can be difficult in children, who often have small veins. The purpose of the INcreased Flow Utilizing Subcutaneously-Enabled Pediatric Rehydration II (INFUSE-Peds II) study is to evaluate the safety and efficacy of recombinant human hyaluronidase (rHuPH20)-facilitated subcutaneous (SC) vs IV fluid administration, in children with mild to moderate dehydration.

---

### Study/Project Design:

Ongoing, Phase IV, randomized, open-label, non-inferiority, company-sponsored, clinical trial.

---

### Setting:

This multicenter trial is being conducted in patients presenting to emergency departments.

---

### Sample:

Subjects are otherwise healthy children aged 1 month to 10 years with mild to moderate dehydration (Gorelick scores of 1 to 6).

---

### Procedures:

Patients are randomized to treatment groups (SC or IV), stratified based on baseline body weight and dehydration severity. Patients receive 20 mL/kg isotonic fluid over 1 hr and additional fluid, as needed, until clinically rehydrated up to 72 hrs, via SC or IV administration. The primary end point is total fluid volume administered at a single infusion site. Secondary end points include dehydration symptoms, dehydration score, ease of use outcomes, and safety evaluations, including adverse events (AEs).

---

### Findings/Results:

Interim analysis is reported on 74 patients (37 SC, 37 IV), mean age 1.98 years ( $-\pm 1.56$ ). Mean volume infused was 374 mL ( $-\pm 292.1$ ) SC vs 491 mL ( $-\pm 645.3$ ) IV, and 445 mL SC vs 419 mL IV when adjusted for duration. Mean improvement in dehydration score was -2.8 (-3.2, -2.4) SC and -2.4 (-3.0, -1.8) IV; mean weight change was +0.3 kg (+0.2, +0.4) in both groups. Initial catheter placement was successful in 97% SC vs 49% IV (OR=38.0; 4.7-306.9). Catheter placement failed in 0/37 SC vs 8/37 IV patients; median placement time was 0.6 min (0.25, 0.92) SC vs 5.0 min (1.0, 9.92) IV. AEs (SC, IV) were mild to moderate: pain (73%, 86%), erythema (73%, 6.9%), swelling (80%, 0%), and extravasation (0%, 3%).

---

### Discussion/Conclusions/Implications:

Preliminary results reveal that rHuPH20-facilitated SC infusions were generally safe and well tolerated. Duration-adjusted mean volume of fluids and resolution of dehydration were comparable for both routes of administration. In these patients, catheter placement was quicker and more often successful with SC than IV. The SC route may represent an acceptable alternative to IV for non-bolus isotonic fluid administration in patients with failed or difficult IV access, until a more definitive route of access can be obtained.

## Research-R11

Oral Presentation – Concurrent Session – Thursday, April 8, 2010 – 9:15-10:15AM

---

### Abstract Title:

**Seatbelt Compliance: Is Obesity a Factor?**

---

### Authors:

[Amber Kyle, BSN, RN](#) and Terri Gillespie, BSN, RN

---

### Background & Purpose:

Mississippi leads the nation with the highest rate of obesity, accidental deaths, and seatbelt non-compliance. The purpose of this study was to determine if obese patients are less likely to wear their seatbelt compared to normal weight and over weight patients involved in motor vehicle collisions and how mortality rates were affected by the rate of non-compliance.

---

### Study/Project Design:

This was a retrospective review of trauma registry data.

---

### Setting:

Academic medical center and Level 1 Trauma Center.

---

### Sample:

This was a convenience sample of 1302 adult patients ( $\geq 16$  years of age) cared for over a 2 1/2 year period (January 2007-July 2009).

---

### Procedures:

De-identified trauma registry data was collected for those patients ( $\geq 16$  years of age) involved in motor vehicle collisions. The data collected included weight, height, documented restraint type, and patient outcome. Body mass index was calculated using the weight divided by the height squared. Body mass index of 18-24.9 were classified as normal weight, 25-29.9 were classified as over weight, and  $>30$  were classified as obese.

---

### Findings/Results:

Results of a Chi-square test indicated a significant association between seatbelt use and weight category,  $p=0.001$ . Sixty-two percent of obese patients were compliant with wearing a seatbelt compared to over weight patients with a compliance rate of 53.9%, and normal weight patients with a compliance of 48.9%. Bonferroni-corrected pairwise comparisons of weight categories indicated that the persons in the obese category had a significantly higher compliance rate compared to the compliance rates of those in the over weight and normal weight categories. Mortality rate for restrained obese patients was at 2.1% compared to normal weight and over weight patients which were at 0.9% and 3.0% respectively. In the group of unrestrained patients, obese patients had the highest mortality rate which was 6.2% compared to normal weight and over weight patients which were 4.5% and 4.7% respectively.

---

### Discussion/Conclusions/Implications:

Obese patients involved in motor vehicle collisions were significantly more likely to be restrained than normal or over weight patients. Restrained obese patients had the lowest mortality rate. However, among those unrestrained, mortality was 40% higher in the obese group than in the normal or over weight groups. Further research is needed to look at complication rates, cost, and hospital length of stay among these three weight groups, and the restraint usage among these weight groups of patients pronounced dead at the scene.

## Research-R12

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**The Silo Effect of a Trauma System in a Level I Trauma Center**

---

### Authors:

[Daneen Mace-Vadjunec, RN, BSN](#); M. Ben Melnykovich, RN, BSAS; Barbara M. Hileman, BA; and Jill E. Little, BA

---

### Background & Purpose:

The silo effect is the lack of common goals and communication between departments of an organization, reflecting the inability of departments to work as a team. Trauma care produces better results when the individual departments work cohesively. It is a collaborative effort of many disciplines who work together to provide the best care for the patient regardless of their area of expertise.

---

### Study/Project Design:

Trauma system employees with direct patient care were prospectively surveyed.

---

### Setting:

St. Elizabeth Health Center, a Level I Trauma Center, located in Youngstown, Ohio.

---

### Sample:

Of the 1155 employees with direct patient contact, 697 responded to the surveys, which is a 60% response rate.

---

### Procedures:

This study assessed the employee's perception of intra and interdepartmental relationships of the trauma system units. Surveys were administered to all employees with direct patient contact, who work within the trauma system. The surveys were anonymous to encourage more honest responses and only the research staff viewed individual results. Departments were divided into two categories, those who work directly with trauma patients on a regular basis and those whose units are peripherally involved, only occasionally caring for trauma patients. The information gathered included: demographic data, length of employment, occupation, intra and interdepartmental knowledge/relations, and general knowledge of the trauma system. SPSS was used for descriptive analysis and significance testing.

---

### Findings/Results:

Of the respondents, 79% were female, 20% male; mean length of time at the hospital = 10.9yrs; 63% were professional positions, 27% technical, and 8% physician/extender. Intradepartmental relations were good (93% aware of other's roles, 70% familiar with co-workers skills, 89% good team work, 92% intra-unit pride, 53% good communication, 90% openly collaborate). Interdepartmental relations were not as good (51% communicate well with other units, 28% other units communicate well with theirs, 78% openly collaborate with other units, 59% respected by other units). Of those peripherally involved with trauma, fewer considered their position part of the trauma system, more felt they were not part of it, and more were not proud to be part of it (90%, 84%, 83% respectively; all  $p < 0.001$ ). They were also more likely to think the patient ceased being a trauma before discharge, feel less respected by trauma, and say no to aiding other units in trauma care (82%, 61%, 71% respectively; all  $p < 0.05$ ).

---

### Discussion/Conclusions/Implications:

Trauma care, once the surgeon's territory, is a team effort, beginning at roadside and continuing through rehabilitation. Those who are more directly involved with trauma patients were overall, more engaged in the trauma system than the employees who work in areas less involved with trauma patients. Also, intradepartmental relationships were much stronger than interdepartmental relationships, indicating the silo effect truly exists within the trauma system. To encourage more of a team atmosphere, an effort should be made to engage the peripherally involved departments with the trauma system.



## Research-R13

Poster – Available for viewing beginning 11:00AM Thursday, April 8, 2010 until 1:30PM Friday, April 9, 2010

---

### Abstract Title:

**Unplanned Extubations in Trauma-related Intensive Care Units**

---

### Authors:

[Heather Kulp, BSN, MPH](#); Ercele Reyes, RN, MSN; and Michael Lloyd, RN, MS

---

### Background & Purpose:

Sedation and restraints are often used in ICU settings to prevent unplanned extubations. Few have proven that both sedation and restraint use decrease unplanned extubation. As part of our performance improvement, we set out to monitor unplanned extubations (UE) and determine what factors contribute to UE. We hypothesized that sedation and restraints alone would not prevent UE in trauma patients.

---

### Study/Project Design:

This was a prospective observational study.

---

### Setting:

Level 1 trauma accredited urban hospital, ED, PACU, SICU, BICU, NSICU, NICU.

---

### Sample:

All intubated trauma injured patients admitted to any one of our trauma-related units.

---

### Procedures:

We prospectively collected data on all intubated patients in our ED, PACU, SICU, BICU, NSICU and NICU beginning in 2007 and continue to concurrently monitor them. We collected the following data on these patients- Ramsey score, appropriate sedation, re-intubation, face mask used for 24 hours post-extubation, restraint use and accidental or positional extubation.

---

### Findings/Results:

Rates of unplanned extubations are reported between 0.7% and 25%. We found 110 self-extubations in nearly 3 years, with a rate of 1.6% per year. Of those only 43% had appropriate sedation, yet 82% were restrained at time of extubation. Nearly 60% of patients did not require re-intubation. Our results show that sedation alone is not enough to prevent unplanned extubations, both sedation and restraints are needed to prevent extubation. We also found that the Ramsey score used as a tool to monitor sedation during the study period was not effective at predicting extubation.

---

### Discussion/Conclusions/Implications:

Given our high number of patients that did not require re-intubation, we have since updated our ventilator weaning protocols. We have also changed from the Ramsey score to the Richmond Agitation-Sedation Scale (RASS). The RASS is more reliable and valid in ICU settings and also incorporates many medical disciplines, such as nursing and pharmacy. Our model of performance improvement in unplanned extubations is now being used in all ICU settings within the hospital.