

E112

Abstract Title:

CT Time: A Vital Measurement in the Treatment of Moderate to Severe Head Injuries

Authors:

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Background & Purpose:

Traumatic Brain Injury (TBI) is one of the most common types of injury seen by trauma centers. According to the American College of Surgeons (ACS) of all patients with TBI that do seek medical care, 25 percent can be classified as moderate to severe (2012). ACS also estimated that 1,700,000 TBI's occur annually, 250,000 patients are hospitalized, and 52,000 patients die. The primary goal in the care of TBI patients is to prevent secondary injury. After stabilization of the ABC's, the goal is to rapidly identify a mass lesion that may require surgical intervention. This is achieved by expeditiously obtaining a computerized tomographic (CT) scan of head.

Study/Project Design:

Baseline data collection occurred between July 2013 and Feb 2014. Changes implemented then collected 2/14 - 6/14.

Setting:

MedStar Washington Hospital Center's Level 1 trauma, burn, and critical care intake unit.

Sample:

Patients included met the following criteria: 1. Arriving directly from the accident scene (transfers excluded) 2. Glasgow Coma Score of 13 or below. 3. Systolic BP of ≥ 90 mmHg.

Procedures:

A thorough review of all trauma patients meeting the following criteria was included. Advanced Trauma Life Support standard were used as a guide for determining the parameter; however, they were made more stringent at the direction of the Trauma Director. Baseline data collection occurred between July 2013 and Feb 2014. This data was reported on the department PI reports but no direct initiative to improve times was in process.

Findings/Results:

This data was reported on the department PI reports but no direct initiative to improve times was in process. After reviewing data, a target goal was set to achieve the 30 minute door-to-CT time in 80% of patient meeting criteria. In February 2014 data was gathered on individual nurse door-to-CT times and shared. The first step for improvement was to share the data with the staff and share individual times with nurses. No distinct process changes were set in place. Emphasis was placed on encouraging timely orders, moving with purpose and delaying unnecessary procedures until after the head CT was obtained. Practice Changes: a. Directing nursing care to ensure unnecessary skills are delayed until after the completion of the head CT. b. Prompting team dynamics to ensure the head CT is a priority after completion and stabilization of the patient's ABC's. c. Promptly preparing the patient for transport and communicating the urgent need for a head CT with radiology. After implementing these changes data was gather for four months. We saw improvement in our mean and median times, but our largest improvement came in the percentage of time we met our goal door-to-CT time.

Discussion/Conclusions/Implications:

Conclusion: 1. Nursing can have an impact on improving door-to-CT time in moderate to severely injured patients. 2. A door-to-CT time of less than 30 minutes is possible, even when airway control is required prior to head CT. 3. Even though mean and median time changes were minimal, a change was noted in the percentage of time patients received a head CT within 30 minutes. Next steps include: 1. Work in collaboration with the trauma service to redefine our goals and continue to improve our process. 2. Institute the Advance Trauma Care for Nurses course as mandatory education for our trauma nurses. 3. Consideration to reducing time spent on necessary procedures preformed prior to scan.

E121

Abstract Title:

Core team members' impact on outcomes and process improvement in the initial resuscitation of trauma patients

Authors:

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Background & Purpose:

Although all emergency Department (ED) registered nurses (RNs) specialize in rapid assessment and treatment, some RNs are leaders for critical cardiac, pediatric or trauma patients. Many staffing models don't account for these individual strengths. When surveyed, our ED RNs identified that some ED RN's desire to acquire such strengths as trauma nursing care. Core team members were identified as a possible solution and the decision was made to pilot a trauma nurse leader (TNL) program. The aim of implementing TNLs was to focus education, concentrate repetition of participation, and improve protocol compliance.

Study/Project Design:

This project was a cohort study with retrospective analysis of 1016 patients over a two year period.

Setting:

An American College of Surgeons- Committee on Trauma (ACS-COT) verified Level III trauma center.

Sample:

An application process with selection bias for interest in trauma was open to all full/part-time RNs, excluding RNs with active disciplinary action.

Procedures:

After selecting the pilot group, monthly TNL meetings were established and guided by trauma leadership with involvement from surgeons, nursing staff, and management. Trauma PIPS provided educational topics for the TNL meetings. Meetings also empowered TNLs to lead PIPS projects with administrative support. Data was collected from first and second quarters 2014 (excluding January and February) and then compared to the same time period in 2013. Specific data points were measured and analyzed from PIPS chart reviews and the trauma registry. Data included nursing documentation of primary/secondary surveys, documentation of focused assessment with sonography in trauma (FAST) exam completion, documentation of time to initial computed tomography (CT) scan, and ED length of stay (LOS).

Findings/Results:

Omissions in documentation such as pupil size, respiratory rate, activation details or breath sounds create problems in PIPS data and process improvement. Documentation audits showed a 40% improvement in compliance post-implementation of the TNL program. However, there was a decrease in documentation of surgeon arrival time. ED LOS for category 1 activations showed a 10 minute improvement. Time to initial CT scans (32 minutes) and time to FAST exam completion (18 minutes) remained constant pre and post implementation, demonstrating maintenance of established processes during implementation.

Discussion/Conclusions/Implications:

Focusing on a high risk, low frequency event (trauma activations per RN), we aimed to decrease risk by increasing repetition per RN in the pilot group. Any process change can lead to increased task completion time, so to evaluate this, documented time of FAST exam completion and CT scan were reviewed. Establishing these consistencies, data was then analyzed for improved documentation compliance, showing a 40% improvement. Finally, data was reviewed for additional outcomes. ED LOS improved 10 minutes in category 1 activations, decreasing ED throughput in the highest acuity of patients. The pilot program for TNLs shows initial promise for documentation compliance, but data is limited to a short time frame and small cohort. The next steps include expansion of the pilot group to provide 24/7 TNL coverage with ongoing monitoring, documentation audits and continued focus on PIPS projects. Improvement in documentation of surgeon arrival time is needed to return to baseline or better.

E122

Abstract Title:

Utilization of Trauma Data for Evaluation of Injury Prevention Programs

Authors:

Kelley Lau, RN, MBA

Background & Purpose:

Rural Level 3 hospitals often do not have resources to support a full time injury prevention coordinator. The purpose of this study was to compare the injury prevention needs identified in the trauma registry to the current injury prevention programs. The trauma registry data was analyzed to determine the most common mechanisms of injury, the use of protective devices and the changing demographics over a 5 year period. Current injury prevention programs were evaluated to determine if they adequately addressed the needs of our community.

Study/Project Design:

Retrospective study that analyzed patient records from a trauma registry database.

Setting:

Level III trauma center, community hospital with 600 annual trauma admissions.

Sample:

5 year review of all patients in the trauma registry 5,566 records.

Procedures:

Trauma Centers are responsible for providing injury prevention education. Our facility historically focused prevention efforts on improving occupant protection and reducing brain and spinal cord injuries. Five years of trauma registry data was queried for causes of injury, location of injury, residence zip code, use of protective devices, and age. These data points were then compared to existing injury prevention programs and the demographics of the population they served.

Findings/Results:

Recreational injuries from skiing, snowboarding and biking accounted for 78% of the registry, followed by falls 12% and MVC 3%. The majority, 72% of injuries, occurred at local resorts. Traumatic brain injury diagnosis was present in 26% of all patients. Wearing a helmet reduces risk of a severe brain injury by 68%. This analysis validates current primary injury prevention efforts to prevent brain injury through Thinkfirst, an international brain and spinal cord injury prevention program. The second most common mechanism of injury (MOI) identified was falls. The geriatric population (age >65), most common MOI were ski 58% and falls 42%. Of the geriatric patients, 40% had a local zip code. This data supported the initiation of a senior falls prevention program. This was accomplished through Stepping On, an evidence based workshop providing strategies & exercises to help the geriatric population avoid falls. 1/3 of people age 65 or older fall yearly. The third most common MOI was MVCs, with 11% not belted. This supports our Child Passenger Safety initiatives through SAFEKIDS. Child safety seats reduce risk of injury by 71-82%, and reduce risk of death by 28%.

Discussion/Conclusions/Implications:

A review of the trauma registry data gave insight into key causes, locales and demographics of injured patients. This study reinforced the need to actively examine registry data to find innovative ways to target educational outreach programs. This data was beneficial in supporting the existing injury prevention programs, ThinkFirst & SAFEKIDS. This project justified the need for a new elderly falls injury prevention program. The data illustrated that 72% of the injuries in the registry occurred at recreational resorts. Many of these patients are from outside of our community. This data supported focused educational activities targeting skiers and snowboarders held at the resorts to reach this demographic. Trauma registry data is an invaluable tool that can be used to help determine the need and help prioritize injury prevention programs.

E125

Abstract Title:

Maintaining a High Index of Suspicion for Acute Compartment Syndrome.

Authors:

Shelly J. Almroth, RN, BSN, CEN; Paula M. Hanson, RN, BSN

Background & Purpose:

Acute compartment syndrome is a complication resulting from bleeding or edema after traumatic injury to bone or soft tissue. Significant portions of our trauma population have sustained a fracture. Elevated pressures of tissue can cause muscle damage, necrosis or potential limb loss within 6 hours if unrecognized. The purpose of this project was to define those patients at highest risk for compartment syndrome. The goal was to achieve a lower complication rate of compartment syndrome for our trauma patients. A focused education plan with assessment tools was implemented in all clinical departments.

Study/Project Design:

A 9-year review of patients with fracture, compartment syndrome, or fasciotomy from 12/2005-09/2014.

Setting:

Community hospital with 600 annual admissions, Level III trauma center in a resort area.

Sample:

Total sample size of 3163. Retrospective review of all patients with ICD-9 codes of 812-825.

Procedures:

Trauma registry was queried for ICD-9 codes 812-825, with critiques for fasciotomy. Mechanism of injury, length of stay, providers, procedures, and other factors were studied. Soft tissue monitors were placed within each department. Nursing skills validation, including return demonstration of assessment provided yearly. Orthopaedic surgeon lead efforts to ensure that all clinical staff understood early warning signs or changes in assessment. The removal of constricting dressings and placing the the limb at heart level is the first intervention. Increased pain with passive stretch and pain out of proportion are the earliest and best signs to evaluate the limb. The 6 P's of compartment syndrome are incorporated into documentation tool within EMR. 100% chart review by registry. Additional physician resources were committed to provide assessment and pressure measurement, if orthopaedic provider not promptly available.

Findings/Results:

Of the 3163 trauma patients, 94% of compartment syndrome had fractures. 6% resulted from soft tissue injury. Tibia/fibula fractures represent 83% of patients with compartment syndrome, 11% had radius ulnar fractures, ankle 2%, femur 1%, calcaneus 1%, humerus 2%. The data was further stratified for tibial shaft fractures vs. tibial plateau. The rate of compartment syndrome was 9.6% of all tibial plateau fractures, 3.2% tibial shaft fractures. Mechanism of injury revealed that a simple fall resulted in average LOS of 2.6 days. High impact event, fall from height or crash resulted in average LOS of 4.7 days. The review of trauma registry data lead our educational focus to tibial plateau fractures that resulted from a high energy event, with recognition that other injuries can result in compartment syndrome up to 48 hours after 1st OR visit.

Discussion/Conclusions/Implications:

Recognition of acute compartment syndrome as well as timing of surgical intervention is critical to avoid disability. Our goal was to achieve a lower complication rate, and to avoid near miss events. Focused education with clinical staff for recognition of impending compartment syndrome is key for reporting critical findings to orthopaedic providers. Nursing supervisors play an active role with urgent notification of on call orthopedist. When Ortho on call providers are doing multiple surgeries, there can be a delay to the OR. Solutions include a second on-call ortho team, re-prioritization of the OR schedule, or patient transfer. Unrecognized compartment syndrome is viewed as a sentinel event. Six Sigma process and timelines are utilized for opportunity for improvement. 100% chart review and peer review process have highlighted the importance for recognizing acute compartment syndrome. Clinical findings, timing of physician notification and arrival, and objective measurement of tissue pressures continues to be emphasized. Further investigation into procedures of ORIF vs. placement of external fixator will be looked at in another research project.

E131

Abstract Title:

Assessment of a Newly Implemented Pediatric Trauma Transfer Policy

Authors:

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Background & Purpose:

Our facility is a free-standing ACS verified Level I Pediatric Trauma Center (PTC) serving a 4000 square mile region. With a large catchment, we have a significant number of transfer patients - 30%. To be safe and effective, trauma care must be efficient and comprehensive. This is facilitated through standardizing care. An internal review demonstrated that we have variability on points of entry for our transfer patients - direct admission vs. Emergency Department (ED) to ED. In January 2014, we implemented a Trauma Transfer Policy, limiting the point of entry for transfer patients. The purpose of this study is to evaluate the effectiveness of this new policy.

Study/Project Design:

Transfer patients pre- and post-policy implementation were compared.

Setting:

A free-standing academic Level I Pediatric Trauma Center in a large urban setting.

Sample:

Transfer patients pre-policy implementation were compared with transfer patients post-policy implementation.

Procedures:

After Institutional Review Board approval, trauma transfer data from 2013 (pre-policy implementation) were compared with data from 2014, post-policy implementation. Data fields compared included patient volume, number of trauma activations, ED length of stay, time to activation, and disposition from ED. Data were abstracted from the hospital's trauma registry. Frequency and percentages were calculated using R version 3.0.2.

Findings/Results:

The new policy resulted in higher ED trauma volume, overall more timely trauma activations, and similar ED length of stay (LOS.) ED volume increased as direct admit volume decreased by 79%. Despite higher volume, the average ED LOS remained stable (although long at 10h19m.) Level II activations occurred more frequently and more promptly, increasing in number from four to 38 (950%), yet decreasing overall delay in activation by 81% from time of patient arrival to time of activation (56m to 11m). Trauma transfer patients going directly to the OR from the ED increased from zero to five. ED disposition for trauma transfer patients changed particularly with more transfer patients going directly to the OR (0 to 5) and PICU (3 to 26.)

Discussion/Conclusions/Implications:

Preliminary results demonstrate that trauma care can be more streamlined by limiting portals of entry into the trauma center. By restricting patient entry to the ED, staff education and resources can be allocated to one nursing unit. Such a policy may result in improved patient care since finite resources are directed to one unit. Despite concerns of increased ED trauma volume, the ED LOS did not increase. In fact, Level II trauma activations were responded to in a timelier manner, ensuring a more prompt evaluation by the trauma service. Implementation of this process required hospital-wide engagement and education. Education was directed at the access center, transport team, ED, pediatric intensive care unit, and trauma service. Continued education has been required with staff turnover and with the new academic surgical training year. Further research will be directed at evaluating outcomes of patients directly admitted compared to ED to ED. Outcomes of interest will include delayed diagnoses, delays to OR, and delay in surgeon arrival for evaluation.

E132

Abstract Title:

Impact of a Level Two Trauma Center on Organ Donation Rates in a Community Hospital

Authors:

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Background & Purpose:

Organ donation and transplantation has been well known to extend lives and improve quality of life. Unfortunately the benefits of this practice are limited by the lack of availability of transplantable organs nationwide. We identified several barriers in our organ donation process limiting our program success. Specifically, untimely referrals, lack of knowledge of the organ donation process among pre-hospital and Emergency Department providers, and inadequate strategies for patient management centered on organ preservation in appropriate patients.

Study/Project Design:

Compared total donors, total lives saved and timely referral rate for a period of two years.

Setting:

Level II Trauma Center in a non-academic community hospital.

Sample:

All potentially medically suitable organ donors from 2011 to 2013.

Procedures:

An extensive education plan was formulated centered on the belief that identification of potential donors must occur early in the process long before brain death has ensued. Therefore, education was targeted to all groups resulting in a culture that supports donation across the entire continuum of care; from EMS providers, ED physicians, ED nurses, critical care intensivists, neurosurgeons, trauma surgeons and critical care nursing staff. An important aspect of the clinical education was modifying current clinical triggers, making the presence of paralytics and sedation no longer a barrier to notifying the Organ Procurement Organization (OPO). The second strategy was to establish a clear path for preservation of organ function. This was achieved by the creation of a catastrophic brain injury protocol.

Findings/Results:

The facility received Level II Trauma Designation status in December 2009; therefore 2010 data was selected for review to reflect the first year as a Level II facility, tracking the results for the following two years. As a result of the strategies implemented, total donors increased from nine in 2011 to 26 in 2013 (188.9% increase). Total lives saved increased from 32 lives in 2011 to 78 lives in 2013 (143.8% increase). In addition, the timely referral rate increased each year to 98.0% which further contributed to program success.

Discussion/Conclusions/Implications:

A strong relationship with your Organ Procurement Organization (OPO) is a must. Creating champions among the unit staff both in the ED and ICU is also a must for program success as they provide peer to peer guidance when leadership is not on site. Finally, collaboration with ED physicians and critical care medicine further supports a strong culture of donation. Future direction includes placement of the OPO coordinator in-house at the Level II trauma center to further enhance communication and identify opportunities for early intervention. The addition of a T4 protocol to the catastrophic brain injury order set is planned to combat failure of the thyroid gland and provide circulatory stability.

E136

Abstract Title:

Creating a Geriatric Focused Model of Care in Trauma with Geriatric Education

Authors:

Kai Bortz MSN, RN, CMSRN, CNL

Background & Purpose:

Forty percent of trauma patients will exceed age 65 by 2050. That number has already been surpassed in the presenting organization's Level I designated trauma center. Forty-six percent of the 2781 patients treated in 2013 were age 65 or older; seventeen percent were over age 85. These statistics prompted geriatric specific education for trauma nurses through Nurses Improving Care for Healthsystem Elders (NICHE) in an effort to improve outcomes, reduce hospital complications, and reduce healthcare costs for this high risk population. Despite the growing geriatric trauma population, only 8.8% of trauma centers currently incorporate a Geriatric Resource Program (GRP) into trauma care.

Study/Project Design:

Length of stay (LOS) data and hospital deaths were compiled monthly from the trauma registry.

Setting:

Two designated trauma units in an academic, community, Magnet™ hospital.

Sample:

A random sample of 759 older adults between January and July, 2014. Of those, 65% were age 65-84; 35% were age 85 or older.

Procedures:

NICHE education was provided to pilot unit registered nurses (RNs) that demonstrated a commitment to quality improvement. Three months later, nine medical-surgical and five ICU trauma RNs completed the required education to become certified Geriatric Resource Nurses (GRNs). Additionally, two nursing assistants completed NICHE education earning the title Geriatric Patient Care Associates (GPCAs). These sixteen clinical staff members became the leaders in geriatric trauma for their respective units. Their role includes performing comprehensive geriatric assessments, consulting with peers on geriatric issues, role modeling, educating, and developing ways to improve the care of geriatric patients.

Findings/Results:

LOS and mortality data from 2011, 2012, and 2013 was compared to data post implementation of NICHE education for the same subset of geriatric trauma patients. Patients age 65 and older had an overall hospital LOS of 5.39 in 2011, 5.04 in 2012, 4.49 in 2013, and current monthly average LOS of 4.43 from Jan-Sept 2014. Patients age 85 and older had an overall LOS of 5.51 in 2011, 5.08 in 2012, 4.21 in 2013, and current monthly average LOS of 4.17 from Jan-Sept 2014. LOS continues to decrease for this population following geriatric specific education, closing the gap between LOS for patients less than 65 compared to those patients 65 and older. Mortality decreased from 4.38% in 2013 to 3.54% from Jan-September 2014 in patients age 65 and older with similar Injury Severity Score (ISS) and age. Increased awareness of this high risk patient population is now considered in daily care by the trauma team. Additionally, process improvement projects have been implemented by the GRN's to reduce complications post trauma.

Discussion/Conclusions/Implications:

The incorporation of geriatric education for trauma nurses can significantly improve outcomes for geriatric trauma patients by decreasing complications associated with trauma and hospitalization. Patient and caregiver transition post trauma is enhanced through geriatric specific education. Additionally, GRN's partner with the multidisciplinary team during daily collaborative rounds to focus on outcomes of early mobilization, pain control, nutrition, delirium, and disposition. Regularly scheduled NICHE meetings are held for GRN's. NICHE education continues to expand, heightening awareness of this high risk population to improve geriatric trauma care in this Level I trauma center.

E137

Abstract Title:

An Interdisciplinary Approach to Reducing Pressure Ulcers in the Geriatric Trauma Population

Authors:

Kai Bortz MSN, RN, CMSRN, CNL

Background & Purpose:

Geriatric trauma patients are at high risk of developing pressure ulcers post trauma. Pressure ulcers represent a significant morbidity and cost in trauma patients, with reported incidence rates of up to 20%. Despite efforts to reduce pressure ulcers, they have been attributed to functional decline, prolonged length of stay, increased health care costs, and readmissions. Our objective was to improve quality and decrease cost by implementing a multidisciplinary performance improvement (PI) project for pressure ulcer prevention on our 30 bed trauma unit.

Study/Project Design:

Data was collected from July 2012 to March 2014 on pressure ulcer occurrences and rates.

Setting:

Thirty bed med-surg trauma unit at an academic, community Magnet™ hospital's Level I Trauma Center.

Sample:

Over 2000 trauma patients were admitted during the study period. There were 1099 patients in Group 1 and 1038 patients in Group 2.

Procedures:

In July 2013, implementation of a multidisciplinary pressure ulcer prevention project on a 30 bed transitional trauma unit (TTU) at our Level I trauma center began. This project consisted of risk identification, pressure relief measures, co-morbidity management, and nutritional assessment and support. Interventions included appointing unit champions, in-service training, twice daily unit quality huddles, and a revision of nutrition consult guidelines. A prospectively collected registry was analyzed over a 9 month period before (Group 1: 11/2012 to 7/2013) and 9 months after (Group 2: 8/2013 to 4/2014) education and intervention. Variables collected included age, Injury Severity Score (ISS), length of stay (LOS) and presence of pressure ulcers.

Findings/Results:

Pressure ulcers occurred in 39/1099 patients (3.5%) in Group 1 and 11/1038 patients (1.1%) in Group 2. ($p < 0.0001$, odds ratio 0.29, $z = 3.6$, Fisher exact). Among patients who developed pressure ulcers in both Groups, there were no differences in Age, ISS or LOS. ($p = NS$). In Group 1, 69% of the pressure ulcers occurred in patients age 65 and older, 51% were 80 years or older. In Group 2, 73% occurred in patients age 65 and older, 55% were in patients age 80 or older. Injuries associated with pressure ulcers in the geriatric trauma population were neck, back, and lower extremity fractures. The number of patients with pressure ulcers decreased by 75.5% following implementation of a pressure ulcer reduction PI project. Considering changes in Centers for Medicare & Medicaid Services (CMS) reimbursement for the care of hospital acquired pressure ulcers, these simple measures can lead to large cost savings. CMS estimates a single pressure ulcer can add \$43,180 to a hospital stay. Given our patient volume, the observed reduction could lead to an annualized cost avoidance of \$1,209,000.

Discussion/Conclusions/Implications:

Few studies have focused on the development of pressure ulcers in the geriatric trauma population. This patient population is at high risk of developing pressure ulcers post trauma. Nutritional intervention, along with multidisciplinary interventions, is a cost-effective approach to the prevention of pressure ulcers in at-risk patients. At twice daily quality safety huddles, trauma patients are reviewed by the Registered Dietician, to identify the need for nutrition consultation, with an emphasis on geriatric trauma patients. Identifying high risk patients and implementing an interdisciplinary approach to reducing pressure ulcers is critical for all Trauma Centers.

E138

Abstract Title:

Stages of Concern and Technology Acceptance

Authors:

Gina M. Berg, PhD; Jamie LoCurto, MA; Felecia A. Lee, PhD; Ashley M. Hervey, MEd

Background & Purpose:

The implementation of new technology in an acute medical setting can be difficult for hospital staff to acclimate and adopt, especially if they are comfortable with current processes. Technology consumers typically move through stages of concern during adoption, in which their concerns shift with experience. The initial focus is on Self, then to Task, and finally to the Impact of the technology. The purpose of this study was to examine the stages of concern experienced by hospital staff upon implementation of a new patient information interface.

Study/Project Design:

Survey measuring attitudes towards technology, immediately following training and three months post.

Setting:

Surgical intensive care unit at a Level I trauma center.

Sample:

Survey respondents were staff in a critical care unit that adopted the Iatrics® Visual Workflow technology for patient data.

Procedures:

Participants answered the Stages of Concern questionnaire immediately following the technology training. Stages of Concern are defined as Self (e.g. role shifting due to technology), Task (e.g. time constraints), and Impact (e.g. concerns about patient and familial attitudes toward the technology). A set of follow-up surveys were then collected three months following implementation of the technology. Survey questions included topics such as awareness of the technology, management, demands of adjusting to and learning about the technology, and attitudes regarding technology. This was a voluntary convenience sample of hospital staff who participated in the training. Only participants who completed both surveys were included in analysis.

Findings/Results:

A total of 41 participants completed both the post training survey and the three-month follow-up. Self-concerns (Stages 0-2) were endorsed by 63% of the participants immediately following training and 49% at three month follow-up; a decrease of 14%. Task concerns (Stage 3) were endorsed by 19% of the participants immediately following training and 12% at follow-up; a decrease of 7%. Impact concerns (Stages 4-6) were endorsed by 17% of the participants at post training and 39% at follow-up; an increase of 22%.

Discussion/Conclusions/Implications:

Following implementation of Iatrics® Visual Workflow in the hospital, staff concerns shifted from Self (limited knowledge of technology, role shifting due to technology) to Impact (concerns about patient and familial attitudes toward the technology, modifications to enhance patient care). This shift from lower-level to higher level concerns is ideal following training and exposure to newly implemented technology. Adoption of any new technology requires clinicians to adapt their current practices and influences decisions regarding patient care. Providing effective experiences and information in a timely manner can facilitate the development of higher-order concerns allowing staff to determine how the technology can benefit them and their patients. The ability to identify the primary concern of staff when developing and incorporating a new innovation in to their everyday setting allows management to address those concerns and perhaps, ease the transition.

E142

Abstract Title:

34 Lives: One Surgical Trauma ICU Nurse at a Time

Authors:

Penny Perez, ADN, RN, CCRN; Joey Amundsen, RN, ADN; Cindy Little, MBA, MSN, RN, CCRN-K, NE-BC

Background & Purpose:

The trauma patient requires the utmost in professional knowledgeable nurses to provide optimal care. This Trauma Team recognized the need to provide a Surgical Trauma Intensive Care Unit (STICU) nurse the moment the severely injured trauma patient arrived to expedite all facets of care. The limitations on resources in the Emergency Department (ED) and designation of the only American College of Surgeons (ACS) Level I Trauma Center for this state, led to a passionate group of professionals of many disciplines joining forces to establish a cohesive trauma nursing program.

Study/Project Design:

A STICU Trauma Nurse Specialist assists the ED with at least 90 percent of Level A traumas.

Setting:

720-bed ACS Level I Medical Center in an urban setting, STICU and ED staff

Sample:

Fifteen Registered Nurses (RN) from the STICU and 20 RNs from the ED were initially selected for the Trauma Nurse Specialist (TNS) Program

Procedures:

Criteria established for the TNS include experience in an ACS Level I Trauma Center, current performance, professional behavior standards, and expressed commitment to trauma resuscitation. All trauma alerts are sent to the STICU Charge Nurse Wi-Fi phone. Based on the alert level, if an "A," a TNS will go to the ED. Often this is the free-floating Charge Nurse. A trauma bag of emergent supplies is taken by the TNS primarily to be used with travel. Upon arrival to the trauma bay, the TNS announces their arrival and assumes a designated position. Once the patient arrives, the TNS provides ICU-level care based on the individual circumstances, such as mixing vasoactive medications, and assisting with surgical procedures. The TNS remains with the patient until definitive location is obtained.

Findings/Results:

The patient results have shown a significant reduction in deaths. The death rate for our traumas in 2012 was 3.90 percent, the TNS program started July 2012, death rate in 2013 was 2.80 percent and year-to-date 2014 death rate is 2.25 percent. This equates to 34 lives saved in 2014. There is more communication and collegiality between the ED and STICU staff, earlier critical care level interventions such as massive transfusion/fluid resuscitation, vasoactive medication use, and earlier transport to the operating room. Staff satisfaction, cohesiveness, and education are dramatically improved.

Discussion/Conclusions/Implications:

This academic facility serves over 9.4 million residents and visitors annually. Recognizing the limitations of time sensitive interventions to successful resuscitation and complete recovery, leadership of the ED and STICU surmised that having trauma critical care nurses immediately at the bedside of the severely injured improves outcomes. The STICU nurses were concerned about leaving their patients. However utilizing senior leaders' support, the charge nurse was kept in a free floating status. Through building strong relationships and trust, the nurses were able to minimize "invading the ED's territory." We have developed an environment that fosters interdisciplinary collaboration. Ongoing mentoring of the TNS is dynamic and evolving as we ensure optimal trauma care to all. Future state would include advanced trauma education for the TNS. Data such as transfer times, length of stay, and comorbidities should be studied.

E145

Abstract Title:

Operation Heat and Eat: Smoke Detector Replacement Program

Authors:

Carol Bullard, RN, MSN, CCRN and Cynthia Mastropieri, RN, MSN, CCRN

Background & Purpose:

According to the National Fire Protection Association, 64 percent of house fire deaths were attributed to absent or malfunctioning smoke detectors. Between 2005 to 2009, smoke detectors were present in approximately 72 percent of all reported home fires and functioned 51 percent of the time. Reasons for malfunction were related to batteries being removed because of low battery alarms, usage of batteries for other purposes, or lack of replacement. The aim of the Operation Heat and Eat program is to assess, replace, and educate on properly working home smoke detectors.

Study/Project Design:

A descriptive design was used to evaluate the program.

Setting:

The setting was within a local residential community.

Sample:

The sample size consisted of Meals on Wheels recipients within a residential community.

Procedures:

A multi-disciplinary committee of fire personnel, Meals on Wheels staff, and burn center nurses met and identified the need for improved smoke detector utilization. A grant was received from the state's Department of Insurance to purchase 254 smoke detectors. A plan was developed to inspect and install smoke detectors in homes that met needs criteria. Meals on Wheels volunteers notified program participants. Local media announced the program details. Combined male and female teams were developed that consisted of nurses and fire department officials. On the scheduled date, teams went to homes and with the permission of the resident, smoke detectors were inspected for presence and functionality. During this time, a home safety evaluation and education was performed by the nurse.

Findings/Results:

The teams visited 901 homes and found that only 22 percent had functioning smoke detectors. Sixty-nine percent required a battery or a smoke detector replacement while 9 percent were not evaluated because recipients were not home. The fire officials have reported a decrease in the number of house fires within this community after the program. Recipients and family members were receptive to education provided related to the importance of functioning smoke detectors.

Discussion/Conclusions/Implications:

The Operation Heat and Eat program identified that more than half of the residential homes visited required a battery or a smoke detector replacement. Non-functioning smoke detectors contribute to a major public concern. One limitation noted was communication barriers and the need for bilingual interpreters. This program has increased awareness for the importance of functioning smoke detectors within the community. This program can be extended to other populations beyond Meals on Wheels. This program can be extended to other communities to increase awareness of smoke detector safety which may have an impact on decreasing injuries and fatalities from house fires.

E149

Abstract Title:

Using the Electronic Health Record (EHR) to Zap VAP in Trauma Patients

Authors:

Jillian Swearer BSN, RN, CCRN, TNS and Susan Matthews BSN, RN, CCRN, TNS

Background & Purpose:

Trauma patients are at a high risk for ventilator-associated pneumonia (VAP), a serious complication of mechanical ventilation and an independent predictor of mortality. To determine causes for high VAP rates, chart reviews revealed a decrease in VAP rates. This decrease occurred after a house-wide change in mouth care kits included chlorhexidine (CHG) but components of the vent bundle, as recommended by the CDC, were missing in the EHR. An evidence based practice change was aimed to ZAP VAP by incorporating an earlier CHG mouth care (2-hours within admission) into the electronic VAP bundle.

Study/Project Design:

This project was a pre and post design. Documentation and the percent of VAPs were measured.

Setting:

This project occurred at a Trauma Level II community hospital. The change impacted 72-ICU beds.

Sample:

Eligible participants were all adult trauma patients who were mechanically ventilated and admitted to Trauma ICU from April through September, 2014.

Procedures:

Trauma nurses initiated a multi-disciplinary team composed of ICU nurses, informatics, infection control, respiratory therapy, advance practitioners, and physician staff. Required components for the VAP bundle were identified and policy was revised to reflect evidence based guidelines. Compliance and ease of documentation improvements in the EHR included an auto-population of the ventilator bundle for patients on the ventilator. The electronic VAP preventive bundle was improved to include all recommended components. In addition, a row was added to document the practice change of performing the early 2-hour CHG mouth care. Education was disseminated via flyers, posters, rounding, Web-in-service and classroom education.

Findings/Results:

Charts on all mechanically ventilated trauma patients (90) were reviewed for a 6-month period. Sixty patients were in the 3-month pre-practice change and 30 patients in the 3-month post-practice change. A 3-month pre- and post-practice change comparison was performed for the 2-hour CHG mouth care and the number of VAPs, as defined by the National Trauma Data Standard. Documentation of the 2-hour CHG improved from 38.3% to 73.3% and the number of VAP s decreased by 62%.

Discussion/Conclusions/Implications:

Since changing to CHG mouth care in 2013, the hospital's VAPs in the Trauma Quality Improvement Program have been under the national benchmark. CHG mouth care is a strategy for prevention in VAPs, is perceived to be safe, and aids in avoidance of antibiotic resistance. The Institute for Healthcare Improvement supports CHG mouth care as part of the VAP bundle and views it as an important process of high-quality care. This quality improvement practice change suggests that incorporating CHG mouth care into the electronic VAP bundle may be a strategy to prevent VAP in mechanically ventilated adult trauma patients. Trauma units may benefit by incorporating a prevention strategy of performing an early CHG mouth care (within 2-hours of admission) and using the electronic health record to help ZAP VAP. Subsequent benefits may include a decrease in patient complications, decreased ICU and hospital length of stay, and overall health costs. The project impact will continue to be monitored.

E150

Abstract Title:

Violent Crimes in the Hospital Setting: Situational Awareness and Nursing Empowerment Result in Safety

Authors:

Jody Shigo, MSN, RN

Background & Purpose:

Violent crimes, resulting in injury and requiring medical attention to either victim or offender, create a myriad of potential dangers to other patients, visitors and staff. It is the responsibility of the health care facility to provide a safe and secure care environment. An increase in threats and violent acts by patients and visitors prompted staff from a 30-bed medical-surgical transitional trauma unit (TTU) to evaluate current practices. This presentation details a devised initiative and evidence-based strategies to enhance situational awareness and ensure a safer environment.

Study/Project Design:

Staff pre-survey May-June 2013, implementation of strategies September 2013, post-survey July-October 2014.

Setting:

The "DNA-VC" project was implemented in an academic, community, Level I trauma, Magnet™ hospital.

Sample:

A convenience sample of 380 staff, working in high risk areas completed a pre-survey, and 161 staff completed the post-implementation survey.

Procedures:

An interprofessional team determined how patients associated with violence are identified, managed from admission through discharge, and how safety is maintained at the bedside. Staff caring for patients admitted due to violent crimes completed a survey to identify concerns and knowledge deficits. Over 28% were unaware of their role regarding this population and 21% felt unsafe in their unit. Staff reported locked units are easily accessible much of the time. In response to the team's analysis and survey findings, violent crime patients were categorized as: cases of penetrating trauma; physical or sexual assault; child abuse; intentional burn, recipients of a threat; or, those in the witness protection program. Interventions led to safety enhancements and a process to identify patients associated with violent crimes.

Findings/Results:

As a result, evidence-based environmental safety enhancements were made, inclusive of: emergency pull switches; directional door locks; new signage; a badge system for non-employees on high risk units; and, the replacement of receptionists with security officers in high risk waiting rooms. Patients associated with violent crimes are flagged upon admission as 'DNA -VC' (Do Not Announce - Violent Crime) in both the electronic record and bed management system, which serves as visual cue to staff to increase their awareness for potential danger. Finally, standard work, including environmental safety assessments, enhanced communication, and education processes were implemented in all departments. These enhancements produced a safer environment, a decrease in threats and violent acts by patients and visitors, and most importantly, a decrease in staff fear and injury.

Discussion/Conclusions/Implications:

Despite recent attention by regulatory groups, limited literature exists regarding approaches and strategies to reduce acts of violence in healthcare settings. A heightened sense of situational awareness prompts nurses to recognize elements possessing the potential for violence. This knowledge empowers nurses to initiate appropriate actions to maintain a safe environment for themselves, their patients and visitors. Novice nurses to expert nurse leaders can direct efforts in their own setting to replicate actions to standardize identification and manage patients at high risk for violence.

E153

Abstract Title:

Home Safe Home: Fall Prevention for Older Adults

Authors:

Sunny Jeffries Squindo, RN, BSN

Background & Purpose:

Falls are the number one mechanism of non-fatal injury. This fact is supported not only by literature, but also the trauma patient population of the project hospital, which in 2013 evaluated 1180 patients for low level falls. Given the prevalence of falls, and the potentially devastating resultant injuries, preventing falls must be a hospital and community priority. Through one-on-one interviews and personalized follow-up, the Home Safe Home (HSH) program aims to prevent recurrent falls by helping individuals address their fall risk factors and connect with community resources.

Study/Project Design:

The project is an evidence-based injury prevention initiative.

Setting:

The setting is a suburban, Level II- American College of Surgeons (ACS) verified Adult Trauma Center.

Sample:

This was a convenience sample of 92 participants over age sixty-five who live independently and have been placed in the Observation Unit after a fall.

Procedures:

Implemented 8/13, the HSH program uses a motivational interview method for assessment of fall risk and dissemination of educational material. During the initial encounter, participants are asked about their fall history and preventative strategies are discussed. To accompany recommendations, participants are given a community resource list. A summary note detailing the encounter and recommendations is then added to participants' electronic medical record (EMR). A follow-up interview is conducted two months later to gauge participant response to the recommendations and occurrence of additional falls. Based on this data, it can be determined if the interventions were successful in preventing recurrent falls, and also what interventions participants were likely to adopt.

Findings/Results:

From 8/13-9/14, initial encounters have been completed with 92 individuals. Follow-up interviews have been completed with 51 individuals 51/92 (55%). Of those participants who completed a follow-up interview, 6/51 (12%) reported a recurrent fall, and 37/51 (72%) reported adopting at least one recommendation. Home modification was the most frequently adopted recommendation, with 21/51 (41%) of participants stating they altered their environment based on the safety information discussed. Though results are favorable, statistical significance cannot be ascribed due to the limited sample size.

Discussion/Conclusions/Implications:

Every fifteen seconds, an older adult is treated in an Emergency Department because of a fall, causing over 2.3 million injuries annually. Preventing repeat falls must be a high priority in order to improve patient outcomes. Preliminary findings of HSH are encouraging. Data analysis demonstrates that participants are likely to adopt at least one intervention, and that there has been little evidence of recurrent falls. Given the positive outcome and ease of replication, the HSH program offers an opportunity for nursing practice. It can be implemented with limited financial and personnel resources, and initial interview can be integrated into discharge instructions. Future investigations should aim to better understand specific risk factors for falls, and if there are any commonalities between participants who experience repeat falls despite interventions. Through analysis of this data, future prevention initiatives can be directed toward ameliorating more specific risk factors.

E154

Abstract Title:

Blueprint for Implementing New Processes in Acute Care; Rescuing Patients with Intraosseous (IO) Access

Authors:

Kristen M. Chreiman, BSN, RN, CCRN

Background & Purpose:

The Intraosseous access initiative at an urban university level one trauma center began from the need for a more expeditious vascular access route to rescue patients in extremis. The goal of this project was a multidisciplinary approach to problem solving to increase access of IO catheters to rescue patients in all care areas. The initiative became a collaborative effort between nursing and medicine to embark on an acute care endeavor to standardize IO access. This resulted in the placement of IO kits on all inpatient and outpatient code carts throughout the institution and the standardization of education and training.

Study/Project Design:

This is a descriptive analysis of processes to effectively develop collaborative strategies to navigate hospital systems and successfully implement multilayered initiatives.

Setting:

Academic medical center and associated outpatient facility

Sample:

150 physicians and 150 nurses

Procedures:

Knowledge gaps related the IO were assess and a training course was developed for our institution insertion providers and for nursing staff who would be caring for, maintaining and removing the device. The insertion and removal portion included both knowledge and simulation teaching. Providers requiring education on insertion, care, maintenance and removal include physicians, APs, ED and Critical Care nurses, CNSs and Nursing Clinical Coordinators who respond to non-ICU based clinical emergencies for both the in-patient and outpatient settings. After new policies were developed, standardized training commenced. Insertion providers were required to complete a skills simulation session and a didactic module which included a narrated power point uploaded to the Hospital based education learning system, Knowledge Link and associated competency. Those nurses caring for the device (ED, trauma, ICU) were required to complete a skills simulation session for IO removal and a didactic module for care, maintenance and removal with associated competency. After training, IO kits were deployed throughout the institution.

Findings/Results:

IO practice patterns differed between entities within health system. Defining key stakeholders and gaining their support and culminating collaboration were important skills to effectively navigate unfamiliar health system infrastructures. Utilizing a toolbox to organize a stakeholder analysis and developing a process map adds direction and focus. Choosing a champion who is vested in the project and can collaborate effectively is advised. Being a pioneer in healthcare is a challenge especially when there is a lack of evidenced based practice to support your initiative. Persistence and preparation will promote successful project implementation when advocating for improvement in patient safety and quality patient care. Future plans for the health system should include pursuit of enterprise purchasing and standardization of outpatient practices. More research opportunities exist to determine medication safety and efficacy in adult patients in the acute care setting. Tracking the placement of IO catheters in the inpatient setting along with the trauma bay is in place to verify compliance with policy and training.

Discussion/Conclusions/Implications:

IO practice patterns differ between entities within health systems. Defining key stakeholders and gaining their support and culminating collaboration are important skills to effectively navigate unfamiliar health system infrastructures. Utilizing a toolbox to organize a stakeholder analysis and developing a process map can add direction and focus. Embarking on implementing new policies and procedures will be unsuccessful without the help of experienced team members who can be called upon for guidance. These key members of leadership can assist in providing history, previous examples and creating new contacts important to moving processes in a forward direction. A project can potentially lose momentum when a champion who maintains ownership is not available or represented at important milestones. Choosing a champion who is vested in the project and can collaborate effectively is advised. Effective communication is imperative to uncovering next steps and remaining goal oriented. Patience is an invaluable skill in this setting where it may be necessary to change institutional culture for process improvements.

To gain others confidence in your proposed policy or process change, collect supporting evidence and be able to articulate it. Gather all of the stakeholders together to form a taskforce to help brainstorm and streamline process development. Perform a cost analysis and align products with capital or operational budgets. Assess implementation strategies and develop a process map to demonstrate that a gap analysis was performed. Once the policy or product has been approved by the appropriate entity, effectively and consistently message and educate staff members regarding upcoming changes. Re-evaluate and monitor the process and look for opportunities for future improvements. Being a pioneer in healthcare is a challenge especially when there is a lack of evidenced based practice to support your initiative. Persistence and preparation will help you to be successful in advocating for improvement in patient safety and quality patient care. Future plans for the organization as a health system include improving system wide engagement and unity. Improved communication between leaders in the health system would assist with streamlining process improvements, improve value based purchasing, reduction in cost, standardize patient care and more efficiently monitor compliance with policies and procedures and improve knowledge and communication throughout the health system. Standardizing outpatient practices should be considered. More research opportunities exist to determine medication safety and efficacy in adult patients in the acute care setting.

E155

Abstract Title:

Critical Care Registered Nurse Responding to Trauma Alerts

Authors:

Robin McAlpin MSN, RN, CCRN, CNRN

Background & Purpose:

To expedite the transition of trauma patients from the Emergency Department (ED) to an intensive care unit (ICU), a new workflow was developed and implemented. A small group of Charge and clinically expert nurses from the Burn Trauma Unit (BTU) began responding to the ED announcements of the arrival of Alpha Trauma patients, the highest level of trauma, which included all patients who would be directly admitted to the BTU or Neurosurgical Intensive Care Unit (NICU) following stabilization in the ED. The purpose is to decrease ED length of stay, improve interdepartmental collaboration between the ED and the BTU and facilitate transition of care from emergency care to critical care.

Study/Project Design:

May 26, 2013 thru April 30, 2014 N=129 ED LOS of 115.4 minutes and previous year of N=138 with ED LOS of 158.6 minutes

Setting:

525 bed tertiary care hospital with a level 1 Trauma Center serving urban, suburban and rural communities.

Sample:

All alpha trauma alerts attended by the BTU nurse and patient admitted from the emergency department directly to the BTU. 5-26-12 thru 4-30-13 N= 138; 5-26-13 thur 4-30-14 N=129

Procedures:

A pre-implementation survey was completed with the ED and BTU teams in order to identify potential challenges to the new process with specific challenges identified. A new workflow was designed based on an analysis of the ED workflow was conducted and determinations of expectations and functions of the BTU RN were communicated. As well as roles and responsibilities of each team member who would be responsible for responding to the Alpha Traumas. The BTU nurses also completed the Trauma Nurse Core Course (TNCC). Between May 26, 2013 through April 30, 2014 166 Alpha Trauma Alerts were called involving patients being admitted directly to the BTU/NICU BTU nurses responded to 129 of these alerts, an approximately 78 percent response rate. ED LOS was evaluated as well as interdepartmental relationships and nurse satisfaction.

Findings/Results:

Between May 26, 2013 through April 30, 2014 166 Alpha Trauma Alerts were called involving patients being admitted directly to the BTU/NICU. BTU nurses responded to 129 of these alerts, an approximately 78 percent response rate. However unexpected challenges occurred once the process was implemented such as physician resistance and staffing concerns in BTU which were overcome quickly with education, reassurances and outcomes. The ED LOS for the alerts from which the patient was directly admitted from the ED to BTU/NICU decreased from 158.6 minutes (May 26, 2012 thru April 30, 2013) to 115.4 minutes (May 26, 2013 thru April 30, 2014). Other outcomes noted as a result of the new work flow include; the continuity of care was improved by simplified transition of care, improved patient safety, improved nursing satisfaction, decreased work load for the ED, physician resolved quickly and enhanced interdepartmental understanding of roles and responsibilities. Lessons learned included; implement the shadowing process earlier and implement process education earlier in both units.

Discussion/Conclusions/Implications:

Interdepartmental and interdisciplinary collaboration enhances patient safety, continuity of care and mutual respect and understanding. Pre-implementation the staff in the BTU and the emergency department expressed their fears regarding the new process including their lack of trust and understanding of the others departments and the fear of change in workflow. In addition once the process was implemented we experienced push back from the physicians as they felt the BTU had no role in the trauma bay and attempted to have them removed on occasion. However, with patience, education and determination the new work flow has decreased the workload for the ED staff, essential team members are present in the trauma bay, transition from the trauma bay is more efficient and safer, handoff is effective and seamless, and overall respect and communication of team members. The emergency department staff and the physician now expect and anticipate the BTU nurses' presence in the trauma bay. Next steps include completion of TNCC for all BTU nurses and continued monitoring of ED LOS, satisfaction, and productivity for each department.

E162

Abstract Title:

Monitoring Data Loss During Implementation of an Electronic Trauma Resuscitation Flowsheet

Authors:

Susan Butler, RN, MSN, Margaret Mellinger, RN, CEN, Amber Rodriguez, RN, Adrian Ong, MD and Eugene Reilly, MD

Background & Purpose:

To comply with The Centers for Medicare and Medicaid Services directives for use of electronic medical record systems (EMR) our hospital system choose a well know EMR to implement live simultaneously in all areas. With the goal of a paperless medical record we retired the hand written Trauma Resuscitation Flowsheet and moved forward electronically. Little evidence is available discussing data loss during the transition period to EMR. We planned on closely working with nurse builders and use of practice sessions with real patient scenarios to limit any data loss during critical resuscitations.

Study/Project Design:

Compliance to priority data fields were collected 6 months before and 12 months after implementation.

Setting:

The institution is a large community hospital with a busy level II trauma center.

Sample:

All trauma activation charts were reviewed for defined data fields completed during resuscitation.

Procedures:

The EMR builders, formally nurses working in our ED, created fields from each section of the paper chart. They met frequently to review new fields and revisions with managers, nursing staff, educators, and data registrars. An expert trauma core group of nurses was established providing consistent care and documentation during transition. Computer equipment was placed in each trauma bay dedicated for nursing scribe use. Several computer savvy trauma surgeons worked with the build team to have duplicative documentation fields from the trauma narrator auto-populate physician fields. Priority data fields were established based on trauma registry requirements and reports built to include fields of activation time and level, arrival time, vital sign data was pulled from direct chart review.

Findings/Results:

Baseline compliance in the priority fields of staff arrival, activation time and level, and arrival time was established to be in 90th percentile. They experienced a 30-40% drop in compliance of documentation during the first month of EMR implementation which was statistically significant. However within 6 months after implementation compliance was improved to within 10 to 15 percent of original baseline on a paper form. At 12 months after starting the EMR during trauma resuscitations levels were within 5% of baseline. The areas of sequential vital signs and neurological checks showed an 86% compliance while on paper flowsheets. Vital signs have limited degradation of the data, however sequential neurological checks dropped precipitously from 86% to 26% the first month of implementation. Each area rebounded to baseline by the 12 month mark and vital sign documentation has exceed baseline.

Discussion/Conclusions/Implications:

The purpose of implementing an EMR was based not only on federal regulations but as means to improve patient safety and communication throughout the system. Our choice to implement electronic documentation in the trauma bay was made with careful planning and preparation for a successful implementation. Working closely with the nursing staff, allowing time for education and active listening to their concerns and recommendations, has been shown to be effective in overcoming many challenges. While there was a significant loss of data during the transition time with the EMR, within a 12 month period the majority of those fields equaled or exceeded compliance when compared to documentation completeness on the paper chart. This transition period will be important for those trauma centers going through a survey process. Monitoring of compliance in additional high risk resuscitation fields warrants future study.

E165

Abstract Title:

Distracted Driving Campaign at Abington Health

Authors:

James Yuschak MD FACS Maureen Small BSN RN Christine McKeever MSN RN CPAN

Background & Purpose:

Distracted driving is any activity that could divert a person's attention away from the primary task of driving. All distractions endanger driver, passenger, and bystander safety. These types of distractions include: }Texting }Using a cell phone or Smartphone }Eating and drinking }Talking to passengers, Grooming, Reading, including maps ,Using a navigation system or changing the radio station. In 2011, 3,331 people were killed in crashes involving a distracted driver, compared to 3,267 in 2010. Montgomery County one of the highest in Philly region for texting while driving.

Study/Project Design:

Observations of distracted drivers were completed at various times of the day and locations

Setting:

The setting was various intersections surrounding two community hospital campuses in Montgomery County PA

Sample:

A total of 5847 cars were observed

Procedures:

The design was observation only. The information from the two campuses tallied and the plan of intervening by education was put in place. The team met and discussed campaign and rolling out campaign during May Injury Prevention month. Car magnets designed for giveaways to increase awareness of the problem.

Findings/Results:

}Results }Total cars observed 5847 }Total cars distracted 1154 }20% or 1 in 5 drivers were distracted

Discussion/Conclusions/Implications:

- Over 700 employees and visitors took the pledge
- Presented to medical staff over 150 physicians signed the pledge
- It Can Wait Pledge available on the hospital website
- Follow up observations performed in October with no significant change in results
- Awareness
- Need stricter laws or device support to make an impact
- Future considerations
- Reevaluate plan with Montgomery County Health Department
- Discuss with representatives concerning need for specific legislation
- Involve local police departments in the campaign

E170

Abstract Title:

We Like to Move It-Move It" Progressive Mobility in a Neurotrauma Intensive Care Unit (NTICU)

Authors:

Ellen Harvey DNP, RN, CCRN; Kathryn Booth, BSN, RN, CCRN; Sandra Hubbard, BSN, RN; Bryan Collier DO, FACS, CNSC

Background & Purpose:

Deconditioning occurs rapidly, worsens in severity with bed rest, and places hospitalized patients at increased risk of falls. Thirty percent of patients who fall sustain an injury at a cost of about \$14,000 per fall with injury, adding an average of 6.2 days to the hospital stay. In fiscal years (FY) 2011-2013 the falls rate in our NTICU was 2.99, 2.50 and 3.03, respectively, exceeding the national benchmark of 1.12 for like units. The purpose of this project was to evaluate the impact of a multidisciplinary progressive mobility program on falls rates in a high-risk NTICU population.

Study/Project Design:

This IRB recognized quality improvement study utilized a pre/post intervention design.

Setting:

A 12-bed NTICU located in a Level 1 trauma center, academic medical center.

Sample:

A convenience sample of patients admitted to a NTICU during FY 2011-2014.

Procedures:

Utilizing the Define-Measure-Analyze-Improve-Control (DMAIC) model for quality improvement, unit culture was transformed from "bed rest" to "move-it" for stable patients in a NTICU. Strategies targeted patient, environment of care and multidisciplinary team interventions. Key improvements included the following: 1) identification and elimination of barriers to mobility, 2) implementation of a mobility algorithm and "no lift" policy and procedure, 3) patient/family/nursing/therapy staff and surgeon mobility education and competency training, 4) electronic health record progressive mobility documentation optimizations; 5) two hours of dedicated physical therapy (PT) time daily and 6) celebration of successes. Unit-based FY falls rates were compared pre and post-intervention.

Findings/Results:

Outcomes achieved post progressive mobility implementation included: 1) PT within 24 hours of consult rose from 23% at baseline to an average of >70% in FY 2014; 2) Average PT NTICU patient intervention was >18 minutes per session. Daily, approximately 40% of NTICU patients were assessed as Level I unstable - the most common reason increased intracranial pressure; 3) >50% reduction in the NTICU falls rate from 3.03 in FY2013 to 1.36 in FY 2014; and 4) projected cost avoidance of \$32,812 related to predicted falls with injury FY 2014 in comparison to FY 2013.

Discussion/Conclusions/Implications:

The findings of this study support prior investigations suggesting a nurse-driven, evidence-based progressive mobility protocol may decrease falls associated with deconditioning in at risk patients. Use of the system-based quality improvement DMAIC model is an efficient and effective strategy to support cultural adoption of evidence-based practices at the unit-based level. Multidisciplinary commitment, daily protocol reinforcement and active engagement of patients/families are the cornerstones to success in our NTICU progressive mobility program. Additional studies are needed to explore the impact of mobility programs on hospital length of stay and mortality and morbidity in Neuro-Trauma populations. Innovative progressive mobility initiatives may reduce patient deconditioning and fall rates in other acute care trauma settings.

E172

Abstract Title:

Measures Taken To Improve the Rate of Documentation of Sonographic FAST Exams Performed in Blunt Trauma Presentations

Authors:

Copeli, Nick MD; Zimmermann, Mary Ellen BSN CEN; Sharma , Manish DO; Ali, Zuhair MD; Radeos, Michael S. MD, MPH; Kindschuh, Mark MD; Sample, Jason MD; Khan, N MD; Garg, Nidhi MD

Background & Purpose:

US FAST is a frequently performed assessment tool for surveying abdominal blunt trauma in the ED: making sure to document both performance and results in the ED is crucial for cohesive patient care, reimbursement, as well as medico legal accountability.

Study/Project Design:

Adult patients who were evaluated by trauma team presented to ED between January 1, 2013- September 30, 2013.

Setting:

urban Level 1 trauma center with an annual visit of 125,000 patients per year

Sample:

Total 495 adult patients >14 years of age who were evaluated by trauma team.

Procedures:

All patients which were seen by trauma team either as consult or full activation were reviewed from the period of June 1st - Sept. 2013. Demographic data and vital signs were collected in addition to the data like hospital disposition. Descriptive analysis was performed followed by univariate analysis. In the end, logistic regression was performed with documentation of FAST as positive outcome

Findings/Results:

Out of which 386 were full activation and 108 were trauma consults. 432 (87.3%) arrived by EMS, median SPB of 137(IQR 122-156), median DBP of 80(IQR 70-91), median HR of 84(IQR 73-98). FAST was performed in 333(67.3%) patients and documented in only 284(57.3%). FAST was positive in only 6(1.2%) pts and CT scan of abdomen was performed in 103(20.8%) patients. FAST exam was always documented in case it was positive for free fluids. CT was done in case of 63 (12.7%) pts where FAST was documented and CT was done in case of 40(8.1%) pts where FAST was not documented. 64(12.9%) went to OR after 1 pts had a positive FAST and rest 63 - initial FAST was neg. FAST study was documented in 43 cases who went to OR and in rest 21 cases, there was no documentation of FAST. Total 345(69.7%) were DC home, 79(16.0%) were sent to nursing home or rehab, 26(5.2%) pts left AMA, 21(4.2%) died in the hospital, 11(2.2%) were transferred, 12(2.4%) were sent to police/jail and 1(0.2%) pts was homeless. There was a perfect correlation of FAST documentation to positive FAST findings, there was no significant factor which was particularly attributable to non-documentation of FAST when FAST was negative

Discussion/Conclusions/Implications:

We identify this as a system error and documentation bias for positive FAST. We intend to improve the rate of documentation by making FAST note as mandatory part of trauma note. Also, there is emerging evidence and data if repeat FAST should be performed in cases where initial FAST was negative. In order, to perform second FAST, it is very important that results of initial FAST be documented and then repeat FAST. Our template includes documentation of both FAST results with time as FAST is time sensitive study.

E174

Abstract Title:

Utilization of Data Abstraction Outsourcing to Achieve a Concurrent Trauma Registry

Authors:

Elizabeth V. Atkins, BSN, RN, CCRN; Anthony Volrath, MHS; Ashley Steele, BSN, RN; Dianne McEver, BSN, RN, CCRN; Cathy Davis; Christopher J. Dente, MD, FACS

Background & Purpose:

The foundation of a successful trauma performance improvement program is timely collection and analysis of high quality data in the trauma registry. In order to drive effective process improvement, abstraction and entry of data into the trauma registry must be concurrent. The American College of Surgeons (ACS) defines a concurrent trauma registry as having a minimum of 80% of records entered within 60 days of discharge. The goal of this project was to employ the use of data abstraction outsourcing to increase the percent of records entered within 60 days from a baseline of 68% to over 80% within a six month timeframe.

Study/Project Design:

Twelve months of data completion reports were divided into two, six month periods for comparative analysis.

Setting:

This project was implemented at a high volume, urban, state-designated level I trauma center.

Sample:

The sample consisted of 3,245 trauma registry records from the first half of 2013 and 2014.

Procedures:

This project was initiated for the purpose of achieving concurrency in the center's trauma registry within a relatively short period. Six months of pre-outsource rates of registry record entry within 60 days of discharge were used as a baseline measure. Once the outsourcing of the registry data collection was implemented, record entry rate within 60 days of discharge was measured again over the identical six month period in the subsequent calendar year. Registry-generated reports yielded total records, total closed records, total closed records within 60 days and percent of records closed within 60 days. Over 80% of the records were outsourced once the project was initiated. The remainder of the records were abstracted and entered into the registry by in-house registry staff. The majority of the in-house abstractions were mortalities which were primarily done the purposes of real-time performance improvement review.

Findings/Results:

Pre-outsourcing implementation included records with an arrival date between January 1, 2013 and June 30, 2013 in which 955 of 1653 records (68%) were entered within 60 days. Post implementation of outsourcing included records with an arrival date between January 1, 2014 and June 30, 2014. Post outsourcing, 1522 of 1592 records (95%) were entered within 60 days. Chi-square method was used for the statistical analysis. The comparative analysis of the pre and post outsourcing was not only statistically significant ($p < 0.001$), it enabled the center to exceed compliance with ACS-defined registry trauma registry concurrency quicker than expected. The first month outsourcing was implemented, the rate of records entered within 60 days of discharge improved to 94% and ranged between 93-100% during the six month post implementation analysis period. The most significant outcome of achieving registry concurrency was timely analysis and reporting of trauma data through the center's performance improvement committees to improve care at the bedside.

Discussion/Conclusions/Implications:

Outsourcing was successful in achieving and exceeding registry concurrency in a relatively short period of time. Despite early technological barriers on trauma center side, the 60 day entry rate improved to 94% within the first month of data outsourcing. An extensive orientation process for the outsource team combined with a rigorous inter-rater reliability process were used to ensure data integrity. There are number factors to consider in the implementation of outsourcing data collection, namely cost, technological interconnectivity and data quality. A hybrid model of in-house abstraction in conjunction with outsourcing offers an interim solution to staffing shortages, backlogs and variability in volume that can be difficult in a fixed staffing model. Having a concurrent registry has improved the center's ability to utilize data driven decision making in the performance improvement process. An unexpected benefit of outsourcing was the in-house staff's collaboration with the outsource team to identify opportunities within the center's registry. Next steps include an analysis of financial feasibility of a long-term hybrid model.

E175

Abstract Title:

Does Transition to an Electronic Flow-Sheet Improve Documentation in Pediatric Trauma Resuscitations?

Authors:

Sean Elwell, MSN, RN, EMT

Background & Purpose:

Documentation of trauma resuscitations is often done with the use of a flow-sheet. In the past, most flow-sheets were hand written and could lack important details. Many hospitals are now using an electronic medical record (EMR) in the emergency department (ED). However, the use of the EMR for the recording of trauma resuscitations has lagged behind (1). Our trauma program recently transitioned from a hand-written flow-sheet to an electronic version. The primary objective of this study was to determine if the change to electronic documentation resulted in fewer incomplete data points.

Study/Project Design:

Compared data for 2 months before implementation to 2 months implementation to 2 month period after implementation

Setting:

Data was collected at one children's hospital, operating as a provisional level 1 pediatric trauma center.

Sample:

110 patients included as part of original review. Complete documentation for each patient involved 12 data points representing targeted areas serving as measures of quality.

Procedures:

The transition to the EMR was accomplished over a 2 month implementation phase where educational efforts were ongoing. In order to monitor and improve the quality of the documentation of the trauma resuscitations, the hospital's trauma program identified targeted data points to be included in the documentation. Data was abstracted retrospectively by a single reviewer from either the hand-written flow-sheet or from the EMR.

Findings/Results:

The Pre-Impl period had a total of 360 data points (30 patients), the Impl phase had 588 data points (49 patients) and the Post-Impl phase had 372 points (31 patients). The Pre-Impl phase had 41 missing data points (11.4%), the Impl phase which had 150 missing data points (25.5%), and the Post-Impl phase had 45 missing data points (12.1%). There was a difference in the Pre-Impl phase and the Impl phase with regards to the number of missing data points ($p < 0.01$). There was no difference in the number of missing data points in the Pre-Impl and Post-Impl phases.

Discussion/Conclusions/Implications:

Missing data points are a common occurrence in the documentation of pediatric trauma resuscitations. The implementation of the EMR was associated with an increase in the number of missing data points. After the implementation period, a decrease was noted. However, there was no overall improvement with the transition from a hand-written flow-sheet to electronic documentation.

E179

Abstract Title:

The Electronic Medical Record and Trauma Resuscitations: Can They Coexist at a Level 1 Trauma Center?

Authors:

Dallas Taylor MSN, Gary Meadows BS, and Samuel Richardson

Background & Purpose:

Trauma resuscitations occur in fast-paced environments requiring accurate documentation to meet state and national quality standards set forth for all trauma centers nationwide. Electronic medical records (EMR) generate challenges for providing accurate and complete information during real time resuscitation events. Our EMR flow sheet did not meet accuracy standards for the comprehensive review of trauma resuscitations. The purpose of this project was to evaluate the impact of a revised EMR trauma documentation tool for the accuracy of quality metrics in a level one trauma center.

Study/Project Design:

Data was collected for a period of 34 months, beginning in November 2011 and ending in August 2014.

Setting:

A 767 bed Level One Trauma Academic Medical Center and ANCC Magnet designated facility.

Sample:

A sample of 1,141 records was reviewed with 451 charts being reviewed pre and 690 records being reviewed post-implementation of the new EMR tool.

Procedures:

A multidisciplinary team comprised of technology services, nurses from emergency medicine, trauma services nursing staff, and radiology convened to design, refine and evaluate an EMR flow sheet. Other trauma centers utilizing an EMR trauma resuscitation flow sheet were benchmarked. Our current EMR tool implemented in March 2013 was redesigned to follow a traditional Trauma Nurse Core Course assessment standard. A trauma documentation quality checklist was used for post-event chart review to measure EMR flow sheet performance. Documentation of accurate time stamps for trauma team arrival was evaluated pre and post the new EMR tool. Staff education occurred with each enhancement of the EMR to garner feedback and improve the EMR flow sheet performance.

Findings/Results:

Prior to the project implementation, the overall accuracy of our EMR trauma resuscitation documentation encounters averaged a completion rate of 81% while evaluating time stamp inaccuracies for trauma team arrivals. Post implementation of our current version of our EMR documentation tool has created an average completion rate of 91%. Documentation of the critical trauma team arrival time element is currently 99% for the 2014 calendar year compared to 80% completion rate in 2013. These findings support a statistically significant improvement on the overall trauma resuscitation documentation.

Discussion/Conclusions/Implications:

This project showcases the success of a trauma nurse driven systematic and multidisciplinary approach to successful implementation of an EMR trauma documentation standard at a level one trauma center. Use of the EMR for trauma resuscitation documentation supports the ongoing quality improvement and quality outcomes for complex injured patients at our healthcare institution. Trauma nurse education and feedback regarding documentation of quality standards was essential to the successful implementation of the EMR trauma resuscitative documentation. The ongoing evaluation and improvement of the EMR tool was fundamental to the overall success in the trauma resuscitation documentation tool. This project has led to the visitation of other trauma centers within the state and neighboring states using a similar EMR system in efforts to benchmark the EMR tool we have in place to improve the overall quality of trauma resuscitation documentation.

R110

Abstract Title:

Pharmacist Consult Service in Geriatric Trauma Patients in a Large Academic Medical Center

Authors:

Vanessa Gleason PharmD, Rohit Moghe, PharmD, MSPH, CDE, Doris Warner, MSN, RN, CEN, Michael Weinstein, MD, FACS

Background & Purpose:

Geriatric patients have multiple co-morbid conditions treated with various medications, which predispose them for traumatic injuries. The Trauma Program at Jefferson University Hospital (JUH) created a pilot program to improve geriatric patient care that includes consultative services from an interprofessional group of practitioners, including evaluation of medications by pharmacists. The purpose was to describe the pharmacist's role as active participants of an interprofessional team in addressing medication safety in geriatric patients admitted for trauma. It is hypothesized that pharmacist consultation and intervention had a positive impact on geriatric trauma program.

Study/Project Design:

Descriptive

Setting:

The setting for the study was at a single urban Academic Medical Center which is a state accredited Level 1 Trauma Center

Sample:

A total of 349 geriatric trauma patients, 65 years old and greater admitted to the trauma service at JUH identified through an internal trauma registry database.

Procedures:

Patients were included if they were on greater than five medications upon admission, average medication change of six or greater since admission, recent hospitalization within the past 30 days, or history of fall. A pharmacist would review the patient within 72 hours. Pharmacists utilized the Screening Tool for Older Persons' Prescriptions (STOPP) and the American Geriatrics Society Beer's 2012 List in assessing potentially inappropriate medications (PIMs). Patient demographics, admission diagnosis, previous medical history (PMH), medication reconciliation, living situation, laboratory values, and PIMs were collected. Recommendations were communicated to the trauma service. Data was analyzed to determine if the patient's trauma was caused and/or exacerbated by medications. Acceptance of pharmacists' recommendations was reviewed after discharge and patients were followed for related 30-day readmission.

Findings/Results:

Patients were admitted to various inpatient surgical as well as medical services from February 15, 2013 to May 15, 2014. A total of 267 (56% female) patients with an average age of 82 years were reviewed by pharmacists as part of the consult process. Of these, 214 (80%) patients admitted for an injury were community-dwelling elders, who had falls (235, 88%), and 26 (9.8%) for motor vehicle collision. The compliance of initial review/consult process within 72 hours was met in majority of the patients (239, 90%). The trauma registry identified 235 (66%) patients admitted for an injury were on antithrombotic medications at admission, however, not all of them experienced hemorrhage. Psychotropic medications were most commonly used in this population (126 of 267 patients, 47%), which were correctly identified by both Beer's 2012 and STOPP criteria. However, falls related to antihypertensive medications found in 57 of 267 (21%) and fractures related to the use of proton pump inhibitors were missed by both of these tools. Only five patients were readmitted within 30 days of discharge of their initial trauma, with two of them being medication related.

Discussion/Conclusions/Implications:

Majority of the patients were part of the pharmacist consult were community-dwelling elders admitted for injury related to their fall. Although the causes of falls in these patients are multifactorial, medications played an important role in addition their physical condition and nutritional status. Pharmacists were one of the groups of consultants as part of the total care program in addition to nurses, clinical dietitians, occupational/physical therapists, and geriatricians. Overall, there was a positive impact of the pharmacist consult service on the geriatric trauma program especially identification of PIMs included in Beer's 2012 and STOPP as well as outside these criteria.

R115

Abstract Title:

Before and after Implementation of an Open Fracture Protocol at a Level 2 Trauma Center

Authors:

McWilliam-Ross MSN, APRN, ACNS-BC, Collinge, Cory, MD

Background & Purpose:

Open fractures are considered a critically important injury constellation with high risk for complication and a poor outcome. With the bone exposed to the outside environment, this tissue gets contaminated with microbial pathogens, and the bone is at risk for becoming infected. While some variables are out of control of the treating physician, other factors can be affected by the providers. It has been shown that early administration of antibiotics is one of the most important factors in reducing infection in open fractures.

Study/Project Design:

Retrospective study of patients treated for an open fracture before and after implementation of our PI program

Setting:

Single metropolitan level 2 regional trauma center.

Sample:

Patients with open fractures at our institution between January 2012 and December 2013 were included.

Procedures:

Education on the importance of early antibiotic therapy for open fracture patients was provided in the form of a 15 minute audiovisual presentation to ED physicians, nurses, and pharmacy staff at their respective department's meetings. Orthopedic surgeons taking ED call were encouraged to take a more active role in ensuring early antibiotic delivery. Finally, ongoing updates documenting performance including an open fracture "scorecard" were reviewed monthly as part of our orthopedic trauma quality assurance program and reported back to the administration of each staffing unit.

Findings/Results:

Group 1 was comprised of 127 patients with a total of 167 open fractures while group 2 included 77 patients with a total of 97 open fractures. Patient and injury factors were not significantly different between the two groups. Group 1 patients received IV antibiotics at a mean of 98.9 minutes and median of 77.5 minutes after arrival at our institution, compared to patients in group 2 who received antibiotics at a mean of 53.4 minutes and median 29.0 minutes after arrival (both $P < 0.008$).

Discussion/Conclusions/Implications:

Optimal treatment of open fracture patients with early and appropriate antibiotic prophylaxis was lacking for many patients at our trauma center. A multifaceted performance improvement program specifically concentrating on education, accountability, and antibiotic availability aimed at this aspect of orthopedic trauma care was very effective in improving our early treatment of these patients.

R118

Abstract Title:

EMS and Trauma Bay Intubation: Is there a clinical difference in patient outcomes?

Authors:

Michael Lloyd, MS, RN and Kimberly Shoff, BSN, RN, CCRN

Background & Purpose:

Emergent intubation for critically injured trauma patients is a complex clinical procedure that saves lives. Advanced Trauma Life Support (ATLS) mandates a patent airway and breathing as the first two clinical priorities for every trauma patient. The ability to perform timely intubation when appropriate is essential. The physical location and practitioners performing intubation can vary. Purpose: to identify factors associated with trauma patient intubation and positive patient outcomes. Hypothesis: the controlled setting of the trauma bay with physician providers results in better patient outcomes and less clinical complications than EMS intubations in the field.

Study/Project Design:

Retrospective, trauma registry, observational study.

Setting:

Four accredited trauma centers (three level 1 and one level 2) in an urban and semi-rural setting.

Sample:

All trauma patients over the age of 18 that were intubated by EMS or in the trauma bay from January 1, 2012 to March 31, 2014.

Procedures:

Four trauma registries were retrospectively reviewed and 905 patients were intubated, 231/25.5% by EMS and 674/74.5% in the trauma bay. Examples of data points: mechanism of injury, TRISS, Injury Severity Score (ISS), and general demographic data. Examples of outcome data: ventilator days, intensive care unit length of stay (ICULOS), hospital length of stay (HLOS), clinical complications, and discharge destination. Mann-Whitney U and Kruskal Wallis tests were performed to identify significant differences in outcomes between the two groups. Data were analyzed unmatched and matched. Matched data included: age, initial EMS and trauma bay systolic blood pressure, initial EMS and trauma bay Glasgow Coma Score, EMS scene time, EMS transport mode, post ED destination, type of injury, and ISS.

Findings/Results:

Overall trauma bay intubation had better patient outcomes. Before matching, trauma bay intubation had lower HLOS, ICULOS, ventilator days, less likely to die, and more likely to be discharged home (all $p < .05$). After matching, 231 (33.3%) were intubated by EMS and 462 (66.7%) in the trauma bay. Trauma bay intubation had shorter ventilator days ($p = .002$), less likely to die ($p < .001$) and more likely to be discharged home ($p < .001$). When matched, trauma bay intubation demonstrated better outcomes for the following: lower median ventilator days (3 versus 4), lower mortality rate (19.3% versus 35.1%), and more likely to be discharged home (42.4% versus 31.7%). Clinical complications such as pneumonia, acute respiratory distress syndrome, and acute respiratory failure were not statistically significant.

Discussion/Conclusions/Implications:

In the review of the data, trauma bay intubations demonstrated better patient outcomes. This was statistically significant for lower HLOS, ICULOS, ventilator days, and to be discharged home. This leads to additional questions regarding the skill level of the provider, mechanism of injury (blunt versus penetrating), and EMS transport times (semi-rural versus urban) and how this may impact the decision to intubate or have EMS scoop and run. The next step will be to include additional trauma centers and EMS providers to review who performs the intubation, what was the clinical decision making process regarding intubation, and how does the Golden Hour for trauma patients apply to EMS intubation.

R144

Abstract Title:

Use of Tranexamic Acid (TXA) in US Trauma Centers

Authors:

Jane E McCormack, RN, BSN, CSTR, James A Vosswinkel, MD and Adam Singer, MD

Background & Purpose:

The antifibrinolytic tranexamic acid (TXA) is listed as 'essential' by the World Health Organization, is included in the Joint Theater Trauma System, and is recommended by the American College of Surgery Trauma Quality Improvement Project (TQIP) as part of massive transfusion protocol (MTP) guidelines. However, its use in United States trauma centers is unknown. We sought to determine surgeon's familiarity with and use of TXA and the association between surgeons military experience and training outside of the US with TXA use. The role of TXA as a therapeutic adjunct in MTP was also examined.

Study/Project Design:

The study was a voluntary survey sample, reviewed by and deemed exempt by the IRB of the author's institution.

Setting:

Respondents are surgeons working in trauma centers of all levels throughout the United States.

Sample:

452 surgeons completed the survey. This represents 35% of the organization's surgeon members.

Procedures:

A brief (19 question) survey was completed using commercial software. Modifications were made by the Research Subcommittee of the national organization prior to release. An email request to participate was sent 3 times over 3 weeks. Data elements included demographics, and experience with TXA. Responses were analyzed using standard statistical tests for significance.

Findings/Results:

452 surgeon completed the survey. Military medical experience was reported by 21.0%, 81.1% completed Critical Care Fellowship and 5.6% trained outside of the US. Experience varied, with 38.0% using TXA regularly, 24.9% using it 1-2/year, 12.3% using it only rarely and 24.7% having not used the drug. Nether military experience nor training outside the US was associated with increased use. Almost 75% work in a Level 1 Trauma Center, and 23% in a Level II. Pre-hospital TXA use was reported by 21.2% of all respondents, but by 33.3% working in a rural setting. Of those who have used TXA, 79.6% indicated the primary indication as significant hemorrhage; 17.9% felt risk of significant bleeding was an indication. The primary reason for not using TXA among those who occasionally or rarely used the drug was uncertain clinical benefit. A majority of respondents agreed or strongly agreed that: TXA reduced bleeding (84.6%), a comprehensive MTP should include TXA (78%), and 91% look to national trauma organizations to develop practice guidelines for use. 17% report that Factor viia is in use as part of the MTP at their trauma center.

Discussion/Conclusions/Implications:

TXA use is not standard among surgeons practicing in US Trauma Centers. Lack of familiarity with TXA, and not military experience or foreign training, is associated with infrequent use. Interest in participating in research regarding TXA was reported by 41% of all respondents. An opportunity exists for national trauma organizations to develop a clinical research project to evaluate the effectiveness of decreasing mortality in civilian trauma. Additionally, the variations in availability and use of therapeutic adjuncts in massive transfusion (Factor viia, defrosted plasma, and prothrombin complex concentrate) point to a need for more widespread adoption of the TQIP Massive Transfusion in Trauma Guidelines. Trauma nurses are The Society of Trauma Nurses could take the lead on this topic and collaborate with trauma physicians to more fully incorporate the TQIP guidelines and develop a clinical research project to evaluate the effectiveness of TXA in the treatment of civilian traumatic hemorrhage.

R146

Abstract Title:

Trauma Nurses Speak...On Certification

Authors:

Kelley Rumsey MS, RN, CEN, ACNP-BC, PNP-BC, Jami Blackwell RN, BSN, BS, CEN, Lawrence J. Fabrey, PhD.

Background & Purpose:

In the spring of 2012, a group of representatives gathered to discuss the feasibility of a trauma nurse certification credential. The representatives of the two groups met later that same year and entered into a formal agreement to explore the possibilities. A needs assessment was initiated at a 2013 trauma conference beginning in the form of a focus group. Later in 2013, a needs assessment survey was distributed to over 4,000 individuals, with a response rate of 36%. Eighty-eight percent of the respondents to that survey indicated a certification exam should be developed for trauma nurses.

Study/Project Design:

A 166 - item survey was constructed.

Setting:

Trauma Nurses across the continuum of care in varying levels of trauma centers or non-designated hospitals.

Sample:

3156 trauma nurses

Procedures:

Invitations were sent to 3156 persons to participate in the survey via email. The mailing lists were largely defined by membership of two large trauma organizations. Of those, 1328 (42%) were deemed usable responses.

Findings/Results:

The most commonly cited trauma nursing courses taken included The Trauma Nurse Core Course, Emergency Nursing Pediatric Course, Advanced Trauma Care for Nurses, Trauma Outcomes and Performance Improvement Course and Advanced Burn Life Support. The mean number of years in trauma nursing practice was 14.84. Practice settings were divided between community hospitals (52%) and academic medical centers (42%). The levels of trauma centers represented included Level I (53%), Level II (30%), Level III (10%) and Level IV (6%). Hospital settings included urban (43%), suburban (44%) and rural (13%). Respondents defined their unit or department as trauma program or service (40%), Emergency Department (39%), Intensive Care Unit (12%), flight or transport (5%) or other (<2%). The group used a systematic process to identify what trauma nurses define as topics and tasks that are clearly part of practice and significant to practice. In excess of 200 distinct comments were provided by the respondents. All of these comments were reviewed and considered by the role delineation study panel.

Discussion/Conclusions/Implications:

The results of the survey demonstrate a diverse representation of trauma nurses and indicate the passion for a unique certification exam. Based on the overwhelming response and the results from the survey, the decision has been made to proceed with the development of a trauma nurse certification exam. Over the course of the next several months, a process will begin to develop an exam to recognize trauma nursing professionals across the continuum of care.

R148

Abstract Title:

INCIDENCE AND SEVERITY OF CHRONIC PAIN 6 YEARS AFTER MODERATE OR SEVERE TRAUMA

Authors:

Knut Magne Kolstadbraaten CRNA, Ulrich Spreng MD PhD, Christine Gaarder MD PhD, Paal Aksel Naess MD PhD and Johan Raeder MD PhD

Background & Purpose:

Aim of investigation: Lifesaving measures have the highest priority in the initial phase of treatment of severely injured patients, whereas dedicated prophylaxis and treatment of pain usually are introduced later. In those who survive a major trauma, chronic pain is frequent and often disabling. The aim of this study was to define the incidence and severity of chronic pain 6 years after major trauma, in a population recruited at a major trauma center.

Study/Project Design:

Retrospective analysis of a selected trauma population and prospective questionnaire 6 years after injury

Setting:

In a major trauma hospital in an urban setting

Sample:

125 were enrolled in the retrospective study and 68 in the prospective study.

Procedures:

The study protocol was approved by the National Committee for Medical and Health Research Ethics and written informed consent was obtained from all patient who responded to the questionnaire. All adult patients with an Injury Severity Score (ISS) >8, admitted at a major trauma center during 2007, were considered for inclusion. Exclusion criteria included: intubated pre-hospital or on admission, patients with isolated head-trauma, initial surgery within 3 hours, discharged before 6 hours observation, known drug abuse and psychiatric disorders. Demographic data, trauma mechanism, type of injury and initial analgesic therapy were registered. The patients received a written questionnaire about 6 years post-injury, focusing on acute and chronic pain caused by the injury.

Findings/Results:

Of the 125 patients eligible for the study, the questionnaire was sent to 98 patients: 3 patients had died and 24 patients could not be reached (unknown address or moved abroad). Of the 98 patients who received the questionnaire, 68 (69%) responded. In this final data set 77% were men, median age 44, interquartile range (IQR) 28-54. Median ISS 15, IQR 12-22. In the emergency department 82% received fentanyl, 8% ketamine and 35% diazepam. No patients received paracetamol, NSAIDs, nerve blocks or epidural analgesia (EDA) during this initial treatment in hospital. In 14 patients epidural analgesia was later instituted, in 13 patients within 24 hours. As many as 46 patients (68 %) reported chronic pain at the site of injury 6 years or more post trauma. Of the patients with chronic pain, 30% had daily pain, 23% more than once per week, 26% more than once per month, and 21% once or less per month. The most intense pain was described as very strong in 4%, strong in 23%, medium in 55 % and weak in 17 %. Ten out of 12 patients (83%) who received EDA for thoracic trauma reported chronic pain. Patients who did not receive EDA had a 70% incidence (16/23) of chronic pain with similar thoracic trauma.

Discussion/Conclusions/Implications:

More than 2 out of 3 in this selected group of injured patients developed chronic pain, evident more than 6 years after the injury. In 82% of the chronic pain patients, the pain was medium or stronger, and in 53% more frequent than once per week. In 2007 our hospital had little focus on dedicated prophylaxis against chronic pain, and there may be a potential to improve these numbers with more aggressive and multimodal initial pain protocols.

R159

Abstract Title:

A Narrative Inquiry into the experience of being a Victim of Gun Violence: stories from the Victims

Authors:

Mary Francis PhD, RN, ACNP-BC

Background & Purpose:

Gun violence is a major social and health concern for all Americans. Gun violence affects everyone; not only those who are victims and perpetrators, but everyone whose schools, neighborhoods, and communities are no longer considered safe as a consequence of gun violence. Recent research has clearly documented the problem of gun violence in society today; however, the voice of the gun victim has been silent in the literature. The research question for this study was "What is the story of being a victim of gun violence from the perspective of the victim?" The purpose of this study was to describe and gain an understanding of gun violence from the perspective of the victim.

Study/Project Design:

Narrative inquiry methodology was used with purposive sampling. Victims of gun violence were interviewed.

Setting:

The interviews were completed at one hospital and outpatient clinic.

Sample:

There were 16 participants in the study, age 18 and over.

Procedures:

The method of research was a narrative inquiry. It is a qualitative approach that allows participants to tell their story. One of the goals of qualitative research is to gain understanding of the experience from those who have lived it. The participants were all victims of gun violence, no limitation of the timeframe of being shot, both male and female were included. Inclusion criteria, stated they must be over the age of 18 and must be fluent in English language. Interviews were conducted by the researcher. Interviews were open ended and allowed the participant to describe in their words the experience of being a victim of gun violence. The researcher did ask probing questions for elaboration or clarification of statement. Data collection ended when saturation of data occurred.

Findings/Results:

Stories from the victims revealed insight into this current day epidemic of gun violence. Analysis of stories revealed four themes. Relevant sections of the text that emerged from their stories have been included. Participant were given an alias to protect their identities. After careful analysis of the interviews four themes emerged: 1) Prevailing nature of everyday violence ; 2) Feeling abandoned by the institutions of society; 3) Living in a context of reactive violence fueled by poverty, lack of employable skills and education; 4) Evolving psychological effects following gun violence. Participants spoke a great deal about a low commitment to school, poverty and exposure to everyday violence. Many of the participants reported that it was very easy to gain access to firearms. They stated that guns were readily available and anyone at any age could access a gun. Participants reported that a gun in the hands of a young man empowered him. Much has been learned by listening to the stories from the victims, one lesson is the toxic environments and also the interventions to assist with processing the traumatic experience.

Discussion/Conclusions/Implications:

The magnitude of the gun violence epidemic encompasses the lives of the participants. Participants described social situations of unemployment, homelessness, and everyday violence. The participants' lives were chaotic, unsettled, and dangerous. Many of the participants shared feelings of hopelessness, they recognized the need to change their situation but lacked the resources to do so. Several participants described feeling degraded because they were still dependent on their mothers for money or unable to give their children presents at Christmas. Gun violence is a multifaceted issue of violence and hopelessness. It is challenging to create appropriate and realistic interventions for this population. It is a population lacking in finances, appropriate ongoing health care, and knowledge on how to access available resources. A socioeconomic disparity exists for this population and many of their overall health care needs are left unmet. Realistic interventions that are accessible to a deprived populations needed to be developed and attainable.

R160

Abstract Title:

Elderly and non-elderly trauma patients in the ICU: are there differences?

Authors:

Lilia de Souza Nogueira - RN, PhD, Professor of School of Nursing, University of São Paulo - Brazil; Rita de Cassia Gengo e Silva - RN, PhD, Professor of School of Nursing, University of São Paulo - Brazil; Renata Eloah de Lucena Ferretti-Rebustini - RN

Background & Purpose:

The aging of the world population has been accompanied by greater number of elderly patients hospitalized in the Intensive Care Unit (ICU). Special attention should be given to the increasing number of elderlies, victims of trauma, which require intensive care. The literature is controversial to address age as a prognostic factor in ICU. From the perspective of nurses, elderly trauma patients in ICU are more clinically serious and require more nursing care than younger patients. In this sense, the objective of this study is to compare the physiologic and trauma gravity and nursing workload required by elderly and non-elderly trauma patients in ICU.

Study/Project Design:

This is a cross-sectional study. Data were collected between 2010 and 2011.

Setting:

The study was carried out at a specialized trauma ICU in Sao Paulo, Brazil.

Sample:

200 trauma victims who fulfilled the following inclusion criteria: age greater than 18 years and ICU length of stay of more than 24 hours.

Procedures:

Data were collected within 24 hours after the admission in the ICU. The independent variable analyzed was age, divided into two groups: elderly (≥ 60 years) and non-elderly (< 60 years). The independent variables used to compare the groups included demographic and clinical characteristics, in addition to illness/injury severity data (Acute Physiology and Chronic Health Evaluation-APACHE II and New Injury Severity Score-NISS). The nursing workload was measured using the Nursing Activities Score (NAS). Descriptive statistic, Fisher's exact and T-tests were used for the analyses.

Findings/Results:

The majority of patients were male (82.0%) and suffered blunt trauma (94.5%), with traffic accidents (57.5%). The groups formed from this sample consisted of 36 elderly and 164 non-elderly and the mean age was 40.7 years (SD=18.6). The mean age of elderly subjects was of 73.05 (SD=8.45). Elderlies had higher scores on the Charlson comorbidity index ($p < 0.001$), greater physiological severity ($p < 0.001$), and lower severity of traumatic injuries ($p < 0.001$). Interestingly, the nursing workload was significantly lower in the elderly group ($p=0.006$). Furthermore, mortality was higher among them ($p=0.030$).

Discussion/Conclusions/Implications:

The results of this study showed that elderly trauma victims have lower injury severity, greater physiological severity and lower nursing workload, compared to non-elderly. Data suggest that although traumatic injuries are less severe, the physiological impact is more significant and may be related to increased mortality in this group. Unlike the original assumption, it was observed that the workload demanded by the elderly in the first 24 hours was less than the other group analyzed. On the other hand, study comparing elderly and non-elderly patients in general ICU showed similarity of nursing care between the groups. In this sense, it is emphasized that the results of the studies are controversial when comparing elderly and non-elderly patients, reinforcing the need for more studies in this field. Our results should be interpreted considering the study limitations, such as small sample size and analysis of only the 1st 24 hours of admission to the ICU. It is concluded that elderly trauma patients differ to non-elderly regarding clinical characteristics and trauma.

R161

Abstract Title:

Is Temperature Useful as a Triage Parameter in Geriatric Patients Not Meeting Traditional Trauma Activation Criteria?

Authors:

Margaret Mellinger, RN, CEN, Amber Rodriguez, RN, Susan Butler, RN, MSN, and Adrian Ong, MD

Background & Purpose:

Geriatric patients not meeting threshold criteria for traditional trauma activation after injury are evaluated through established triage processes within emergency departments (ED). Since these patients do not usually have the benefit of rapid trauma team evaluation, reliance solely on traditional triage parameters could potentially result in a delay in recognition of significant injuries or occult hypoperfusion and result in poor outcomes. In this cohort, the significance of admission hypothermia has not been well studied as a triage parameter.

Study/Project Design:

A retrospective review of triage data and relationship to mortality in geriatric patients was studied.

Setting:

The location is a large community ED with over 120,000 annual visits and Level II trauma center.

Sample:

A convenience sample of patients age 65 and older entering the ED after a low velocity injury with a trauma consult from 2010 to 2014 were reviewed.

Procedures:

All patients aged ≥ 65 seen by an ED physician and received a consult evaluation from the trauma service between Jan. 1, 2006 and June 30, 2014 were included. Variables were age, systolic blood pressure (SBP), heart rate (HR), Glasgow Coma Scale (GCS), Injury Severity Score (ISS). Hypothermia was defined as temperature $< 36^{\circ}\text{C}$. Relationships between variables and mortality were explored by univariate analysis. Categorical variables were compared using chi-square or Fisher's exact test where appropriate. Continuous variables were analyzed using t test or Mann Whitney U test where appropriate. Significant variables associated with mortality were entered into logistic regression analysis to determine if independent variables were associated with mortality. A p value of 0.05 indicated statistical significance.

Findings/Results:

During the study period, 3592 patients met inclusion criteria, 198 patients were excluded due to missing temperature data, leaving 3394 patients for analysis. 89(2.6%) patients died. 164(5%) patients were hypothermic. Hypothermic patients had significantly lower SBP (141 ± 36 vs 151 ± 34 mmHg, $p<0.001$). However there were no significant associations between hypothermia and other variables. Compared to survivors, non-survivors were older (85 ± 8 vs 82 ± 8 yrs, $p=0.002$), more injured (median ISS, 12 vs 9 $p=0.001$), had lower GCS (median 15 vs 15, $p<0.001$), and more likely to be hypothermic (12% vs 5%, $p=0.04$). A logistic regression model incorporating ISS, GCS, age and temperature found that ISS (odds ratio [95% confidence interval], 1.10 [1.06-1.13]), GCS (odds ratio, 0.65 [0.57-0.74]), and age (odds ratio, 1.04 [1.01-1.07]) were independent predictors of mortality. Hypothermia was not predictive (odds ratio, 1.33 [0.53-3.39]).

Discussion/Conclusions/Implications:

Hypothermia in the critically injured geriatric population is well studied and linked to increased mortality. In patients that do not meet trauma criteria the data is less clear and adds to the complexity of assessment that may mislead interpretation of conventional triage parameters. With a high prevalence of geriatric patients arriving in our ED, nurses need tools aimed at early identification of occult injury and hypoperfusion. Temperature has never been a variable in classifying a trauma patient as blood pressure and heart rate have. The findings conclude a relationship between hypothermia and blood pressure with increased mortality though not hypothermia as an independent factor. There were no significant differences in SBP or HR between survivors and non-survivors. The implication of our finding adds another layer of risk stratification to the triage nurse's current tools. However the relationship between hypothermia and mortality deserves further study in larger samples.

R169

Abstract Title:

Compassion Fatigue, Moral Distress, and Work Engagement in Trauma SICU Nurses: A Pilot Study

Authors:

Virginia Mason, PhD, RN, CCRN, ACNS-BC Gail Leslie, MSN, RN,PMHCNS-BC Christina Butler, BSN,RN

Background & Purpose:

SICU nurses caring for trauma patients are at risk for compassion fatigue (CF) and moral distress (MDS) due to the impact of sudden, tragic outcomes and may leave the ICU prematurely. Retaining experienced nurses is imperative to successfully precepting new ICU nurses. Preparation for replacing the nurses retiring in the next few decades is essential to patient outcomes. Nursing care potentially influences UTIs, pneumonia, shock, longer hospital stays, failure to rescue, and 30-day mortality. Compassion Satisfaction enriches nurses offering help to people in life-threatening crisis. The purpose of this study is to examine the effects of compassion fatigue, moral distress, and work engagement.

Study/Project Design:

This pilot study is a partial replication of a non-experimental, descriptive, correlational design.

Setting:

All nurses were currently working in a SICU in an urban hospital with a Level 1 trauma center.

Sample:

A convenience sample of 26 out of 34 eligible SICU trauma nurses responded to this survey, which is a 77% response rate

Procedures:

Questionnaires were sent electronically via nurses' work e-mails. Anonymity was maintained by typing answers to avoid the possibility of handwriting recognition. All 3 instruments: the 30-item Professional Quality of Life Scale (ProQOL-5); the 9-item Moral distress subscale: 'Not in patient's best interest' factor, shortened version 2005; and the 9-item Work and Well-being Survey or UWES-9 Work Engagement Scale (UWES) shortened version 2008, demonstrated adequate reliability and validity. Data analysis included descriptive statistics and Spearman correlation coefficients between scales. Krippendorff's content analysis which determines the presence of themes within communicative language; and quantifies the presence of themes, was applied to this study's questions with an audit trail.

Findings/Results:

On the CS subscale 73% of nurses scored average and 27% high. No one scored low. Nurses scored 58% average and 42% low on the Burnout subscale. Nurses scored 62% low and 38% average on the STS subscale. No one scored high on either CF subscale. The mean MDS subscale score was 3.4. The mean Utrecht Work Engagement score of 3.8. Significant positive correlations between Work Engagement and ProQOL-5 Compassion Satisfaction Subscale ($r = 0.49, p < 0.05$) were demonstrated. Significant negative correlations between work engagement and ProQOL-5 burnout subscale were demonstrated ($r = -0.49, p < 0.05$).

Discussion/Conclusions/Implications:

Moral distress is supported as a clinically significant issue for nurses. Significant positive correlations show that as Work Engagement increases, Compassion Satisfaction increases. Significant negative correlations show that as Work Engagement increases, Burnout decreases. Summary of question "Worst Experiences of Distress?" revealed: Role Conflict with Management/Rules, Death and Suffering end-of-life decision making, Dealing with Violence in the ICU, Dealing with Family, Powerlessness-Moral Distress, Physical Distress and Medical versus Nursing Values-Moral Distress as in Lawrence's findings. Content analysis of "What Do You Like about Nursing?" revealed: caring, helping families, longtime interdependent supportive relationships of colleagues, and satisfaction. Summary of "How Do You Replenish Yourself?" revealed: Self-care, Relationships of Professionals, and Compassion/Empathy. Future recommendations include replication in larger samples to identify additional variables.

R176

Abstract Title:

Impact of Palliative Care on the Geriatric Trauma Population Outcomes

Authors:

Diane Kupensky, RN, MSN, CNS, ACHPN; Barbara M. Hileman, BA; Eric S. Emerick, BA; Elisha A. Chance, BSAS

Background & Purpose:

Decisions of patients and their families may conflict with Trauma training of providing life sustaining care for the acutely ill and injured. Although many physicians and residents in trauma/emergency medicine agree it is an important asset, many do not consult Palliative Medicine. The literature indicates a benefit to patients when Palliative Medicine is consulted in the Emergency Department and the Intensive Care, however the benefits to trauma patients have not been studied. Palliative Medicine may be helpful for an older adult population in establishing an acceptable treatment plan.

Study/Project Design:

Retrospective chart review of trauma Palliative Medicine consults.

Setting:

Community Level I Trauma Center.

Sample:

Trauma patients ≥ 65 years, admitted to the surgical intensive care unit (SICU) from 7/01/13 to 6/30/14. The sample included 232 trauma patients.

Procedures:

Data was collected via an electronic medical record request and review of the records. Independent variables included: age, presence of and time to Palliative consult, advanced directives discussion, code status change. Dependent variables were: surgical intensive care unit and hospital length of stay. Patients with and without a Palliative Medicine consult were compared by analyzing the existence of a discussion on advanced directives, status of a code change, and age. Our current policy dictates that Palliative Medicine is consulted within 2 days of trauma admittance. Consults that occurred within the first 2 days of admission were compared to those >2 days in terms of surgical intensive care unit and total hospital length of stay. Statistical analysis included chi-square and ANOVA testing. Statistical significance was established with an α of 0.05.

Findings/Results:

The total number of patient records reviewed was 232. The mean patient age was 78.6 years (65-99) and 50.9% were female ($n=118$). Palliative Medicine was consulted in 28.4% ($n=66$) of the patients. Significantly more patients with a Palliative Medicine consult had an advanced directives discussion (97.0% vs. 1.7%; $p<0.000$) and had a change in their code status (54.5% vs. 8.3%; $p<0.000$). Palliative Medicine consults were significantly older than those without (mean age 80.2 years vs. 74.9 years; $p<0.000$). If Palliative Medicine was consulted within 2 days of admission, the surgical intensive care unit and total hospital length of stay were greatly reduced (mean days 8.35 vs. 15.23 days; $p=0.001$ and mean days 8.39 vs. 15.79 days; $p=0.001$, respectively).

Discussion/Conclusions/Implications:

Similar to the literature on emergency and intensive care patients, geriatric trauma patients benefited from a Palliative Medicine consult. Their wishes regarding advanced directives were addressed and often changed. If patients were consulted by Palliative Medicine within two days of admission, their surgical intensive care and hospital length of stay were reduced by about a week. The policy at this institution is for Palliative Medicine to be consulted for all geriatric patients (≥ 65). However, our study found they were only consulted in 28% of the cases and were more likely to be consulted for older geriatric patients. Further education of the nurses and doctors caring for trauma patients on the value of a Palliative consult could reduce or eliminate this disparity. Retrospective chart reviews are limited due to the dependence on the data existing in the medical records, which could be incomplete. A randomized controlled trial may further illuminate the relationship between Palliative Medicine and the Trauma population.

R177

Abstract Title:

Reducing Repeat Head Computed Tomography for Pediatric Trauma Patients

Authors:

Melanie Weller, MD, Christopher Coppola, MD, Alfred Kennedy, MD, Carol Hanson, MSN, RN

Background & Purpose:

Purpose : To evaluate use of head computed tomography (CT) in pediatric trauma patients at a pediatric trauma center, analyzing effectiveness of strategies to reduce CT radiation exposure in pediatric trauma patients.

Study/Project Design:

Retrospective review of pediatric trauma patients at a rural trauma center requiring head CT imaging.

Setting:

A Pennsylvania rural, regional trauma center, Level 1 adult center, level 2 pediatric center, state accredited.

Sample:

The sample included a review of all pediatric trauma admissions to the institution, age 14 yrs and less, from January 1 2010 to June 30 2012 who had received a repeat head CT.

Procedures:

Prior to July 2011 the adult trauma surgeons provided the majority of trauma resuscitations for pediatric trauma patients. Review of the number of CT imaging studies reveal a high repeat imaging rate. Children were transferred from another facility or presented directly. Inclusion criteria were children who received at least one head CT. Trauma registry and electronic medical record was reviewed for mechanism of injury and rationale for any CT, including repeating CT done at a transferring facility. CT of all body regions was reviewed, and analysis of use of head CT as well as compliance to hospital policy on use of CT in trauma victims. Data from each calendar year in the study period were compared.

Findings/Results:

A total of 288 children met the inclusion criteria of pediatric trauma alert, and had at least one head CT scan at transferring facility or pediatric trauma center. In the early study period (January 1, 2010 to December 31, 2010) 96% of children had a repeat head CT, which was higher than the late study period (January 1, 2012 to June 30, 2012) during which 10.3% of children had a repeat head CT.

Discussion/Conclusions/Implications:

Over two years, repeat head CT use in pediatric trauma patients decreased. This decrease corresponded to several changes in hospital policy. After July 1, 2011 an attending pediatric surgeon responded to all pediatric trauma alerts, in person for Level 1 Alert and as direct or general supervision for Level 2 Alerts. After May 22, 2012, implementation of lifelIMAGE (lifelImage, Newton, MA), radiographic software allowed outside CT to be loaded into the electronic health record, evaluated by the pediatric radiologist at the pediatric trauma center, and accessed throughout the health system. During the study period, protocols for severe and mild pediatric brain injury were implemented. These multiple initiatives were likely responsible for decreased repeat head CT and future study will be performed to analyze use of CT in other body regions.

R178

Abstract Title:

From Community Hospital to Level I Trauma Center: Staff Feedback Utilizing High Fidelity Drills to Identify and Expedite Systems Improvement Prior to Go-Live

Authors:

Tiffany Strever, BSN, CEN, FAEN; Conrad Diven, MD, MS Christopher Salvino, MD, MS, MT, FACS

Background & Purpose:

Access to expedited, high-quality trauma care in western Arizona needs improvement. We recently opened the first provisional state Level I trauma center located in western Phoenix after more than a year of planning and almost 3 weeks of high-fidelity, realistic, drills that included nearly the entire hospital staff. Here, we outline our experiences of transforming a small community hospital into a tertiary care trauma center.

Study/Project Design:

Survey participants of high-fidelity drills post go-live as a trauma center.

Setting:

The project took place in a community hospital with a bed total of 188.

Sample:

Surveys were sent to the entire hospital community (n=1000).

Procedures:

For a full 17-days prior to go-live, we performed approximately 70 realistic drills 24-hours a day; drills involved live volunteers, high-fidelity simulation mannequins, and local ground and air ambulance units. We evaluated almost every system from trauma bay, radiology and operating room to blood bank, pharmacy, and housekeeping. Each drill was followed by a real-time debriefing that generated a punch-list of items needing attention. Hospital administration was in-house 24/7 and fully participated in the drills. Participants in the drills were surveyed two weeks after the trauma center opening to determine their perceptions before and after the drills. The key question being whether the simulation training was helpful. Data were analyzed using SPSS and Microsoft Excel.

Findings/Results:

Surveys were sent electronically to the entire hospital community (n=1000). 92 responses were returned (10%) and out of this 14 (15%) were excluded because they did not participate in the drills. An additional 17 (21%) were excluded because of incomplete data. Average age of participants was 45 to 54 years with 73% being female. 31% of respondents were nurses, 42% were other providers that ranged from radiology technician to department director, respiratory therapist (15%), and physician or midlevel provider (10%). Overall, 63% of respondents felt that the high-fidelity drills were extremely useful to improve the system prior to go-live.

Discussion/Conclusions/Implications:

The use of extensive and realistic drills to test and identify weaknesses in the hospital system is a key component to successful implementation of a new trauma program. The majority of participants felt that this method was useful in preparing a new program. Further inquiry into this methodology should be entertained with the ultimate goal to optimize system performance and patient safety prior to go-live.