

## Quick Shots Parallel Session IV

Quick Shot Paper #33  
January 11, 2018  
4:15 pm

### EVALUATING SWALLOWING FUNCTION IN THE ELDERLY REQUIRING CERVICAL COLLARS: A NEW STANDARD OF CARE

Nicholas M. Sich, MD, Andrew Rogers, Andrew Shajari, Ryan Shadis, MD\*  
Abington-Jefferson Health

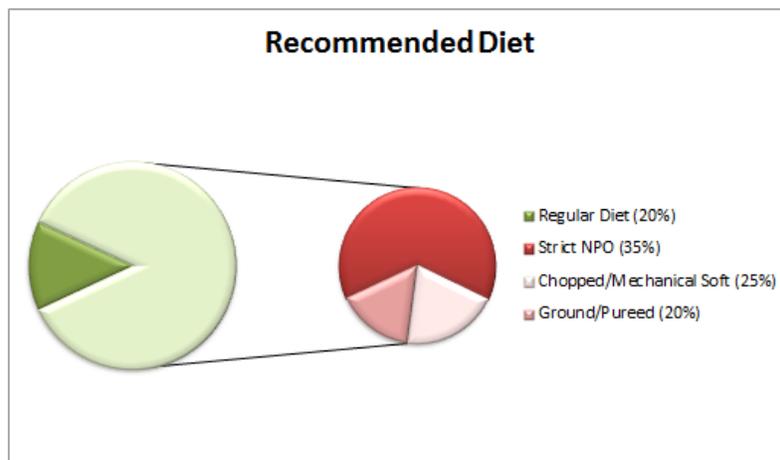
**Presenter:** Nicholas M. Sich, MD

**Objectives:** There is a high rate of aspiration events in the elderly with cervical collars. In 2008 our institution implemented a policy requiring speech and swallow evaluations (SSE) in any patient with age >65 requiring a hard cervical collar for their management. This study sought to determine if performing SSE in elderly patients requiring cervical collars for injury management should be a standard of care.

**Methods:** A retrospective chart review of all patients evaluated by the trauma service was performed starting in 2008. Inclusion criteria were patients with age >65, an image-confirmed cervical spine fracture, and treatment requiring hard cervical collar. Patients were further stratified into cohorts of those with documented SSE and those without. The SSE were then reviewed by investigators for diet recommendations.

**Results:** Three hundred eighty-eight patients were identified to have cervical spine fractures. Of these, 271 underwent documented SSE. Only 55 (20%) patients were cleared for a regular diet. For the remaining 238 (80%) patients: 69 (25%) were recommended chopped or mechanical soft diet, 52 (19%) ground/pureed diet, and 95 (35%) strict nil per os with either video-barium swallow for further evaluation or alternative feeding access (e.g. gastrostomy tube).

**Conclusions:** Due to a high rate of aspiration in our patients, our institution adopted a department policy requiring SSE in patients over 65 requiring hard cervical collar for management. Retrospective analysis of this management algorithm clearly demonstrates that the vast majority of patients (4 of 5) with cervical fractures requiring hard collar will have swallowing dysfunction. We recommend mandatory SSE for all patients over 65 requiring cervical collar as a standard of care.



Breakdown of diet recommendations following speech and swallow evaluation.

## Quick Shots Parallel Session IV

Quick Shot Paper #34  
January 11, 2018  
4:21 pm

### DOES IT WORK: A CRITICAL ASSESSMENT OF THE “STOP THE BLEED” EDUCATION PROGRAM

Brian L. Frank, MD\*, Kathryn Bommer, Amanda Young, Patrick Wende, Charles Proctor, Claire LeGuen, Ryan Hessenius, Maddison Kane, Richard A. Lopez, DO\*, John Mitchell  
Geisinger - Community Medical Center

**Presenter:** Brian L. Frank, MD

**Objectives:** Since its inception, “Stop the Bleed” (STB) has trained participants to recognize and treat life-threatening hemorrhage. ACS members feel the course is appropriate to train the public, but its efficacy has not been assessed. We conducted a critical analysis of course effectiveness in improving comfort with, willingness to use, and knowledge about tourniquet use.

**Methods:** This is a prospective observational study utilizing pre- and post-course survey responses. Course participants over 18 years old were enrolled in classes through our trauma outreach office and informed about the study at the outset of the class. A pre-course survey was completed. Students then participated in the STB didactic and hands-on training followed by the post-course survey. Pre- and post-course comfort, willingness, and knowledge were compared using McNemar’s test and paired t-tests. Analysis was limited to completed surveys.

**Results:** A total of 367 participants were accrued from January through May 2017. They had backgrounds in law-enforcement (55%), pre-hospital medical care (17.2%), fire-fighting (14.4%), medicine (CRNP, MD, RN; 12.3%). Prior bleeding control training was reported in 41.2%. Specific tourniquet training was noted in 58%. Prior to training, 52.8% were “uncomfortable” or “neutral” with tourniquet use, but 79% were willing to use a tourniquet. After STB training, 76.2% of participants improved comfort ( $p<0.0001$ ), 17.4% improved willingness ( $p<0.0001$ ), and knowledge assessment scores improved in 83% ( $p<0.0001$ ).

**Conclusions:** STB training is effective in training participants to recognize and treat life-threatening hemorrhage. The training improves comfort, willingness, and knowledge of tourniquet use. Efforts to support this outreach should continue with emphasis on interval follow-up to assess long-term knowledge retention.

	N	%	p-value
Currently comfortable with appropriate tourniquet use (n=357)			
Improved Comfort	272	76.2	<0.0001*
Same Comfort	77	21.6	
Still not Comfortable	8	2.2	
Missing	5		
Willingness to use a tourniquet (n=350)			
Improved Willingness	61	17.4	<0.0001**
Still Willing	284	81.2	
Not Willing/No Longer Willing	5	1.4	
Missing	12		
Knowledge assessment score (n=358)			
Improved Test Score	297	83.0	<0.0001*
Same Test Score	46	12.8	
Decreased Test Score	15	4.2	
Missing	4		

\*Paired t-test  
\*\*McNemar’s Test

Change in Pre-Course and Post-Course Results

## Quick Shots Parallel Session IV

Quick Shot Paper #35  
January 11, 2018  
4:27 pm

### HEALTH LITERACY AND ITS IMPACT ON OUTCOMES IN TRAUMA PATIENTS: A PROSPECTIVE COHORT STUDY

Tianyi Swartz, BS, Faisal S. Jehan, MD, Andrew L. Tang, MD\*, ElRasheid Zakaria, Narong Kulvatunyou, MD\*, Arpana Jain, Lynn Gries, Terence O'Keeffe, MD, MSPH\*, Bellal Joseph, MD\*  
The University of Arizona

**Presenter:** Tianyi Swartz, BS

**Objectives:** Health literacy (HL) is emerging as a focus of interest and is evolving as an important component of national health policy. Aim of our study is to assess prevalence of low-health literacy in trauma patients and its impact on outcomes after trauma.

**Methods:** 1-year prospective cohort study on all trauma patients age >18. The Short Assessment of Health Literacy (SAHL) score in English or Spanish to assess HL of patients. SAHL and trauma specific questionnaire were administered at discharge. LHL was defined as SAHL score <14. At 30-days post discharge, patients were surveyed about clinic follow-up details and recovery. Outcomes measures were prevalence of LHL and factors associated with it, readmission, follow-up, and time to recovery.

**Results:** We prospectively enrolled 105 patients. Mean age was 45+20 years, 59% were male and median ISS was 14[9-18]. Most common mechanism of injury was blunt 84% and 56% patients were White while 38% were Hispanics. Overall, 24% patients had LHL. LHL patients were more likely to be Hispanics (63%vs27%,  $p=0.01$ ), have lower-socioeconomic status (90%vs51%,  $p=0.02$ ), un-insured (45%vs18%,  $p=0.01$ ) and less likely to have completed college (0%vs49%,  $p=0.01$ ), compared to the HL patients. At discharge, both groups were satisfied with the time spent by physician to explain the condition; however, the LHL patients could not recall their injuries and details about the surgery (**Table1**). On regression analysis, patients with LHL were less likely to follow-up (OR0.7), took longer time (>4 weeks) to recover (OR1.2), however, there was no difference in the readmission rates. (**Table2**)

**Conclusions:** One in 5 trauma patients has LHL. LHL is associated with poor understanding of injuries and treatment provided to them, lack of follow-up and longer time to recovery. Identifying LHL in high risk patients and improving techniques of discussion with patients before discharge may help to improve outcomes.

<b>Table 1. Health Literacy related trauma specific questionnaire</b>			
	<b>LHL (n=25)</b>	<b>HL (n=80)</b>	<b>P</b>
<b>At discharge</b>			
Satisfaction with time spent by physician	81.8%	80.9%	0.98
Recalled injuries	27.3%	56.3%	0.03
Knowledge about type of surgery performed or treatment	0%	43.8%	0.01
Understood the purpose of medications prescribed	18%	50.1%	0.03
Knowledge about when to follow-up	18%	60%	0.02

Table 1. Health Literacy related trauma specific questionnaire

<b>Table 2. Survey at 30-days post-discharge. (Multivariate Regression analysis)</b>			
<b>Low health literacy (LHL)</b>	<b>OR</b>	<b>95% confidence interval</b>	<b>P</b>
Follow-up	0.78	[0.66-0.89]	0.03
Time to recover > 4 weeks	1.23	[1.08-2.56]	0.04
Re-admission	0.97	[0.65-2.45]	0.64

Table 2. Survey at 30-days post-discharge. (Multivariate Regression analysis)

## Quick Shots Parallel Session IV

Quick Shot Paper #36  
January 11, 2018  
4:33 pm

### SEE ONE, DO ONE, BUT NEVER TEACH ONE? AN ACUTE CARE SURGERY MODEL WITH GRADUATED SUPERVISION SAFELY FACILITATES SENIOR RESIDENT AUTONOMY

Joshua P. Smith, DO, Donald Moe, John McClellan, Avery Walker, Vance Sohn,  
Matthew J Eckert, MD\*, Matthew J. Martin, MD\*  
Madigan Army Medical Center

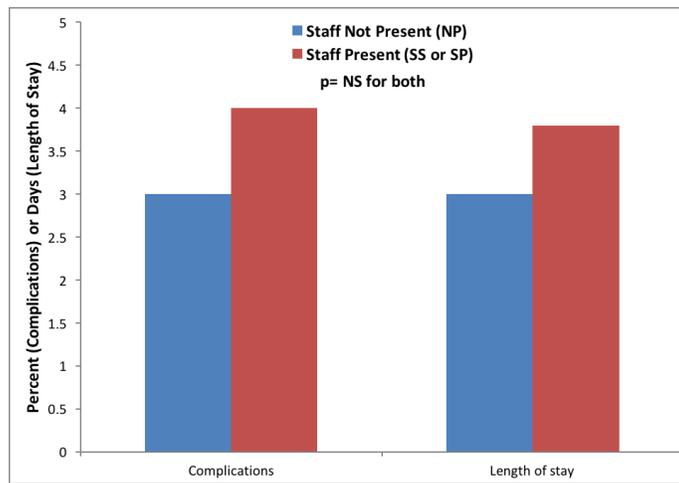
**Presenter:** Joshua P. Smith, DO

**Objectives:** Surgical training traditionally relied on gradually increasing levels of resident autonomy and independence, particularly on operative cases. However, this practice has become increasingly limited due to reimbursement, and patient safety concerns. We sought to analyze the outcomes of senior resident teaching assist (TA) cases performed under an acute care surgery model with a structured policy including varying levels of staff supervision.

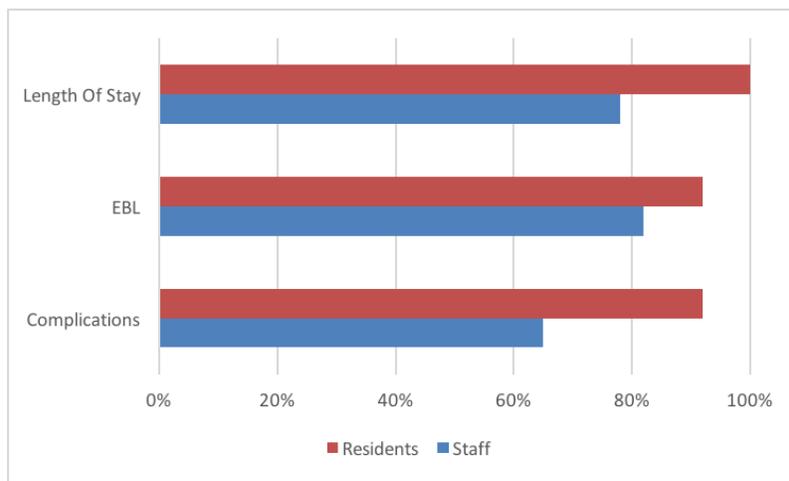
**Methods:** Retrospective review at a military academic medical center of senior resident TA cases from 2009-2014. Operative time, estimated blood loss, complications and length of stay were analyzed according to level of staff supervision (staff not present (NP), staff scrubbed (SS), and staff present but not scrubbed (SP). An anonymous survey of residents and staff at 6 military training programs regarding experience and opinions on TA cases was distributed.

**Results:** 389 TA cases were identified. The majority (52%) were performed as NP, while 48% were performed as SP or SS. Operative times were shorter for NP cases ( $p < 0.05$ ). Overall complication rate and mean length of stay were not significantly different between groups ( $p > 0.05$ , Figure). Survey results demonstrated most staff (71%) and residents (91%) believed there was no increased risk of complications with the selective NP approach, with similar results for blood loss and length of stay (Figure 2). Staff and residents felt that allowing selective NP was critical for achieving resident competence.

**Conclusions:** In a structured program of allowing increasing senior resident autonomy on highly select TA cases, there was no identified adverse effects on major complications or patient outcomes. Staff and residents felt this practice was safe and is a critical component of graduating residents readiness for independent practice.



Comparison of overall complications and overall patient length of stay between NP and SP/SS. There is no statistical difference in either category between groups.



There is agreement amongst staff and residents on the impact of allowing teaching assist cases in terms of length of stay, estimated blood loss and overall complication rates.

## Quick Shots Parallel Session IV

Quick Shot Paper #37  
January 11, 2018  
4:39 pm

### EFFECT OF RELAXED LEGISLATION OF FIREWORKS-RELATED INJURIES IN DOUGLAS COUNTY, NEBRASKA

James Tiehen, MD, Jessica Summers, MD\*, Brett Harden Waibel, MD\*, Paul J. Schenarts, MD\*  
University of Nebraska Medical Center

**Presenter:** James Tiehen, MD

**Objectives:** In December 2010, Omaha, NE relaxed its fireworks ordinance to be more in line with the rest of the state by allowing a larger variety of fireworks to be legally used during the July 4<sup>th</sup> holiday. Prior to this change, fireworks were available in neighboring municipalities and injuries within Omaha were common despite the ban. Our purpose was to determine what effect the relaxation of a local fireworks ban had in an area surrounded by more liberal fireworks laws.

**Methods:** Discharge data from Douglas County hospitals was evaluated for a period before (2004-10) and after (2011-14) the ordinance change. The population of Omaha accounts for the vast majority of Douglas County, therefore, data collected in Douglas Co. was used as a surrogate for the trends in Omaha. The pre and post rates of firework-related injury (per 100,000 persons per year) were compared using the Wilcoxon-Mann-Whitey test.

**Results:** A total of 1,264 fireworks injuries were reported in Nebraska, 276 of those in Douglas County over a ten-year period from 2004 – 2014. Prior to the legislation in Douglas Co, there were 4.13 injuries per 100k population, with a 49.9% increase to 6.19 injuries per 100k after the ordinance change ( $p=0.023$ ). In the state of Nebraska, the rates for the same time period were 5.96 and 6.96 per 100k respectively ( $p=0.131$ ). Both of these rates are higher than the national average over the same time period of 3.09 per 100k (table).

**Conclusions:** This study demonstrates that despite the availability of fireworks just outside the city limits of Omaha prior to 2010, the rate of injuries increased by almost 50% after the sale of fireworks was allowed within the city limits. This data can be used to provide information to both state and city officials to advocate for stronger fireworks legislation in both the city of Omaha and the state of Nebraska.

	Rate	Stnd Dev	p	% Change Pre to Post	% Difference to National	% Differenceto State
Douglas Co Pre	4.13	0.62	0.023	49.9%	35.9%	-30.8%
Douglas Co Post	6.19	1.56			94.4%	-11.1%
Douglas Co All Yrs	4.87	1.43			57.8%	-23.0%
Nebraska Pre	5.96	0.83	0.131	16.7%	96.5%	
Nebraska Post	6.96	0.87			118.7%	
Nebraska All Yrs	6.33	0.94			104.8%	
National Pre	3.03	0.43	0.706	4.9%		
National Post	3.18	0.35				
National All Yrs	3.09	0.39				

## Quick Shots Parallel Session IV

Quick Shot Paper #38  
January 11, 2018  
4:45 pm

### MISCONCEPTIONS - GUN VIOLENCE IN AMERICA

Matthew Bennis, MD\*, Keith Miller, MD\*, Kimberly Denzik, Annabelle Pike,  
Latasha White, Lindsey Kendrick, Shannon Cambron  
University of Louisville

**Presenter:** Matthew Bennis, MD

**Objectives:** The U.S. has the highest estimated number of gun owners per capita of any industrialized nation in the world. Firearm injuries are also common, with more than 100,000 occurring annually. Despite the prevalence of guns and gun violence in America, we hypothesized that there would be significant misconceptions related to gun violence among a surveyed population.

**Methods:** Students at an urban, liberal arts university were electronically surveyed regarding gun violence. Where applicable, responses were compared to the most recent 5-year annual average data from the Centers for Disease Control.

**Results:** 605 people were invited to participate; 168 completed the study (27.7%). Respondents were mostly female (79.76%) and diverse in terms of age (10.7% between 17-22 years, 19.6%: 23-29, 23.8%: 30-39, 18.4%: 40-49, 18.4%: 50-59, 8.9%: >60). 40% of respondents own a gun. 44% of respondents personally know someone who has been shot. All respondents believed suicide accounted for <50% of annual gun deaths (actual: 62%). 48% of respondents believed there were >75,000 annual gun deaths (actual: 33,880). 73% of respondents believed that >10% of gunshot deaths occurred as a result of accidents (actual: 1.6%). 46% of respondents believed that police shootings accounted for >10% of all firearm deaths (actual: 1.3%). 40.8% of respondents believed that mass shootings accounted for >6% gunshot deaths (actual: <0.5%). Only 35.5% of respondents considered suicide an act of gun violence.

**Conclusions:** Misconceptions related to gun violence were common amongst survey participants. Many respondents overestimated the total number of firearm injuries and the proportion of deaths related to mass shootings, police interventions, and accidents. The majority of respondents also indicated that they did not view suicide as an act of gun violence. Further characterization of misconceptions is essential to the development of successful injury prevention strategies.

## Quick Shots Parallel Session IV

Quick Shot Paper #39  
January 11, 2018  
4:51 pm

### THE USE OF ABC SCORE IN ACTIVATION OF MASSIVE TRANSFUSION: THE YIN AND THE YANG

Rebekah Hodge, BS, Amirreza Motameni, MD, Brian P. Strollo, MD\*, Matthew Bozeman, MD\*,  
Matthew Benns, MD\*, Keith Miller, MD\*, Brian G. Harbrecht, MD\*  
University of Louisville

**Presenter:** Amirreza Motameni, MD

**Objectives:** Hemorrhage is the most common cause of death in trauma patients within the first hour of arrival to a trauma center. Delay in Massive Transfusion Protocol (MTP) activation has shown to result in increased mortality. Predicting the need for MT remains a challenge. The Assessment of Blood Consumption (ABC) score has become a widely accepted criteria for MTP activation. The purpose of this study is to compare the use of ABC criteria to clinical judgment in MTP activation.

**Methods:** Adult trauma patients treated at University of Louisville Trauma Center from January 2016 to December 2016 who either had MTP activation based on clinical judgment or had a Focused Assessment with Sonography for Trauma (FAST) scan performed during the initial trauma resuscitation were included. Activation of ABC score was assessed retrospectively. ABC score was calculated by assigning a value (0 or 1) to each of the following four criteria: penetrating mechanism, free fluid on FAST, arrival blood pressure <90 mm Hg and arrival pulse >120 bpm. A score of 2 or more was used as "positive" to activate MTP.

**Results:** 1,438 patients were included in this study. After retrospectively applying the ABC criteria, only 40% of the patients who had MTP activation based on the ABC criteria would have used more than 5 units of blood products during their entire hospital stay as compared to 77% of the patients in whom clinical judgment was used to activate MTP. 55% of all MT activations via clinical judgment were activated in the OR and 44% in the ED. 83% of activations that occurred in the OR by clinical judgment could have been activated earlier in the ED using the ABC criteria.

**Conclusions:** While the ABC criteria overestimates the need for MT, its use does lead to earlier activation of MT. Criteria to trigger MT activation should rely on multiple factors including both clinical acumen and well-studied prediction tools such as the ABC score.

## Quick Shots Parallel Session IV

Quick Shot Paper #40  
January 11, 2018  
4:57pm

### THE PRESENCE OF AN APPENDICOLITH ON PREOPERATIVE CT IS ASSOCIATED WITH A SEVERE CLINICAL COURSE AND FAILURE OF NON-OPERATIVE THERAPY IN PATIENTS WITH ACUTE APPENDICITIS

David Wang, BS, Mohamad H. Abouzeid, MD  
NYU School of Medicine

**Presenter:** David Wang, BS

**Objectives:** As the non-operative therapy of acute appendicitis gains traction in the United States, we sought to examine the subset of patients who were found have an appendicolith on preoperative imaging; specifically, the severity of disease, complications rates, and the rate of failure of non-operative management.

**Methods:** This is a retrospective review of all adult patients admitted to an academic tertiary care center in 2016 with the primary diagnosis of acute appendicitis. Patient demographics and clinical characteristics including sex, age, perforation rate, sepsis rate, complications, and readmission rates were recorded. failure of non-operative therapy was also determined in those who did not undergo surgery as first line therapy. Patients with an appendicolith were compared to those without.

**Results:** A total of 458 cases of acute appendicitis were identified. 239 were female (52.2%) and the mean age was 36.5 years. Appendicoliths were present in 137 (29.9%). The rates of sepsis, perforation, and abscess were significantly higher at 21.2%, 35.8%, and 18.2% respectively in the appendicolith group compared to those without at 8.4% ( $P=0.0001$ ), 21.5% ( $P=0.0014$ ), and 10.9% ( $P=0.033$ ). In the patients who underwent surgery, the complication rate tended to be higher in the appendicolith group at 9.5% vs 5.3%, although it was not statistically significant ( $P=0.097$ ). Non-operative management was attempted in 76 patients, of whom 22 (16.1%) had an appendicolith. Their failure rate was 50% compared to 22.2% for the non-appendicolith group ( $P=0.017$ ).

**Conclusions:** The presence of an appendicolith in patients with acute appendicitis is a predictor of a more severe disease course and failure on non-operative therapy. We thus recommend strong consideration for early appendectomy in these patients when feasible, rather than non-operative therapy.

## Quick Shots Parallel Session IV

Quick Shot Paper #41  
January 11, 2018  
5:03 pm

### TRAUMA SURGEON PERFORMANCE OF APPENDECTOMY IN 5-10 YEAR-OLD CHILDREN IS SAFE AND DECREASES LENGTH OF HOSPITAL STAY

Derek B. Wall, MD\*, Carlos Ortega  
NorthShore University HealthSystem

**Presenter:** Derek B. Wall, MD

**Objectives:** Even in metropolitan areas, on-call pediatric surgeons may not always be immediately available for surgical care of appendicitis, potentially leading to delays in care. Approximately six years ago, the in-house trauma group at a suburban Level 1 trauma center (none with formal pediatric fellowship training) assumed surgical care of 5-10 year-old children with appendicitis within a four hospital system. We propose to compare clinical outcomes before and after this change.

**Methods:** Retrospective chart review of 5-10 year-olds undergoing emergency appendectomy at a community Level 1 trauma center between January, 2007 and December, 2016 was performed. Patients were classified as having surgery performed by the trauma group or the pediatric surgery group. Patient characteristics, clinical course, and outcomes were compared using the Wilcoxon Rank-Sum Test and Fisher's Exact Test, with  $p < 0.05$  considered significant.

**Results:** A total of 220 patients were identified, 138 in the trauma group and 82 in the pediatric surgery group. Patients cared for by the trauma group were more likely to be female (47% vs. 31%;  $p = 0.03$ ), were less likely to be diagnosed without imaging (2% vs. 26%;  $p < 0.0001$ ), had a shorter time from diagnosis to surgery (214 vs. 318 minutes;  $p = 0.01$ ), were more likely to have laparoscopic surgery (70% vs. 55%;  $p = 0.04$ ), had a shorter operative time (40 vs. 49 minutes;  $p < 0.0001$ ), and had a shorter length of stay (32 vs. 41 hours;  $p < 0.0001$ ), despite more of them needing to be transferred from outside hospitals (60% vs. 37%;  $p < 0.001$ ). There were no significant differences in patient age, rate of perforated appendicitis, 30 day readmissions, surgical site infections, or unanticipated procedures.

**Conclusions:** Trauma surgeon performance of emergency appendectomy in 5-10 year-old children decreased length of hospitalization with similar complication rates as compared to pediatric surgeons.

## Quick Shots Parallel Session IV

Quick Shot Paper #42  
January 11, 2018  
5:09 pm

### **NASOGASTRIC TUBE (NGT) OUTPUT AFTER TWO DAYS PREDICTS THE NEED FOR OPERATION IN SMALL BOWEL OBSTRUCTION (SBO)**

D. Dante Yeh, MD\*, Mohamed D Ray-Zack, MBBS, Matthew C. Hernandez, MD, Kenji Inaba, MD, Therese M. Duane, MD, FACS\*, Salina M. Wydo, MD\*, Daniel C. Cullinane, MD\*, Andrea Pakula, MD, MPH, FACS\*, Asad Choudhry, John Christopher Graybill, Carlos J. Rodriguez, DO, MBA, FACS\*, Martin D. Zielinski, MD, FACS\*  
University of Miami Miller School of Medicine

**Presenter:** D. Dante Yeh, MD

**Objectives:** Patients presenting with SBO without signs warranting immediate exploration are often treated with NGT for a trial of non-operative management (non-op). It is difficult to predict patients who will fail non-op. We hypothesized that cumulative NGT output after two days predicts eventual operation.

**Methods:** A post-hoc analysis of an EAST-sponsored, multi-institutional database collected to study the Gastrografin (GG) challenge in SBO was performed. Only patients with complete data and NGT inserted on the day of admission were included. Exclusions included peritonitis, closed loop obstruction on CT, and operation within 48 h after NGT insertion. The cohort was divided into operative (Op) and non-operative (Non-Op) groups. Descriptive statistics were calculated with comparisons between groups performed using Fisher's exact, t test, and Wilcoxon-rank-sum test as appropriate. Multiple logistic regression analysis controlling for Service of Admission, GG Challenge, and Cumulative NGT output was performed to predict odds of operation.

**Results:** There were 212 subjects with 50 (24%) ultimately undergoing operation (Table-1). GG challenge was used in significantly more Non-Op patients (68% vs. 42%,  $p=0.001$ ). Daily and cumulative NGT output by day 2 were significantly greater among Op patients. On regression analysis, odds for eventual operation was significantly greater among patients with surgical service of admission (OR 3.3, 95% CI 1.3-9.6,  $p=0.029$ ) and cumulative day 2 NGT output  $>1500\text{mL}$  (OR 3.3, 95% CI 1.6-6.7,  $p=0.001$ ). GG challenge was predictive of successful non-op (OR 0.3, 95% CI 0.1-0.5,  $p<0.001$ ).

**Conclusions:** For patients with SBO treated initially with NGT decompression, cumulative NGT output after two days is predictive of eventual operation. Patients with high NGT output after this time should be strongly considered for exploration.

	All (n=212)	Op (n=50)	Non-Op (n=162)	p
Mean age (SD)	66.6 (15.8)	66.2 (14.3)	66.7 (16.2)	0.8378
Male sex	102 (48%)	23 (46%)	79 (49%)	0.749
Mean weight kg (SD)	79.2 (20.5)	78.5 (22.0)	79.4 (20.1)	0.7967
BMI mean (SD)	27.5 (6.6)	27.5 (1.2)	27.5 (0.5)	0.9830
Hospital LOS median [IQR]	4 [3 – 10]	13 [9 – 20]	3 [2 – 5]	<0.001
Surgical service admission	174 (82%)	45 (90%)	129 (80%)	0.138
History of any cancer	98 (46%)	71 (44%)	27 (54%)	0.256
Prior SBO Admission	99 (47%)	22 (44%)	77 (48%)	0.746
Prior SBO Operative Exploration	57 (27%)	13 (26%)	44 (27%)	1.00
Number of prior abdominal operations	2 [1-4]	2 [1 – 3]	2 [2 -4]	0.06
CT scan	205 (97%)	48 (96%)	157 (97%)	0.669
Transition point identified on CT scan	157 (74%)	37 (74%)	120 (74%)	0.914
Gastrografin challenge performed	131 (62%)	21 (42%)	110 (68%)	0.001
NGT output (mL)				
Day 1	400 [150 – 1000]	600 [270 – 1300]	350 [150 – 920]	0.043
Day 2	615 [250 – 1400]	925 [500 – 1500]	450 [200 – 1250]	<0.001
Cumulative on Day 2	940 [ 400 – 2100]	1522 [890 – 2950]	800 [350 – 1675]	<0.001
>500 mL	141 (67%)	43 (86%)	98 (60%)	0.001
>1000 mL	99 (47%)	34 (68%)	65 (40%)	0.001
>1500 mL	71 (33%)	25 (50%)	46 (28%)	0.006
Duration from admission to operation: median days [IQR]	4 [2 – 5]	4 [2 – 5]	-	-
Requiring operation	50 (24%)	50	-	-

Demographics, Nasogastric Tube (NGT) output on Day 1 and 2, and operative outcomes.  
 BMI = body mass index; CT = computed tomography; SBO = small bowel obstruction

## Quick Shots Parallel Session IV

Quick Shot Paper #43  
January 11, 2018  
5:15 pm

### NON-TRAUMA SERVICE ADMISSIONS: SHOULD WE CARE?

Brandon Joseph Fumanti, MD\*, Lisa Szyzdiak, Michael D. Grossman, MD\*  
Northwell Health Southside Hospital

**Presenter:** Brandon Joseph Fumanti, MD

**Objectives:** ACS-COT requires trauma centers with greater than 10% injured patients admitted to non-trauma services (NTSA) have process to review these for appropriateness of care. We previously described an algorithm to determine the appropriateness of NTSA. Our objective was to determine potential effects of prospective implementation of the algorithm.

**Methods:** Three-year retrospective analysis of trauma registry in an ACS-COT verified level II trauma center. Patients defined as meeting NTDB submission criteria but **excluding** isolated hip fractures. NTSA appropriate patients by algorithm were included. Differences between patients admitted to a trauma service (TS) and NTSA were compared using  $\chi^2$ , Fisher's exact, or Wilcoxon tests with significance at  $p=0.05$ .

**Results:** 941 of 2872 (33%) patients met algorithm criteria as appropriate NTSA; 694 (74%) were admitted to TS, 247 (26%) were NTSA. Most common association with admission to TS was trauma consult or activation. Compared to TS patients NTSA patients were older, had similar ISS, and a similar proportion had three or greater pre-existing comorbidities (Table 1). NTSA had similar risk for mortality and complications, but longer length of stay (LOS), and were less likely to have a desirable discharge disposition (Table 2).

**Conclusions:** Minimally injured elderly patients constitute the majority of NTSA and a large proportion of TS admission. ACS-COT requirement for evaluation of NTSA compared to TS admission allowed determination that care after NTSA was appropriate with respect to mortality and complications. Process of care between TS/NTSA may have accounted for longer LOS and differences in disposition. Prospective application of the algorithm would have resulted in a 36% rate of NTSA, well above the ACS-COT threshold and would not have resulted in improved patient care. Efforts to prospectively identify and manage this population are warranted given changing demographics in many trauma centers.

	Trauma	Non Trauma	p-value
Mean Age (Years)	72.2	77.6	<0.001
Mean ISS	5.9	5.4	0.06
3+ Comorbidities (%)	130 (50.8)	352 (52.6)	0.61

**Table 1** - Population baseline characteristics

	Trauma	Non Trauma	p-value
Mean Length of Stay (Days)	4.7	6.1	<0.001
Complication (%)	26 (3.8)	13 (5.3)	0.31
Mortality (%)	11 (1.6)	2 (0.8)	0.53
Desirable Discharge (%)*	465 (71.2)	105 (43.8)	<0.001

**Table 2** - Outcomes.

\* Desirable discharge to home or acute rehab setting.

## Quick Shots Parallel Session IV

Quick Shot Paper #44  
January 11, 2018  
5:21 pm

### TRENDS IN CIVILIAN PENETRATING BRAIN INJURY; A REVIEW OF 26,871 PATIENTS

David J. Skarupa, MD, FACS\*, Muhammad Khan, MD, Dunbar Alcindor, David Ebler, MD\*, Albert T Hsu, MD\*,  
Firas G. Madbak, MD, FACS\*, Gazanfar Rahmathulla, Brian K. Yorkgitis, DO\*, Bellal Joseph, MD\*  
University of Florida College of Medicine - Jacksonville

**Presenter:** David J. Skarupa, MD, FACS

**Objectives:** Penetrating traumatic brain injuries (TBI) are generally associated with higher mortality rates. Principles of management and resuscitation protocols have evolved over the past few years; however, their impact on outcomes remains unclear. The aim of our study is to analyze the 5 years' trends, mortality rate, and factors that influence mortality after civilian penetrating TBI.

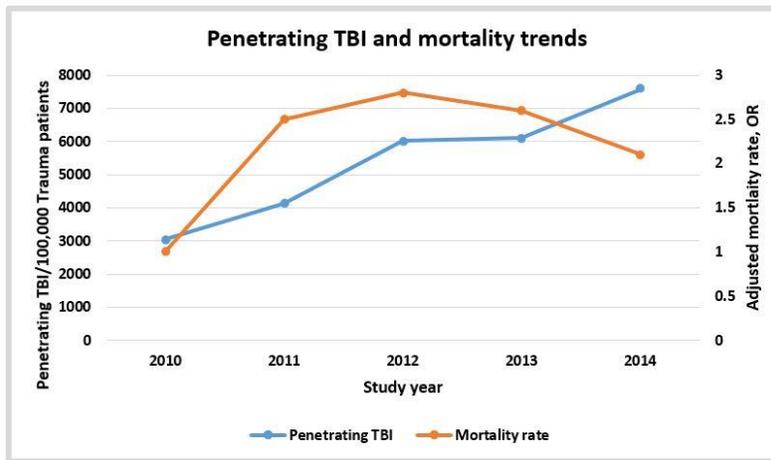
**Methods:** We performed a 5-year (2010-14) analysis of all trauma patients diagnosed with TBI in the Trauma Quality Improvement Program (TQIP). Patients who had penetrating mechanism of injury were included. Our outcome measures were trends of penetrating TBI and mortality rate over the 5-year period. Regression analysis was performed to determine factors associated with mortality. Sub-analysis was performed.

**Results:** A total of 26,871 had penetrating brain injury over the 5-year period. Mean age was  $36 \pm 16$ y, 86% were males, 53% were white and 32% were African-American. Mechanism of injury was gunshot in 94.6%, of which 44% were self-inflicted. The majority of patients (62%) had severe TBI. Details of operative intervention are summarized in **Table 1**. Overall mortality rate was 34%. The incidence of penetrating TBI increased from 3,042 in 2010 to 7,578 in 2014 per 100,000 trauma patients (**Figure 1**). On regression analysis, independent predictors of mortality were pre-hospital intubation (OR: 1.9 [1.6-2.3]), penetrating injury with sharp object (non-ballistic) (OR: 1.8 [1.6-2.1]), and suicidal intent (OR: 2.1 [1.8-2.5]). Within the first 24 hours of injury, 59% of patients died, and 17% died on the second day after injury. The incidence of self-inflicted penetrating injuries and mortality rate increased with age. On sub-analysis of patients who underwent operative intervention, adjusted mortality rate was highest for patients who had severe TBI (OR: 7.8 [5.6-9.8]) (**Table 1**).

**Conclusions:** Incidence and mortality after civilian penetrating TBI has gradually increased over the five-year period. Self-inflicted injury and prehospital intubation were the two most significant predictors of mortality. Injury prevention awareness focused on suicide might help reduce such injuries. In addition, more than half of the deaths occurred within the first 24 hours. Early activation of organ donation protocols as well as resources focused on family support and counseling should be considered.

<b>Intervention</b>	Mild TBI (GCS>12) (n=8748)	Moderate TBI (GCS: 9-12) (n=1446)	Severe TBI (GCS<9) (n=16,677)	<i>p-value</i>
Craniotomy	8.3%	11.8%	6.5%	<0.001
Craniectomy	3.9%	11.1%	4.7%	<0.001
Lobectomy/excision of brain	4.3%	11.1%	5.3%	<0.001
<b>Operative intervention</b>	(n=1285)	(n=415)	(n=2482)	
Post-Op adjusted mortality rate	1(ref)	2.1 [1.7-3.2]	7.8 [5.6-9.8]	<0.001

### Details of Operative Intervention



### Penetrating TBI and Mortality Trends