Cervical Spine Immobilization After Penetrating Trauma to the Head and Neck
Kimberly J. Wilkins, MD; Christian Sommerhalder, MD; Taylor R. Klein, BS; Sebastian D. Schubl MD; Vanessa P. Ho, MD, MPH
Department of Surgery, Jamaica Hospital Medical Center, Jamaica, NY

BACKGROUND

C-collars May Result In Adverse Effects:
• Skin breakdown
• Elevated intracranial pressures
• Increased ventilator time
• Increased intensive care unit days
• Longer hospital stays

Prehospital Trauma Life Support Recommendation:
“Spinal immobilization may be performed after penetrating injury when a focal neurologic deficit is noted on physical examination although there is little evidence of benefit even in these cases.”

METHODS

Retrospective analysis of all patients who presented to an urban trauma center between January 2010 - January 2014 with a penetrating injury to the head or neck. Variables Collected:
- Date of injury
- Location
- Initial neurologic exam
- Imaging Results: Vertebral fracture, Spinocord injury
- Patient demographics
- Initial GCS
- Initial discharge neuro exam
- Treatment

RESULTS

172 patients had penetrating injury to the head and/or neck:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N=172</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Gender</td>
<td>153</td>
<td>89%</td>
</tr>
<tr>
<td>Age (years, SD)</td>
<td>34.5 ±14.9</td>
<td></td>
</tr>
<tr>
<td>Mechanism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSW</td>
<td>48</td>
<td>28%</td>
</tr>
<tr>
<td>Stab</td>
<td>124</td>
<td>72%</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head</td>
<td>84</td>
<td>49%</td>
</tr>
<tr>
<td>Neck</td>
<td>106</td>
<td>62%</td>
</tr>
<tr>
<td>Head and Neck</td>
<td>19</td>
<td>11%</td>
</tr>
</tbody>
</table>

Clinical Outcomes

<table>
<thead>
<tr>
<th>Clinical Outcomes</th>
<th>N=172</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td>24</td>
<td>14%</td>
</tr>
<tr>
<td>Mortality prior to imaging or clinical evaluation</td>
<td>16</td>
<td>9%</td>
</tr>
<tr>
<td>C-spine evaluated and fracture identified</td>
<td>6</td>
<td>4%</td>
</tr>
<tr>
<td>Fracture after stab wound (n=120)</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Fracture after GSW (n=36)</td>
<td>5</td>
<td>13.8%</td>
</tr>
</tbody>
</table>

Patient Injuries and Clinical Descriptions

<table>
<thead>
<tr>
<th>Initial GCS</th>
<th>Initial Discharge Neuro Exam</th>
<th>Treatment</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial GCS</td>
<td>Initial Discharge Neuro Exam</td>
<td>Treatment</td>
<td>Mortality</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Initial GCS</th>
<th>Initial Discharge Neuro Exam</th>
<th>Treatment</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSW to face</td>
<td>1</td>
<td>Unable/Unknown</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>• C1 transverse process fracture, air in spinal canal</td>
<td>3</td>
<td>Normal</td>
<td>Halo</td>
<td>No</td>
</tr>
<tr>
<td>• Pseudoaneurysm of the carotid artery</td>
<td>15</td>
<td>Normal</td>
<td>Halo</td>
<td>No</td>
</tr>
<tr>
<td>• Transferred for neurointerventional radiology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSWs to face and neck</td>
<td>2</td>
<td>Normal</td>
<td>Halo</td>
<td>No</td>
</tr>
<tr>
<td>• Right C1 vertebral arch fracture, vertebral artery spasm</td>
<td>3</td>
<td>Unable/Unknown</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>• Discharged to home with Halo, with no neurologic deficit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSW to left face, maxillary area</td>
<td>3</td>
<td>Unable/Death</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>• Displaced fracture to L transverse process of C1</td>
<td>3</td>
<td>Normal</td>
<td>Collar</td>
<td>Yes</td>
</tr>
<tr>
<td>• Expired on HD 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSW to zone II of neck</td>
<td>4</td>
<td>Unable/Quad</td>
<td>Collar</td>
<td>Yes</td>
</tr>
<tr>
<td>• Fractures of C5 transverse process, pedicle, spinous process, and C6 superior facet</td>
<td>3</td>
<td>Unable/Quad</td>
<td>Collar</td>
<td>Yes</td>
</tr>
<tr>
<td>• Expired after a protracted hospital course</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSWs to neck and legs</td>
<td>5</td>
<td>Unable/UE &amp; LE weakness</td>
<td>Collar</td>
<td>No</td>
</tr>
<tr>
<td>• Fractures of C2, C3, C4 transverse processes, spinous process of C4 and superior facet of C4</td>
<td>3</td>
<td>Unable/UE &amp; LE weakness</td>
<td>Collar</td>
<td>No</td>
</tr>
<tr>
<td>• MRI showed cord contusion at C3/C4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Discharged to acute rehab</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stab Wound to zone II of neck</td>
<td>6</td>
<td>Normal</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>• Teardrop fracture at C6</td>
<td>15</td>
<td>Normal</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>• MRI showed normal spinal cord</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

REFERENCES


CONCLUSIONS

• Of patients with a GSW to the head and/or neck that survived to be evaluated, 5 (13.8%) had CS fracture. Cervical spine immobilization is appropriate in this population.
• Of patients with a SW to the head and/or neck that survived to be evaluated, 1 (0.8%), had a fracture after a stab wound. The patient showed no neurological deficit, had no spinal cord injury, and received no treatment for the fracture.
• Further research may allow providers to forego cervical spine immobilization in patients with stab wounds to the head and/or neck.

ANALYSIS

Penetrating wounds were stratified into stab wounds vs. gunshot wounds and compared using Pearson’s Chi squared test.

HYPOTHESIS

Patients with stab wounds (SW) will have a lower incidence of cervical spinal column injury than patients with gunshot wounds (GSW).
**BACKGROUND**

Percutaneous Endoscopic Gastrostomy (PEG):
- PEG tube placement is a safe and effective means to provide feeding when oral intake is impaired.
- Common indications for PEG tube placement include head/neck trauma, head/neck cancer and neurological diseases.
- Despite its routine use PEG is associated with complications and mortality.
- Complications include: bleeding, wound infection, tube dislodgement, necrotizing fasciitis, and buried bumper syndrome.

**OBJECTIVE AND HYPOTHESIS**

The aim of this study was to identify risk factors for the development of post-PEG complications. We hypothesized that patients with low albumin levels, diabetes, thicker abdominal walls and psychomotor agitation would have more complications.

**METHODS**

Retrospective analysis of all patients with an order for PEG tube placement during the period of December 2011 - November 2013.

**Variables Collected:**
- Patient demographics
- Indication for PEG
- Diabetes diagnosis
- Albumin levels
- Psychomotor agitation
- Abdominal wall thickness (when CT scans were available)
- Anticoagulant use
- Length of hospital stay
- Complications
- Date complication occurred
- Mortality

Psychomotor agitation was defined as a need for 1:1 observation or restraints.

**Analysis:**

Patients were stratified into No Complications vs. Complications and compared using Fisher’s exact test.

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**RESULTS**

- 91 patients were identified (mean age 58.7, range 19-96, SD 18.6)
- 70.3% were male, 29.7% were female
- 17 patients developed post-PEG complications (18.7%)
- The most common complications were surgical site infection, tube dislodgement and peristomal leakage
- The 30-day mortality rate was 14.3%

**Table 1. Patient Outcomes**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Mean, Total #</th>
<th>SD, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complication Rate (n=91)</td>
<td>17</td>
<td>18.7%</td>
</tr>
<tr>
<td>Patients with 1 complication (n=17)</td>
<td>8</td>
<td>47.1%</td>
</tr>
<tr>
<td>Patients with &gt; 1 complication (n=17)</td>
<td>9</td>
<td>52.9%</td>
</tr>
<tr>
<td>Postoperative time to Complication, days</td>
<td>Mean 26.8, Median 16</td>
<td>SD 47.3, Range 0-203</td>
</tr>
<tr>
<td>Mortality Rate (n=91)</td>
<td>17</td>
<td>18.7%</td>
</tr>
<tr>
<td>In-hospital Mortality (n=91)</td>
<td>17</td>
<td>18.7%</td>
</tr>
<tr>
<td>Death within 30 days (n=91)</td>
<td>13</td>
<td>14.3%</td>
</tr>
<tr>
<td>Death within 60 days (n=91)</td>
<td>15</td>
<td>16.5%</td>
</tr>
<tr>
<td>Death within 1 year (n=91)</td>
<td>16</td>
<td>17.6%</td>
</tr>
<tr>
<td>Postoperative time to Mortality, days</td>
<td>51.8</td>
<td>SD 128.1</td>
</tr>
<tr>
<td>Length of Hospital Stay, days</td>
<td>Mean 52.2, Median 32</td>
<td>SD 72.3, Range 9-547</td>
</tr>
</tbody>
</table>

**Table 2. PEG related Complications**

<table>
<thead>
<tr>
<th>Complication</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Complications</td>
<td>17/91</td>
<td>18.7</td>
</tr>
<tr>
<td>PEG site Infection</td>
<td>10/17</td>
<td>58.8</td>
</tr>
<tr>
<td>Peristomal Leakage</td>
<td>7/17</td>
<td>41.2</td>
</tr>
<tr>
<td>Tube Dislodgement</td>
<td>5/17</td>
<td>29.4</td>
</tr>
<tr>
<td>Tube Dysfunction</td>
<td>2/17</td>
<td>11.8</td>
</tr>
<tr>
<td>Minor Bleeding at PEG site</td>
<td>1/17</td>
<td>5.9</td>
</tr>
<tr>
<td>Pneumoperitoneum</td>
<td>1/17</td>
<td>5.9</td>
</tr>
<tr>
<td>Central Fever</td>
<td>1/17</td>
<td>5.9</td>
</tr>
<tr>
<td>Major Complications</td>
<td>4/91</td>
<td>4.4</td>
</tr>
<tr>
<td>Bleeding at PEG site (required surgery)</td>
<td>1/17</td>
<td>5.9</td>
</tr>
<tr>
<td>Buried Bumper Syndrome</td>
<td>3/17</td>
<td>17.6</td>
</tr>
</tbody>
</table>

**Table 3. Univariate analysis of patients with and without complications**

<table>
<thead>
<tr>
<th>Variable</th>
<th>No Complication, Total=74</th>
<th>Complication, Total=17</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>60.7 (SD 17.1)</td>
<td>50.1 (SD 22.7)</td>
<td>0.03*</td>
</tr>
<tr>
<td>Male</td>
<td>51 (69.0%)</td>
<td>13 (76.5%)</td>
<td>0.77</td>
</tr>
<tr>
<td>Surgical Service</td>
<td>46 (62.2%)</td>
<td>13 (76.5%)</td>
<td>0.40</td>
</tr>
<tr>
<td>Trauma Activation</td>
<td>38 (51.3%)</td>
<td>8 (47%)</td>
<td>0.79</td>
</tr>
<tr>
<td>Albumin, g/dL</td>
<td>2.8 (SD 0.7)</td>
<td>3.2 (SD 0.9)</td>
<td>0.06</td>
</tr>
<tr>
<td>Weight, kg</td>
<td>78.6 (SD 21.6)</td>
<td>63.6 (SD 11.6)</td>
<td>0.01*</td>
</tr>
<tr>
<td>BMI, kg/m²</td>
<td>27.1 (SD 6.8)</td>
<td>23.7 (SD 7.6)</td>
<td>0.07</td>
</tr>
<tr>
<td>Diabetes</td>
<td>21 (28.4%)</td>
<td>5 (29.4%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Abdominal wall thickness, mm</td>
<td>27.6 (SD 8.1)</td>
<td>21.6 (SD 7.6)</td>
<td>0.02*</td>
</tr>
<tr>
<td>PrePEG Anticoagulants</td>
<td>36 (48.6%)</td>
<td>6 (35.3%)</td>
<td>0.42</td>
</tr>
<tr>
<td>PrePEG Steroids</td>
<td>15 (20.3%)</td>
<td>5 (29.4%)</td>
<td>0.52</td>
</tr>
<tr>
<td>Patients on 1:1 observation</td>
<td>8 (10.8%)</td>
<td>4 (23.5%)</td>
<td>0.23</td>
</tr>
<tr>
<td>Patients on restraints</td>
<td>30 (40.5%)</td>
<td>11 (64.7%)</td>
<td>0.10</td>
</tr>
</tbody>
</table>

**CONCLUSIONS**

- 18.7% of patients developed complications after PEG tube placement.
- Age, weight and abdominal wall thickness were identified as risk factors for complications.
- Younger patients (< 51.5 years) who weighed less (< 62.2 kg) and had thinner abdominal walls (< 20.2 mm) were more prone to develop complications.
- Abdominal wall thickness was the only independent risk factor for complications.
- 14.3% of patients died within 30 days, however; mortality was due to severe underlying injuries and not PEG tube placement.
- There was no association between complications and mortality.
- Preoperative measurement of abdominal wall thickness by pre-procedural imaging can potentially be used to predict post-PEG complications.
Ultra Low Dose CT Scanning: A Reliable and Effective Modality with an Improved Patient Safety Profile
Sanjit R. Konda, MD; Abraham M. Goch, BS; Philipp Leucht, MD, PhD; Anthony Christiano, BA; Soterios Gyftopoulos, MD; Gideon Yoeli, MD; Kenneth A. Egol, MD
Jamaica Hospital Medical Center, Jamaica, Queens and NYU Hospital for Joint Diseases, New York, New York.

Background

• Computerized tomography (CT) was invented in the early 1970s.
• 71.7 million CT scans were performed in 2007.1
• 600,000 head and abdominal CT scans are performed annually for children <15 years old.2
• It is projected that 500 of these individuals will die from cancer attributable to this irradiation.2

Objective

To determine whether or not a novel CT imaging protocol could produce similar diagnostic capability as compared to conventional CT scanning while minimizing radiation exposure for a given body part.

Methods

Previously an ultra low dose CT (ULD-CT) protocol was developed to identify articular penetration of the knee joint.3–5 A novel low dose CT protocol was developed by altering multiple parameters and used to prospectively assess fracture patients. Ten orthopaedic fracture surgeons evaluated de-identified images for diagnosis, management, and image quality. The total radiation dose for each imaging type was determined and recorded.

Results

• Ultra low dose CT scanning resulted in an estimated effective dose (ED) 14x lower than that of conventional CT (C-CT) scanning.
• Mean ED for ULD-CT vs. C-CT was 0.03 milliSieverts (mSv) vs. 0.43 mSv (p<.005).
• Sensitivity (Sn), Specificity (Sp), Positive Predictive Value (PPV) and Negative Predictive Value (NPV) of ULD-CT scan to detect fractures was 0.98, 0.89, 0.98, and 0.89 with 2 occult fractures excluded.
• Reliability statistics between ULD-CT and C-CT assessments were comparable reflecting that the diagnostic value of CT technology does not decay with an ULD protocol.

Conclusions

1. Our ULD-CT protocol appears to represent a significant advancement in the refinement of an ubiquitous diagnostic tool.2
2. This ultra low dose protocol appears to provide for high fidelity images in appropriately selected patients, with an improved safety profile over conventional CT.
3. By employing dose reduction strategies as demonstrated here, orthopaedic surgeons can address public concerns over radiation exposure in their medical care.
Predicting Mortality and Inpatient Complications: The Score for Trauma Triage in the Geriatric and Middle-Aged (STTGMA) Orthopaedic Trauma Patient
Sanjit R. Konda, MD; Kari J. Broder, BA; Sebastian Schubl, MD; Kenneth A. Egol, MD
NYU Hospital for Joint Diseases, New York, New York and Jamaica Hospital Medical Center, Jamaica, Queens.

Background

• Each trauma patient is assigned an Injury Severity Score (ISS) upon discharge from the hospital.

• However, on admission, there is no ISS to assist in the treatment and care of middle-aged and geriatric trauma patients.

• Triage of each trauma patient varies depending on the mechanism of injury.

• There is no ISS that separates patients by low-energy (eg. falling from standing) vs. high-energy (eg. motor vehicle accident, falling from height, pedestrian struck) mechanism of injury.

• We developed a novel injury severity score specific to geriatric trauma: Score for Trauma Triage in the Geriatric and Middle-Aged (STTGMA) orthopaedic trauma patient.

Objectives

• To create a new model to predict mortality and inpatient complications for middle-aged and geriatric trauma patients in the Emergency Department setting.

• To customize the STTGMA formula for the JHMC patient population.

• To optimize patient triage to the ICU or floor and to reduce costs.

• To initiate a Palliative Care consult earlier for high-risk patients.

Methods

• Inclusion criteria: patients ≥55 years with blunt trauma.

• STTGMA variables were collected for 6 months on orthopaedic and trauma surgery consults.

• STTGMA variables: age, pre-existing conditions, injury severity, neurological status.

• Additional variables: anticoagulation status (COAG), albumin level (ALB), ambulatory status (community, household, non-ambulatory) (AMB), assistive device (walker, cane, wheelchair) (AD).

• Inpatient complications and mortality were monitored.

• Hospital cost was calculated to determine if utilizing early palliative care consults resulted in hospital cost savings.

• Logistic regressions were used to formulate a JHMC-specific algorithm and area under receiver operator curve (AUROC) statistics were used to measure specificity and sensitivity of STTGMAJHMC.

Results

• 94 high energy (HE) patients, 6 deaths (7.4%)

• 154 low energy (LE) patients, 6 deaths (3.9%)

• HE-STTGMAJHMC = HE-STTGMA + AD + AMB + ALB

• LE-STTGMAJHMC = LE-STTGMA + AD + AMB + COAG

• HE-STTGMA and HE-STTGMAJHMC showed ability to predict complications (Figure 3)

• STTGMAJHMC stratified patients by mortality (Figure 1, 2)

• Estimated reduction in hospital costs over 1 year using STTGMAJHMC + palliative care consult on admission

• LE = $205,984

• HE = $192,416

• Total = $398,400

References


Conclusions

• HE-STTGMA and LE-STTGMA can be modified for a hospital’s patient population to predict inpatient complications and mortality.

• STTGMAJHMC accurately stratifies patients into STTGMA levels regarding patient mortality.

• STTGMA Scale can be used to lower hospital costs by including Palliative Care earlier in the admission process.
Every 2 hours in NYC, 1 pedestrian or cyclist is either killed or seriously injured.

In Queens, 22,760 pedestrians/cyclists were struck by motor vehicles in 2013. 384 pedestrians/cyclists sustained fatal injuries.

Distracted driving accounts for some pedestrian casualties, however there is no established mechanism that explains traffic injuries and fatalities that occur while drivers are not distracted.

Pedestrians/cyclists are always perceived as having the “right-of-way”. This perception often encourages unsafe practices which include:

- Cell phone and headphones use
- Inebriation due to alcohol consumption
- Pedestrians walking along roadways
- Pedestrians crossing midblock
- Cyclists riding against the signal
- Cyclists riding too closely to parked vehicles
- Cyclists riding without protective gear (helmets, elbow pads, knee pads, and wrist guards)
- Cyclists failing to abide by traffic laws and signals

The objective of this study is to determine risk factors that contribute to accidents involving pedestrians and cyclists. By collecting prospective data on each patient who present to JHMC after being hit by a motor vehicle we hope to match the circumstances and location with medical outcome for each incident. By using the data we collect we will be able to design better targeted interventions to reduce the number of pedestrians and cyclists struck by motor vehicles in Queens.

Data was prospectively obtained from all pedestrians and cyclists 18 years and older who were struck by motor vehicles and presented to JHMC for treatment during the period of September 16th, 2013 – April 30th, 2015. Medical records were reviewed to collect demographic data, injuries, outcomes, and incident locations. Pedestrian and cyclist practices were obtained via interviews with patients, emergency medical services personnel, and from police reports.
Risky Motorcyclist Behavior Correlates with Small Motorcycle Engine Size

R. Jonathan Robitsek, Richard Tom, Simon P. Tiu, Taylor R. Klein, Marianne J. Mylan, Sebastian D. Schubl, Vanessa P. Ho
Department of Surgery, Jamaica Hospital Medical Center, Jamaica, NY

**BACKGROUND**
- Motorcycles have the greatest crash costs per person-mile of all vehicles in the US (Miller, 1993).
- In 2010, motorcycles made up 3% of all registered vehicles in the US, and accounted for 0.6% of all vehicle miles traveled (NHTSA, 2010).
- From 2001-2010, US motorcyclist fatalities increased by 41% (NHTSA, 2010).
- Per vehicle mile traveled, motorcyclists are ~30 times more likely to perish and 5 times more likely to be injured than drivers or passengers in caged vehicles (NHTSA, 2010).
- Across all classes of motorcycles, there has been a trend towards an increase in the average size of engines in fatal motorcycle crashes, suggesting that larger engine motorcycles are inherently riskier to ride than those with smaller engines.
- “You are what you drive”: Motorcycle size and engine type may reflect the riding style and attitude of the rider.
- Rider style and attitudes towards risk taking may be an important causative factor contributing to the higher injury and fatality statistics observed for larger engine size motorcycles, rather than the large engine of the motorcycle itself (Houston, 2011).

**HYPOTHESIS**
Riders of MCs with larger engines are more likely to exhibit risky behavior than riders of MCs with smaller engines.

**METHODS**
- Demographics, helmet fastening, MC licensure, and MC insurance were collected from charts and/or prospective patient interviews.
- ES were categorized as: small (<500cc), medium (500-850cc), large (>850cc), or unknown.
- Risky behavior: A failure to fasten or wear a helmet, or operating a motorcycle without a license or without insurance.
- Univariate analysis was performed to determine factors associated with risky behavior (chi-square and t test); multivariable logistic regression was performed.

**RESULTS**
- 115 (61%) had complete safety profile, collected during admission.
  - 108 Male (94%)
  - Mean age 28 ± 8.1 years
  - 59 (51%) showed safe behavior
  - 56 (49%) showed risky behavior
- Risky riders were significantly younger than safe riders ($B; p < 0.001$), and more likely to be riding small engine motorcycles ($A; p < 0.001$).
  - Age ($OR = 0.87, p < 0.001$) and small engine size ($OR = 10.75, p = 0.03$) were independently predictive of risky behavior.
- Medium ($OR = 4.7; p = 0.02$) and large ($OR = 5.6; p = 0.02$) engine MC riders were more likely to fasten their helmet than riders of small engine MCs ($C$). Riders with unfastened helmets were younger than fastened riders ($D; p = 0.04$).
- Medium ($OR = 16.8; p < 0.001$) and large ($OR = 33.6; p < 0.001$) engine MC riders were more likely to be properly licensed than riders of small engine MCs ($E$). Riders without proper licensure were younger than licensed riders ($F; p < 0.001$).
- Medium ($OR = 24.05; p = 0.003$) and large ($OR = 58.5; p < 0.001$) engine MC riders were more likely to be properly insured than riders of small engine MCs ($G$). Riders without proper insurance were younger than licensed riders ($H; p < 0.001$).
- Length of stay was 56% longer for risky riders than safe riders ($OR = 1.59; p < 0.001$).

**DISCUSSION**
- Within our sample:
  - Small motorcycle engine size was significantly and independently associated with risky behavior
  - Younger age was significantly and independently associated with risky behavior
  - Hospital length of stay was significantly longer for risky riders as compared to safe riders.
- Riders of motorcycles with larger engines may attempt to mitigate risk by practicing safe behaviors
- Limitations include small sample size and potential selection bias as some patients were not or could not be interviewed
- Injury prevention providers should emphasize safe riding practices amongst young motorcyclists and those with all sizes of engines
- Future research should study whether community and in-hospital interventions can modify rider behavior

**REFERENCES**
Prognosis with the setting of traumatic Injury is often uncertain with limited aid from quantitative surgical severity/mortality and morbidity prediction systems [6, 7]. There are inherent difficulties and conflict in establishing goals of care [6, 7]. These difficulties are often exacerbated by the frequent presence of a surrogate decision maker for the patient [6, 7]. These factors contribute to the increased likelihood of non-palliative care needs in the ICU. The presence of palliative care services within the hospital setting exist: including workforce shortfalls, program resource constraints and timelines of referral for consultation [2]. Much emphasis has been placed on the role of Palliative Care within the setting of the ICU. There are a myriad of justifications for this focus on ICU populations including: ideally capturing all critically ill patients, the imperative to care being strongest in this setting which tends to detract from attention to end-of-life care and the fact that up to 20% of patients will die, while as little as 5% of patients may actively participate in decision making, resulting in 50% of patients having no advance care plan [8,9]. The time of trigger criteria in the ICU where patients may have a length of stay as short as 2-3 days prior to death, may contribute to a decreased likelihood of meeting the Palliative Care needs of patients. Proactive case finding in the MICU through the use of Trigger Criteria has been shown to result in decreased length of stay in ICU without changing mortality rates or discharge disposition [3-5].

We develop a novel set of Trigger Criteria for identifying Trauma patients warranting Palliative Care consult on admission to the Hospital from the Emergency Department within the first 24 hours. Ultimately we aim to develop a trigger tool composed of largely quantitative criteria or elements easily extracted from the Electronic Medical Record that can be automated within the EMR system to screen all Trauma patients, regardless of age or trauma stage/settng, at the time of admission to the Hospital. At the present moment no such tool exists. This novel trigger tool will aid in capturing trauma patients with unmet Palliative Care needs, while circumventing the need for additional staff devoted to manually screening all patients admitted each day to the hospital. This work may potentially serve as the basis of future studies evaluating the impact of implementing these criteria via established outcome measures.

We hope to develop a novel set of Trigger criteria for identifying Trauma patients warranting Palliative Care consult on admission to the Hospital from the Emergency Department within the first 24 hours. Ultimately we aim to develop a trigger tool composed of largely quantitative criteria or elements easily extracted from the Electronic Medical Record that can be automated within the EMR system to screen all Trauma patients, regardless of age or trauma stage/settng, at the time of admission to the Hospital. This automated tool, composed of criteria extracted from the primary literature known to contribute to increased probability of morbidity and complicated hospital course, will then provide patient lists each day to the Palliative Care consultation service for further consideration of the need for Palliative Consultation. At the present moment no such tool exists. This novel trigger tool would aid in capturing trauma patients with unmet Palliative Care needs, while circumventing the need for additional staff devoted to manually screening all patients admitted each day to the hospital. This work may potentially serve as the basis of future studies evaluating the impact of implementing these criteria via established outcome measures including but not limited to: Hospital Length of Stay, ICU Length of Stay, time to palliative care consultation, rate of transfer to the Palliative Care Unit, NR entry, withdrawal of life-sustaining care, patient/family satisfaction, discharge disposition (i.e. Hospice) as well as other potential measures of life-altering morbidity/functional limitation and mortality rates.
In the US, traumatic injuries are a major public health problem across the lifespan and a leading cause of death in individuals 1 to 44 years of age. More than 2.8 million people are hospitalized and 31.7 million people treated in emergency rooms as a result of violence and injuries each year.

The American College of Surgeons, the organization responsible for verifying Trauma Centers across the country, mandates that Trauma Centers be actively involved with injury prevention efforts.

Occupational therapists working with injured patients have always provided these individuals with information and practical tools to make healthy choices to prevent injuries from reoccurring.

Occupational therapists working in Trauma Centers now need to take it to the next level by assuming leadership roles in injury prevention programming. This leadership includes using concepts of occupational therapy to design, implement and evaluate broad scope prevention initiatives. It also requires occupational therapists to increase their involvement and presence in advocacy and health policy related to trauma injury prevention. Increased involvement in leadership activities of this sort will also support the profession to move forward consistent with the AOTA Centennial Vision.

**INTRODUCTION**

**JHMC LEVEL I TRAUMA CENTER SNAPSHOT**

- **Age**
  - 0-18: 4%
  - 19-35: 24%
  - 36-55: 41%
  - 56+: 31%

- **Mechanism**
  - MVA: 37%
  - Falls: 29%
  - Assault: 26%
  - Suicide: 22%
  - Other: 4%

- **Types of Trauma**
  - Blunt: 14%
  - Penetrating: 21%
  - Other: 78%

- **Injury Severity Score (ISS)**
  - 0: 47%
  - 1 to 8: 22%
  - 9 to 15: 9%
  - >15: 9%

**OT APPROACH AND INFLUENCING FACTORS**

**KEY POINTS IN INJURY PREVENTION**

- Injury develops through a process.
- Identifying factors underlying injury can be aided by using conceptual models.
- Conceptual models can guide the development of interventions.
- Injury prevention involves several disciplines.
- Multi-disciplinary interventions are often more successful

**OT LEADERSHIP COMPETENCIES**

- Utilizes Center’s Trauma Registry for Data Driven Problem Identification
- Develops Collaborative, Community-Based, Strategies
- Designs and Implements PEC Population Based Interventions
- Employs Careful Evaluation and Measurement
- Demonstrates Post-Implementation Persistence
- Identifies Funding Opportunities
- Engages in Health Policy & Activism

**TYPICAL PROGRAMS**

- Helmet Safety
- Violence Prevention Initiatives
- Fall Prevention
- Distracted Driving Education
- Car-Seat Education
- Street Crossing/ Pedestrian Safety

**REFERENCES**


