Evaluating Sepsis in Trauma Patients in the United States Using NEDS 2010

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INTRODUCTION

- The NEDS, largest all-payer ED database, was constructed using records from both the HCUP State Emergency Department Databases (SEDD) and the State Inpatient Databases (SID) \(^1\)
- The SEDD capture information on ED visits that do not result in an admission
- The SID contain information on patients initially seen in the emergency room and then admitted to the same hospital
- Stratified by \(^2\):
  - Geographic region, trauma vs. non-trauma center, urban vs. rural location, teaching status and type of ownership

METHODS

- Design: Observational cohort study
- Setting: 961 hospital-based EDs in 28 states used to estimate national ED trends
- Patients: trauma injury related ED visits
  - Trauma injury identification by ICD-9CM used by consensus report from the Safe State Alliance \(^2\)
  - Patients that developed sepsis (ICD-9CM: 038-septicemia, 785.52- septic shock, 995.91- sepsis, 995.92 - severe sepsis ) were analyzed

OBJECTIVE

To identify factors that increase the likelihood of sepsis in trauma patients and estimate the impact on charges and outcomes using 2010 Nationwide Emergency Department Sample (NEDS), a Healthcare Cost and Utilization Project (HCUP) from the Agency for Healthcare Research and Quality

RESULTS

129 Million ED Visits
- 80.4% Treat and released
- 15.3% Admitted to same hospital
- 1.5% Transferred to another hospital

30.2 Million Injury Related
- 88.7% Treat and released
- 8.0% Admitted to same hospital
- 1.3% Transferred to another hospital
- 63% Treated at non-teaching hospital
- 65% Treated at a non-trauma hospital

2.4 Million Admitted to Hospital
- 48% Treated at a non-trauma hospital
- 49% Treated at non-teaching hospital
- 42% Were related to falling (most common)
- 37% Were multi-trauma
- 3.5% Developed sepsis

Independent Risk Factors for Sepsis*:
- Male gender
- Older than age 50
- Chronic comorbidity
- Elevated Injury Severity Score
- Mechanism of injury related to nature, firearms, poison, drowning, suffocation or fire

Sepsis Patients Were:
- Male (57% vs. 50%)
- Older ( 63.9 vs. 57.5 years old)
- Have a chronic comorbidity (98% vs. 88%)
- Less likely to be multi-trauma (24% vs. 37%)
- Less likely to be related to falls (25% vs. 42%)
- Increased length of stay (13.3 vs. 5.0 days)
- Increased hospital charges ($126,321 vs. $42,870)
- Have a higher mortality rate (18.0% vs. 2.7%)

CONCLUSIONS

- Sepsis is an expensive and often fatal complication of injury-related admissions in the United States
- At higher risk to developing sepsis:
  - Specific injuries related to nature, firearms, poison, drowning, suffocation or fire
  - Older, male patients, and those with chronic comorbid conditions
- Development of sepsis increases length of stay, resource utilization and higher mortality rates

REFERENCES