Description of Penetrating Trauma in Children by Age and Location: A National Trauma Database Review

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Background

- Lessons learned from the Global War on Terror have been increasingly incorporated into civilian care through programs such as Stop The Bleed & TCCC/TECC
- School shootings and terror attacks involve kids
- There has been little description of pediatric penetrating trauma outside of conflict zones

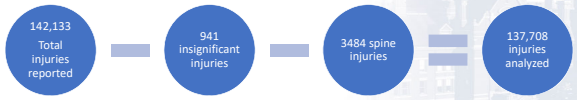
Objectives

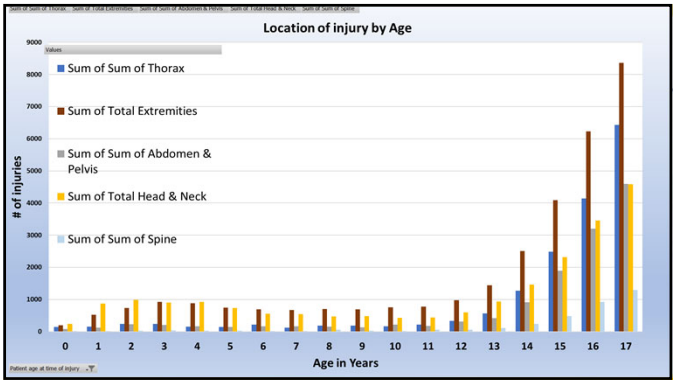
- Describe the injury and mortality burden of penetrating trauma in children in the US
- Identify injury locations most commonly associated with “Early Death”
- Suggest priorities for pediatric point of injury management

Methods

- Retrospective review of penetrating trauma in children 1-18yrs old in the National Trauma Database from 2011-2016
- ICD codes were queried and reviewed for age, mechanism of injury, anatomic location of injuries, and Early Death
- Injury codes for superficial injuries and spine injuries were removed from analysis

Results





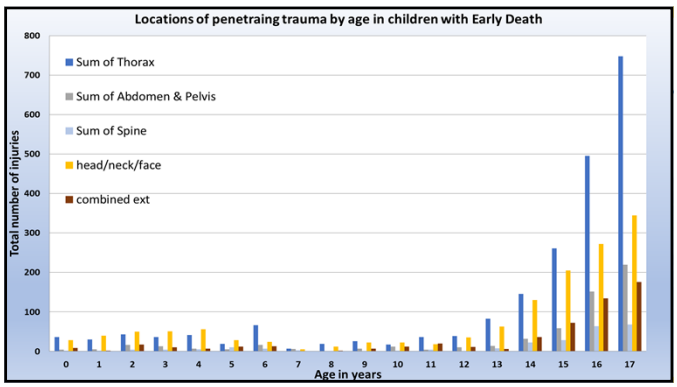
Results

137,708
Total injuries

31,636
(23%)
Extremity

21,322
(15%)
Head & Neck

17,715
(13%)
Thorax



Results

41,540
Total Patients

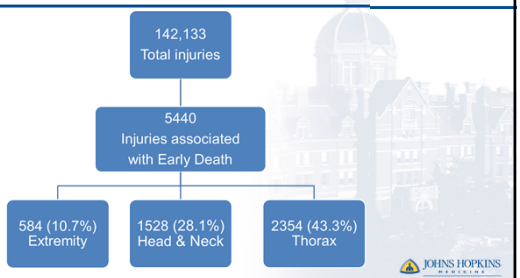
1,471
Total Early Death

66 (4.5%)
Isolated
Extremity

288 (19.6%)
Isolated
Head & Neck

302 (20.5%)
Isolated
Thorax

Results



Conclusions

- Extremity injuries are the leading location of injury and the third most commonly associated with early death
- Thorax injuries resulted in the highest mortality burden
- Our data suggest pediatric priorities should mirror the overall prehospital trauma care emphasis on addressing thorax injuries & extremity hemorrhage, including the use of tourniquets, to reduce preventable deaths

Limitations

- This review is limited by the quality and quantity of data uploaded into the NTDB
- We are unable to show causation, only correlation

Implications/Next Steps

- Next steps include identifying the optimal site for prehospital Needle Decompression

Efficacy of CAT in Children

- Recent study of 60 children 6-16 years showed 100% efficacy in arms, 93% in legs
- Our study is enrolling 1-8 year olds

Results

	No. Subjects	Arms	Legs	Success (%)	95% CI
Total	**13**	**11**	**13**	**100**	**85.8-100**
1-4yr	7	5	7	100	73.5-100

	Range	Mean	50% WHO age correlate (boys)	50% WHO age correlate (girls)
Age (yrs)	2-7	4y 2m	N/A	N/A
Weight (kg)	12.8-23.9	16.7	4y 2m	4y 4m
Height (cm)	87.0-122.0	103.4	4y 0m	4y 1m
Arm circumference (cm)	13.0-24.0	16.3	4y 4m	4y 1m
Leg circumference (cm)	24.5-34.5	27.9	N/A	N/A

Questions?