Warfighter Personal Protective Equipment and Combat Wounds: Body Armor on Casualties at Role 1

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Background

Balance

Protection ⚖ Mobility

Modularity

Level	Configuration	Added Weight lbs/kg
BAPL 0	No body armor	0
BAPL 1	Vest or plate carrier with soft armor only	6 / 2.7 and 10.5 / 4.8
BAPL 2	Plate carrier with front and back plates	18 / 8.2
BAPL 3	Plate carrier with front, back, and side plates	23 /10.4
BAPL 4	IOTV with front and back plates	28 / 12.7
BAPL 5	IOTV with front, back, and side plates	32 / 14.5

Potter, A. et al. Natick, MA: U.S. Army Research Institute of Environmental Medicine. 2013.

Shifting Trauma Patterns

Objective

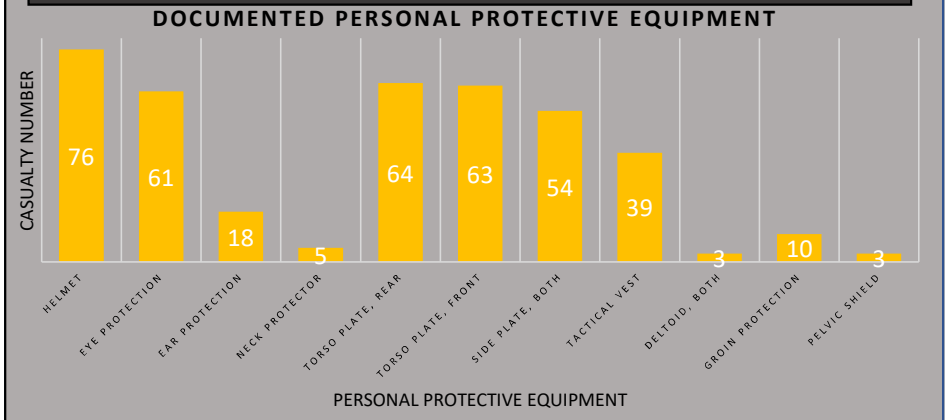
- Broad trends with injury patterns correlated with PPE use.
- Little is known about what PPE is actually worn at point of injury
- Determine what PPE is being worn at point of injury during combat operations

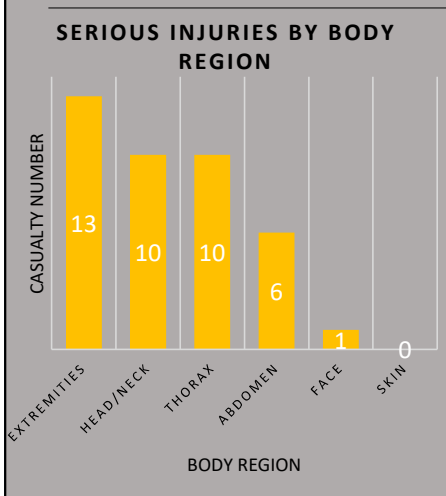
Methods

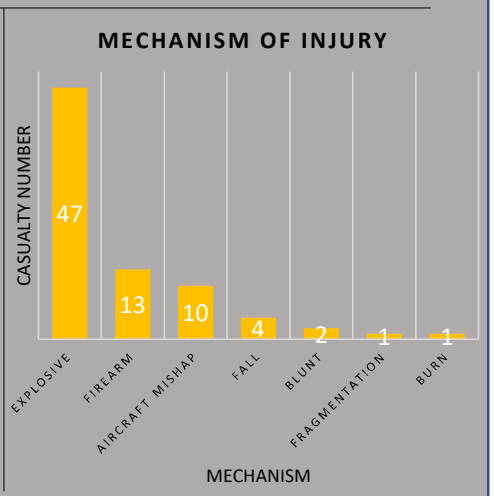
- Prehospital Trauma Registry (PHTR): Data from TCCC cards and after-action reviews
- Department of Defense Trauma Registry: Repository for trauma related injuries, from point of injury to final disposition.

PHTR: 1357 Casualties → PPE: • 98 Casualties • 83 U.S. Military → DoDTR: • 62 Casualties • Data Analysis

Results







Discussion

Trend
- Protect head/thorax
- Exposed neck, groin, extremities

Reasons
- Perception armor not effective, no benefit
- Increased thermal burden
- Increased weight, reduced mobility

Limits
- Small Sample size – external validity
- Granularity of data
- Poor documentation rates

Future
- Improved armor design
- Improve data capture

Conclusion

- Balance in mobility and protection. Shift in trauma patterns.
- Warfighters opt to protect head/thorax, less protection for extremities, neck, groin.
- Need for improved armor design and point of injury data collection.