

Assessing the survivability of early trauma deaths: a feasibility pilot

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Introduction:

- Death following trauma is classically described as having a trimodal temporal distribution. The first phase of deaths are often ascribed to unsurvivable injuries.
- The Emergency Medical Retrieval Service is a prehospital critical care team based in Glasgow that serves a large area of urban and rural Scotland.

Aims:

We wished to assess the feasibility of:

- obtaining post-mortem information from patients who die on scene from traumatic injuries.
- systematically analysing the pattern of injuries this population of patients.
- assessing the reversibility of the injuries found and the appropriateness of interventions performed on scene.

Methods:

- We identified a cohort of 6 patients to serve as a pilot group.
- These patients had died on scene despite intervention from our service, were identifiable and had post-mortem examinations performed at a specific forensic medicine department.
- The Procurator Fiscal's office granted permission to analyse the findings of these studies since legal proceedings had concluded and processes were defined.
- Injuries identified at post-mortem were coded using Abbreviated Injury Scores (AIS 2005) with an Injury Severity Score (ISS) calculated for each patient; this was done by an experienced trauma audit coordinator.

Results:

The median ISS was 43 (range 33 to 57). The contributing AIS codes are summarised in the table:

Patient	Mechanism of injury	Highest scoring regions	Summary of Injury	AIS score	ISS
1	Pedestrian knockdown	Head	Diffuse axonal Injury	4	57
		Thorax	Bilateral flail chest	5	
		Extremity	Pelvic fracture	4	
2	Motorcyclist vs van	Chest	Thoracic aorta tears	5	45
		Abdomen	Splenic lacerations	4	
		Extremity	Pelvic fracture	2	
3	Stabbing	Thorax	Pulmonary artery transection	5	33
		Extremity	Open scapula #	2	
		External	Head wound >10cms	2	
4	Pedestrian knockdown	Head	Cerebral Contusion	3	41
		Thorax	Rib fractures with flail	4	
		Extremity	Pelvic fracture	4	
5	Cyclist vs wall	Head	Brain stem haemorrhage	5	35
		Thorax	T5 fracture with epidural haemorrhage	3	
		Face	Tongue laceration	1	
6	Car driver in RTC	Thorax	Bilateral flail chest	5	50
		Abdomen	Renal artery transection	4	
		Extremity	Femur fracture	3	

Conclusion:

- We have demonstrated that it is feasible to identify a cohort of patients, work through the legal constraints surrounding post mortem paperwork and code the injuries found using accepted methodology.
- Our cohort of patients all had significant traumatic injuries, each with a high injury severity score.
- Five out of six patients had at least one injury coded as critical (AIS=5); none of the patients had an injury currently coded as unsurvivable (AIS=6).

Next Steps:

- The next phase with this pilot group is to form a multidisciplinary expert panel to appraise potential survivability and the appropriateness of the interventions performed on scene.
- Following completion of this pilot, we envisage that it will be feasible to conduct a larger study to systematically review patients who die on scene.