

The Royal College of
Emergency Medicine

Major incident triage: the civilian validation of the Modified Physiological Triage Tool (MPTT)

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Introduction

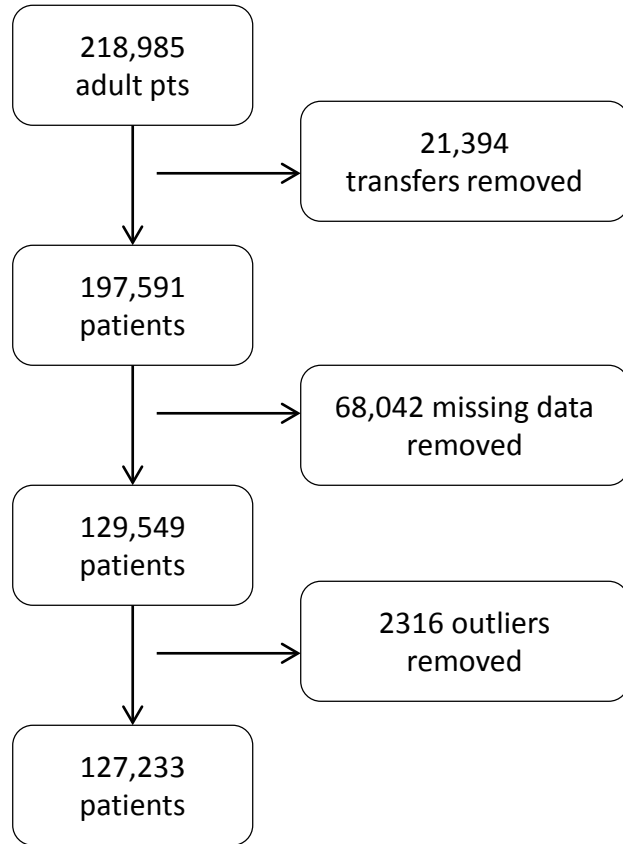
- Major incidents occur outside of MIMMS courses
- Existing methods of triaging patients have limited performance & evidence-base
- The **Modified Physiological Triage Tool (MPTT)**, derived using a military cohort is the first evidence-based triage tool
- In a military population the **MPTT** demonstrates significantly improved performance at predicting need for life-saving intervention
 - MPTT : $GCS < 14$, $HR \geq 100$, $12 > RR \leq 22$

Methods

- TARN database 2006 – 2014
- Adult patients > 18 years
- Complete physiology only
- P1 or Not P1
- Comparative analysis :
 - Triage Sieve (TS)
 - Modified/Military Sieve (MS/MMS)
 - START (ST)
 - CAREFLIGHT (CF)

| | |
|----|---|
| 1 | Intubation for actual airway obstruction |
| 2 | Intubation for impending airway obstruction |
| 3 | Surgical airway for airway obstruction |
| 4 | Surgical airway for impending airway obstruction |
| 5 | Needle thoracocentesis |
| 6 | Finger thoracostomy |
| 7 | Tube thoracostomy |
| 8 | Application of a chest seal (commercial/improvised) |
| 9 | Positive Pressure Ventilation for ventilatory inadequacy |
| 10 | Application of a tourniquet for haemorrhage control |
| 11 | Use of haemostatic agents for haemorrhage control |
| 12 | Insertion of an intra-osseous device for resuscitation purposes |
| 13 | Receiving uncross-matched blood |
| 14 | Receiving ≥ 4 units of blood/blood products |
| 15 | Administration of tranexamic acid |
| 16 | Laparotomy for trauma |
| 17 | Thoracotomy for trauma |
| 18 | Pericardial window for trauma |
| 19 | Surgery to gain proximal vascular control |
| 20 | Interventional radiology for haemorrhage control |
| 21 | Application of a pelvic binder |
| 22 | ALS/ACLS protocols for a patient in a <i>peri</i> -arrest situation |
| 23 | ALS/ACLS protocols for a patient in cardiac arrest |
| 24 | Neurosurgery for the evacuation of an intra-cranial haematoma |
| 25 | Craniotomy |
| 26 | Burr Hole Insertion |
| 27 | Spinal nursing for a C1-3 fracture |
| 28 | Administration of a seizure-terminating medication |
| 29 | Active rewarming for initial core temp $<32^{\circ}$ celcius |
| 30 | Passive rewarming for initial core temp $<32^{\circ}$ celcius |
| 31 | Correction of low blood glucose |
| 32 | Administration of chemical antidotes |

Results



| | |
|-----------------------|---|
| No of patients | 127,233 (55% male) |
| Median age | 62 (IQR 43-80) |
| ISS (median / mean) | 9 / 11.9 |
| Injury Mechanism | 1. Falls < 2m, n = 68,354 (53.7%) 2. RTC, n = 27,915 (21.9%) |
| Priority One | 24,791 (19.5%) |
| Body Region Injured | Limbs 38.7% Thorax 16.6% |

Results

| Model | AUROC | Sensitivity | Specificity | Under-triage | Over-triage |
|-------|-------|-----------------------|-----------------------|--------------|-------------|
| MPTT | 0.645 | 57.6% (56.9-58.2%) | 71.5% (71.2-71.8%) | 42.4% | 67.1% |
| MS | 0.610 | 28.0% (27.5-28.6%) | 94.1% (93.9-94.2%) | 72.0% | 56.7% |
| MMS | 0.631 | 36.5% (35.9-37.1%) | 89.7% (89.6-89.9%) | 73.5% | 53.7% |
| TS | 0.548 | 12.9% (12.5-13.4%) | 96.7% (96.5-96.8%) | 87.1% | 51.6% |
| START | 0.616 | 28.8% (28.2-29.4%) | 94.3% (94.2-94.4%) | 71.2% | 45.0% |
| CF | 0.597 | 23.6% (23.1-24.1%) | 95.9% (95.7-96.0%) | 76.4% | 42.1% |

Conclusion

- This study supports the use of the MPTT within a civilian context.
- The existing Triage Sieve performs poorly.
- With simple modifications, performance can be improved greatly.
- MPTT likely demonstrates the optimum performance characteristics of a physiological triage tool.

Questions

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