

# REDUCING THE TRAUMA BURDEN IN THE UNITED ARAB EMIRATES – A BRIEF REPORT

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## ABSTRACT

Trauma is the second leading cause of death in the UAE for both national and expatriate populations, accounting for over 20% of all fatalities. The total trauma related impact to the UAE economy is unknown. Outlined in this brief report are key steps that are being presently prioritised in the United Arab Emirates to reduce the burden of trauma on the population.

### Authors' affiliation:

**Correspondent author: BATT Alan, MSc**

Clinical Services, National Ambulance LLC, Etihad Towers,  
PO Box 63788, Abu Dhabi, UAE.  
abatt@prehospitalresearch.eu

**Batt A, MSc, Al-Hajeri A, BHSc, Ward G, BSc, Lonergan D, GradDipEMS, Cummins F, MB MSc**

Clinical Services, National Ambulance LLC, Etihad Towers, Abu Dhabi, United Arab Emirates

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## INTRODUCTION

Injuries and violence are major public health issues worldwide and account for nearly one out of every 10 deaths every year. Globally, more than nine people die every minute from injuries or violence - that's 5.8 million people per year of all ages and economic groups who die each year from both unintentional and violence related injuries [1].

Trauma is the second leading cause of death in the United Arab Emirates (UAE) for both national and expatriate populations, accounting for over 20% of all fatalities. It is more prevalent in males, specifically young, male Emiratis. Road traffic incidents are the primary cause of fatal injuries in Abu Dhabi accounting for 67% of all deaths from trauma. This compares to road traffic

incidents accounting for 22% of all deaths in the USA [2]. Trauma is also the leading cause of death in children aged 5-19 and women (of all ages) in the UAE [3].

In comparison, the three leading causes of injury and violence-related deaths in the USA are road traffic incidents (1.3 million), suicides (844,000) and homicides (600,000) [4]. The morbidity associated with trauma poses an even greater burden on society than mortality. Road traffic incidents result in 20-50 million injuries every year, and these injuries cost approximately \$518 billion annually [5;6].

## TRAUMA SYSTEM DEVELOPMENT



**Figure 1:** Trauma System Components. Adapted from Indiana Trauma System Elements [7]

In order to reduce the burden of trauma on society within the UAE, a number of steps are currently being taken which together comprise a structured approach to implementation of a trauma system. These are outlined in **Table 1**.

### PREVENTION

The cost of trauma to the UAE economy is at present, unknown. Trauma costs the US economy \$406 billion a year, including both health care costs and lost productivity. Trauma is a disease that affects all ages of people; the impact on life years lost is equal to the life years lost from cancer, heart disease and HIV combined (USA) [8]. Injury prevention can often reduce medical costs and save lives [9]. Performance of appropriate cost versus outcome analysis should be performed prior to prevention programme development, to ensure maximum return on investment.

Focusing on road safety should be a priority for reducing trauma morbidity and mortality in the UAE. Reducing speed, wearing seat-belts, driving sober and wearing a helmet are all public health injury prevention measures that will reduce the trauma burden. Reducing speed on the roads within the UAE is a major priority. An increase in average speed of 1 km.h<sup>-1</sup> typically results in a 3% higher risk of a crash involving injury, and a 4-5% increase of a crash that results in a fatality [10].

Enforcement of seat belt laws also needs prioritisation in the UAE; appropriate wearing of seat belts reduces serious crash-related injuries and deaths by between 50 and 72% [10;11]. Studies have shown that enforcement laws make a big difference in getting more people to buckle up.

Traffic stops where drivers' level of alcohol or drug impairment are assessed consistently reduce intoxication-related crashes, typically by 9% [13;14]. Wearing a helmet reduces the risk of head injury by around 69% and death by around 42% [15].

1. Improving public awareness of injury prevention
2. Increasing the general public's capacity to respond to injury
3. Ensuring high-quality care is delivered to the injured
4. Ensuring trauma patients have access to appropriate definitive care
5. Benchmarking performance against international standards and practice

**Table 1:** Strategies to reduce trauma burden in the UAE

### INCREASE THE CAPACITY TO RESPOND

In order to increase the general public's capacity to respond, campaigns aimed at increasing provision of basic first aid training to the general public need to be undertaken, to enable them to manage life-threatening emergencies, including trauma. Whilst a stand-alone "Good Samaritan" law does not exist within the UAE, a Fatwa issued in 2010 by the Official Iftaa Centre, General Authority of Islamic Affairs & Endowments states that first aid should be administered by all people in accordance with Shariah law. In accordance with this Fatwa, no criminal liability will attach to an individual, in respect of Shariah and UAE law, when they provide first aid to someone in need [16].

### DELIVER HIGH-QUALITY CARE

Provision of evidence-based interventions to clinicians and prehospital care providers is essential in reducing the impact of trauma on mortality and morbidity. Evidence-based interventions such as tourniquets, haemostatic agents, pelvic binders, traction splints, tranexamic acid and blood products allow pre-hospital care providers such as Emergency Medical Technicians and Paramedics to provide appropriate care to the severely-injured trauma patient [17].

All prehospital care practitioners should be provided with appropriate trauma education in the form of Pre-Hospital or International Trauma Life Support courses or similar. These courses provide the practitioner with a structured assessment and treatment process, which allows for systematic identification and management of life-threatening injuries.

### ESTABLISH TRAUMA NETWORKS AND TRAUMA REGISTRY

The primary goal of a trauma network is to diminish, or eliminate, the risk of death or permanent disability following trauma [18]. Essential trauma care services should be provided to all who need them in a timely fashion.

Numerous studies have shown that severely injured trauma patients have a greater chance of survival when cared for in an inclusive trauma system [19-22]. Receiving care at a Level I

trauma centre can decrease the risk for death among seriously injured patients by up to 25% [22;23].

On the opposite side of the spectrum, ad-hoc, unstructured management of trauma patients is associated with considerable avoidable death and disability in numerous international reports. Trauma registries, as a component of a trauma system, can help to evaluate system efficiency [24]. However, a human resource is required to maintain these databases. This has to be built in to hospital budgets as a mandatory component when seeking accreditation as a trauma centre.

With this in mind, the Abu Dhabi Trauma System Initiative (ADTSI) was formed in 2010. It is comprised of representation from HAAD, Zayed Military Hospital, major SEHA facilities, Abu Dhabi Police Ambulance, UAE University, and the private hospital sector of Abu Dhabi. The overall goal of the system is to reduce the impact of trauma on citizens. The benefits of expanding this model across the UAE are obvious.

As part of its commitment to improving the health and well-being of both UAE nationals and residents in the UAE, National Ambulance actively undertakes clinical research and development to improve the level of care delivered to service users. National Ambulance LLC has recently been appointed the lead site for the UAE for the Pan-Asian Trauma Outcomes Study (PATOS). PATOS is a collaborative research network that aims to inform trauma policies and practices within member states and in the Middle East-Asia-Pacific region in general. National Ambulance LLC will coordinate the data collection from all UAE sites, and contribute this data to the international study.

### IMPLEMENT TRAUMA BYPASS

In the prehospital care phase of traumatic injury, transporting the patient to the nearest hospital that has the appropriate level of care for the patient’s suspected severity of injury is an essential component of care [24]. The care of severely injured patients at a designated trauma centre is associated with a significant mortality benefit. To achieve this benefit however, severely injured

patients must be correctly identified in the field and directed toward designated trauma centre [25]. “Trauma Bypass” criteria give EMTs and Paramedics set conditions and presentations for transporting direct to a designated trauma centre.

These include patients who are injured due to large force, or mechanism of injury, and with certain injury patterns. Examples of these are included in **Table 2**.

### PERFORM TRAUMA AUDIT

High quality trauma audit processes and quality management systems are essential in aiding trauma research [25;26]. Within the UAE, ambulance services and trauma systems must be prepared to benchmark their performance against international standards. This best practice undertaking allows for identification of service improvements and service achievements, thus ultimately benefitting the end-user of the service. Ongoing evaluation and a willingness to implement quality improvement processes are cornerstones of any trauma system.

### CONCLUSION

The current burden of trauma on the citizens and residents of the UAE is unacceptable. As one of the leading causes of death in the UAE, the impact on individuals, families and the economy is overwhelming. Simple public health initiatives, and engaging with the public on injury prevention and increasing their capacity to respond will enable all citizens and residents to reduce risk and respond appropriately.

Enforcement of interventions identified by HAAD Public Health and the ADTSI is a key step in ensuring optimisation of prevention strategies has occurred. The misinformation surrounding provision of first aid treatment to those who need it needs to be dispelled. The further development of inclusive trauma systems such as the ADTSI, and the contribution of data to the PATOS Registry will further the evidence-based management of trauma disease in the UAE.

High risk mechanisms	Injury pattern
<ul style="list-style-type: none"> <li>• Ejected from vehicle</li> <li>• Fall from height ≥ three meters</li> <li>• Involved in an explosion</li> <li>• Involved in a high impact Road Traffic Collision (RTC) with incursion into the occupant’s compartment</li> <li>• Involved in a vehicle rollover</li> <li>• Involved in an RTC in which there was a fatality in the same vehicle</li> <li>• Entrapped for &gt; 30 minutes from vehicle</li> </ul>	<ul style="list-style-type: none"> <li>• Injuries to the head, neck, chest, abdomen, pelvis, axilla, or groin that are penetrating, sustained from blasts or involve two or more of those regions</li> <li>• Limb amputation above the wrist or ankle</li> <li>• Suspected spinal cord injuries</li> <li>• Serious crush injury</li> <li>• Major compound fracture or vascular compromise</li> <li>• Fractured pelvis or two or more of long-bones</li> </ul>

**Table 2:** Examples of trauma bypass criteria

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