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Enhanced care team response to incidents involving major trauma at night: Are helicopters the answer?



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ABSTRACT

Introduction: Challenges exist in how to deliver enhanced care to patients suffering severe injury in geographically remote areas within regionalised trauma networks at night. The physician led Enhanced Care Teams (ECTs) in the West Midlands region of England do not currently utilise helicopters to respond to incidents at night.

This study describes this remote trauma workload at night within the regional network in terms of incident location; injury profile and patient care needs and discusses various solutions to the delivery of ECTs to such incidents, including the need for helicopter based platforms.

Methods: We present a retrospective analysis of incidents involving Major Trauma occurring in the West Midlands Regional Trauma Network in England over a one year period (1st April 2012 until the 31st March 2013). Anonymised patient records from the Trauma Audit and Research Network (TARN) for patients that had been conveyed to hospital by ambulance/air ambulance were cross-referenced with the West Midlands Ambulance Service NHS Foundation Trust (WMAS) Computer Assisted Dispatch (CAD) archive for the same period. Data were abstracted from the combined dataset relating to injury severity (ISS/ICU admission/death at scene or as inpatient); ECT resource activations/scene attendances; incident location and the need for enhanced level care.

Results: A total of 603 incidents involving Major Trauma were identified during night time hours. Enhanced Care Team resources attended scene in 167 cases (27.7%). Of the incidents not attended by an ECT 179 (41.1%) were due to falls and 91 (20.9%) involved a 'Road Traffic Collision'.

A total of 36 incidents (6.0% of total at night) occurred in locations identified as being greater than 45 min by road from the nearest major trauma centre. In these cases 13 patients had enhanced care needs that could not be addressed at scene by the attending ambulance service personnel.

Conclusions: There is limited evidence to support the need for night HEMS operations in the West Midlands regional trauma network. The potential role of night HEMS in other regional trauma networks in England requires further evaluation with specific reference to the incidence of Major Trauma and efficiency of existing road based systems.

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Introduction

Regional Trauma Networks (RTNs) were formally launched in England in March 2011 [1]. Within the West Midlands Regional Trauma Network there are 3 adult Major Trauma Centre's (MTC), 1 children's MTC and 10 Trauma Units (TU) (Fig. 1). The MTCs in the north and south of the network also receive patients from TUs from outside the West Midlands. All potential Major Trauma patients are screened using a major trauma triage tool (Fig. 2). Patients triaged as having identified or suspected severe traumatic injuries should be transported preferentially to a MTC (bypassing TUs if necessary), if they fall within a 45-min travel window of the MTC. Support for triage decisions is available 24/7 via a Regional Trauma Desk in the Emergency Operations Centre (EOC) manned by a specialist trauma paramedic [2].

Triage bypass decisions can be overridden by the acuity of the patient's injuries. Such patients will usually have time critical airway, breathing or circulatory compromise which cannot be resolved or attenuated within the skill mix of the personnel at scene. These patients must be taken to the nearest TU unless personnel with advanced clinical care skills can be transported to scene.

Within the West Midlands network there is a 24/7 Medical Emergency Response Incident Team (MERIT). The MERIT team consists of a doctor competent in advanced airway management and immediate surgical intervention (normally a consultant in Emergency Medicine or Anaesthesia) and a specialist trauma paramedic [3]. The role of the MERIT service within the regional trauma network is twofold: to deliver enhanced care interventions to patients with time critical injuries and to facilitate expedient onward transfer to centres for definitive care.

Between the hours of 0700–1900 the MERIT team is deployed by helicopter based at RAF Cosford in Shropshire. The location of the

airbase in the centre of the region ensures appropriate coverage of all areas within the network. In addition to their role as a tool for skills delivery, helicopters provide an additional advantage in incidents located in remote parts of the region as a platform for rapid transfer to definitive care.

The MERIT team is deployed by road utilising a Fast Response Vehicle (FRV) between the hours of 1900–0700. The night MERIT base is located in West Birmingham in close proximity to the regional motorway networks and the centre of the city. Additional regional enhanced care resources operating at night include voluntary organisations such as doctors from the British Association of Immediate Care Specialists (BASICS) and the West Midlands Central Accident Resuscitation and Emergency (CARE) Team. Although not formally integrated with MERIT service the regional voluntary schemes utilise common standard operating procedures, equipment and governance structures. Many personnel from the MERIT service also respond to incidents with voluntary schemes.

At night the 45 min travel isochrone becomes more important than during daylight hours due to the unavailability of helicopters for skill insertion to scene and onward transfer to an MTC. This increases the proportional area of the regional network classed as geographically "remote". The current models of delivery of specialist pre-hospital care teams to such areas at night in the West Midlands are outlined in Box 1.

Box 1—description of the models for Enhanced Care Team delivery utilised in the West Midlands. Both 'interception' and 'hyper-acute transfer' are co-ordinated via the specialist trauma paramedic manning the regional trauma desk in close liaison with the ambulance crew conveying the patient; the Enhance Care Team and receiving hospitals.

The logistics of how best to deliver enhanced care to these remote trauma patients is a subject of debate [4]. Night flying of civilian air ambulance helicopters is common in North America

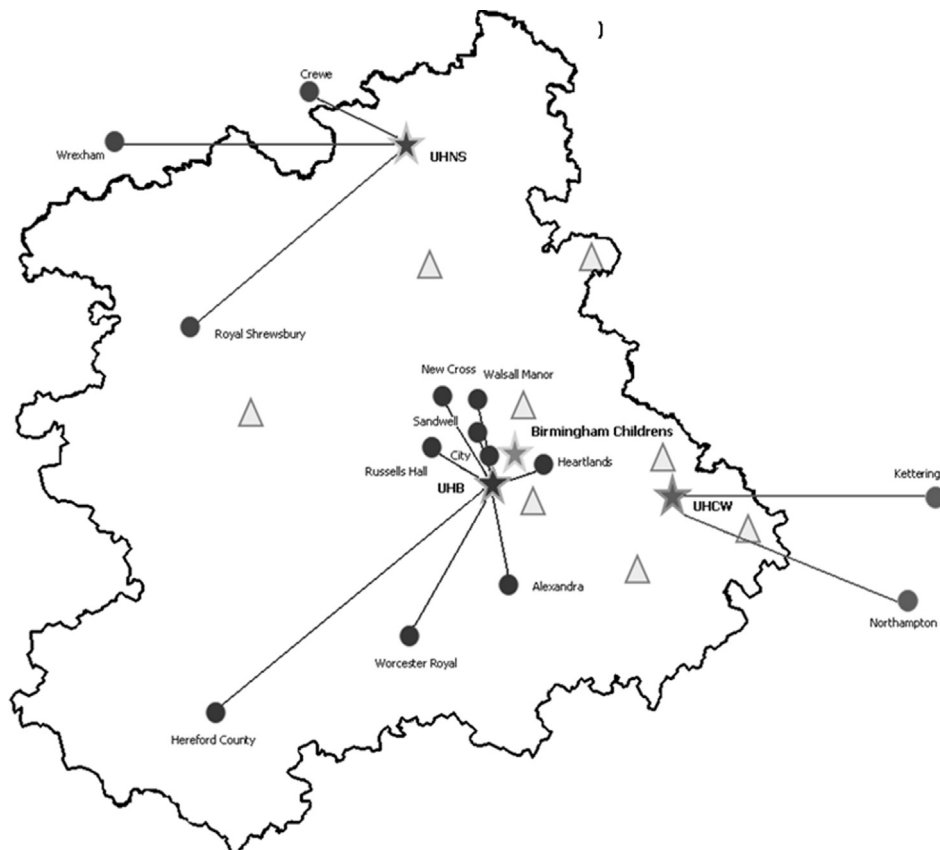


Fig. 1. Schematic diagram of the location of hospitals within the West Midlands Major Trauma Network; MTC—star; TU—circle; LEH (local emergency hospital—not designated to accept trauma)—triangle (reproduced with permission from West Midlands Ambulance Service NHS Foundation Trust).

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