

Mass Casualties and Burns at the Royal Darwin Hospital: 2002-2010

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Abstract

Royal Darwin Hospital (RDH) is recognised as Australia's National Critical Care and Trauma Response Centre. RDH gained world recognition with its response to the 2002 Bali bombing where 61 patients were evacuated within 36 hours of the disaster, and 48 patients with severe burns were transferred to burns units all over Australia. In 2009-2010, RDH responded to 2 mass casualty disasters, the Ashmore Reef disaster in April 2009 and the TIO bombing in February 2010. In the Ashmore Reef disaster, 21 patients were evacuated to RDH, 17 of these were admitted with severe burns, and 5 required transfer. In the Territory Insurance Office (TIO) bombing, 13 patients attended the Emergency department, 4 required burn related admissions and all were treated at RDH. Eleven patients required ICU/HDU admissions and 30 burn-related operations were performed during both incidences. This paper reviews the response of a small remote burns service to mass casualties.

INTRODUCTION

The Royal Darwin Hospital (RDH) is the largest teaching hospital located in the Northern Territory of Australia, and is known as Australia's National Critical Care and Trauma Response Centre. With approximately 363 beds and more than 1,700 staff, it provides a broad range of services in all speciality areas to the Darwin urban population, and serves as a referral centre to the Top End of the Northern Territory, Western Australia and South-East Asia. A Top End population of approximately 150,000 is serviced by the hospital.

RDH won international recognition for its role in the retrieval, treatment and transfer of victims of the 2002 Bali bombings. Within 62 hours of the bombings, medical staff had resuscitated 61 patients, including 20 intensive care patients, and also evacuated 48 patients to burns centres around Australia. Following the second Bali bombings in October 2005, the hospital treated more than 20 evacuated victims, and in 2006 it treated victims evacuated from East Timor. The nearest specialized burns unit to Darwin was in Adelaide, located 2600 km away in South Australia. In 2009 and 2010, RDH responded to 2 other mass casualty disasters, the Ashmore Reef disaster in April 2009 and the TIO bombing in February 2010.

This paper reviews the response of the RDH's small remote burns service to the 2002 Bali, 2009 Ashmore Reef, and

2010 TIO mass casualties.

METHODS

Details from the 2002 Bali bombing were extracted from the article by Palmer et al. (2003).¹ Details for the 2009 Ashmore Reef disaster and the 2010 TIO bombing were compiled by the authors from the RDH trauma database. The database was reviewed to obtain patient names and details of their injuries. The RDH burns database was then reviewed, along with the RDH computer system. Information regarding types of injury, degree of burns, types of management, and theatre visits were then compiled. Further management events in terms of discharge or transfer to another facility were also recorded.

RESULTS

2002 BALI BOMBING

There were 61 admissions to the RDH from the 2002 Bali bombing. Forty-eight of the 61 patients (78%) were admitted for burns. These 48 patients were transferred interstate. The mean Total Body Surface Area (TBSA) burnt in these patients was 26.6%. During this crisis, RDH was also reinforced with a burns assessment team from the Royal Adelaide Hospital (RAH). As a result of the actions by RDH in response to this disaster, the RDH's strategic location in disaster response was recognised, and it was named Australia's National Critical Care and Trauma Response

Centre (NCCTRC) in 2005.

2009 ASHMORE REEF DISASTER

After the Ashmore Reef disaster², 44 patients required medical attention. Twenty-one patients were admitted to the RDH, and 17 of these (80%) had burns. The mean TBSA burnt in these patients was 15.6%. During the initial surge, 12 debridements and 4 escharotomies were performed. Five patients were transferred to Royal Brisbane Hospital (RBH) with burns involving 15-56% TBSA. Four of the remaining patients underwent further debridements and split-skin grafts (SSG) of 3%, 5%, 6%, and 7%. In total, 23 theatre visits were made during the care of victims of this disaster. Other than the 5 patients who died during the initial insult, all patients that entered the Australian medical system have survived.

2010 TIO BOMBING

The TIO bombing was an incident at a Territory Insurance Office (TIO) branch in Darwin.³ Of those wounded by the bombing, 13 patients attended the emergency department. Four patients required burn-related admission to RDH. In total, 7 theatre visits were made, with 4 initial scrub and dress, and 3 requiring SSG with TBSA burns of 4%, 9% and 12%. There were no transfers to other hospitals. The RAH burns unit was available for additional assistance if needed, but none was required.

DISCUSSION

After the 2002 Bali bombing response, the majority of burns patients were transferred out of RDH. There was a significant increase in infrastructure, personnel, and

development of strategic links with burns units interstate. During the response to the 2009 Ashmore Reef disaster and the 2010 TIO bombing, 76% of burn patients having burns of less than 12% TBSA were treated until the definitive grafting stage at the RDH. The Mean Burn Area from the 2002 Bali incident was 26.6%, while from the 2009 Ashmore Reef incident it was 15.6%.

RDH attributes its successful response to these casualties to the increase in the infrastructure and the announcement of the National Critical Care and Trauma Response Centre (NCCTRC) as well as its policies and approaches. In situations of mass casualties, the staff adopted a battlefield casualty approach, where they scrub and dress, and perform escharotomies with minimal time. There were multiple surgeons per patient to facilitate rapid transit, and a great deal of cooperative teamwork. RDH also uses a coding system with car names instead of just numbers when admitting patients from such disasters. These methods may be useful in other hospitals to ensure effective responses to situations of mass casualties.

References

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