

EMERGENCY MEDICINE

Burns disasters - a plan for South Africa

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'An emergency anticipated and prepared for ceases to be an emergency.'¹

The need for a burns disaster plan integrated with national and provincial disaster plans was highlighted during the South African Burns Society Congress in Pretoria in 2009. In recent times, a fire at a large printing works in Paarl and a nightclub in Durban, and bush fires around Cape Town, have questioned both the prevention strategies and our preparedness to cope with the potential number of burn casualties. The likelihood of a burns disaster increases when large numbers of people are gathered in an environment where powerful sources of energy are harnessed in industry or where there has been a significant growth in transportation and technology.²⁻⁶

Acts of terrorism have highlighted the need for national disaster plans in all countries. The Australian Burns Disaster Plan (Ausburnplan), for instance, was drawn up in the aftermath of the Bali catastrophe.⁷ Analysis of major terrorist attacks has revealed that up to 15% of the total live casualties sustained severe burn injuries; but the arrival of even 10 new major burns would overwhelm most burns units in South Africa.^{3,5,6,8}

The International Society for Burns Injuries (ISBI) guidelines for the management of large numbers of burns casualties recommend that 'each country has or should have a disaster planning system that addresses its own particular needs.'⁹ The essential elements of any disaster plan are descriptions of how medical facilities should provide appropriate treatment, and how to ensure access to such facilities.⁹ The South African Burns Society (SABS) should assist in evaluating these facilities, help to maintain standards, and formulate and implement provincial and national burns disaster plans.

Ten principles of burns disaster planning

1. Disaster plans have not made adequate provision for burn casualties, a group that has **required greater access to resources** than other categories of trauma, and requires input from several role-players.³⁻⁶ Police, fire and ambulance services are critical to the successful implementation of disaster plans, and should be represented in the planning committees.⁶
2. Crucial to the prevention of burns disasters in South Africa is the critical analysis of domestic, public and industrial settings. The

successful implementation of **basic safety standards** has resulted in a significant reduction in the fatalities per burns disaster over the last century.³

3. If one were to divide the casualties into three groups (those who die within 24 hours, those who require inpatient care, and those who can be managed as outpatients), the **smallest cohort have required hospitalisation**. The Coconut Grove Disaster demonstrated that the dead interfere with the optimal management of the living.³
4. The first 2 - 3 hours require the implementation of emergency care in the field, based on **ATLS principles**¹⁰ and **South African Burns Society guidelines**.¹¹ During the ensuing 8 hours, the complex relief strategy should be implemented according to the **disaster plan**. A co-ordinating team should be located at a central facility.^{3,7}
5. Optimal management of major burns casualties occurs in a **burns unit**.^{2,3} Triage patients to the appropriate category is paramount in the success of a plan's implementation.^{3,4} An experienced burns practitioner should co-ordinate with the senior emergency medicine practitioner on the scene.^{2,3}
6. The early notification of surrounding hospitals is important. A burns disaster will overwhelm even a burns centre within a multi-specialty hospital. **Secondary triage** may be necessary so that patients may be diverted to where treatment may continue.³⁻⁹
7. Each department in the hospital complex involved should have an **emergency call-out plan** and implement it according to the nature of the disaster, as determined by the senior burn surgeon. Critical medical and support personnel may include doctors from several specialties (surgeons, intensivists, anaesthetists); nurses with critical care, wound care, trauma or burns experience; occupational therapists; physiotherapists; escorts and translators; clerks; radiologists and radiographers; blood bank and laboratory technicians; social workers and psychologists; administrators; security personnel and porters.⁶
8. An identified member of the team should **liaise with the media** and with representatives from victims' families. Inappropriate management of these groups hampers patient care.^{2,3,6}
9. Adequate **stockpiles of supplies** should be available for such a disaster. The laboratory will be under increased pressure, and the blood bank should be able to arrange major blood donation drives at short notice.^{6,7} Cadaver skin was identified as the major single resource lacking in Singapore after the 2002 Bali attack, despite having more than 9 000 cm² in their local skin bank at the time of the disaster.¹² Legislation and local resistance have severely limited the availability of cadaver skin in South Africa.
10. Members of the South African Burns Society (SABS) should **maintain a list of units and individuals** accredited with the SABS, collaborate with other agencies, provide courses and training (e.g. course in Emergency Management of Severe Burns¹³), be represented at disaster management headquarters, maintain contact with burns units and liaise with bed managers during normal functioning.⁹

Since 'each country should have a disaster planning system that addresses its own particular needs,'⁹ the SABS has identified the need for a major audit of burns care in South Africa in order to formulate, implement and test such a plan.

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The maintenance of a central database of burns units and practitioners forms part of this strategy. Broader objectives include the improvement of burns care and resources in South Africa and increasing the number of practitioners to complete the Emergency Management of Severe Burns (EMSB) course.

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ISSUES IN MEDICINE

Ethical decision making in severe paediatric burn victims

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'The life of a patient is the only life the patient has – can we really make a judgment call on who to treat or not?' J Puchula (from his address at the 2008 congress of the European Club for Paediatric Burns, Gdansk).

The matter of triaging severe burns so that expensive and potentially futile treatment should not be initiated was discussed in a priority setting process by the Western Cape Health Department, and led us to question the validity of such an approach.

The provision of equitable, accessible and appropriate burn care in South Africa faces many problems, particularly for patients with major burns. Approximately 3.2% of South Africa's population suffer burns annually, of whom 50% are less than 20 years of age, and burns are the leading cause of unnatural death under the age of 5 (personal communication – M Pedan, MRC).¹ Burn care in South Africa varies enormously in terms of clinical management, organisation, facilities, staffing, workload and outcomes. Care of the burnt child is entirely emergency driven, labour intensive, has an appreciable morbidity and mortality, and experiences the same economic pressures as the rest of health care.

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Driven by fiscal restraints and the need to ration resource allocations, health authorities are driving to rationalise medical care by means of standard protocols. Therefore, it would be prudent to re-evaluate the management and outcome of major paediatric burns in South Africa, emphasising the development of criteria for an explicit and accountable health care approach.^{2,3} The protocols should include a fair, ethical, equitable and reasonable process for the management of the burnt patient with little or no hope of survival.

Our case study below highlights the moral and ethical questions posed by a patient sustaining very severe burns in relation to advances in burn care. The moral dilemma is that while survival could be achieved, it might result in a disfigured, deformed and disabled person with poor quality of life. Would this be acceptable or justified in a limited health resource environment?⁴

Case history

A 9-year-old girl sustained 94% total body surface burns (TBSA) following a gas explosion, with 75% of the burns full thickness and with a significant inhalation component. She was resuscitated following standard protocols.⁵ Multiple complications during her in-hospital treatment included burn wound infections, pneumonia, pleural effusion, broncho-pleural fistula, and 6 episodes of sepsis; 25 surgical procedures – 14 within the first month during a hospital stay of 107 days – were required, including emergency escharotomies, eschar debridement, procurement and application of allograft, biological skin substitutes, cultured epithelial autografts and use of autografts. Enteral feeding provided her nutritional needs, also during surgical procedures to maintain requirements. She received active and passive physiotherapy and occupational therapy throughout her hospitalisation. During this period, she was isolated and attended to by only her immediate family. Before discharge, she was entered into an intense and all-embracing physical and psychosocial rehabilitation programme. Although left with an altered body image, scarred facial features and significant physical impairment, her introduction into mainstream activities progressed over months and years.

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