The Asian tsunami disaster: emergency management aspects

Perhaps catastrophe is the natural human environment, and even though we spend a good deal of energy trying to get away from it, we are programmed for survival amid catastrophe.

Germaine Greer

While the threat of terrorism cannot be underestimated, the recent Asian earthquake and tsunami disaster demonstrates the awesome nature of large natural disasters in generating mass casualty and infrastructure destruction.

The response to mass casualty events needs to be placed in the context of Australia as a nation and the current legislation defining emergency management arrangements [1]. The whole system needs to be considered in managing a mass casualty event. In addition, all four phases of emergency management (prevention, preparedness, response and recovery) must be considered and integrated [2].

Currently, emergency management arrangements are mostly focused on on-shore arrangements, although Emergency Management Australia (EMA) plays a key Australian government coordinating

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role and AusAID has an international response role in developing countries. Under the legislation, on-shore disasters are managed by the affected jurisdiction.

In NSW, the relevant legislation applies under the *State Emergency and Rescue Management Act* (SERM) as amended, 1989 [3]. From a health perspective, NSW HEALTHPLAN (2005) articulates the whole of health arrangements within medical, ambulance, mental health, public health and health communications streams, each controller having a portfolio of responsibilities [4]. The activation of NSW HEALTHPLAN ensures whole-of-health operations within whole-of-government. Requests for interstate and international assistance are made through the State

Emergency Operations Controller (SEOCON) to the Australian government via EMA.

During the tsunami, the NSW Health Services Disaster Control Centre was established and the utility of the Incident Control System firmly reinforced [5]. This system ensures the integration of operations, planning and logistics functions during the deployment. Further integration at a whole-of-government level occurs through the State Emergency Operations Centre.

The challenges in mounting a medical response internationally are many. Following Bali, the establishment of the Australian Health Disaster Management and Policy Committee (AHDMPC) has improved health input at the Australian government level in responding to national and international emergencies [6]. Australia is a vast continent surrounded by archipelagic seas and three of the world's great oceans. Outside of the capital cities, it is sparsely populated. The 'tyranny of distance' certainly continues to apply within the island continent but may be less relevant when assessing the risk of terrorism and biological emergencies from overseas in the age of air travel and electronic communication [7].

Following the tsunami disaster on Boxing Day, the Australian government received requests for medical assistance from the governments of Indonesia, Sri Lanka and the Maldives. In recent times, the Australian defence force has provided immediate assistance in our region; however, on this occasion, the Indonesian government requested civilian medical teams.

The Australian government, through EMA and AusAID, in consultation with the Department of Health and Ageing, tasked the NSW Counter Disaster Unit (CDU) with the establishment, configuration and

WA arrival in Sydney.

Medical equipment in Aceh.

deployment of four disaster medical teams. This was following the full activation of AUSASSISTPLAN, the national disaster plan for overseas assistance.

The request from the Australian government was made at 1700 on 28 December 2004. Our team delivered the first two taskforces (ALPHA and BRAVO, 14 persons each) at RAAF Richmond by 1000 the next day, operational just 17 hours from request. These teams were deployed to Banda Aceh via Jakarta and, soon after, were in place providing medical and surgical care. The configuration of the team included surgical (orthopaedics/general surgery), emergency medicine, nursing, paramedic, public health/infectious diseases and logistics elements, through the NSW fire brigades. The deployment included personnel from four States; NSW, Victoria, WA and Queensland.

Of particular importance was the need for self-sustainability in such an austere environment; the NSW fire brigades were vital in providing essential logistics through their urban search and rescue capability. The taskforce deployment included 16 pallets of medical and logistics equipment, including pharmaceuticals, generators, lighting, tentage, water and ration packs, completely filling an RAAF 707.

The team performed over 90 operations in total and up to 300 consultations and interventions per day, with over 70

in-patients managed at all times. This treatment was undertaken in very difficult conditions with no running water, sterilisation or laboratory infrastructure, and only intermittent power through the generator capability deployed with the teams.

The other taskforce (CHARLIE team to the Maldives) and public health team (DELTA team to Sri Lanka), were also configured in Sydney and were deployed by the CDU on 30 December from Sydney airport. These teams provided vital public health and primary care support.

In all, 50 personnel were deployed within these four teams (28 from NSW), a further three staff from Canberra Hospital were deployed to Phuket as an assessment team, and two mental health workers went to Jakarta to assist United Nations staff. Many other forensic experts were embedded with the Australian Federal police in Thailand. Subsequent teams from other jurisdictions (ECHO from South Australia, FOXTROT from Queensland and GOLF from Victoria) replaced the initial deployment over the next several weeks.

The initial deployment of four civilian health taskforces in such a short time is a substantial achievement and a tribute to all the staff involved. The deployment also demonstrated the whole-of-government cooperation apparent in NSW, a legacy from the Olympics [8]. The NSW urban search and rescue capability, together

with counter-disaster arrangements and stockpiled equipment provided by the NSW government, was vital in undertaking such an urgent tasking. This demonstrates the significant capability of our response in the event of disasters within NSW and how this capability is now a national and international asset. These were unprecedented, truly Australian health deployments, both multi-jurisdictional and multi-disciplinary, with civilians and reservists working together under the umbrella of the Australian government to support our region in such a tragic time.

In summary, Australia will inevitably be called upon to respond to events in our region in the future. While the jurisdictions continue to be the key effectors of disaster response, the threat of natural disaster, terrorism and emerging infectious diseases emphasise the important role the Australian government has in disaster coordination.

Ensuring that appropriate health expertise is promptly factored into disaster response is important. The AHDMPC has been very successful in coordinating the health response to disasters and a continued operational capability will be important. The Australian government interdepartmental taskforce has also been successful in ensuring a 'whole-of-government' approach.

Going forward, there is a need to continue to develop capacity in developing nations in our region. This also reaffirms the need to continue to examine Australia's risk for disaster and to have detailed plans to mitigate against the risk.

In regard to disaster planning, history is the best predictor of the future. There are have been catastrophic disasters on average every 10 years since the late 19th century [9]. We must accept that disasters will inevitably occur and we must continue to develop detailed plans for response. Denominators for population cohorts in country and in our region are available and should be analysed pre-disaster to assess risk and vulnerability and ensure an appropriate response.

There has been significant debate over the utility of field hospitals in international

humanitarian relief, primarily in regard to the delay in response time and the focus on acute trauma services (at the potential expense of population health strategies such as immunisation and vector control). This particularly applies to field hospitals arriving 3 weeks after the event, with a focus on 'western medicine'. Indeed, it has been reported that, in Banda Aceh at week 3, the doctor:patient ratio approached 1:1 [9]. However, our deployment demonstrated the utility of a 'light' multi-disciplinary team for acute response based on the epidemiology of tsunami disasters. The teams were configured based on historical data, especially relating to the Papua New Guinea tsunami response [10] and were sent as a taskforce, including population health elements. An appropriate acute phase response as well as a focus on population health can be implemented concurrently.

Detailed needs assessment is important but key decisions will continue to be required in the immediate post-disaster phase when 'perfect' data is not available. Annotating risk assessments in the pre-disaster phase will assist in ensuring the best possible response.

Up to date and evidenced based guidance should be implemented to help improve specific problems faced by crisis affected populations, including psychosocial, gender equity and children's health care issues. In addition, the development of early warning systems will also remain a challenge but are potentially life saving. In Australia, early warning of tsunami is coordinated through EMA.

The use of the Australian defence force in humanitarian relief remains important, given the logistics capability that it brings [10, 11]. However, this cannot always be guaranteed or be diplomatically appropriate, so

the on-going development of inter-operability between defence and the civilian medical community will remain important.

There are also ethical dilemmas associated with utilising military assets. This particularly applied to the *USS Abraham Lincoln* deployment, which was returning from Iraq. While essential logistics elements were immediately available from the carrier group, especially rotary wing aircraft, which enabled surveillance activity and intervention in remote areas, humanitarian relief is not military 'core business'. Significant debate continues within the United Nations in regard to the utilisation of such elements in the context of the war in Iraq [9].

Coordination of non-government organisations and donor offers within existing sovereignty arrangements also remains difficult to manage. Further leadership from the United Nations is necessary to streamline the response phase.

In summary, in regard to emergency and disaster management, "the whole is greater than the sum of the parts" [11, 12]. While 'emergency management' is often an eclectic mix of providers, when reviewed as part of an integrated emergency management model, it can be a strength rather than a weakness. Coordination and communication systems, which are continually tested and operate effectively, are vital for success. Utilising emergency management frameworks allows an all-hazards approach; undertaking careful risk and threat assessment is the mainstay in planning for disasters, which remain an inevitability within our regional landscape.

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