



Early post-tsunami disaster medical assistance to Banda Aceh: A personal account

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Abstract

The south Asian tsunami on 26 December, 2004, saw Australia deploy civilian teams to an international disaster in large numbers for the first time. The logistics of supporting such teams in both a self sustainability capacity and medical equipment had not previously been planned for or tested. For the first Australian team deployed to Banda Aceh, which arrived on the fourth day after the tsunami, equipment sourced from the New South Wales Fire Brigades Urban Search and Rescue (US&R) cache supplied all food, water, tents, generators and sleeping equipment. The medical equipment was largely sourced from the CareFlight US&R medical cache. There were significant deficits in surgical equipment as the medical cache had not been designed to provide a stand alone surgical capability. This resulted in the need for substantial improvisation by the surgical teams during the deployment. Despite this, the team performed nearly 140 major procedures in austere circumstances and significantly contributed to the early international response to this major humanitarian disaster.

Key words: *disaster, logistics, tsunami.*

At 18:00 hours, Sunday, 26 December, Dr Ken Harrison, anaesthetic and retrieval specialist with CareFlight Sydney first heard about the tsunami when watching the television news. During the evening it became clear that a major humanitarian crisis was unfolding, requiring an international response.

Ken: Thought 1: Are CareFlight's international retrieval resources available? (Mobilizing civilian specialist retrieval teams had been delayed after Bali). Call the international retrieval coordinator at CareFlight: three jets were available to repatriate injured Australians. Thought 2: Are any government response plans being made? Contact New South Wales State Disaster Controller. 'To my surprise, he was unaware of the incident. I let him know we are available and prepared if needed'.

During the next 36 h there were numerous updates from the state controller. Communications were also established between the principal organizations forming the National Retrieval Network: CareFlight New South Wales, CareFlight Queensland and Royal Adelaide Hospital/Mediflight. The network had been established after the Bali bombings to ensure a coordinated response to critical care transport for disasters occurring overseas or in remote Australia.¹

At 18:00 hours on Tuesday, 28 December, the duty state controller asked both Ken Harrison and Alan Garner, emergency physician and medical chairman of CareFlight, to join an Australian medical team to go to a tsunami-affected area, probably Indonesia. He requested the CareFlight disaster medical cache for dispatch with the team.

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This cache is the largest stock of disaster medical equipment in Australasia, outside of the defence forces. New South Wales public hospital disaster kits contain limited amounts of equipment. Apart from Ambulance Service major incident vehicles, which contain limited equipment, and some drug stores for chemical, biological and radiological incidents, New South Wales has no other preprepared disaster medical equipment stockpiles.

Ken: Thought 1: The cache is designed for an Urban Search and Rescue (US&R) deployment;² some critical parts of the cache are provided by the NSW Fire Brigades (NSWFB). Call NSWFB: immediately get a tent, a fridge for drugs, a generator and some lights. Thought 2: The US&R cache is designed to provide care to injured victims during extrication from a major building collapse, assuming that the victims will then be handed over for ongoing care. It is unlikely there will be anyone to provide ongoing care in a tsunami area – the cache would have to provide longer term care, including a surgical capability. Thought 3: There probably won't be much surviving local infrastructure to support the team – it will have to be completely self-sufficient. 'I knew that the NSWFB had all the food, water, tents, generators etc. that we needed in the US&R taskforce cache, as the cache composition assumes that deployment may be into an earthquake-affected area where all infrastructure is destroyed'. Call the disaster controller: suggest deploying the logistic support components of the NSWFB US&R taskforce with the medical team.

Preparation

The CareFlight disaster cache was packed in 1 h. However, at 20:10 hours a 30-page fax was received from the New South Wales Counter Disaster Unit, itemizing equipment designed to support 500 casualties in a population of 50 000 people for 3 days. The Counter Disaster Unit requested assembly of three complete inventories of this list, supplied from Westmead Hospital. Almost all the critical care equipment was already contained in the CareFlight cache. Some items such as sharps bins and spinal needles were not on the Commonwealth list, whereas drugs like diazoxide and isoprenaline are included. The list was therefore modified to meet the likely deployment requirements.

Through the night, almost all the additional pharmaceuticals from the Commonwealth list were obtained. However, of the other consumable items only about 30% could be sourced through Westmead Hospital. The

only items of non-consumable equipment the hospital could spare were two bedpans and two urinals. All the hardware, diagnostic tools, monitoring equipment, surgical instruments and anaesthetic equipment came from the CareFlight cache. This resulted in a substantial deficit in surgical equipment as the CareFlight cache contained only enough surgical equipment for the US&R role: performing simple suturing, inserting chest drains and performing prehospital amputations. This deficit in surgical equipment resulted in substantial improvisation being required of the surgical teams and some procedures being performed with implements such as a pocket knife during the early days of the deployment.

Loading at Royal Australian Air Force Richmond

The equipment was transferred by NSWFB truck to the airforce base for loading into a B707. At first it was uncertain whether it would all fit. First priority was the self-sustainability equipment. Then the medical cache was loaded and then two pallets provided by the Australian Agency for International Development comprising collapsible jerry cans for water, tarpaulins and body bags. All these items proved useful, but not for what they were intended. The water containers became funnels and surgical scrub bowls, the tarpaulins became ward floor liners, privacy screens and rainwater collectors and the body bags were used as undersheets for patients and to move them to and from the operating theatres. In all, 17 tons of equipment was transported with the team.

It was only on arrival at the air base that the full team met. The team comprised:

- Two team leaders – senior Australian Defence Force (ADF) reserve personnel
- Two orthopaedic and two general surgeons
- Four anaesthetists
- Four emergency nurses and four operating theatre nurses
- Two emergency physicians
- Two public health physicians
- An infectious diseases physician
- Two NSWFB officers (operational logistics)
- A medical logistician

Unloading at Banda Aceh airport

After an overnight stay in Jakarta, the team arrived at Banda Aceh airport. The 17 tons of equipment was

hand-unloaded and carried 80 m to the edge of the hard apron by the medical team assisted by the aircraft crew and pilots and one ADF forklift. We spent the night in a tent on the edge of the airport adjacent to the Indonesian Army compound – this was considered to be the most secure area (prior to the tsunami, there had been local insurgent activity).

The next day the team awoke at 05:00 hours, packed their sleeping gear and tents and moved back to the equipment dump that had been secured overnight by ADF personnel. That day six truck loads were moved to the hospital using an ADF truck and a variety of other trucks obtained by begging or bartering.

The hospital had been selected by an ADF reconnaissance team. It was a private hospital, 150 m outside the inundation area and essentially intact. It had apparently been abandoned; bags of i.v. fluids were still hanging with drips of blood evident on the floor where patients had fled in fear. A team of Indonesian doctors and nurses had arrived the previous day from Jakarta.

Ken: 'We were invited to select some accommodation. I decided to set up in the classrooms on the second (top) floor; it was secure, and if it collapsed in subsequent earthquakes we could "ride it down." The two rooms could accommodate all the personnel and equipment. The 17 tons of equipment were moved up to the second floor by the team forming a human chain.

At the hospital, three things amazed me: the scarcity of staff, the small number of patients and the overpowering smell of infection coming from them. I knew intellectually that all the patients with body cavity injuries would have died by the time we arrived but I was still surprised that all of the 20 or so patients in the hospital had only peripheral injuries. There were about five Indonesian doctors and only 10 nurses but they had established a command structure under which we operated. Once word got out that we had arrived many more patients arrived and the smell did not improve.

Medical services provided by the team

The team worked in Banda Aceh for 9 days of 12–18 h duration without break, providing surgical teams for the Fakinah hospital and the Kasdem hospital, the only other functional hospital in the city. The city's major hospital had been inundated and was unusable. Team emergency physicians and nurses treated patients in the ED and wards of the Fakinah hospital. The team infectious diseases consultant was the principal pro-

vider of care for patients in the wards, assisted by a professor of medicine from Switzerland. The two public health physicians provided services in the displaced persons camps. The two NSWFB officers provided the toileting and washing facilities for the team, fixed the hospital generator, and myriad other tasks including fixing anaesthetic machines and providing emergency lighting whenever the hospital generator failed.

Alan: 'To support a team of 25 clinicians, we needed more than three dedicated logistics personnel. I was included in the team as an emergency physician but spent the first several days doing nothing but assisting Ken and the Fire Brigade officers with the medical and general logistics'. The support function for the team consisted of two fire brigade officers, two paramedics (who acted as safety officers) and the two CareFlight doctors. All six knew each other and had previously worked together. 'We therefore had a sound understanding of each other's roles and skills. Often our roles overlapped; the fire brigade officers assisting with patient care whilst at other times the CareFlight doctors did things like repairing equipment'.

Over the 9 days the teams used approximately two of the three Commonwealth lists in consumables as well as a substantial portion of the CareFlight cache. Improvisation was required. When the plastic aprons in the cache were exhausted, these were replaced with plastic cook's aprons from the USS Abraham Lincoln, flown in by helicopter. Multiple amputations were performed using only five Gigli saw blades that were reused until they shredded or broke completely. Empty water bottles were modified for use as incentive spirometers, salbutamol spacers, galley pots for theatres, funnels, or as candle-holders during blackouts.

Alan: 'We had always intended to include a portable biochemistry/haematology analyser in the CareFlight cache but had not been able to afford it. The only imaging available was a small ultrasound machine that we had brought with us from CareFlight stocks. Otherwise all treatment was based purely on clinical assessment. Fortunately all the team members were very senior in their respective fields, and were prepared to make decisions on the basis of clinical judgement alone – though in reality there was little choice'.

Logistics and resupply

As the deficit in surgical equipment was known prior to departure, additional stocks had been requested to be sent on. However, the only additional equipment received was a case of surgical instruments that arrived

on the last day from Switzerland (organized by the Swiss physician), and the plastic cook's aprons. We heard that there were numerous parcels marked 'urgent' at the airport at Medan. Flights from Medan to Banda Aceh were so limited that none made it to the team.

Although prepared for extensive delays for transport out, the team eventually waited only 7 h for a flight. Logistical problems also resulted in the relieving team from South Australia not arriving in Banda Aceh till the day after the initial team departed.

Living conditions and team safety

Conditions were very hot and humid 24 h a day making for oppressive working conditions and difficulty in sleeping at night. Each team member consumed approximately 7 L of water per day. Ongoing aftershocks also made sleep difficult – there were four shocks greater than 6.2 on the Richter scale and many shocks of lesser magnitude. We deliberately placed large packing cases around the sleeping accommodation to provide some protection from a ceiling collapse.

Infectious diseases were an ongoing risk. Appropriate vaccinations were offered to team members on departure. We took Doxycycline daily and were encouraged to cover up and use repellent. Apart from some bananas and eggs obtained by the public health physicians in the countryside, the team consumed only army rations and imported water. No gastrointestinal disease occurred among the team during the deployment.

The media

The media was everywhere – they filmed, photographed and interviewed the team in the operating theatres, in the wards, in the ED and even in the accommodation area. Although the Australian media were the most frequent visitors, reporters from all continents came through the hospitals during the course of the deployment. At times this was intrusive, but at other times the relationship bordered on symbiotic. Camera crews were utilized to help move patients; the translators who frequently accompanied the journalists were utilized for clinical communications; and television lights were excellent for illuminating dimly lit corners of the wards.

Conclusion

The combined Australian team was the first international medical team to arrive in Banda Aceh after the tsunami and treated several hundred patients. The rapidity of the response was acknowledged by the Indonesian government, forming an important early component of Australia's overall aid package. From a logistics viewpoint two features stand out:

- Without the 'ready-to-go' self-sustainability equipment and expertise provided by the NSWFB from the US&R cache, the team could not have responded to an area like Banda Aceh with decimated infrastructure
- Without the 'ready-to-go' disaster medical equipment cache of CareFlight, the team could not have provided as much medical care as it did. Although there were deficiencies in surgical equipment, the team was able to mobilize quickly with an extensive cache that was simply not available through the public hospital system

As individuals we learned a lot from the Banda Aceh experience. The foremost logistical lesson was that of good preparation. The CareFlight cache has been expanded and is maintained in a packed state ready for immediate deployment. The second lesson is not to rely on resupply via extended logistics chains but to source as much as possible either locally or in adjacent areas. Responding to disasters beyond our shores is new territory for Australian civilian teams. However, the response to the Bali bombings and now the South Asian tsunami suggests that this will be an increasingly important part of being a good neighbour for Australia as a nation.

Competing interests

None declared.

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