Reopening a hospital laboratory in Banda Aceh

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Medical team GOLF departed Melbourne on Australia Day bound for Banda Aceh. This was an AusAID initiative coordinated by Emergency Management Australia (EMA). The group of 24 was the seventh Australian government team sent to tsunami devastated areas.

The team consisted of surgeons, anaesthetists, nursing staff, paramedics, environmental and public health experts and a laboratory team, comprising Dr Geoff Hogg (pathologist), Kay Withnall and myself. Our brief was to provide public health and medical support to communities affected by the tsunami, to coordinate with other agencies and to support local health authorities.

Departure came 2 working days after selection, making provision of equipment and supplies very difficult. However, the team we were to replace confirmed that they had extensive provisions. We travelled with our supplies by Hercules aircraft, a slow process, landing 4 days later at the then chaotic Banda Aceh military airfield. Our instructions changed en route and we were requested to join the Australian & New Zealand army teams at Zainul Abidin Hospital (RSUZA), one of the larger teaching hospitals in Indonesia. Previous groups had operated out of a commandeered 60 bed private hospital at Fakinah, clear of any flooding. The severely ill patients from this hospital were transferred to RSUZA.

We were subject to conditions similar to the army personnel. We slept in stifling conditions on camp stretchers, under mosquito domes. Due to disruption to water and sewerage, there was an Aussie style galvanised iron toilet and a communal shower, limited to 2 minutes per person. Our food consisted of army ration packs. For the second week we crowded into a rental house but we now had a bathroom. Curfew was still enforced as there had been shooting in this area pre-tsunami.

The hospital was a sprawling complex of single storey buildings covering an area of several acres. All buildings had been flooded and many lives lost, especially in the paediatric ward. Most of the hospital equipment, communications, water supply and drainage had been damaged or destroyed. The retreating floodwaters left all buildings and surrounds covered in a 20-30cm layer of thick, black mud. The Anzac units cleared drains, re-established an (intermittent) chlorinated water supply and re-opened two wards and an operating theatre.

Figure 1. View out of laboratory window (photo Kay Withnall).

With tens of thousands of displaced persons, epidemics of cholera, dysentery or typhoid were considered a major risk. Thus, provision of a public health diagnostic service was a priority for the two teams who preceded us. For a short time, their laboratory provided the only functioning service of this type in Banda Aceh. We considered our primary task was to maintain this capacity but to try to work in conjunction with the hospital laboratory.

While inspecting the damaged hospital labs, we met Dr Harwita, the Director of Pathology. Unfortunately, she had lost seven of a staff of 25, including the two who had previously provided a limited microbiology service. We offered to help her resume laboratory services for the hospital. The task was daunting; all equipment and papers had been lost in the flood, nothing was salvaged. Geoff and Kay, with her basic skills in Bahasa, assisted in preparing bi-lingual request forms and a list of tests and requirements for specimen collection. The army tradesmen helped by fitting doors, covering broken windows, replacing electrical fittings and reconnecting the water supply. In the absence of any staff, microbiology became our responsibility.

Initially we had to advertise our service then organise specimen collection from the various sections of the hospital currently run by foreign teams. The Anzacs and German army both ran field hospitals with their own biochemistry and haematology service, the Belgians

and French ran the paediatric ward, the Singaporeans an infectious diseases ward and the Chinese ran a very busy polyclinic. There was also another equally busy outpatient department and an emergency ward, with multinational and Indonesian staff seconded from other regions.

We had expected to receive numerous faecal specimens but instead dealt largely with sputum; there were approximately 200 specimens which also included urine, wound swabs, blood cultures, a single CSF and a few faecal specimens.

Unfortunately, agar supplies and reagents reflected our presumed public health role; with Microbact kits, XLD, TCBS, and selenite media clogging our fridges, supplies of blood and chocolate agars were in perilously short supply. There was no opportunity for re-supply from elsewhere in Indonesia as all flights were heavily booked. The OP clinics generated numerous requests for TB and each day saw two to three new diagnoses based solely on ZN staining.

We had plenty of Gram reagents but limited stocks of strong carbol fuchsin, prompting desperate trading between the few labs that were now established. These included a newly established satellite lab of NAMRU Jakarta, BLK (district health labs), a field lab at Meuloboh on the east coast and the shipboard labs on *HMAS Kanimbla* and *USNS Mercy*.

The lack of reliable water and power continued to confound operations; several of our fridges failed. There was no air conditioning and it was exceptionally hot, dry and dusty. Tiny Drosophila-like flies descended on any moist plates and the condensation problem was immense. Despite insecticide sprays, plates left on the bench for more than a few minutes were almost invariably invaded by miniature ants, which succeeded in tracking over the whole plate. Because we were relying on candle jars, the number of sputum specimens received created storage problems within the incubator.

As noted by the previous team, there was a surprising level of antibiotic resistance encountered. Findings included several isolates of MRSA and ESBL producing *E. coli* and *K. pneumoniae*. A few *P. aeruginosa* isolates from sputum and wounds were resistant to gentamicin, timentin and ciprofloxacin (there was anecdotal evidence of widespread ciprofloxacin prescribing by local doctors). Despite the use of Ashdown's medium, there was no further isolation of *B. pseudomallei*, which had been reported by the previous team. One surprising finding was the isolation of Salmonella Typhi from dermoid cyst fluid; this isolate was fully sensitive. Approximately 10% of sputa were positive for acid-fast bacilli and there was one case of facial leprosy.

There was a disruptive stream of visitors to the lab, especially representatives from newly arrived agencies. Furthermore, as the service became established, patients or their relatives started delivering specimens, in line with local habits. This included some of the DOTS patients, some wearing face masks.

Because our stay was only 2 weeks, we were concerned that our promise to provide continuity of service could be jeopardised. In fact we were 'extracted' following two successive public holidays, leaving insufficient opportunities for goodbyes. At short notice, the now numerous blood cultures and some potential Shigella isolates became the responsibility of Captain Mok of the Australian army.

Fortunately, we were replaced a few days later by an AusAID funded team, which included one Australian and one Indonesian scientist. Subsequently, Kay Withnall was contracted to return for a further 5 weeks and was able to run a training program for local staff. Thankfully this has helped fulfil our initial promise not to abandon this service. Her experiences and the changing scene are the subject of the next report.

Arriving at 4 weeks after the disaster, the role of the overall team had evolved into providing support for the re-opening of this large hospital, rather than dealing directly with tsunami victims. In the interim phase, while the surviving staff were still in the grieving period, the running of this sprawling hospital complex had been a multi-national effort. However, the Australian troops should be singled out for particular praise for their efforts.

Figure 2. Patients queuing at medical records for registration (photo Kay Withnall).

Figure 3. The newly renovated biochemistry/haematology laboratory (photo Kay Withnall).