

Renal dialysis service and patient evacuation during the Queensland Cyclone Yasi disaster

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Hayes B (2011). Renal dialysis service and patient evacuation during the Queensland Cyclone Yasi disaster. *Renal Society of Australasia Journal*, 7(2), 72-75.

Submitted April 2011. Accepted June 2011.

This paper describes one nurse's story of the evacuation of patients in Queensland during the event of a major category 5 cyclone in February 2011. The lessons learned include the importance of communication, both manual and electronic records, clothing, medication and personal requirements, accommodation and transport needs, and the need for extensive culturally appropriate emotional and family support.

Background

Living in tropical Cairns and the Far North Queensland area of Australia, cyclones are a part of life. Each year the wet season (November–April) brings torrential rains, humidity and cyclones that regularly cut Cairns off from the rest of Australia. Generally these cyclones are benign and cause minimal damage. However, 2011 delivered the biggest cyclone to have ever crossed the Queensland coast. The following is a summary of the preparation and eventual evacuation of the Cairns Renal Unit 2000 kilometres south to Brisbane during Cyclone Yasi.

Cairns Renal Services covers a huge area and includes all of the Torres Strait islands, which lie between Papua New Guinea and the northern part of mainland Queensland, incorporating the Cairns and Hinterland, Cape York and Torres Health Service Districts of Queensland Health. It has a land area of approximately 350,000 km², which is comparable to the size of the state of Victoria combined with two Tasmanias. Cairns Renal Services is based at Cairns Base Hospital with satellite dialysis units in Innisfail, Atherton, Mossman, Cooktown and at the Cairns Private Hospital (public) and future plans to expand to satellite provisions to Thursday Island. Throughout this region, peritoneal and home haemodialysis (HD) patients

are supported by training units in Cairns. This wide geographical area makes the probability of cyclones affecting services likely at some stage during the Wet season. At the time of Cyclone Yasi



Figure 1. Catchment area for Cairns Renal Services.

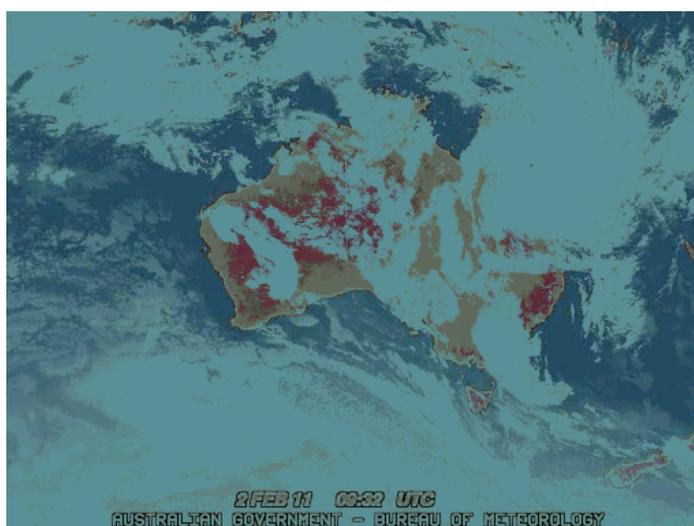


Figure 2. Satellite image of Yasi.

Keywords

Renal, dialysis, nursing, cyclone, disaster.

(1 February 2011) Cairns Renal Services provided care for 181 dialysis-dependent patients.

Since category 5 Cyclone Larry, which crossed the coast south of Cairns in 2006, the Cairns Renal Unit has had an established cyclone plan. Each year preparation begins with the education of patients and staff on what to do during a cyclone. Cyclone packs, which contain a 48-hour supply of calcium resonium and lactulose, are handed out to all HD patients and dialysis units order an extra month's supply of dialysis stock.

Cyclone warnings

On Tuesday February 1, 2011, potentially catastrophic Cyclone Yasi was heading straight for the city of Cairns in Far North Queensland. For a week prior there had been warnings that a cyclone larger than Hurricane Katrina was forming in the Pacific Ocean and was slowly heading towards the Queensland

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coast. For those of us working in the renal unit in Cairns on 1 February, it was a day like none other.

As staff and patients progressively arrived at work the well-established renal unit cyclone plan was put into action. The plan: cancel all out-patient clinics and dialyse as many in-centre and satellite HD patients as we could before the cyclone arrived (due late 2 February or early 3 February). As the morning progressed, hospital managers started to inform the renal department about the possibility of evacuating all the in-patients to Brisbane. At the time only five in-patients were HD-dependent. Hospital managers advised that the Cairns Base Hospital would be empty and closed by 8 am on Wednesday. On hearing this, one of the first priorities was to retrieve five patients from Yarrabah, a coastal Aboriginal community 50 kilometres from Cairns; Yarrabah is prone to being isolated during floods and cyclones. Thankfully, a dedicated local picked up these patients and brought them to Cairns.

Hospital managers then called for volunteer nurses to accompany patients to Brisbane (some 2000 km away.) However, family members of the nurses were not able to go. This placed nurses in an extremely difficult position of abandoning their family at a time when the likelihood of their homes being destroyed was extremely high. All but one nurse decided to stay in Cairns with their families and property. This nurse was to accompany the in-patients to Brisbane on a Royal Australian Air Force (RAAF) Hercules flight.

Things were to get more complicated for the sole renal nurse when it was decided that all out-patient HD patients from the Cairns Private (a satellite unit of Cairns Base Hospital) and Cairns Base Hospital dialysis units along with home HD patients living in the Cairns area were to be offered evacuation as well. This effected 85 patients. Although this was not a mandatory evacuation, staff contacting the patients were 'highly recommending' patients to evacuate south. Unlike the in-patients,

these patients were to travel south on a Virgin Blue charter flight arranged by Queensland Health. Late in the afternoon a decision was made to evacuate the Innisfail satellite dialysis unit. This call came too late for some and time constraints meant that they did not make this flight; other patients chose to stay with family in Cairns.

Attempts were made by five staff to contact 101 patients and collate a list of evacuated patients prior to the plane leaving. Unfortunately, because of the impending cyclone, many staff had chosen to leave the hospital early, leaving only a skeleton staff to continue dialysing patients and the opportunity to get all the patient information such as care paths, medical history and medication lists was limited, meaning that most did not travel with information such as dry weights, required anti-coagulation and medication. Thankfully, as all Queensland Health facilities use the same pathology system, hospitals were able to gain access to results.

The evacuation

While 63 out-patients were beginning to assemble at the domestic airport, the five in-patients were being transported to the international airport by a steady stream of ambulances. Initially patients were placed on beds beside the tarmac but were later moved indoors when it started to rain. Despite arriving at the airport at 7 pm, it wasn't until midnight that patients commenced loading into the planes and then another three hours till the planes were able to leave laden with patients. The flight from the nurse perspective was noisy, cold and long. All the HD patients commented that they slept very well with their ear plugs in, strapped to their military stretchers and piled four high in a bunk-like configuration; the same could not be said for the nurse. A flight which usually takes two hours took over four hours via the Hercules.

Upon landing in Brisbane, the patients were hurried into ambulances and taken to Princess Alexandra Hospital (PAH) who were able to make room for the sudden arrival of five new renal patients for the renal ward. By this time, 63 out-



Figure 3. Evacuating dialysis patients onto RAAF C-130 Hercules aeroplanes.



Figure 4. Dialysis patients inside RAAF C-130 Hercules.

patients had arrived in Brisbane and were welcomed by a disaster coordination team and taken to either the Sofitel Hotel or George William Hotel (patients were later moved to the Sofitel) in central Brisbane. They were joined by a group of nurses, doctors, social workers and a psychologist from the PAH and Royal Brisbane and Women's Hospital (RBWH) who promptly sorted dialysis spots in Brisbane, removed the mini bars and cut the in-room access to movies and phones. Dietitians were called in to give advice to kitchen staff and a renal diabetic diet was maintained for the duration of their stay.

Patients with mobility challenges (n=3) were admitted to RBWH for the duration of the stay in Brisbane. The Kidney Support Network provided

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transport and emotional support for the patients, including arranging for an op shop to be created at the Sofitel to relieve the developing clothing and laundry crisis. They also arranged for a trip in a Brisbane City Council bus to see the city and visit some more op shops. A central phone was arranged so that patients could call loved ones when phone lines returned to Cairns. The Sofitel also provided the Club Sofitel area so that patients and staff had a central area to meet and eat throughout the day. The sole Cairns renal nurse stayed with the patients at the hotel and was on-call 24 hours a day for the patients dealing with post-dialysis cramps and nausea, injuries and general anxiety.

The cyclone hits

Cyclone Yasi crossed the coast south of Cairns late on 2 February and, despite Cairns missing the eye of the cyclone (thankfully) and suffering only cosmetic damage, there was still localised flash flooding. The situation was worse in Townsville where the town water supply was cut and talks began about evacuating Townsville's Home Hill satellite unit to Brisbane. This led to a quick decision to repatriate some patients before Cairns Base Hospital had been assessed and before the Cairns Airport had been reopened. This decision was later repealed when word that flash flooding had caused the demise of a nephrologist's car and that the safety of patients when they returned to Cairns could not be guaranteed. Senior staff gained access to the Cairns Base hospital on the afternoon of 3 February to assess the facility, giving



Figure 5. Dialysis patients enjoying five-star luxury.

it the all-clear shortly after. Machines were heat-cleaned in preparation for opening on the Thursday. The priority that day was to locate and dialyse all the patients who did not evacuate. Two nurses were sent out to find patients who could not be contacted. Due to the damage caused by the cyclone south of Cairns, some of the patients from the Innisfail satellite unit were evacuated to Cairns and housed in a hotel adjacent to the hospital but returned to their homes once the Innisfail unit was working again.

Returning to Cairns

The first repatriation of patients occurred on Friday 4 February. Thirty-six patients were returned to Cairns on a commercial flight with a nurse escort from PAH. Patients who had become short of breath on the flight were taken to the Cairns Base dialysis unit for urgent treatment. The remaining patients, who included patients from Yarrabah and Innisfail, were repatriated on Saturday with the help of a nurse from PAH and RBH along with the Cairns renal nurse. By Saturday evening all patients except three in-patients were back in Cairns. These patients later returned on either RAAF flights or commercial flights.

Lessons learnt

From this experience several lessons have been learnt. Firstly, communication is essential. The lack of patient information caused difficulty in Brisbane. Many patients were not aware of their dry weight or their medication. Electronic medical records would relieve this problem. Communication between Cairns and Brisbane was difficult with Cairns Base Hospital being closed, so access to patient medical records was not possible. The priority at the time of evacuation was to get patients out and next time a small team of staff will be given the job of getting information together. The jammed phone lines to the area also meant that it was difficult to contact patients to alert them to evacuate; it was also difficult for patients in Brisbane to contact family members (who were in Cairns and surrounds) when the cyclone had passed. The Innisfail patients did not know until that

Saturday (five days after evacuation) that their family and houses had survived. Secondly, patients need to be better prepared for evacuation. Patients need to be told to take at least a week's worth of clothing, medication and personal items. It only took 48 hours to realise that we were in need of more clothing for some patients. Thirdly, the decision to leave family and home in the face of a potential catastrophic cyclone is incredibly hard for patients and staff. It is stressful! The patients did extremely well to adapt to their new surroundings. Many had never been on a plane before; many had not stayed in a five-star hotel like the Sofitel before. To get the number of patients to go, 67% of whom were Indigenous and would have preferred to stay in Cairns, is a credit to the staff who contacted them. As the days went on in Brisbane, the Indigenous patients in particular became quite homesick and this was borne out in anxiety-like symptoms. Had there been a need to stay longer then there would have been a need to have greater support from Aboriginal and Torres Strait Islander social workers and health workers as well as more volunteer support for activities to keep patients occupied on non-dialysis days.

Overall, the evacuation was a success. All patients showed great trust in the evacuation process. Patients received timely and appropriate treatment. A big thanks goes to all the nurses in the Brisbane units who worked longer hours to dialyse the Cairns patients. It is reassuring that as a statewide renal network we can pull together in a time of disaster and help each other out. Special thanks goes to the following people who supported the patients at the Sofitel: Dr David Johnson, Dr Carmel Hawley, Dr Carolyn Van Epps, Dr Kris Sammartino, Veronica Oliver, Claire Reed, Lisa Finch, Bettina Douglas, Cathy Martin, Eileen Fitzpatrick, Jane Nearhos and the Kidney Support Network. Thanks also to all the staff at the HD units in Brisbane who accepted the Cairns patients at short notice.

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Time line of events during the Cyclone Yasi evacuation

Tuesday 1 February 2011

7 am: All HD units open; 61 chairs/beds spread across seven dialysis units.

8 am: Senior renal unit staff arrive at work. Discussions commence on how to dialyse as many HD patients as possible. Plan to dialyse all Tuesday and Wednesday patients before lunchtime Wednesday.

9 am: Offers of help come from Princess Alexandra Hospital Nephrology team (available dialysis chairs).

10 am: Informed by hospital managers that hospital will be evacuated by 8 am Wednesday morning. There will be no HD performed at Cairns Base Hospital or the public unit at Cairns Private hospital (a satellite unit of Cairns Base Hospital) on Wednesday. Continue to dialyse as many HD patients as possible on Tuesday. PAH and RBWH put on code brown (internal emergency) to make way for evacuated in-patients from Cairns Base, Cairns Private and Gordonvale Hospitals.

12 pm: Decision made that in-patient, acutely ill HD patients to be transferred to Brisbane via RAAF with nurse escorts.

2.50 pm: Notification given that all outpatient HD patients living in Cairns including home HD patients (101 patients) to be offered evacuation to Brisbane. Statewide Renal Network, coordinated by Dr David Johnson, commence an assessment of dialysis chairs available to accommodate evacuated patients.

3–4 pm: Senior staff attend hospital briefing. Charter plane arranged for 2100 to take out-patient HD patients to Brisbane.

4 pm: Commenced notification of out-patients in affected area. Difficulty contacting some due to jammed phone lines and incorrect contact details. Patients offered transportation assistance (taxi).

6 pm: Notification that Innisfail HD patients to be evacuated and on 9 pm flight. Difficulties with travel arrangements and delays due to jammed

phone lines means only two out of a possible 12 patients are able to evacuate. Some patients did not have enough time to get to the airport (particularly Tully patients who live 2½ hours south of Cairns). Innisfail patients transported to Cairns by taxi (approximate cost \$270)

7 pm: Evacuation commences of Cairns Base Hospital to the Cairns International Airport Terminal. Patients initially placed on striker beds on airport tarmac.

8 pm: Out-patient HD patients start meeting at the Cairns Domestic Airport Terminal assisted by renal nurse.

11 pm: Sixty-three out of 101 eligible out-patients board Virgin Blue charter plane. Two patients had made their own way to Brisbane. Evacuation was not offered to Atherton, Mossman or Cooktown satellite HD units or peritoneal dialysis (PD) patients as they were considered out of the cyclone impact area (HD patients) or were able to maintain dialysis without power (PD patients). This left 82 dialysis-dependent patients in Far North Queensland.

Wednesday 2 February

12.10 am: First HD in-patient loaded into an RAAF Hercules.

2.30 am: Charter flight arrives at Brisbane Airport. Patients met by Disaster Coordination Team and patients transferred to the Sofitel and George Williams hotels in Brisbane's CBD. Patients requiring mobility assistance admitted to Royal Brisbane Hospital.

3.30 am: First RAAF Hercules leaves Cairns with HD patients and renal nurse on board.

6 am: Cairns Base Hospital officially closed and all patients and staff evacuated from the premises. Cairns (population 170,000) left without a functioning hospital with emergency facilities relocated to Fretwell park sports facility.

7 am: Atherton, Mossman and Cooktown satellite units remain open and functional.

7 am: First group of evacuated out-patients attend dialysis in units around Brisbane coordinated by a team of PAH and RBWH nurses and doctors located at the Sofitel and George Williams hotels.

7.45 am: First Hercules arrives at Brisbane's freight terminal and HD in-patients transferred to PAH via Queensland Ambulance Service.

11.30 am: Last HD in-patient arrives at PAH.

12–2 pm: Renal nurse eats and sleeps (!!!) and joins patients at the Sofitel at 2.30 pm.

Thursday 3 February

12–1 am: Cyclone Yasi (Category 5) crosses the coast and causes widespread destruction at Mission Beach, Silkwood, Tully, Tully Heads, Cardwell and Port Hinchinbrook.

7 am: Patients continue to attend dialysis throughout the day at units around Brisbane.

4 pm: Notification of the repatriation of 15 patients to Cairns at 6 pm. Cairns Base Hospital and Cairns Airport still closed.

5 pm: Renal unit staff access the still closed Cairns Base Hospital to check facilities, assess water quality and Heat Clean machines. Severe thunder and lightning storms and flash flooding occur in Cairns with many roads blocked by rising waters, resulting in a nephrologist getting caught in flash flooding. Cairns Base unit deemed fit to resume services on Friday.

5 pm: Decision made that it is unsafe to repatriate patients due to the extreme weather and airport remaining closed.

Friday 4 February

7 am: Patients commence second dialysis session throughout the day at units around Brisbane.

2 pm: Thirty-two patients repatriated back to Cairns, some requiring urgent dialysis after getting short of breath in transit.

Saturday 5 February

7 am: Public unit at Cairns Private Hospital operational.

2 pm: Last 38 patients repatriated to Cairns.

5.10 pm: Plane arrives in Cairns. Patients returned to their homes by taxis.