

Renal Association Elective Bursary Report

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The Renal Association generously awarded me an elective bursary to support my elective to Darwin, Australia, where I worked in the department of nephrology at the Royal Darwin Hospital (RDH) for 2 months from February to April 2014.

This was a terrific opportunity to explore the medical specialty of nephrology in more detail than I had been able to previously, and also afforded me the chance to learn about the Australian aboriginal culture, and the medical issues faced by this population. Finally, I was fortunate to be able to conduct a research project during my elective.

Darwin is an attractive and challenging place to visit for the aspiring nephrologist: the indigenous population of the Northern Territory (NT) of Australia has what is likely the highest incidence of end stage renal failure in the world with patients requiring renal replacement therapy spread over an enormous area [1]. The reasons for this are complex and profusely multifactorial. My experience in the NT was an unrivalled opportunity to explore and learn more about this situation through immersion in hands on renal medicine.

My objectives for the elective were:

- 1) **Gain a firm clinical experience across renal medicine**
- 2) **Understand how the challenges to excellent renal care posed by sociocultural factors and the environment in Darwin/NT are tackled and overcome by the nephrology services there**
- 3) **Conduct and complete a feasible research project addressing a question of importance to renal medicine in Darwin.**

Gain a firm clinical experience across renal medicine

The RDH is the principal teaching hospital in the NT (the closest comprehensive hospital is in Alice Springs some 1500 km away). It has around 350 beds (but given the geographical situation regularly significantly upsizes its capacity to cope with demand). The hospital is situated at the top of the northern suburbs of Darwin, itself a small city (135 000 people) which sprawls up an enormous natural harbour. The NT is a vast, sparsely populated expanse of land, with 240 000 people inhabiting 1.35 million square kilometres.

The renal service in the top end is extremely busy. On the inpatient side there are around 30 patients at any one time, and overall about 15-20 of these will be haemodialysis patients. The remainder were transplant patients with medical issues, peritoneal dialysis patients, patients with new renal presentations, and ITU patients. I spent much of my time with work across this case mix on the wards - this involved full days spent clerking patients in ED, helping to assess inpatient consults, ward rounds and subsequent jobs, and joining the registrars for line insertion and biopsy procedures. My skills in acute inpatient care developed enormously through these activities.

The vast majority of the haemodialysis cohort were indigenous patients whose complex healthcare needs were accompanied by complex social and cultural circumstances. All of this was compounded by the sheer distances involved in travel. Thus patients who move to Darwin become isolated from family and community support, and patients dialysing in remote communities often face dangerous circumstances when equipment or supplies necessary for their dialysis fail e.g fistula thrombosis. A number of regular non attenders for haemodialysis were partly homeless, resulting in some complex presentations. I also encountered haemodialysis patients who became unwell with new medical issues, occasionally myocardial infarctions, and required admission. I saw a good number of transplant patients with new medical issues, and two cases of acute nephrotic syndrome presenting to ED during my time there. There were a handful of patients who presented *in extremis* to ED requiring new start haemodialysis or recommencement of haemodialysis having been relatively unknown to the service before. It was very educational to observe first hand the risks of starting a patient on haemodialysis in an unstable state. During my time in Darwin I was involved in the care of 3 pregnant women with renal issues; I certainly gained an appreciation for the clinical challenges involved in keeping these pregnancies safe.

A recurring theme of my clerkings was missed haemodialysis. This was a near daily occurrence. I became much more skilled in the assessment of patients' volume status, and the assessment and management of the sequelae of renal failure. These missed haemodialysis cases became quite routine, but occasionally we would encounter serious complications or consequences which would underline just how precarious the health of these patients is, and just what a dangerous predicament they may find themselves in.

Clerking patients in ED allowed me to get good experience in fully clerking patients and coming to sensible management plans and assisting in deploying these. In that sense, it was perfect preparation for starting my job as a junior doctor in August.

The department operated two, sometimes three clinics in the hospital per week - a general nephrology clinic, a transplant clinic [2], and a joint diabetes/nephrology clinic. I attended these regularly and they were very educational.

The nephrology department also ran a series of meetings (transplant, research meetings, histopathology review meetings, journal clubs, and case presentations) that I thoroughly enjoyed attending and learnt a lot from. Many of these meetings incorporated teleconferencing, which was quite an effective way of overcoming the “tyranny of distance” Australian doctors contend with.

In addition to renal specific experience, I regularly attended hospital grand rounds on subjects ranging from Melioidosis to disaster relief, and learned plenty about the wider context of healthcare in the NT and beyond by doing so.

A defining feature of tropical medicine in Darwin is melioidosis [3]. This infection is caused by a soil dwelling Gram-negative bacterium (*Burkholderia pseudomallei*) and is an extremely important cause of community acquired sepsis in the NT and parts of South East Asia. Risk factors for infection include diabetes, alcohol abuse, and chronic kidney disease and mortality approaches 40%. Consequently many of the patients supported by the renal service were at considerable risk of this infection. I was involved in the care of several patients with melioidosis during my time in Darwin, given I was there in the wet season, when the rains churn the bacterium from the soil and make infection much more likely. I took great interest in learning about the specific management of this infection. As the RDH is a prominent centre for research on melioid, I certainly gained a great insight into how this public health threat has been studied and how the population in the NT is safeguarded from infection through various public health and disease control measures



The Royal Darwin Hospital. The renal ward on the 7th floor overlooks tropical Darwin and the Arafura sea.

Understand how the challenges to excellent renal care posed by sociocultural factors and the environment in Darwin/NT are tackled and overcome by the nephrology services there.

The indigenous patients in the NT of Australia are a diverse group, some living very westernised lives, and some living a very traditional way of life, some living in urban centres (Darwin or Katherine), with many living in small communities scattered across the NT. In general the outlook of indigenous patient on healthcare is often idiosyncratic, and the dominance of community and family in their lives often trumps individual health. Their health literacy can be quite poor.

By and large the indigenous population suffers an high burden of disease - principally infectious and diseases with their roots in lifestyle and disadvantage [1]. To their credit, I felt that the government had a range of sensible and well funded health interventions, but it struggles to tackle poor engagement with healthcare overlaid on a lot of frank poverty.

The renal department runs an outreach program and this is where much of my outpatient experience was acquired. This was a hugely memorable set of experiences. I went on about one trip each week and a half on average, either just one day in a light aircraft or a two day stint in a car. Typically this was to remote dialysis units to review the dialysis patients, or to local health clinics to see an accrued list of patients requiring a renal review. I typically joined the registrar and sometimes a consultant too. The flights allowed me to get a sense of the vastness and

beauty of the NT, and the outreach trips were an excellent way of seeing and understanding the indigenous way of life outside the artifice of the hospital.

It was wonderful to practise applying really high standard, well resourced care in what is often said to be a third world environment. These experiences challenged a lot of my preconceptions about how medicine should be practiced in the developed versus developing world.

Communication with indigenous patients could sometimes present a challenge, usually not because of language (although English is frequently a second language to older aboriginal Australians in the NT) but because of a plethora of cultural and behavioural differences that demand understanding and consideration. Over time, with training on cultural competence, I became much more effective at getting the most out of interactions with my patients.



Outreach would often involve flights across the NT on light aircraft.



Preparing to land on the Tiwi islands. Each community is served by a small airstrip

Conduct and complete a feasible research project addressing a question of importance to renal medicine in Darwin

The RDH has established itself as an important research centre for tropical medicine and indigenous health. The attached Menzies School is a research institute conducting public health research and basic science research into these areas and I was fortunate to become involved in a collaborative project between the nephrology department and the Menzies School.

I worked with Dr Steve Tong (Infectious Diseases - RDH and Menzies) and Dr Greg Perry (Nephrology - RDH). My project examined at the effectiveness of interventions to reduce the incidence of documented *Staph. aureus* bacteraemia (SAB) in the haemodialysis population of the top end of the NT. Using hospital infection control data, and data from a national patient registry (ANZDATA), we demonstrated that altering that a straightforward

alteration in the skin antiseptics protocol used across the top end of the NT has resulted in a considerable reduction in the incidence of SAB in haemodialysis patients.

Whilst working on the wards I encountered an unusual case of focal myositis in a patient on maintenance haemodialysis and subsequently wrote and submitted a case report based on this experience.

Away from the hospital

Whilst in Darwin I took full advantage of the tropical environment and the stunning landscape. I went camping and hiking several times across the national parks of the NT, and enjoyed adopting the relaxed tropical lifestyle this part of the world is famed for.



Kakadu National Park: Nourlangie Rock



Kakadu National Park: Jim Jim Creek

References

1. Cass A., Cunningham J., Snelling P., Wang Z., Hoy W. Exploring the pathways leading from disadvantage to end-stage renal disease for Indigenous Australians. *Social Science & Medicine* 2004; 58: 767-785
2. Majoni SW., Abeyaratne A. Renal transplantation in indigenous Australians of the Northern Territory: closing the gap. *Intern Med J* 2013; 43(10): 1059-66
3. Wiersinga WJ., Currie BJ., Peacock SJ., Melioidosis. *N Engl J Med* 2012; 367:1035-1044