A nurse-managed kidney disease program in regional and remote Australia

Kim Tracey, Tania Cossich, Paul N Bennett, Steven Wright & Cherene Ockerby

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Abstract

Health services that aim to prevent and manage chronic kidney disease (CKD) in rural and remote Aboriginal communities in Australia, including the Goldfields region of Western Australia (WA), require innovative approaches. Nursing roles can significantly improve access to renal services in rural and remote areas as they are able to address a range of renal health promotion and prevention activities, and provide renal clinical education and support to Aboriginal people. The Goldfields Kidney Disease Nursing Management Program (GKDNMP), funded through the Council of Australian Governments (COAG) National Partnership Agreements, was developed to provide a comprehensive approach to primary health care that incorporates a range of health promotion and disease management activities. In the first year, the program increased home dialysis rates and decreased patient travel due to expanded access to renal care within the region. Context-specific health programs generated in response to local needs can be successful in addressing specific health care challenges in rural and remote health.

Keywords Chronic kidney disease, dialysis, renal, implementation, Indigenous, primary care, prevention, remote, nursing.

Aim

The aim of this paper is to report on a nurse-managed model of care to improve renal care in rural and remote Aboriginal communities in the Goldfields region of WA. The GKDNMP has been developed using key indicators identified by COAG who funded the three-year program. The program aims to improve renal health services in the region through improved access to local renal services to reduce relocation to Perth. Program staff provide screening and early detection of Aboriginal people at risk of, or with, CKD and provide appropriate management and comprehensive care across the disease continuum. The program operates in consultation with Aboriginal communities and uses and promotes culturally secure practices in care delivery.

Background

Major disease-specific, health-related measures in Australia vary between Aboriginal and non-Aboriginal people. Chronic kidney disease (CKD) exemplifies this as Aboriginal Australians were five times more likely than non-Aboriginal people to have CKD recorded on their death certificate between 2003 and 2007 (Australian Institute of Health and Welfare, 2010). CKD refers to all diseases of the kidney where a person has evidence of kidney damage and/or reduced kidney function that lasts for more than three months (Australian Institute of Health and Welfare, 2009). A person with end-stage kidney disease has over 85% loss of kidney function and requires renal replacement therapy, such as dialysis or transplantation, to continue life for an extended period of time (Kidney Health Australia, 2012). Supportive care without dialysis or transplantation is an alternative option that provides palliative symptom management (Davison, 2011; Sedgewick, Noble, Ho, Kafkia & Van Waeleghem, 2010).

Factors that increase the risk of CKD can be predetermined such as age, family history, ethnicity and gender. Other factors are behavioural (for example, tobacco smoking, nutrition and inactivity) or may be due to underlying health conditions including diabetes, hypertension, cardiovascular disease, obesity and systemic diseases (Australian Institute of Health and Welfare, 2009; Chadban *et al.,* 2003; White *et al.*, 2011; White, Polkinghorne, Atkins & Chadban, 2010). The five major causes of CKD death include circulatory diseases, diabetes, cancer, respiratory diseases, injury and poisoning, compounded by lifestyle and risk behaviour and limited access to effective services (Department of Indigenous Affairs, 2008). The identification of early-stage CKD and early prevention of progression is critical to ensure people receive appropriate management to delay, minimise or halt disease progression (Kidney Health Australia, 2012). This may include fluid management, cessation of nephrotoxic medication and commencement of angiotensin converting enzyme inhibitors (Sinclair & Bennett, 2011).

Nursing has a significant role in facilitating equity in health care and improved access to services and health care outcomes. The broad scope of the role and its application in rural and remote communities beyond the acute setting has been previously noted and requires full use of the role of nurses (Cerasa, 2011; Van Camp, Huybrechts, Van Rompaey & Elseviers, 2011). While nursing roles in rural areas tend to be generalist (Francis & Mills, 2011), an increased number of nurse practitioners (NPs) working in remote areas is required (Wakerman, Curry

Author details Kim Tracey RN, Clinical Nurse Manager, Goldfields Regional Renal Service and Nurse Practitioner Candidate, Kalgoorlie Hospital, WA
Tania Cossich RN, MPH, Research Fellow, Deakin-Southern Health Nursing Research Centre, VIC
Paul N Bennett RN, PhD, Associate Professor, Deakin-Southern Health Nursing Research Centre, VIC
Steven Wright MBBS, FRACP, Visiting Nephrologist, Kalgoorlie, WA
Cherene Ockerby BA (Hons), Research Assistant, Deakin-Southern Health Nursing Research Centre, VIC

Correspondence to Ms Tania Cossich, Deakin-Southern Health Nursing Research Centre, Monash Medical Centre, Southern Health, Clayton Road, Clayton, VIC, Australia Tania.Cossich@health.vic.gov.au

Figure 1. Map of Goldfields region, Western Australia and major centres, population and distances from Perth (Government of Western Australia, 2011)

Major Centres	Population	Distance From Perth
Kalgoorlie	28,196	595km
Leonora	1,072	830km
Laverton	440	954km
Norseman	1,058	721km
Esperance	9,365	730km
Ravensthorpe	348	540km

& McEldowney, 2012), and could further support nurse-led management of Aboriginal patients with renal disease.

CKD in the Goldfields region of Western Australia

The prevalence of stage 3 and 4 CKD has been estimated to be 83,000 and 2,265 with stage 4 and 5 CKD, based on a state population of approximately 755,000 people aged 45 years or older (Western Australia Department of Health, 2008). In 2009 the incidence of patients undergoing dialysis in WA reflected a nationwide stabilising trend (Grace, Excell, Dent & McDonald, 2008); however, previously reported linear projections predict an annual increase of 6.3% (Western Australia Department of Health, 2008). This is a predicted increase from 330 people in 2010 to 670 in 2021 (WACHS, 2010).

The Goldfields region is the largest of nine government regions in WA, with approximately 58,727 residents living in 10 major regional towns and 17 remote Aboriginal communities (Figure 1). Kalgoorlie is the largest town in the region, with remote communities loosely clustered around Kalgoorlie, and the towns of Leonora, Laverton, Warburton and Tjuntjuntjara. An estimated 8% of the regional population is of Aboriginal descent with a wide variance in the percentage of Aboriginal people in these towns, including 9% in Kalgoorlie, 42% in Laverton, and 89% in Ngaanyatjarraku Shire. This is compared to three per cent population of Aboriginal descent for WA as a whole (Government of Western Australia, 2011).

The incidence and prevalence of CKD in the Goldfields region mirrors increases in the WA population. Projected increases in the prevalence of kidney disease in WA justifies the need to provide well-resourced programs to improve renal health outcomes, renal services, and access to services for Aboriginal people to meet increasing demands and reduce the gap in renal health outcomes between Aboriginal and non-Aboriginal Australians. This paper presents the development and implementation of the Goldfields Kidney Disease Nursing Management Program (GKDNMP.)

Service availability and acceptability

Past health care services for people with CKD in the Goldfields region of WA were limited. People who required access to specialised nephrology services, CKD stage 3 and 4 education, and preparation for dialysis access or transplantation were often required to attend services in Perth. This involved frequent, long-distance travel as far as 600 km from Kalgoorlie to Perth and 1500 km from Warburton to Perth. Aboriginal people who undertook, and continue to undertake this travel, can suffer distress, isolation and dislocation from their usual social supports and environment, and encounter services that may not be sensitive to cultural concerns (Jeffries-Stokes, Stokes, McDonald, Stokes & Daly, 2011).

Historically, specialty nephrology workforce deficits have impaired the successful resourcing of CKD services or long-term nursing programs to support tertiary dialysis services and the dialysis centre at Kalgoorlie Hospital (KH). This is despite past efforts of nephrologists, surgeons, vascular access nurses and CKD specialist nurses who conducted clinics in the Goldfields region. The lack of a coordinated, Kalgoorlie-based service was identified as a gap that needed to be addressed to provide specialised kidney disease management while still embracing the Aboriginal Health Service and local general medical practices.

Prior to program implementation, a Perth-based nephrologist flew into KH to attend clinics on a weekly basis. Outside these times, patients were managed at KH by medical staff in consultation with Perth-based services. The use of KH as the base for the GKDNMP has enabled specialised renal nurses to manage the program and work more closely with regional and remote Aboriginal communities. The nephrologist continues to attend clinics at KH and remote areas, supported by videoconferencing facilities as needed.

Program development and implementation

The GKDNMP was designed to improve the care processes and service delivery for people with, or at risk of, CKD living in remote areas. The program used the framework developed by the WA Renal Disease Health Network to identify seven key action areas to improve renal health care services. The model included prevention strategies; early detection and management of patients with CKD; preparation and care of patients suitable for kidney transplantation; end-of-life palliative care; appropriate and timely nephrologist referrals and dialysis; establishment of multidisciplinary clinics; and renal workforce development (Western Australia Department of Health, 2008).

The Western Australian Country Health Services (WACHS) Renal Dialysis Plan Working Party refined the model in 2010 which informed the WACHS Renal Dialysis Plan 2010–2021 (WACHS, 2010). Recommendations to monitor the growth of the regional dialysis population, review and expand existing satellite services, establish satellite outreach services, expand home dialysis services, develop services in new regional locations, build workforce capacity, improve transport and accommodation, and information systems, formed the basis of the federal government decision to increase funding for renal dialysis services in country WA (Swan, Roxon & Snowdon, 2011).

The COAG funding provided an opportunity to develop and implement the three-year GKDNMP with sensitivity to the needs of Aboriginal people and communities. The rationale for the development of the GKDNMP was the identification of a largely under-resourced CKD program, with limited staffing and service delivery resources for Aboriginal people in the Goldfields region (Western Australia Department of Health, 2008). The aim of the GKDNMP was to enhance existing renal services within the Goldfields region by providing comprehensive prevention, health promotion, screening and early identification, education, case management and tertiary care for Aboriginal people within the region. A particular focus was given to improved access to renal services predominantly provided by nurses in metropolitan CKD programs, through delivery of culturally secure services developed in consultation with Aboriginal communities and Aboriginal-controlled health services in the Goldfields region (Government of Western Australia, 2010).

Designed to be managed by nurses, the program employed a clinical nurse manager, renal nurse educator, community renal nurse, Aboriginal health workers (AHWs) and administrative officer. The program structure outlined in Figure 2 shows that the program team is managed by a specialist renal nurse who functions as the program nurse manager. The nephrologist flies in and out of Kalgoorlie from Royal Perth Hospital (RPH) to join the program team for clinics. The program provides patient care across a number of sites. All staff are involved in renal clinics at KH and the remote clinics and Aboriginal communities. If the nephrologist is unable to fly into KH, videoconferencing facilities are used to support clinics at KH. Clinics at Bega Garnbirringu Health Service (BGHS), the Kalgoorlie-based Aboriginal-controlled clinic, are attended by the nephrologist and community renal nurse. The local Aboriginal communities that are readily accessed by car from KH are seen by the community renal nurse and AHW.

The bulk of renal care provided by the program to Aboriginal people is managed by the team based at KH. Aboriginal people and communities are supported with medication management, diet, dialysis and education, and support with accommodation and transport needs to ensure patients attend clinics or treatments. Nurses have a unique skill set that enables the provision of a range of services to support patients across the care continuum. Effective management is underpinned by strong relationships between patients and providers, characterised by good communication and trust (Wakerman *et al.*, 2012). The program engages a range of nursing roles to support this process and through strong nursing leadership, effective communication, team focus, and cultural sensitivity, Aboriginal communities have been engaged and supported the program.

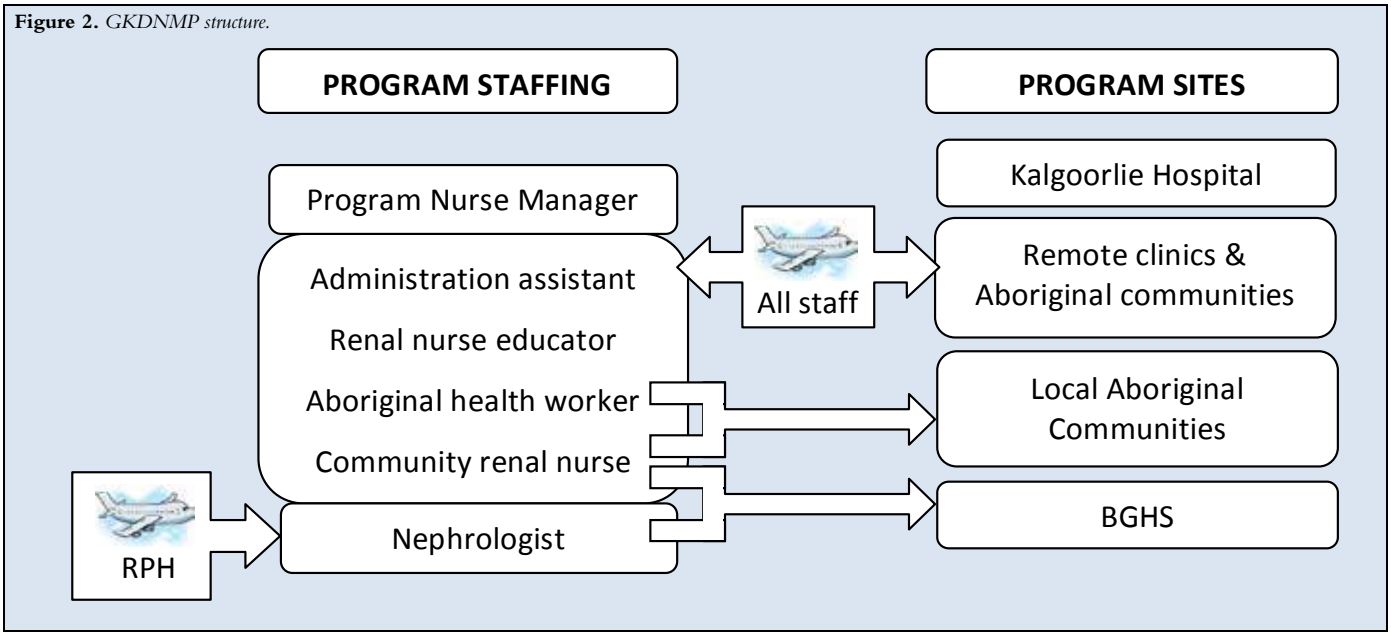
The benefit of this approach rests with the range of knowledge and skills nurses are able to provide in working with Aboriginal people across the care continuum. Delays in staff recruitment and in the development of strategies and services, however, were experienced from September 2010 to May 2011, partly due to the availability and confirmation of funding. Despite the delays, the positions have been able to provide culturally secure, accessible renal health care services and an appropriate system to support patients close to their home and social supports in the remote Goldfields region. Moreover, the high level of skill and knowledge of the specialised staff enable nursing staff to backfill or accommodate positions for short periods of time, if required.

Staff recruitment, culturally secure service provision, community consultations, and the establishment and maintenance of effective partnerships have underpinned program development and facilitated appropriate and effective care pathways and communication protocols. These activities have been designed to build on primary services and improve access and delivery of primary, acute and subacute health care services.

Closing the Gap in Aboriginal health: GKDNMP development and implementation

The COAG National Partnership Agreements on Closing the Gap in Aboriginal health outcomes identified priority areas to

Figure 2. *GKDNMP structure.*



drive improvements (Australian Health Ministers' Conference, 2006). GKDNMP development and implementation was linked to outputs in Table 1 with a focus on the priority areas (Government of Western Australia, 2010).

Table 1: Key action areas and program outputs. (Adapted from Appendix C(2)).

Action areas	Program outputs
Fixing the gaps and improving the patient journey	Health system Aboriginal Health Workers provided to coordinate and follow up care transitions. Transport and accommodation support for rural and remote patients and their families. Provision of culturally secure services and practices across the renal health system. Facilitate access to acute and sub-acute care.
Primary health care services that can deliver	Provision of culturally secure primary health care service, including MBS-funded service. Culturally secure, multi-disciplinary chronic kidney disease management services to provide screening, education/promotion and management. Develop communication protocols and care pathways to improve renal care coordination, referral and recall. Minimum service standards in place for all organisations providing care services for Aboriginal people.
Partnerships	Partnerships with other renal agencies / stakeholders.
Community consultations	Appropriate renal-related community consulations.

Fixing the gaps and improving the patient journey

The AHW role was considered vital to understand different value systems and reduce barriers in the provision of CKD care with Aboriginal communities. The AHWs promote and develop culturally secure services and practices, coordinate follow-up care and transitions, arrange transport and accommodation, and improve access to acute and subacute care. One male AHW was engaged for three months. The assistance and education provided by the AHW contributed to a deeper understanding of the impact of CKD for non-Aboriginal nursing staff, and the development of appropriate practices and procedures.

This was achieved by the AHW through education seminars for health workers, contribution to the design of culturally appropriate educational materials, and one-on-one education regarding Aboriginal culture and sensitivities with KH haemodialysis nursing staff. Staff feedback indicated seminars were valuable for informing their nursing care with Aboriginal patients undergoing dialysis. Importantly, the AHW informally engaged and supported patients during each shift in the dialysis unit. He successfully contributed to decreased patient transfers from the Goldfields region to Perth, reduced patient distress, reduced negative impacts of relocation, increased dialysis attendance rates, and decreased the accommodation and travel costs of temporary relocation.

As a result of this program, access to subacute services has improved in the more remote parts of the Goldfields region. Renal outreach clinics are now held quarterly at Warburton and Laverton. The importance of a consistent renal team attending these clinics is vital to increase trust and confidence and improve attendance rates, to facilitate management of people in various stages of CKD in more remote areas. Monthly outpatient clinics at BGHS with a nephrologist and the community renal nurse, and weekly multidisciplinary clinics at KH, successfully identified greater numbers of people at stages 3 to 5 CKD. Due to these changes, more people access CKD stage 4 pre-dialysis education, lifestyle education and anaemia management. Although the impacts of this activity cannot be measured at this early stage of the program, the logical impact of this activity will be the reduction in CKD progression to end-stage kidney disease requiring renal replacement therapy.

The community renal nurse role has contributed to increased outpatient renal clinics and consultation at KH and reduced transfers to RPH. This has been achieved through engagement with Aboriginal communities to identify Aboriginal people who may be unable to attend clinics without support. Transport and accommodation needs have been identified and these have then been arranged for people requiring these services. The respectful manner in which program staff communicate and work with Aboriginal people has led to strong engagement with Aboriginal communities and requests for additional visits in remote areas. The number of transfers to Perth has been reduced as program nurses are able to monitor people living in Aboriginal communities more frequently. They are able to undertake regular screening and assessments, improve the uptake of early interventions by Aboriginal people, and provide services at KH. In the first six months of the program, 36 patients who would have previously travelled to Perth for CKD management were able to access services at KH.

Improved attendance rates led to a 100% increase in the identification and management of people with CKD stage 5 (eGFR<15 ml/min), an increase from 38 to 76 people with stages 4 or 5 CKD. In the initial six months of the program, there was a significant decrease in the number of patient transfers and hospital admissions to RPH. This included two patients who were able to receive peritoneal dialysis tube insertion at KH, a procedure that had previously required transfer to RPH and an inpatient stay of two months post-procedure.

The GKDNMP arranged for increased support from the Perth-based vascular access team, who now visit KH quarterly. The GKDNMP assists the vascular access team by providing appropriate communication and education, and arranges patient transport to encourage attendance. Attendance rates have doubled in the first six months of the program. This is likely to improve the number of people who require dialysis with adequate preparation in managing their vascular access.

Access to acute services also increased in the first six months of the program. Dialysis patients with acute complications are now managed by the GKDNMP in Kalgoorlie when clinically appropriate. These conditions include acute fluid overload, peritonitis and access issues, which previously required patient transfers to a tertiary facility in Perth using the Royal Flying

Doctors Service. Again, this has contributed to decreased unnecessary transfers to Perth.

In the event that travel to Perth is unavoidable, established care plans and clinical support enable patients to remain in their local community until the point of transfer. For example, patients requiring home haemodialysis training can be supported at home until transfer for haemodialysis is required. This has reduced inpatient admissions in Perth from an average of three weeks to one week and lengths of stay have decreased through collaborative community health care, for example, intraperitoneal antibiotics administered remotely through collaboration with GKDNMP. Liaison with dialysis patients and families has seen attendance rates improve from 50% to 90% over a six-month period for dialysis patients in Kalgoorlie.

Delivering primary health care services

Primary health care has a significant role in the early detection and management of people with CKD. Primary health care responsibilities require the GKDNMP to support other services to improve the access to health care services for people with CKD. Significant progress in this area has seen a range of health promotion activities to raise awareness and engage communities in screening and education for populations at risk of CKD, and rural and remote health workers. Awareness-raising activities have included World Kidney Day, where education and screening was offered to the public. Over 50% of the 19 people screened had hypertension and were advised to see their general practitioner (GP) as soon as possible. Results indicate five people contacted the service for ongoing CKD support and education, an additional six agreed to a visit from the community renal nurse, and three attended the BGHS outpatient clinic.

CKD screening and education promotion activities in Kalgoorlie and more remote areas of the Goldfields region have been led by the community renal nurse and GKDNMP team in collaboration with Kidney Health Australia (KHA). In the six months to April 2011, five renal education sessions were delivered to health care providers at Laverton Hospital, Warburton Clinic, KH and the Edward Collick Nursing Home. Remote clinic nurses reported improved skills, knowledge and confidence regarding when to refer to other services, particularly for patients receiving peritoneal dialysis.

Liaison with GP network programs such as the "Heart Moves Program" (Heart Foundation, 2011) contributed to overall improvements in services aimed to decrease CKD and cardiovascular disease risk factors, and a structured approach to CKD pathology specimen collection. The GP Network sponsored the Kidney Check Australia Taskforce (KCAT) managed by KHA to provide workshops targeted for practice nurses and GPs. Using a series of education modules, the interactive learning sessions, with national accreditation and continuing education points, aim to improve the knowledge, detection and management of kidney disease in general practice (Kidney Health Australia, 2011). Prior to the GKDNMP, facilitation of these programs targeting the appropriate health care services had been limited.

Ongoing education has increased the capacity of GPs and practice nurses to provide services such as targeted screening and minimisation of modifiable risk factors for CKD. This education has improved clinicians' confidence and knowledge, and strengthened relationships between GKDNMP staff, GPs and practices nurses. This has resulted in increased attendance rates at the Aboriginal Health Service rather than KH, in line with patient preferences.

Partnerships

The need to foster relationships and develop partnerships with renal-related agencies and stakeholders in order to close the gap has been recognised by the GKDNMP. During the program's initial six months, a collaborative, problem-solving approach focused on patient case management was used to develop working relationships with local and outreach health facilities. The partnership and collaborative relationship, together with improved education, and clearer patient pathways, have contributed to improved patient care and reduced travel to both Kalgoorlie and Perth.

GKDNMP staff are actively involved in two of the four working groups formed to promote remote renal services, the Haemodialysis Model of Care, and Community Engagement and Health Promotion. Strong partnerships and collaboration with the RPH, WACHS, Fresenius Medical Care (a home dialysis care provider), KH, Ngaanyatjarra Health Service, and Western Desert Nganampa Walytja Palyantjaku Tjutaku (WDNWPT) have been vital to providing the best in culturally sensitive, coordinated renal care.

Effective collaboration with a range of staff from the above services has led to a number of key achievements. The most notable development has been a referral pathway with Ngaanyatjarra Lands and review form. It has led to improved referral and communication pathways between Kalgoorlie, Ngaanyatjarra Lands, Fresenius Medical Care (FMC) and tertiary facilities such as RPH, regarding discharge processes for Aboriginal patients returning to Warburton and surrounding areas. In addition, a home dialysis discharge and referral protocol and review form was developed between the Goldfields region and FMC.

Further collaboration has led to improved coordination and care delivery closer to Goldfields renal patients' homes in Ngaanyatjarra Lands. The Ngaanyatjarra Health Service, WDNWPT, BGHS, and GKDNMP have been proactive in developing proposals for dialysis services at Warburton Hospital and BGHS health clinic to further reduce the need for relocation for dialysis services and address cultural sensitivities. Development of the BGHS dialysis service has the potential to provide a supported, self-care dialysis service and decrease the need of some patients to attend KH.

Community consultations

A feature of the GKDNMP has been an increased number and improved quality of community consultations. These have been held with a range of established Aboriginal-controlled health

services and council meetings with community elders. These groups contributed to the development and implementation phase of the project and continue to inform changes using a continuous quality improvement approach. This will include ongoing development of culturally relevant renal resources.

Non-Aboriginal groups have contributed to health promotion activities such as World Kidney Day. Public events were used to provide public education and screening initiatives in collaboration with Watercorp, Leonards Chicken Supply, and the Oasis Centre for Kidney Week. High attendance rates at education and screening days held in the community, and continuity of a collaborative, problem-solving approach to patient-centred care, have strengthened existing relationships with WACHS Health Services Providers, Tjuntjuntjara, Warburton and Laverton in outlying areas.

Discussion

Establishment of the GKDNMP has improved culturally secure renal health programs and access to health services for Aboriginal people at risk of, or with, CKD. This has been achieved by staff awareness and commitment to deliver the right care at the right place, and avoid unnecessary relocation to larger centres such as Kalgoorlie and Perth that results in immeasurable, negative personal, family and health impacts.

Program staff have improved access and culturally relevant services for patients and families, and improved staff confidence and understanding of culturally and renal-specific knowledge and skills. An initial challenge in recruiting AHWs provided opportunities to identify alternative methods to recruit to this role, and emphasised the need to provide support and clarification during the early stages of the role. Recruitment could be achieved through BGHS, local communities, dialysis patients, or transplant recipients. Mentorship programs using successful renal AHWs from other areas, such as Kimberly, Alice Springs, or Perth could be considered to provide additional support.

In the limited time the program has been operational, significant improvements in health service delivery to Aboriginal communities have been achieved. This has been demonstrated through requests from Aboriginal communities for increased clinics and visits, and improved clinic and dialysis attendance rates. A whole of health approach has been used in which the range of nursing skills are highlighted and the ability to work across the health system and beyond the acute sector. The approach used in this program could be applied more broadly to other chronic disease management programs in Aboriginal communities. Stronger relationships between similar programs and across the life continuum could improve the ability of programs to improve health outcomes. This could include diabetes, hypertension, and cardiovascular disease, for example, that contribute to renal disease (Australian Institute of Health and Welfare, 2009; Chadban *et al.*, 2003; White *et al.*, 2010). In addition to this, government policies need to address the social determinants of health and nursing has a significant role in supporting these changes (Cerasa, 2011).

Development of an NP role would further enable program support and can improve patient outcomes (Wakerman *et al.*, 2012). This role would need to be carefully scoped as it would require specialised renal and Aboriginal health knowledge and not be limited to clinical perspectives. That is, the role needs to be developed with the ability to influence the social determinants of health (Cerasa, 2011).

Limitations

The quality of the program in relation to the acceptability from the Aboriginal communities has not been directly addressed. This information has been identified anecdotally but a more rigorous approach undertaken with cultural sensitivity would be valuable.

Conclusion

The GKDNMP has achieved significant success in the majority of the 10 COAG outputs and improved access and delivery of culturally secure renal health care services. The commitment to improve the prevention of, and services for, people with CKD, is evident from the WACHS Goldfields Regional Director through to the renal program staff, with nursing roles central to the support and sustainability of these changes. This commitment has been demonstrated through substantial progress in only eight months. This early progress report has summarised many of these achievements and provided suggested opportunities to continue this program to contribute to closing the gap in renal health-related outputs in the WACHS Goldfields region.

Nursing has a strong role in improved access and delivery of renal health services in remote Aboriginal communities in Australia. The program demonstrates the strong ability nursing has to improve Aboriginal health, and while improvements in renal health outcomes may not be noted for some time, the strong relationships built with Aboriginal people and communities will support changes in the longer term.

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