



An innovative model of improving access to renal specialist care: one rural centre's experience with a Nurse Practitioner (NP)-led chronic kidney disease (CKD) telehealth service.

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Background

The Darling Downs is a farming region on the western slopes of the Great Dividing Range in southern Queensland, Australia. Toowoomba Hospital is the major regional/ referral hospital for the Darling Downs Hospital and Health Service (DDHHS), supporting the NP-led nephrology services based at Kingaroy and Cherbourg Hospitals, as shown in **Figure 1**.

CKD.QLD is a state-wide collaborative multidisciplinary research and practice program, established in July 2009. It incorporates a registry and research platform involving all consenting patients with CKD (prior to Renal Replacement Therapy - RRT) in public renal practices in Queensland.

Access to CKD specialists is often limited in rural and remote areas because of geographical location, socio-economic factors and health service resources. To address this, a telehealth model of care (MOC) for a rural CKD multidisciplinary service (Dietitian; Diabetic Educator; Podiatrist; Pharmacist and Aboriginal Health Workers) was established, facilitated by a renal NP. The NP responsibilities include, but are not limited to, initiation of pathology screening, prescriptions, inter-disciplinary referrals, and primary liaison for general practice/primary health care providers.

Aim

To review NP-led telehealth CKD MOC in rural Queensland.

Methods

CKD patients in the Kingaroy-Cherbourg region who were accessing renal care via Toowoomba (150-200kms away) were offered transition to the telehealth MOC, facilitated by the renal NP, and within their local Hospital and Health Service. Patients were enrolled by informed consent into the CKD.QLD Registry. Patient demographics and longitudinal outcomes, including patient satisfaction, were collated.

- Study subjects were those who consented for the CKD.QLD registry from July 2014 to May 2016.
- A total of 98 patients were recruited.
- Statistical analyses were performed using Stata (StataCorp 2013, College Station, TX: LP)

Results

Demographics

- 31% identified as Aboriginal and/or Torres Strait Islander (A&TSI).
- There was no significant difference in gender distribution by ethnicity.
- Indigenous people were much younger than non-Indigenous people in this cohort (median values of 58.2 years vs. 70.2 years respectively; $p < 0.01$). **Figure 2**.
- The percentage of CKD patients living in the lowest Index of Relative Socio-Economic Disadvantage (IRSD) quintile was significantly higher in Indigenous people than in non-Indigenous people (96.7% vs. 45.6%, $p < 0.001$). **Figure 3**.

CKD Stage at consent

- 30.2% of all patients were CKD stage 4, followed by 3A (24.0%) and 3B (21.9%). **Figure 4**.
- There was no significant difference in stage distribution either by gender or by ethnicity.

Primary renal diagnoses

- Diabetic nephropathy (DN) was the leading cause of CKD overall (51.6%) followed by renovascular disease (12.9%).
- The percentage of CKD patients with DN was significantly higher in Indigenous people than in non-Indigenous people (83.3% vs. 35.3%, $p < 0.001$). **Figure 5**.
- No Indigenous person had a primary renal diagnosis of renovascular disease compared with 22.1% of the non-Indigenous people.

Comorbidities

- When all patients were combined, 76.5% had hyperlipidaemia, 50% had hypertension and 45.8% had known cardiovascular disease.
- The percentages of those with hyperlipidaemia were significantly higher in Indigenous people than in non-Indigenous people; 93.3% vs. 69.1%, $p < 0.01$. **Figure 6**.

Telehealth consultations

- Approximately 485 telehealth consultations were provided, with 90% including a relative/carer, resulting in financial savings (QH transport subsidy scheme) of >\$110,000, and (total) patient travel reduction of >147,000kms.

Patient satisfaction (survey outcomes)

- Patient satisfaction was high with 100% of patients indicating that they were treated with respect and dignity and 100% stating that they would recommend the service.

Conclusions

CKD management via an NP-led telehealth MOC is efficient and cost effective, enabling patients to be managed 'closer to home' with the benefits of local health service involvement, carers and family. Positive experiences and outcomes have supported the implementation of an NP-led *haemodialysis* telehealth MOC.

References

1. Venuthurupalli SK, Hoy WE, Healy HG, et al. CKD.QLD: Growth of Chronic Kidney Disease Surveillance in Queensland, Australia. Invited Review for: "Taming the Chronic Kidney Disease Epidemic: A Global View of Surveillance Efforts". KI 2014.

Fig 1: Darling Downs Hospital and Health Service (DDHHS)

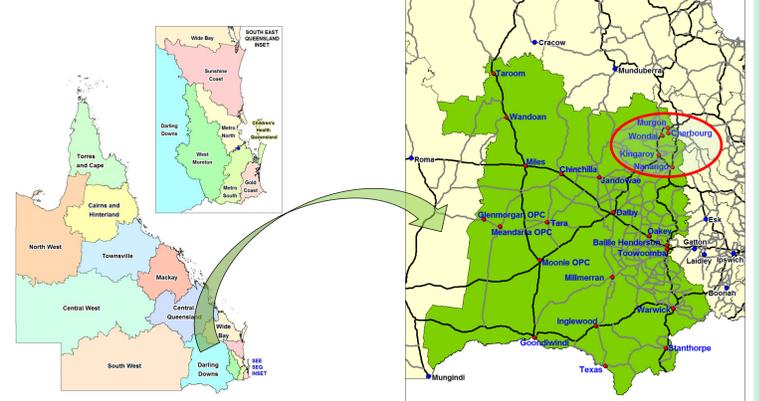


Fig 2. Age distribution (%) by ethnicity

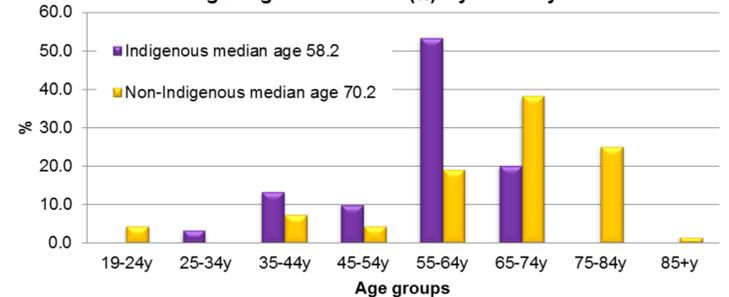


Fig 3. Distribution (%) of IRSD quintiles by ethnicity

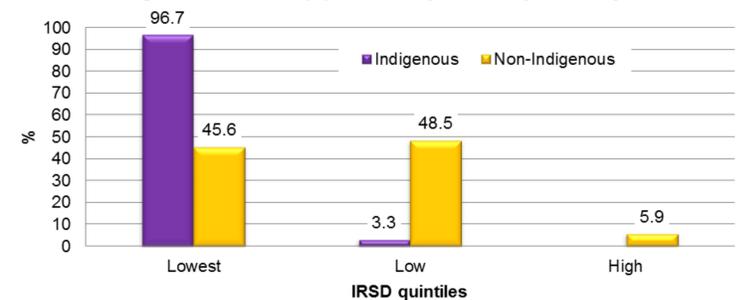


Fig 4. CKD stage distribution (%) by ethnicity

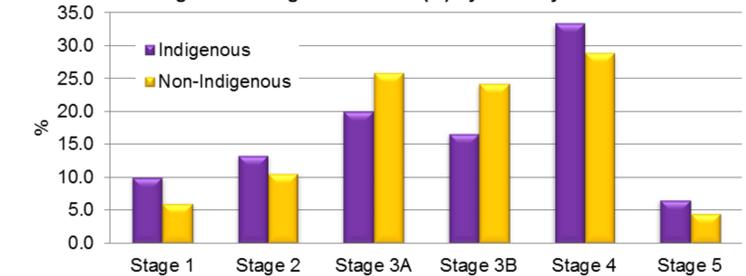


Fig 5. Distribution (%) of renal diagnoses by ethnicity

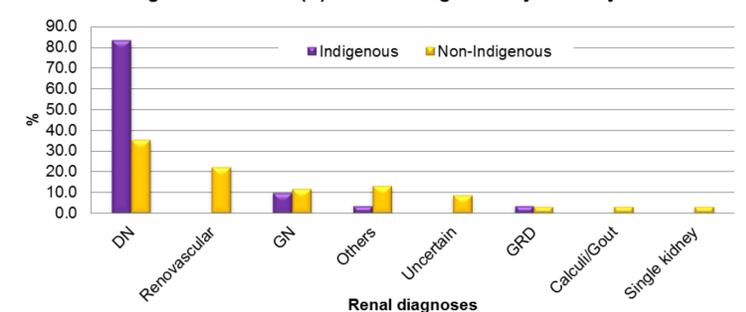


Fig 6. Percentage of patients with comorbidities by ethnicity

