# Renal Health in the Kimberley region

**Dr Emma Griffiths**

- **Renal GP, KRS**
- **Medical Coordinator, RCSWA**
- **Public Health Registrar and PhD Candidate, UWA**

# HISTORY OF THE SERVICE

- October 2002: Kimberley Satellite Dialysis Centre (KSDC) established in partnership with Royal Perth Hospital - first Australian dialysis unit to be managed by an Aboriginal Community Controlled Health Service
- April 2004: KSDC at full capacity
- August 2012: Opening of current 4 chair Fitzroy Renal Health Centre (FRHC)
- April 2013: Opening of current 11 chair Derby Renal Health Centre (DRHC)
- May 2013: Opening of 6 chair Kununurra Renal Health Centre (KRHC)
- October 2014: KRS becomes a company in it's own right
- May 2017: KSDC (Now Broome Renal Health Centre BRHC), DRHC, FRHC and KRHC at full capacity

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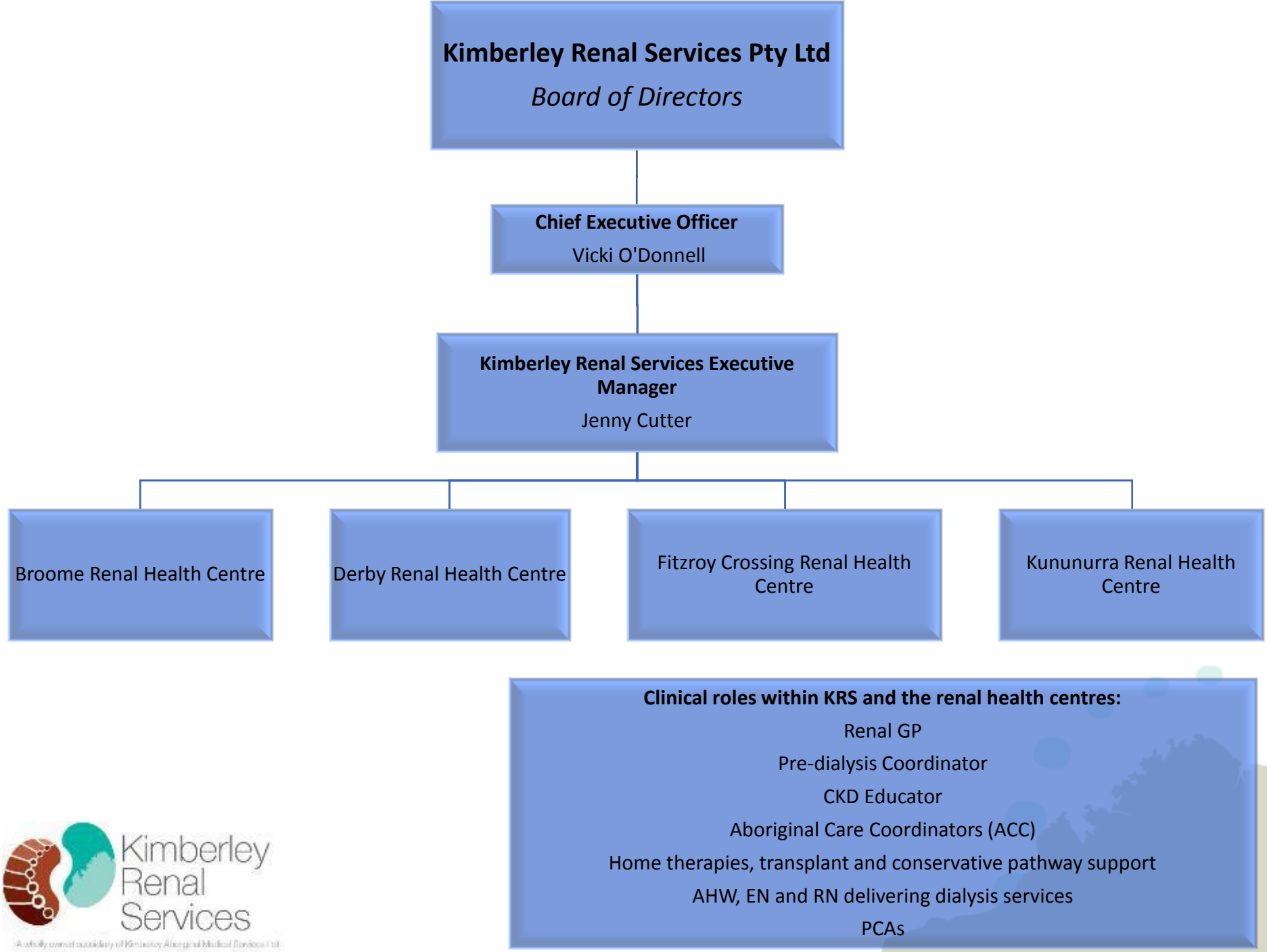
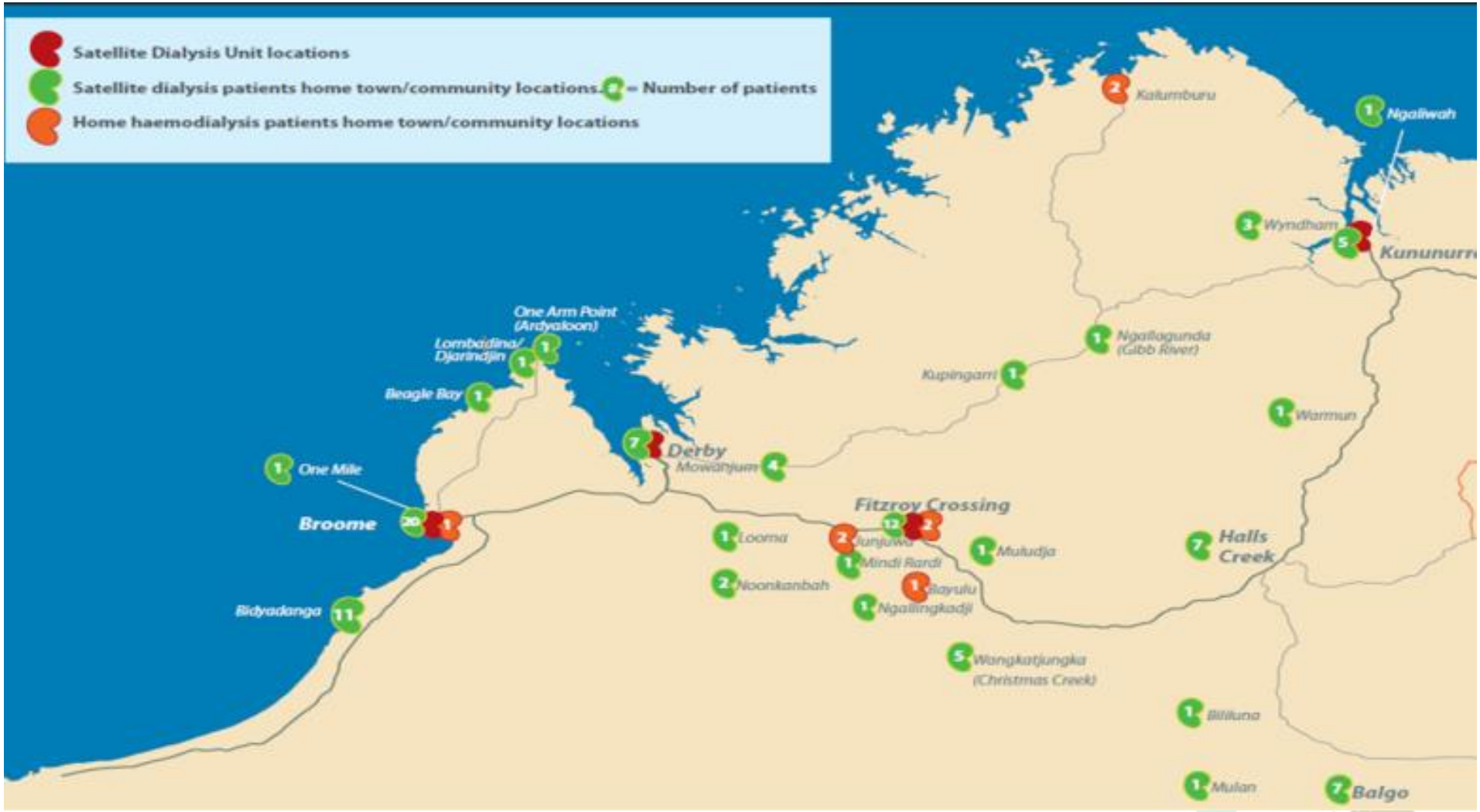

Kimberley Renal Services Pty Ltd
Board of Directors
Chief Executive Officer
Vicki O'Donnell
Kimberley Renal Services Executive Manager
Jenny Cutter
Broome Renal Health Centre
Derby Renal Health Centre
Fitzroy Crossing Renal Health Centre
Kununurra Renal Health Centre
Clinical roles within KRS and the renal health centres:
Renal GP
Pre-dialysis Coordinator
CKD Educator
Aboriginal Care Coordinators (ACC)
Home therapies, transplant and conservative pathway support
AHW, EN and RN delivering dialysis services
PCAs




Currently:
At full capacity for satellite dialysis = 124
Number of transplant patients living in the Kimberley = 11
Number on PD = 9
Number on HHD = 3

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# Rates Of CKD In Indigenous Australians

- <u>NT community data vs AusDiab:</u>
  - Relative risk for Indigenous Australians
    - Up to 5 times for proteinuria
- <u>2011 – 2013 ABS Australian Health Survey:</u>
  - Relative risk for Indigenous Australians:
    - Up to 4 times for CKD*
  - Relative risk for remote living Indigenous Australians:
    - Up to 20 times for ESKD


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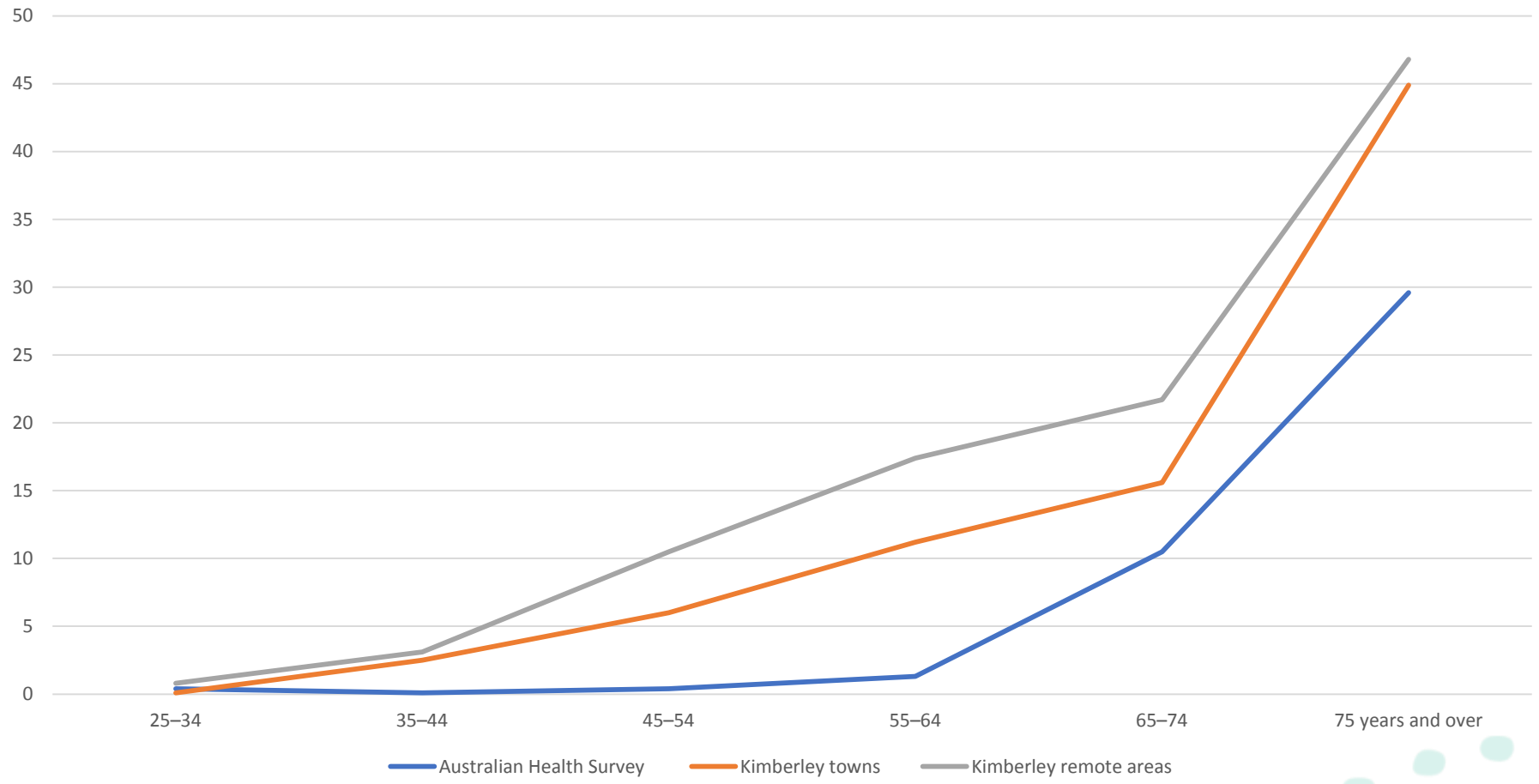


| AGE GROUP | 25-34 | 35-44 | 45-54 | 55-64 | 65-74 | 75+ |
|---|---|---|---|---|---|---|
| Difference (%) (K - AUS) | 0.0 | 2.3 | 6.7 | 10.9 | 10.4 | 15.4 |

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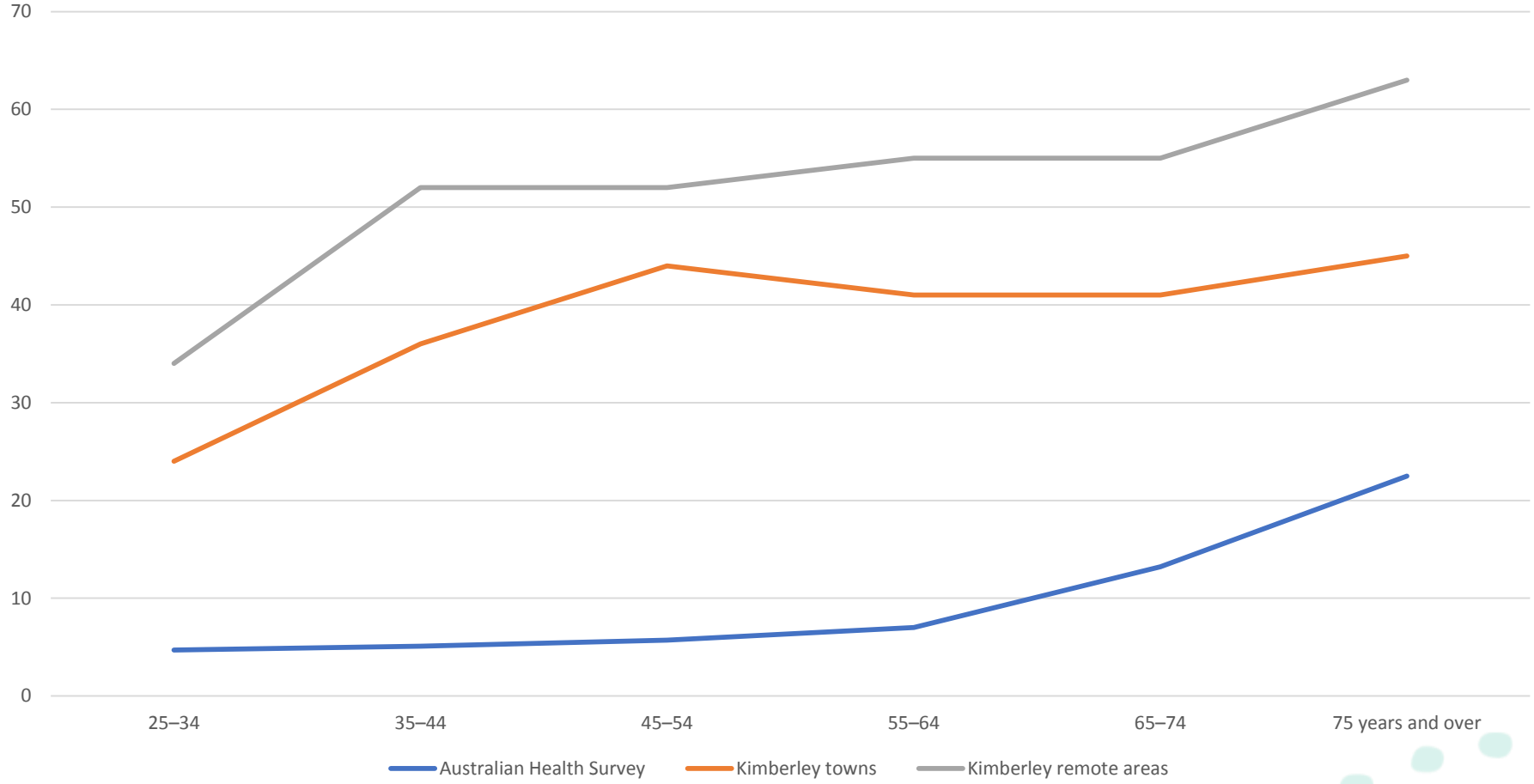
Reference = Available primary care data, proportion of tests done 1/1/2016 – 30/6/3016 (n = 5946) and 43640DO001_20112012 Australian Health Survey: Biomedical Results for Chronic Diseases, 2011–12 — Australia

Prevalence of albuminuria
Kimberley vs. Australia Health Survey 2011- 2012




| AGE GROUP | 25-34 | 35-44 | 45-54 | 55-64 | 65-74 | 75+ |
|---|---|---|---|---|---|---|
| Difference (%) (K:AUS) | 23 | 37.3 | 40.7 | 38.0 | 31.1 | 27.5 |

Reference = Routinely collected data analysed for KRS reporting requirements (as of 30th June 2016) and 43640DO001_20112012 Australian Health Survey: Biomedical Results for Chronic Diseases, 2011–12 — Australia

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# RATES OF ESKD IN INDIGENOUS AUSTRALIANS

ANZDATA reporting system:

- 251 Indigenous Australians commenced RRT in 2014
- Diabetes was the most commonly identified primary disease (32%) followed by glomerulonephritis (22%)
    - Few biopsies done
- RRT incidence in remote areas the highest in the world

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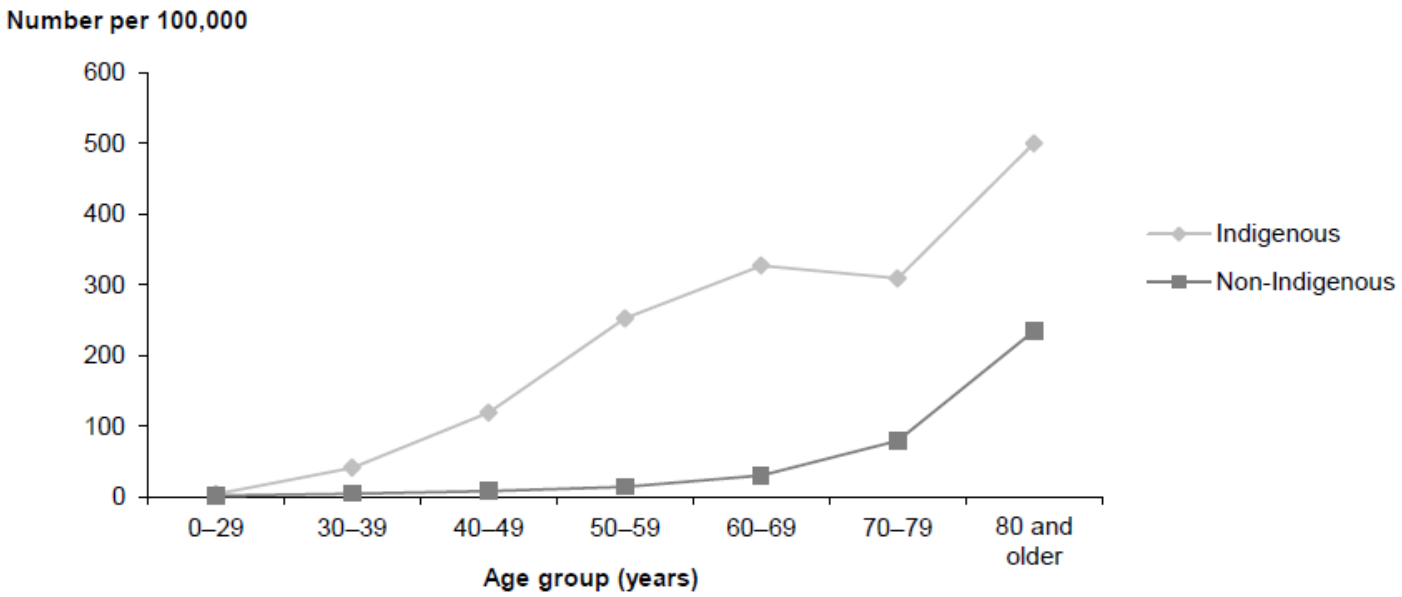
Reference = ANZDATA Registry. 38th Report, Chapter 12: Indigenous People and End Stage Kidney Disease. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2016. Available at: http://www.anzdata.org.au

# ANZDATA: INCIDENCE OF ESKD




*Note:* Only New South Wales, Queensland, Western Australia, South Australia and the Northern Territory are included.

*Source:* Linked ANZDATA Registry, AIHW National Mortality Database and National Death Index.

**Figure 6.2: Total incidence of ESKD, by age and Indigenous status, 2003–2007**

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# COMMUNITY CASE STUDY

Community "A" in the Western Desert:

- Population = 915, people with results = 389

Prevalence of Kidney disease:

- By age 25: 52% chance of signs of CKD
- By age 45: 62% chance of signs of CKD

If you are aged between 45 and 55:

  - There is a 12% chance you have a reduced eGFR
  - There is a 22% chance you have an ACR > 100
- There is a high chance someone in your family has had ESKD

Reference = routinely collected data analysed for KRS reporting requirements, as of 30th June 2016

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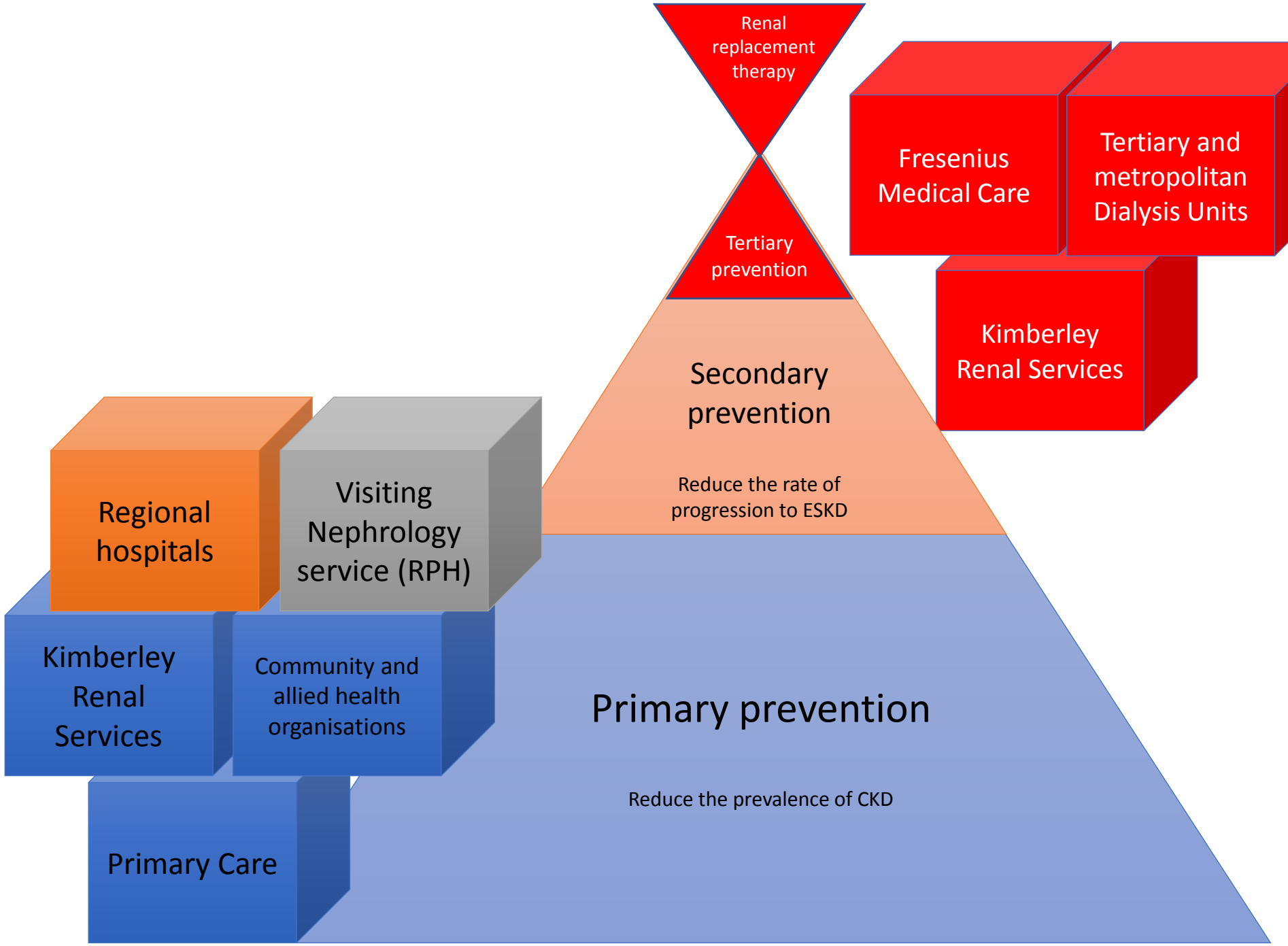
Renal replacement therapy
Fresenius Medical Care
Tertiary and metropolitan Dialysis Units
Tertiary prevention
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Secondary prevention
Reduce the rate of progression to ESKD
Regional hospitals
Visiting Nephrology service (RPH)
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Community and allied health organisations
Primary prevention
Reduce the prevalence of CKD
Primary Care

# SATELLITE HAEMODIALYSIS



## Haemodialysis outcomes of Aboriginal and Torres Strait Islander patients of remote Kimberley region origin

Julia V Marley, Hannah K Dent, Maree Wearne, Cherelle Fitzclarence, Carmel Nelson, Karen Siu, Kevin Warr and David Atkinson

As has been widely reported elsewhere, over the past 20 years, there has been an epidemic of end-stage kidney disease (ESKD) among Aboriginal and Torres Strait Islander people in remote areas of Australia.[1-5] Known risk factors include intrauterine growth retardation, various illnesses in childhood, the early onset and poor control of hypertension and diabetes, and possibly smoking.[6]

There have been limited reports on the outcomes of Aboriginal and Torres Strait Islander people on dialysis in Australia, and those that have been published have generally documented poor patient survival when compared with non-Indigenous patients in Australia.[4,5,7] From 1993 to 1996, the median survival for patients undergoing peritoneal dialysis (PD) and haemodialysis (HD) was 3.3 and 6.5 years for Aboriginal and Torres Strait Islander people, respectively.[5] When all forms of renal replacement therapy (RRT) were included, patient survival for Aboriginal and Torres Strait Islander people was less than a third that of non-Indigenous patients. During 1994 and 1995 almost

ABSTRACT

**Objectives:** To compare the clinical outcomes and mortality rates of Aboriginal and Torres Strait Islander people of Kimberley origin receiving haemodialysis (HD) treatment with other subsets of Aboriginal and Torres Strait Islander HD patients (Northern Territory, Western Australia excluding the Kimberley region, the rest of Australia) and Australian non-Indigenous HD patients.

**Design, participants and setting:** Retrospective identification of Aboriginal and Torres Strait Islander patients of Kimberley origin and analysis of secondary data from the Australia and New Zealand Dialysis and Transplant Registry; this group was compared with other Australian patients receiving HD treatment from 1 January 2003 to 31 December 2007.

**Main outcome measures:** Clinical outcome measures; comorbid conditions; death rates per 100 patient-years, unadjusted and adjusted (for age, sex, comorbid conditions, late referral to nephrologist treatment).

**Results:** Seventy per cent of HD treatments for Aboriginal and Torres Strait Islander patients of Kimberley origin was provided in the Kimberley. They had comparable adjusted mortality rates to non-Indigenous Australian patients (adjusted mortality rate ratio, 0.80; 95% CI, 0.51–1.23).

**Conclusions:** This is the first report showing similar mortality rates for Aboriginal and Torres Strait Islander people exclusively from a remote area of Australia and non-Indigenous Australians receiving HD treatment. HD treatment delivered closer to home can be safe and effective in remote areas.

MJA 2010; 193: 516–520

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# SATELLITE HAEMODIALYSIS

- All Kimberley Renal Health Centres currently operating at full capacity
- As of May 2017:
  - Seven patients now waiting in Perth (as of May 2017)
  - Twenty-five patients on RRT pathway in the region with an eGFR ≤ 15
- Services limited to Broome, Kununurra, Derby, Fitzroy Crossing

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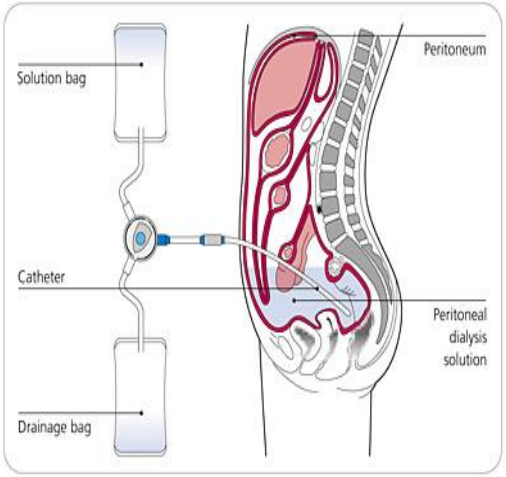
# Home Therapies

- Can bring patients closer to home
- No specific ceiling on patient numbers
- WACHS Renal Dialysis Plan 2010 to 2021:
  - Target of 35% of RRT to be via home therapies

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**HOWEVER…**

# Home Therapies

Peritoneal Dialysis in the Kimberley:

- Higher rates of technique failure
- Higher rates peritonitis
- Significantly shorter:
  - Time to first episode peritonitis
  - Overall survival time on PD

AJRH The Australian Journal of Rural Health

*Aust. J. Rural Health* (2013) **22**, 101–108

Original Research

Peritoneal dialysis outcomes of Indigenous Australian patients of remote Kimberley origin

Julia V. Marley, PhD,[1,2] Sarah Moore, FRACGP,[1,2] Cherelle Fitzclarence, FRACGP,[2] Kevin Warr, FRACP,[3] and David Atkinson, MBBS[1,2]

[1]*The Rural Clinical School of Western Australia, The University of Western Australia, and* [2]*Kimberley Aboriginal Medical Services Council, Broome, and* [3]*Department of Renal Medicine, Royal Perth Hospital, Perth, Western Australia, Australia*

Need for:

- Enhanced local support for home therapies
- Consideration of patient pathways to home therapies care, including low acuity satellite facilities
- Beware the “bad reputation” following treatment failures
- Good engagement between stakeholders

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# TRANSPLANT

**Table 8.3. Ethnicity of Recipients Transplanted 2010-2014**

| Country | Ethnicity | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| | **Total** | 825 (100.0%) | 845 (100.0%) | 883 (100.0%) | 913 (100.0%) | 949 (100.0%) |
| | **Caucasian** | 657 (79.6%) | 674 (79.8%) | 682 (77.2%) | 696 (76.2%) | 686 (72.3%) |
| | **Aboriginal/TSI** | 28 (3.4%) | 20 (2.4%) | 31 (3.5%) | 41 (4.5%) | 36 (3.8%) |

- Fewer transplants
- More infective complications
- Families unable to donate to families
- No new transplants for Kimberley Aboriginal patients in the last three years

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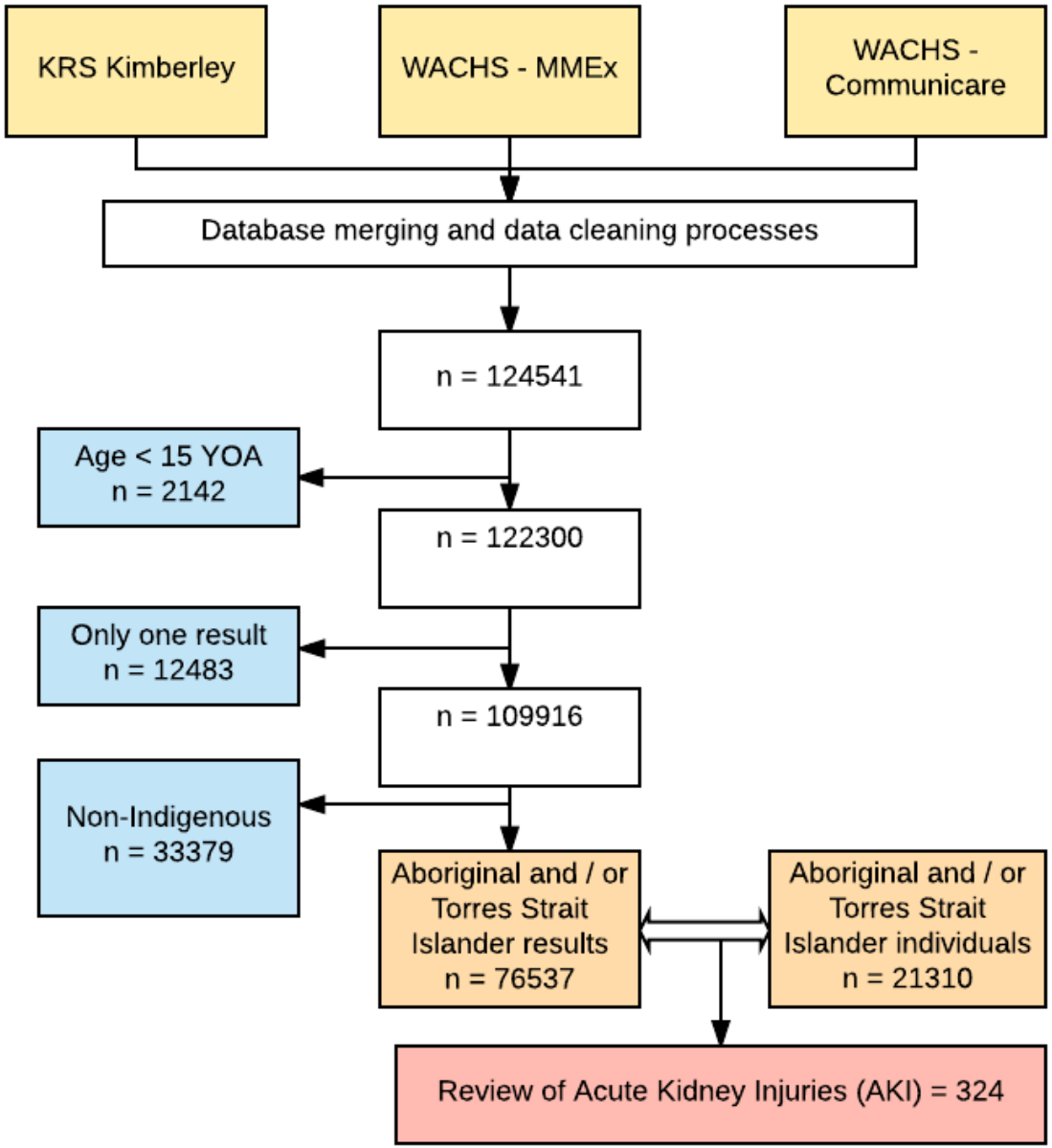
# DATA: AKI PROJECT

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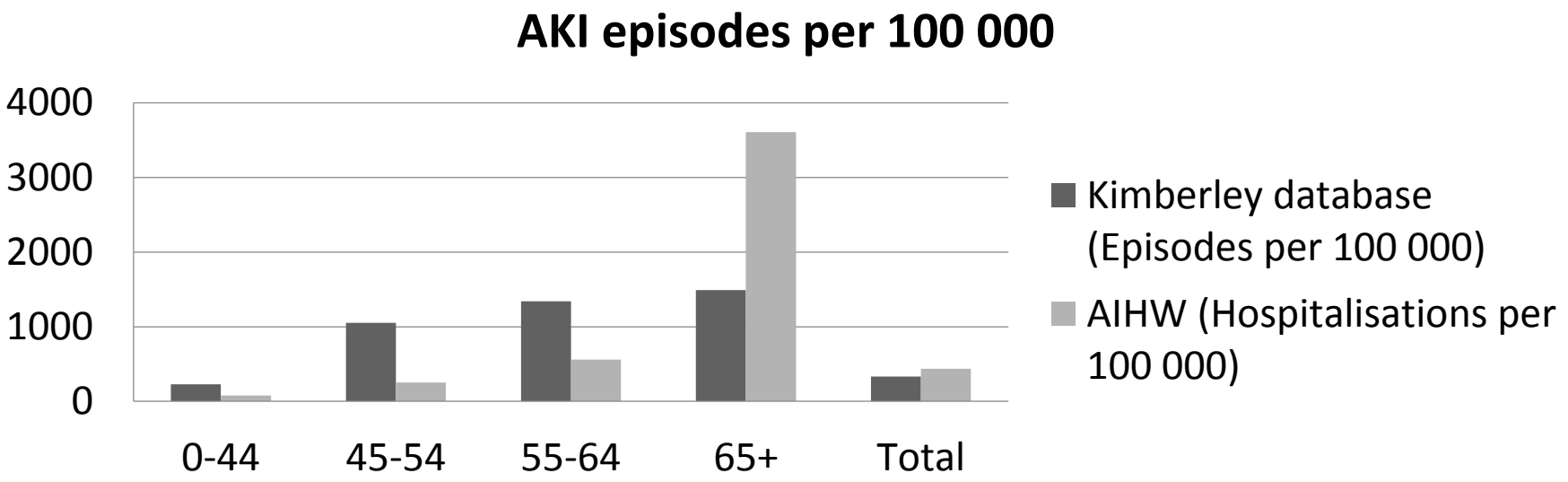
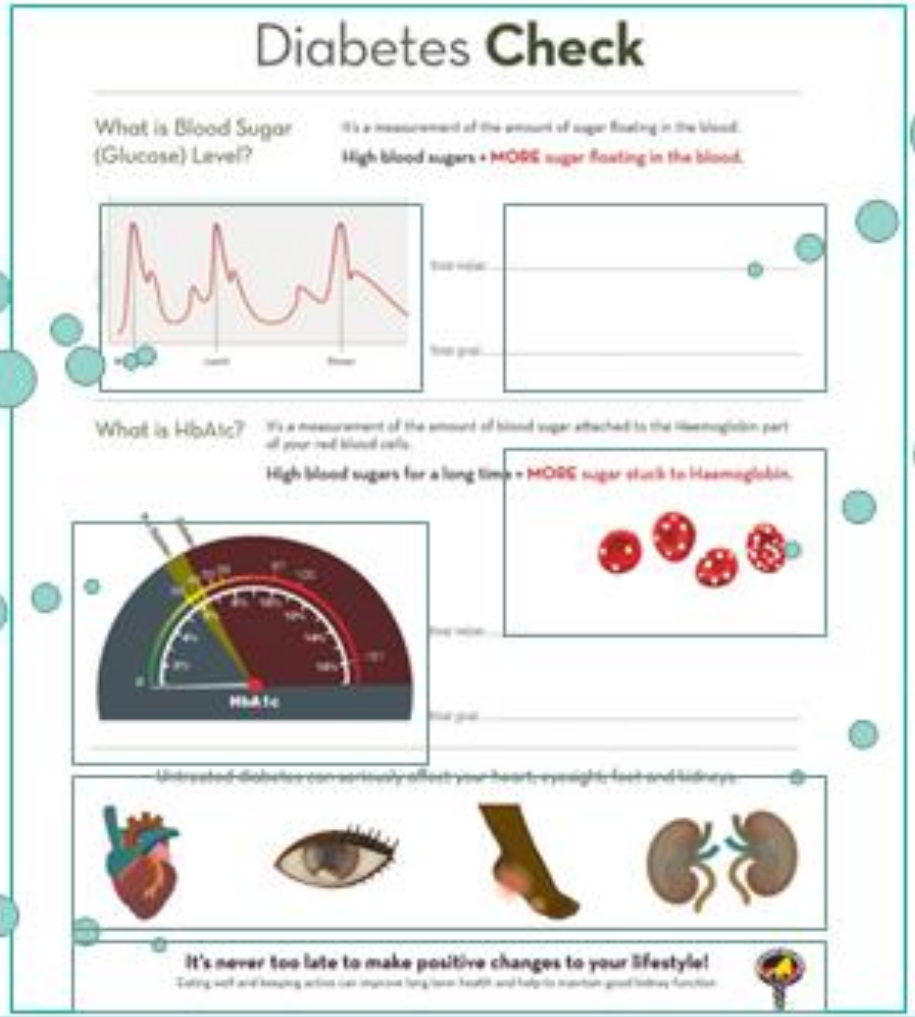
# Acute Kidney Injury




**Most common conditions associated with AKI (ICD-10):**

| Kimberley (n = 324) | | National (n = 113 768) | |
|---|---|---|---|
| Number of episodes with diagnosis | % episodes with diagnosis | Number of episodes with diagnosis | % episodes with diagnosis |
| Infection (n = 155)<br>[Pneumonia (n = 42), Skin (n = 38), UTI (n = 20)] | 48% | Circulatory / vascular (n = 21852) | 19% |
| Circulatory / vascular (n = 50)<br>[Heart failure (n = 24)] | 15% | Respiratory (n = 14088) | 12% |
| Endocrine / metabolic<br>[Diabetes and related (n = 26)] | 14% | Infection (n = 10474) | 9% |

# Culturally responsive health promotion resources – Evaluation needed




Blood sugar graph used to show change in BSL during the day.

Used to mark client's own BSL pattern.
Used to explain insulin titration.

Speedometer used as risk metaphor

Motivating and optimistic message

Space to write client's own values

Blood cells with sugar attached (can match to demonstration)

Impact on patient – end organ damage

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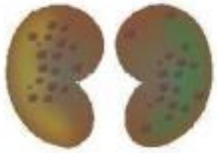
# Kidney **Check**

NO KIDNEY DISEASE

KIDNEY DISEASE

**STAGE 1**
eGFR > 90

**STAGE 2**
eGFR 60-89



**STAGE 3**
eGFR 30-59

**STAGE 4**
eGFR 15-29

**STAGE 5**
eGFR <15

END Stage Kidney Disease

**Proteinuria (Urine test check)** Protein in the urine is bad for your kidneys. More protein means kidneys get sick quicker.

**Chronic Kidney Disease (blood test check)**

*Waste builds up and causes sickness.*

**Your values:**

Protein: ..... eGFR: .....

Creatinine: ..... Stage: .....

**It's never too late to make positive changes to your lifestyle!**

Eating well and keeping active can improve long term health and help to maintain good kidney function

160102

## CASE DEFINITION

Chronic Kidney Disease (CKD) is either of the following, persisting for at least three months, repeated on at least two occasions:

1. Markers of kidney damage (e.g. proteinuria, haematuria or structural abnormalities on renal imaging) and / or:
2. GFR < 60 mL/min/1.73m².

**Both eGFR and ACR are required to determine the stage and risk category of CKD as albuminuria is one of the biggest known risk factors for progression to End Stage Kidney Disease (ESKD).**

**TABLE 1: KDIGO STAGING OF CKD**

| | ACR (mg/mmol) | | |
|---|---|---|---|
| eGFR | Normal <3.0 | Micro-albuminuria 3.0-30 | Macro-albuminuria >30 |
| Stage 1 eGFR ≥90 | NO CKD (unless other markers of kidney damage detected) | MODERATE RISK CKD | HIGH RISK CKD |
| Stage 2 eGFR 60-89 | | | |
| Stage 3 eGFR 45-59 | MODERATE RISK CKD | HIGH RISK CKD | VERY HIGH RISK CKD |
| Stage 3b eGFR 30-44 | HIGH RISK CKD | VERY HIGH RISK CKD | |
| Stage 4 eGFR 15-29 | VERY HIGH RISK CKD | | |
| Stage 5 eGFR <15 or dialysis | | | |

## SCREENING

**Up to 60% of adults in some Kimberley communities have markers of Chronic Kidney Disease (CKD).**

Increased creatinine occurs late in CKD and implies significant kidney damage.

**Screen annually for patients with any of the following risk factors:**

- Aboriginal or Torres Strait Islander person aged >= 15 years of age;
- Smoking;
- Obesity (BMI > 30kg/m²);
- Family history of CKD;
- History of cardiovascular disease (e.g. stroke/CVA, heart attack/MI, peripheral vascular disease / PVD);
- Hypertension;
- Diabetes;
- Previous acute kidney injury (AKI);
- Use of nephrotoxic drugs (e.g. NSAIDS).

Patients assessed as not having risk factors should be regularly screened for the development of risk factors over time.

**Screening for CKD requires:**

- Blood pressure (BP) measurement;
- Blood test for urea, electrolytes and creatinine (UEC);
- Urine test for albumin:creatinine ratio (ACR):
  - Dipstick prior to sending and document result;
  - If leucocytes, blood and/or nitrates consider possible UTI / STI (see Table 2).

**TABLE 2: OTHER CAUSES OF ABNORMAL KIDNEY SCREENING TESTS AND APPROPRIATE FOLLOW-UP**

| Abnormality | Management |
|---|---|
| Proteinuria with abnormal urine dipstick due to suspected urinary tract infection (UTI) or urethritis from sexually transmissible infection (STI). | Send urine for MCS and consider UTI treatment in discussion with GP. Follow appropriate STI guidelines for counselling, testing and treating possible STI (See RESOURCES). Repeat ACR with proof of cure of infection in three months or as clinically indicated. |
| Proteinuria / raised creatinine after vigorous exercise or heavy protein consumption. | Repeat screening when patient has not exercised in the previous 24 hours or fasting sample. |
| Isolated proteinuria in person without other risk factors for CKD aged less than 30 years (i.e. possible orthostatic proteinuria). | Recheck ACR on morning first void urine collected immediately on first standing |
| Increase in creatinine after commencement of ACE-inhibitor / ARB. | Creatinine rise to ≤25% acceptable – see management section. Monitor weekly until stable. |

**Considerations in interpreting screening results:**

- Creatinine levels vary with muscle mass: eGFR on laboratory reports may under or overestimate renal function in people with extremes of body size, muscular diseases or amputations – calculators can be used to factors in body weight (see RESOURCES);
- Abnormalities persisting less than 3 months indicate acute kidney injury (AKI) which increases the risk of subsequent CKD;
- Episodes of AKI should be investigated for a cause and documented in the medical record;
- Newly abnormal eGFR should be repeated within a week to identify rapidly declining renal function.

# DATA: CQI

## Colour Coding Scale - Last Date

This provides the numbers of patients categorised by their latest ACR and eGFR observations in the date range.

| | Last ACR Category | | | |
|---|---|---|---|---|
| **Last eGFR Category** | **A1** | **A2** | **A3** | **No Result** |
| **G1** | 620 | 320 | 152 | 967 |
| **G2** | 196 | 128 | 83 | 323 |
| **G3a** | 23 | 22 | 52 | 63 |
| **G3b** | 9 | 12 | 33 | 54 |
| **G4** | 1 | 7 | 33 | 36 |
| **G5** | | 1 | 14 | 41 |
| **No Result** | 116 | 66 | 28 | |

# Research priorities

http://www.cari.org.au/docs/Research%20Priorities%20in%20Chronic%20Kidney%20Disease_7Feb2014.pdf

How effective are lifestyle programs (diet, exercise and smoking cessation) for preventing deterioration in kidney function in patients with early CKD?

What are the best interventions to improve the decision-making process of people faced with HD?

Does active implementation of clinical practice guidelines in general practice improve kidney health in patients with early CKD?

Does provision of culturally appropriate information about early CKD modify acknowledgement, medication adherence, and health service uptake in patients with early CKD?

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# Thank you for your time and attention

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