

ANZDATA / ANZSN SPECIAL REPORT

Unit Survey 2024

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SUGGESTED CITATION

*Forcey D, *Au E, Irish G, Clayton P, Gray N, Kotwal S, Krishnasamy R, Mather A, Crawford S, McDonald S. ANZDATA & ANZSN Special Report: Head of Unit Report: Nephrology unit workforce and dialysis capacity. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2025. ISBN 978-0-6453621-8-3. Available at: <http://www.anzdata.org.au>.

PLAIN LANGUAGE SUMMARY

People with kidney failure who elect to receive kidney replacement therapy (KRT) are treated with dialysis or a kidney transplant. A survey of Kidney units in Australia and New Zealand was undertaken by the Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry and the Australian and New Zealand Society of Nephrology (ANZSN), to find out:

- The types of kidney replacement therapies offered,
- How units are staffed, and how numbers of staff to patients with kidney failure differs, and
- Limitations in units' ability to provide haemodialysis to their patients, and the strategies in place to address these challenges.

PART 1

Part 1 covers the workforce and staffing of kidney units in Australia and New Zealand.

- Survey responses indicated a large and varied workforce caring for people with kidney failure in Australia and New Zealand, with:
 - * Differences in staffing of kidney specialists, kidney specialty trainees, and kidney-specialised Allied Health staff, and the numbers of patients with kidney failure that they care for.

PART 2

Part 2 covers units' ability to provide dialysis care, challenges providing care, and what is being done to address these.

- For patients wanting to have dialysis at home, three-quarters of kidney units had waiting lists to start training for home dialysis.
- Almost 9 in 10 kidney units reported that they are concerned about their ability to start new patients on haemodialysis in a timely manner and provide patients with the number of dialysis sessions for the number of treatment hours that they require.
 - * This is because the number of patients requiring haemodialysis was higher than the spaces and staff available to provide haemodialysis for them.
 - * As a result, half of Australian kidney units and almost three-quarters of New Zealand kidney units reporting placing restrictions on patients' haemodialysis treatments, including some that are opposed by current recommendations,¹ such as:
 - » Reducing treatment duration or number of treatment sessions.
 - » Requiring patients to start on certain types of dialysis.
- Despite recommendations that patients receive haemodialysis at their closest/ preferred location,¹ 2 in 3 kidney units in Australia and 4 in 5 kidney units in New Zealand were not able to offer this due to lack of haemodialysis capacity in their unit.
- Units were taking many actions to address these issues and increase their haemodialysis capacity.

Results from this report demonstrate the different experiences of kidney units around Australia and New Zealand and will help kidney units understand how their unit compares to other units, informing health services and governments to make improvements to provide quality kidney care.

EXECUTIVE SUMMARY

This Special Report is a collaboration between the Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry and the Australian and New Zealand Society of Nephrology (ANZSN). This Special Report details results from a survey of adult and paediatric Nephrology Units in Australia and New Zealand. It details units' workforce structure (**Part 1**) and has a special focus on dialysis capacity (**Part 2**). This report complements existing Registry publications including the ANZDATA and ANZSN Special Report on Haemodialysis Capacity.² This is part of an ongoing body of work addressing growing rates of kidney failure and areas of service constraint and shortfall in meeting the needs of the growing number of patients undergoing kidney replacement therapy.

This report details consultant Nephrologist, Nephrology advanced trainee and specialised Nephrology and Allied Health staffing in Australia and New Zealand, including ratios of patients receiving kidney replacement therapy (KRT) to these staff, and ratios of consultant Nephrologists to Nephrology advanced trainees under supervision in their Nephrology unit. There is limited information available on the workforce across Nephrology units, therefore this represents an opportunity for units to compare their staffing, training and workforce structure to that of other units.

The data reported in this Special Report is unprecedented in scope, presenting data from all paediatric and over 90% of adult public Nephrology units in Australia and New Zealand. The data presented herein provide important insights into challenges meeting the needs of growing numbers of patients with kidney failure, with adult public Nephrology units reporting:

- 87% are concerned about their ability to provide adequate haemodialysis services to their patients.
- 68% have insufficient haemodialysis capacity to accommodate patients at their preferred location. As a result, 58% of units reported that patients living within their hospital catchment area were receiving haemodialysis out of area.
- Haemodialysis capacity constraints primarily relate to shortfalls in capital infrastructure, with inadequate physical capacity, including dialysis chairs and physical space, the leading cause for capacity constraint.
- Over half of units had placed restrictions on patient care in response to haemodialysis capacity constraints.
 - * Over one-third of units in Australia and half of units in New Zealand reported that these restrictions had resulted in patient harm.
- Most units had escalated these concerns within their hospital and health service network and one-third had escalated these concerns at a government level.

This Special Report details the large and varied workforce providing Nephrology care within the public health service in Australia and New Zealand. Faced with unprecedented demand for haemodialysis services, this Report also provides unique insights from leaders in the field into the significant challenges in providing haemodialysis care across Nephrology units bi-nationally.

INTRODUCTION: BACKGROUND OF SPECIAL REPORTS

This Special Report is a collaboration between the Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry and the Australian and New Zealand Society of Nephrology (ANZSN). ANZSN is a not-for-profit organisation representing health professionals working in the prevention and treatment of kidney disease. The ANZDATA Registry is a Clinical Quality Registry that collects data regarding individual patients receiving kidney replacement therapy (KRT - dialysis or in receipt of a kidney transplant) in Australia and New Zealand. The Registry does not collect data on patients who are not receiving KRT nor those receiving dialysis for acute kidney injury. As part of annual reporting, the ANZDATA Registry reports on the number and location of people receiving different types of KRT and their outcomes. Individual hospital reports are also generated for internal review, standardising outcomes across Nephrology units, with benchmarking for quality indicators.

Special Reports are undertaken by ANZDATA periodically to collect and release material that is of relevance to contributors but does not fit within annual unit-level reporting structures, or publication in a peer-reviewed research journal. These reports are prepared and reviewed internally and released with the aim to complement existing output (such as the Annual Report). The first Special Report was a unit survey,³ undertaken in 2019 in conjunction with the end-of-year Annual Survey. That publication covered a variety of areas including Nephrology unit staffing, Nephrology physician training, unit resources and clinical practices. Variation in unit structure, staffing, clinical practice and service provision may not be otherwise captured in the Registry's traditional data collection but are relevant and of interest to Nephrology units and service providers and were collected as part of this Special Report (**Part 1**). Special Reports are also additionally conceived as opportunities to elucidate granular unit-level experiences of issues impacting Nephrology care in Australia and New Zealand, providing a foundation for further investigation of these issues and the factors influencing them. For this Special Report, the additional focus was Haemodialysis Capacity (**Part 2**).

THIS SPECIAL REPORT: HAEMODIALYSIS CAPACITY IN FOCUS (PART 2)

Dialysis capacity refers to the maximum ability of resources, infrastructure, staffing and funding to sustainably provide dialysis services to people with kidney failure in a timely, lifesaving, clinically appropriate and person-centred manner with optimal outcomes.¹ The majority of dialysis provided in Australia and New Zealand is haemodialysis that occurs in a haemodialysis centre. Dialysis capacity constraints for haemodialysis centres may result from inadequate physical space or resources to provide haemodialysis for the number of patients seeking treatment at their centre, inadequate funding or staffing to provide haemodialysis with existing resources, and other factors. For haemodialysis in haemodialysis centres, an important element of dialysis capacity refers to patients' ability to access care in treatment centres within reasonable proximity to their homes. In contrast, 'home therapies' such as peritoneal and home haemodialysis can be undertaken in patients' homes but as these therapies requires training of patients and families, dialysis capacity constraints may relate to staffing to provide education and training.

Recent works have identified the following issues with dialysis capacity in Australia and New Zealand:

1. Current and projected significant growth in the dialysis population,⁴
2. 'Hot-spots' of incident dialysis demand rising in excess of population growth⁵ that may unequally stress health services' Nephrology care provision in specific areas,
3. Challenges in staffing the dialysis workforce,⁶ and
4. Geographic variation in patient-to-haemodialysis chair ratios reported in the ANZDATA and ANZSN Special Report on Haemodialysis Capacity Survey Special Report.²

Recognising these factors, this Special Report surveyed units about their experiences with dialysis capacity constraints, particularly haemodialysis capacity, impacts of these on patient care, and measures taken to address these issues. This report does not cover the care of patients with acute dialysis not registered on the ANZDATA Registry, or patients who opt for a non-dialysis (conservative kidney management) pathway.

SPECIAL REPORT OVERVIEW

This Special Report summarises information from a survey from Australian and New Zealand Nephrology units on unit structure, staffing, and dialysis capacity, particularly haemodialysis capacity. The ANZDATA Registry conducted this survey in conjunction with the annual Registry end-of-year survey in 2023. This report primarily covers data from public Nephrology units, providing summary information from survey responses, to inform contributing units in Australia and New Zealand and others about:

1. Unit composition,
2. Ratios of patients to staff and Nephrology advanced trainees, and
3. The experiences of other Nephrology units.

Further work is currently underway to quantify the reported capacity issues in the provision of dialysis care at a dialysis centre level, as addressing these remains a priority for Nephrology care providers bi-nationally.

METHODS

The survey was distributed via the REDCap⁷⁸ electronic data capture tool hosted at the South Australian Health and Medical Research Institute, in conjunction with the end-of-year ANZDATA survey in December 2023. This was sent to the heads of all 'parent' Nephrology units in Australia and New Zealand, with the request that it be completed by someone with the relevant knowledge about their unit. Staff from the ANZDATA Registry made frequent contact with surveyed units to achieve comprehensive and complete survey responses.

'Parent' units are the principal care-providing unit within the ANZDATA Registry. Parent units have the overall responsibility of care provision and coordination of patients receiving kidney replacement therapy in their unit. Typically located in hospitals, these units often oversee multiple haemodialysis satellite facilities, provide access to home therapies including peritoneal dialysis and home haemodialysis, and provide access to kidney transplantation services (either at their centre, or by referral to another service).

Questions were determined by consultation with ANZDATA working groups and the ANZSN and covered a variety of areas including staffing, resources, clinical practice, service demands and measure to address these demands. The survey closed in December 2024.

DESCRIPTIVE DATA

In this report, basic descriptive data of survey responses are presented for each of the survey items. Where appropriate, these data are presented by region and/or as a ratio to:

1. Prevalent patients receiving kidney replacement therapy (dialysis or transplant), as determined by prevalent patients under the parent unit for the corresponding ANZDATA Annual Survey,
2. Consultant Nephrologists,
3. Nephrology physician trainees in the respondents' Nephrology unit, and
4. Specialised Nephrology and Allied Health staff.

In addition to care of patients with kidney failure, Nephrology units in Australia and New Zealand also care for patients with chronic kidney disease and acute kidney injury. As the ANZDATA Registry collects data regarding patients with kidney failure receiving KRT, this report presents numbers of patients receiving KRT under the care of each unit and the ratio of the ratio of patients receiving KRT to trainees and staff however it should be noted that a substantial component of units' workload involves inpatient and outpatient care for patients with chronic kidney disease, acute kidney injury, and conservative kidney management, who are not included in the ANZDATA Registry. Therefore, ratios presented in this survey do not include the entirety of the units' patient to staff ratio patients and associated workload for each unit.

Data were analysed using Stata v18.0⁹ and Microsoft Excel¹⁰ to report discrete counts and proportions, and ratios of patients to Nephrologists, Nephrology Physician Trainees and specialised Nephrology and Allied Health staff to patients as determined by prevalent patients under the care of each parent unit by corresponding ANZDATA Annual Survey.

RESULTS

1. Responders and non-responders by state and country, public and private units

Overall, 76% of parent units responded to the survey (**Table 1**). Survey response rate was 100% for paediatric units and 74% for adult units, accounted for by lower response rates from private units which provide treatment for adult patients. The overall response rate of 91% from adult public Nephrology units accounted for 94% of prevalent adult patients receiving kidney replacement therapy in public Nephrology units in Australia and New Zealand.

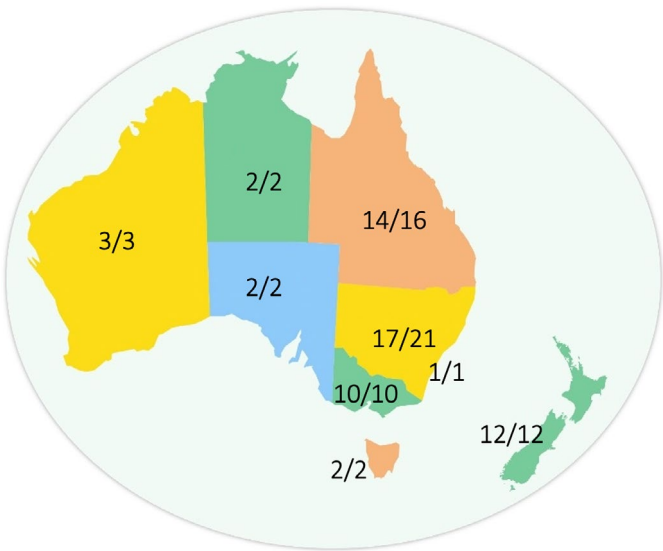
Table 1: Number and proportion of Nephrology ‘parent’ unit respondent to the survey

Type of unit	Units <i>n</i>	Responses <i>n</i>	Units responding %
All	110	83	75.5
Public	77	71	92.2
Private	33	12	36.4
Public			
Adult	69	63	91.3
Australia	57	51	89.5
New Zealand	12	12	100.0
Paediatric	8	8	100.0

SECTION 1: ADULT PUBLIC NEPHROLOGY UNITS

Section 1 of this Special Report details responses from adult public Nephrology units in Australia in New Zealand. Number of survey-respondent units over total number adult public units by New Zealand/ Australian state/territory is shown in **Figure 1**; response rates for subsequent questions may total less than the number of respondent units as not all units completed all questions.

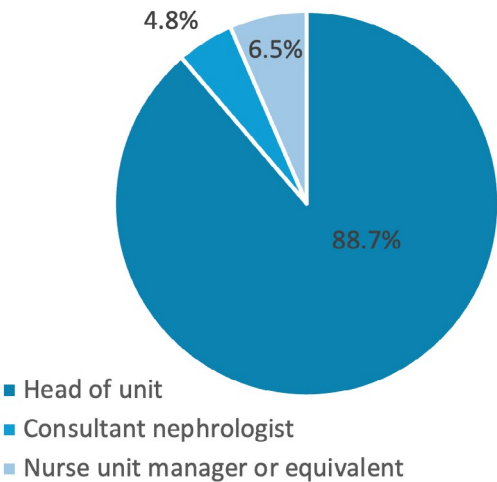
Figure 1: Number of responses from adult public Nephrology parent units by the total number of adult public Nephrology units in the region (New Zealand/ Australian state/ territory).



2. Individuals completing the survey

Most surveys were completed by Nephrology Heads of Unit, followed by nurse unit managers (or equivalent), or another consultant Nephrologist within the unit (*Figure 2*).

Figure 2: Survey respondents for adult public Nephrology units in Australia and New Zealand.



3. Total patients receiving kidney replacement therapy

Variation was observed in number of prevalent patients receiving KRT cared for by each unit across Australia (*Figure 3*) and New Zealand (*Figure 4*).

Figure 3: Number of prevalent patients receiving kidney replacement therapy (dialysis and transplant) in adult public Nephrology units in Australia.

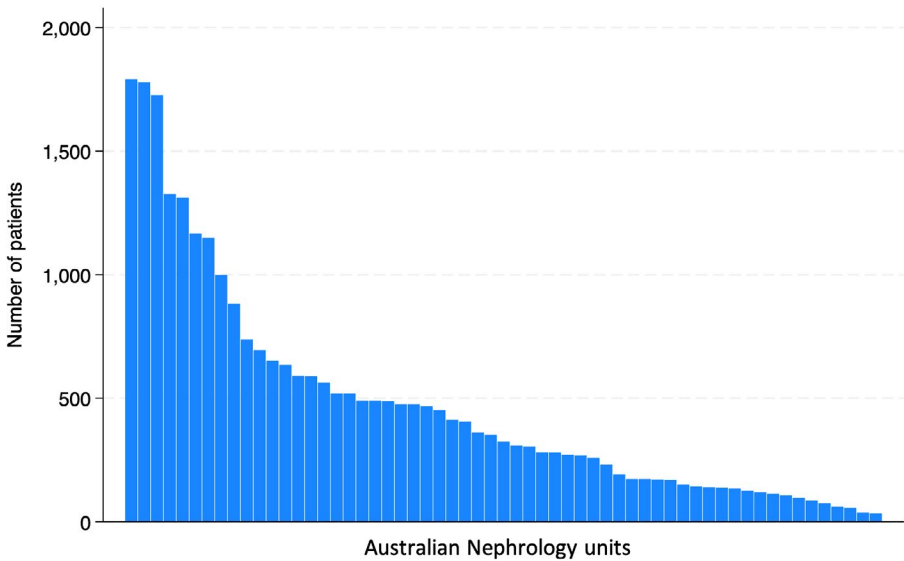
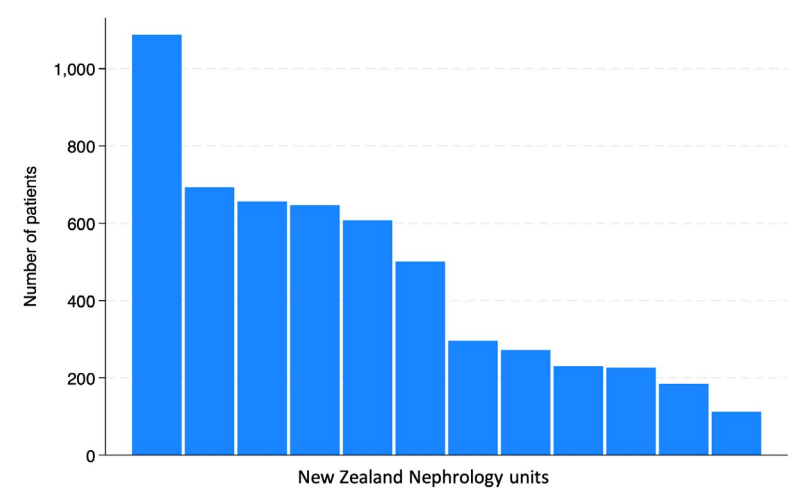


Figure 4: Number of prevalent patients receiving kidney replacement therapy (dialysis and transplant) in adult public Nephrology units in New Zealand.

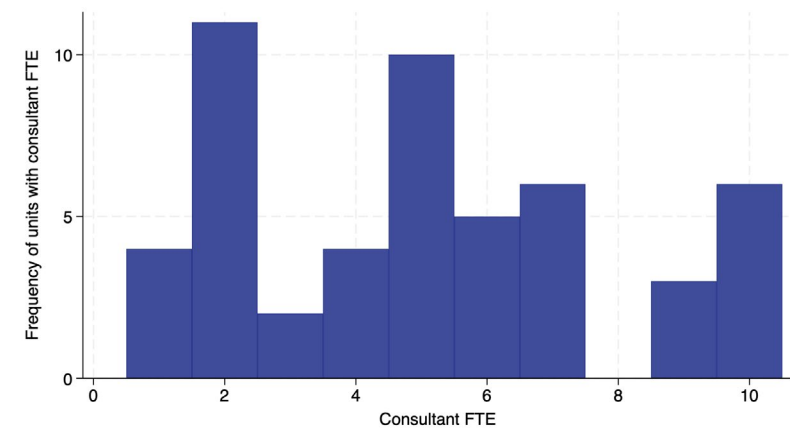


Part 1: Australian and New Zealand adult public Nephrology unit workforce

4. Number of full-time equivalent consultant Nephrologists in each Nephrology unit

All respondent units completed questions regarding full-time equivalent (FTE) consultant Nephrologists. The median number of FTE consultant Nephrologists per unit was 4.8 overall (inter-quartile range (IQR) 2.0-7.0), median FTE was 4.8 (IQR 2.0-7.0) for Australia and 5.8 (IQR 2.4-8.0) for New Zealand (Figure 5).

Figure 5: Full-time equivalent consultant Nephrologists in adult public Nephrology units in Australia and New Zealand.



FTE - Full time equivalent

5. Ratio of full-time equivalent consultant Nephrologists to prevalent patients receiving KRT.

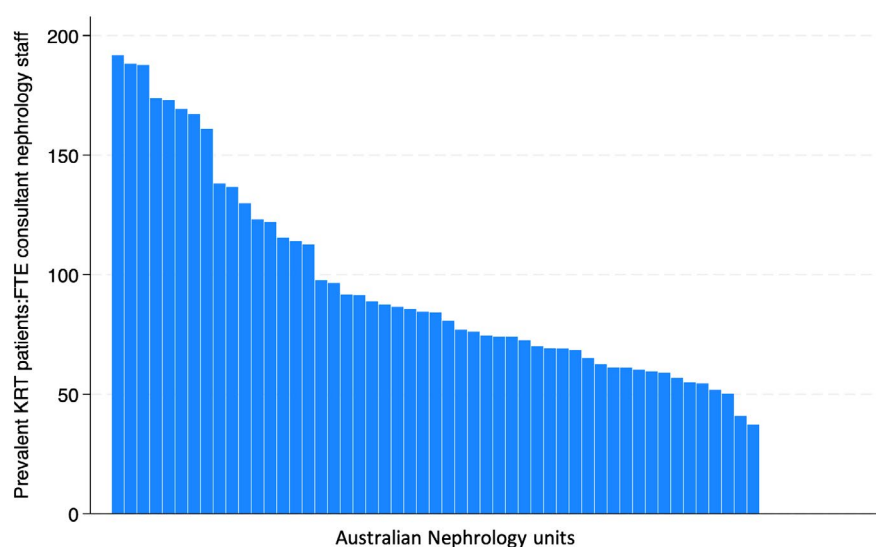
The ratio of patients receiving KRT to FTE consultant Nephrologists in the unit was 84.1 (IQR 62.5-112.6) in Australia and in New Zealand was 88.0 (IQR 63.9-99.5); differences in this ratio were observed between Australian states and territories (**Table 2, Figures 6, 7**).

Table 2: Full-time equivalent (FTE) consultant Nephrologists within adult public Nephrology units in Australia and New Zealand and ratio of prevalent patients receiving kidney replacement therapy (dialysis and transplant) to Nephrologists, by region.

Region	FTE Consultant Nephrologists			KRT Patients* /FTE Consultant Nephrologists		
	Median (IQR)	Min	Max	Median (IQR)	Min	Max
Australia	4.8 (2.0-7.0)	0.5	10.5	84.1 (62.5-112.6)	37.2	191.8
Victoria	5.2 (4.8-9.0)	1.7	10.5	117.9 (74.0-167.1)	50.2	173.8
Tasmania	2.9 (2.5-3.2)	2.5	3.2	101.3 (80.6-122.0)	80.6	122.0
New South Wales	4.6 (2.0-7.1)	1.0	10.1	69.1 (59.4-96.5)	37.2	173.0
Australian Capital Territory	6.8 (N/A)	6.8	6.8	76.2 (N/A)	76.2	76.2
Queensland	2.1 (2.0-5.2)	0.5	10.0	79.3 (61.0-91.3)	54.5	138.1
Western Australia	6.2 (4.7-6.2)	4.7	6.2	187.7 (161.0-188.2)	161.0	188.2
South Australia	7.4 (5.7-9.0)	5.7	9.0	138.7 (85.6-191.8)	85.6	191.8
Northern Territory	6.4 (5.6-7.2)	5.6	7.2	76.3 (65.0-87.5)	65.0	87.5
New Zealand	5.8 (2.4-8.0)	1.8	15.8	88.0 (63.6-99.5)	40.6	104.4

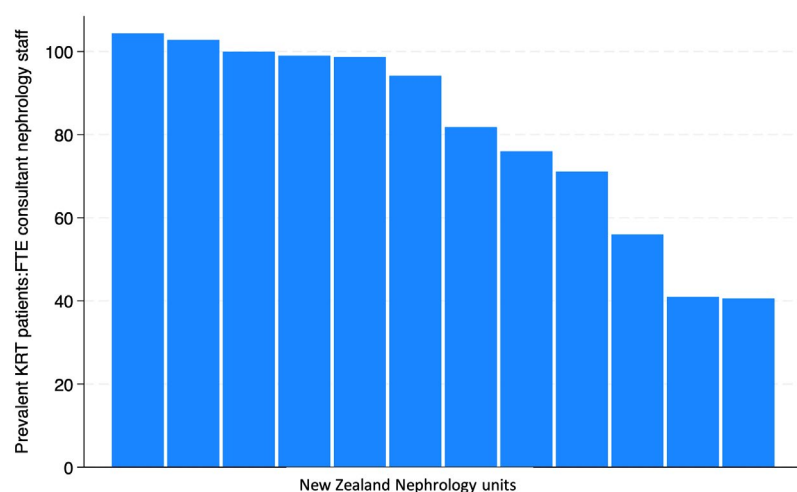
*Per total patients receiving dialysis or in receipt of a kidney transplant in the with that unit as registered in the ANZDATA Annual Survey. FTE – Full-time equivalent, KRT – Kidney replacement therapy, IQR – inter-quartile range (N/A where only 1 respondent unit for that subgroup).

Figure 6: Ratio of prevalent patients receiving kidney replacement therapy (dialysis and transplant) to full-time equivalent consultant Nephrologists in adult public Nephrology units in Australia.



KRT – Kidney replacement therapy, FTE – Full time equivalent

Figure 7: Ratio of prevalent patients receiving kidney replacement therapy (dialysis and transplant) to full-time equivalent consultant Nephrologists in adult public Nephrology units in New Zealand.



KRT - Kidney replacement therapy, FTE - Full time equivalent

Nephrology units can be categorised according to transplant centre status (Nephrology units performing kidney transplants compared to those not providing this service and instead referring their patients to transplant hospitals for kidney transplantation). Nephrology units in Australia performing kidney transplants had higher patient: FTE consultant Nephrologist ratios; the inverse was observed in New Zealand (**Table 3**).

Table 3: Ratio of prevalent patients receiving kidney replacement therapy (dialysis and transplant) to Full-time equivalent consultant Nephrologists, by country and Nephrology units' transplant status (median, IQR)

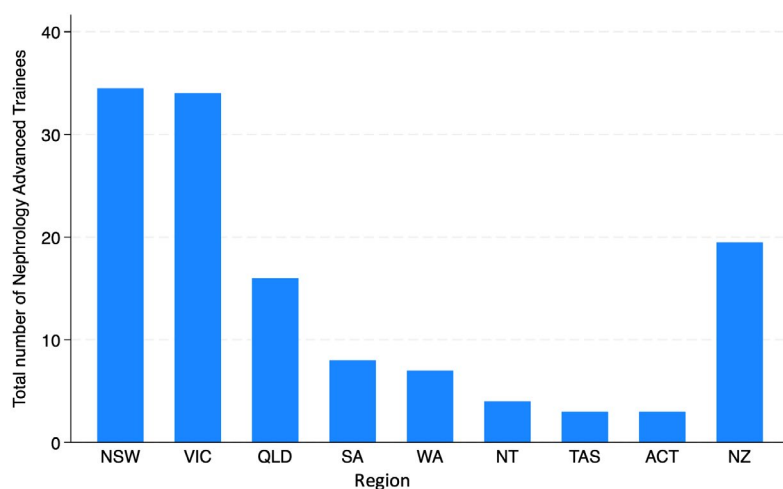
Country	Transplant centre	PD Patients: consultant FTE	HD [^] patients: consultant FTE	Transplant patients: consultant FTE	Total patients*: consultant FTE
Australia	Yes	11.8 (8.5-15.4)	45.0 (39.0-58.0)	58.3 (55.2-85.9)	129.9 (97.7-169.3)
	No	6.5 (4.6-9.1)	36.3 (30.0-44.8)	24.3 (18.0-33.1)	70.0 (60.2-86.5)
New Zealand	Yes	13.7 (2.1-14.6)	22.5 (18.3-26.9)	41.1 (16.3-71.5)	81.8 (40.9-104.4)
	No	10.0 (7.5-13.5)	36.3 (25.2-43.3)	34.1 (29.5-40.4)	94.1 (71.1-99.0)
Total		8.2 (5.4-12.8)	39.0 (29.8-47.0)	34.1 (20.0-55.5)	84.1 (62.5-112.6)

FTE - Full time equivalent. IQR - Inter-quartile range. [^]includes home haemodialysis, *Per total patients receiving dialysis or in receipt of a kidney transplant in the with that unit as registered in the ANZDATA Annual Survey. FTE - Full time equivalent

6. Nephrology physician trainees

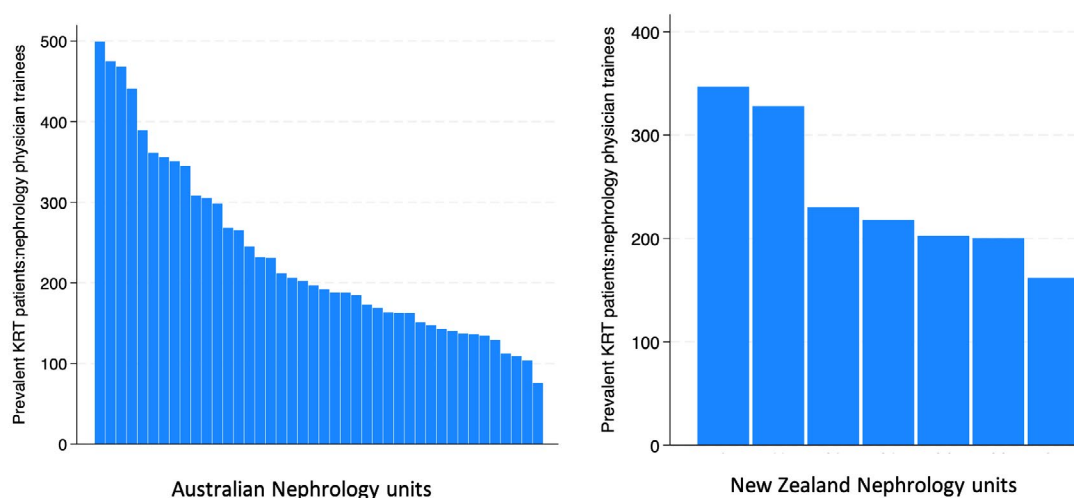
Nephrology units may be accredited by the Royal Australasian College of Physicians to train physician trainees specialising in Nephrology. 97% of respondent units (n=61) reported the number of FTE Nephrology advanced trainees in their unit. The highest numbers of FTE Nephrology advanced trainees were in New South Wales (n=34.5) and Victoria (n=34), followed by New Zealand (n=19.5) (**Figure 8**); these numbers may differ from the number of accredited training positions reported Royal Australasian College of Physicians where survey respondents included trainees working in the unit as Nephrology registrars but not accredited by the College. 12 units (20%) reported no Nephrology advanced trainees in their unit.

Figure 8: Total number of Nephrology advanced trainees in adult public Nephrology units, by region.



There was variation in the ratio of prevalent patients receiving KRT to Nephrology advanced trainees among units reporting Nephrology advanced trainees in their unit (**Figure 9**).

Figure 9: Ratio of prevalent patients receiving kidney replacement therapy (dialysis and transplant) to Nephrology advanced trainees* in adult public Nephrology units in Australia and New Zealand.



KRT - Kidney replacement therapy

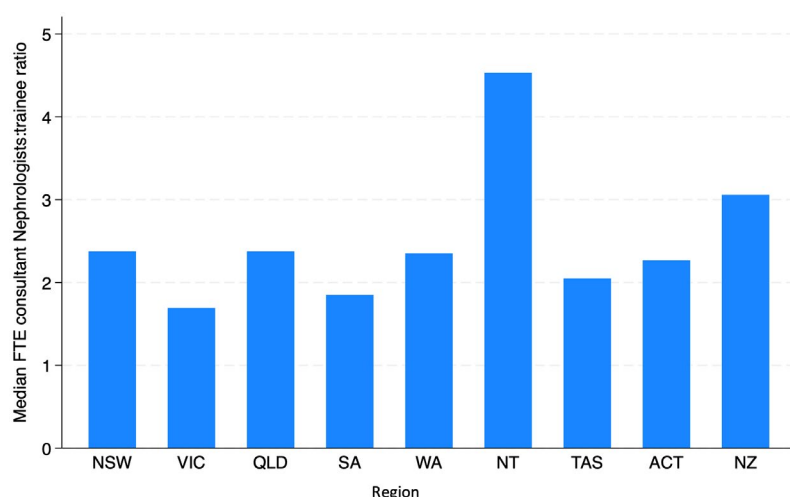
The median ratio of FTE consultant Nephrologists to Nephrology advanced trainees per unit was 2.2 (IQR 1.8-3.0) in Australia and 3.1 (IQR 2.3-3.9) in New Zealand, with highest ratios in the Northern Territory and lowest in Victoria (**Table 4, Figure 10**).

Table 4: Ratio of FTE consultant Nephrologists to Nephrology advanced trainees in adult public Nephrology units in Australia and New Zealand.

Region	Consultant Nephrologist FTE: Nephrology advanced trainees*		
	Median (IQR)	Min	Max
Australia	2.2 (1.8-3.0)	0.9	7.2
Victoria	1.7 (1.4-2.1)	0.9	3.0
Tasmania	2.1 (1.6-2.5)	1.6	2.5
New South Wales	2.4 (2.0-3.6)	1.4	5.0
Australian Capital Territory	2.3 (N/A)	2.3	2.3
Queensland	2.4 (2.0-4.4)	1.7	6.0
Western Australia	2.4 (2.1-3.1)	2.1	3.1
South Australia	1.9 (1.8-1.9)	1.8	1.9
Northern Territory	4.5 (1.9-7.2)	1.9	7.2
New Zealand	3.1 (2.3-4.0)	1.9	4.0

*Of units with Nephrology advanced trainees. FTE - Full-time equivalent, IQR - Inter-quartile range (N/A where only 1 respondent unit for that subgroup)

Figure 10: Median ratio of FTE consultant Nephrologists to Nephrology advanced trainees* in adult public Nephrology units in Australia and New Zealand.

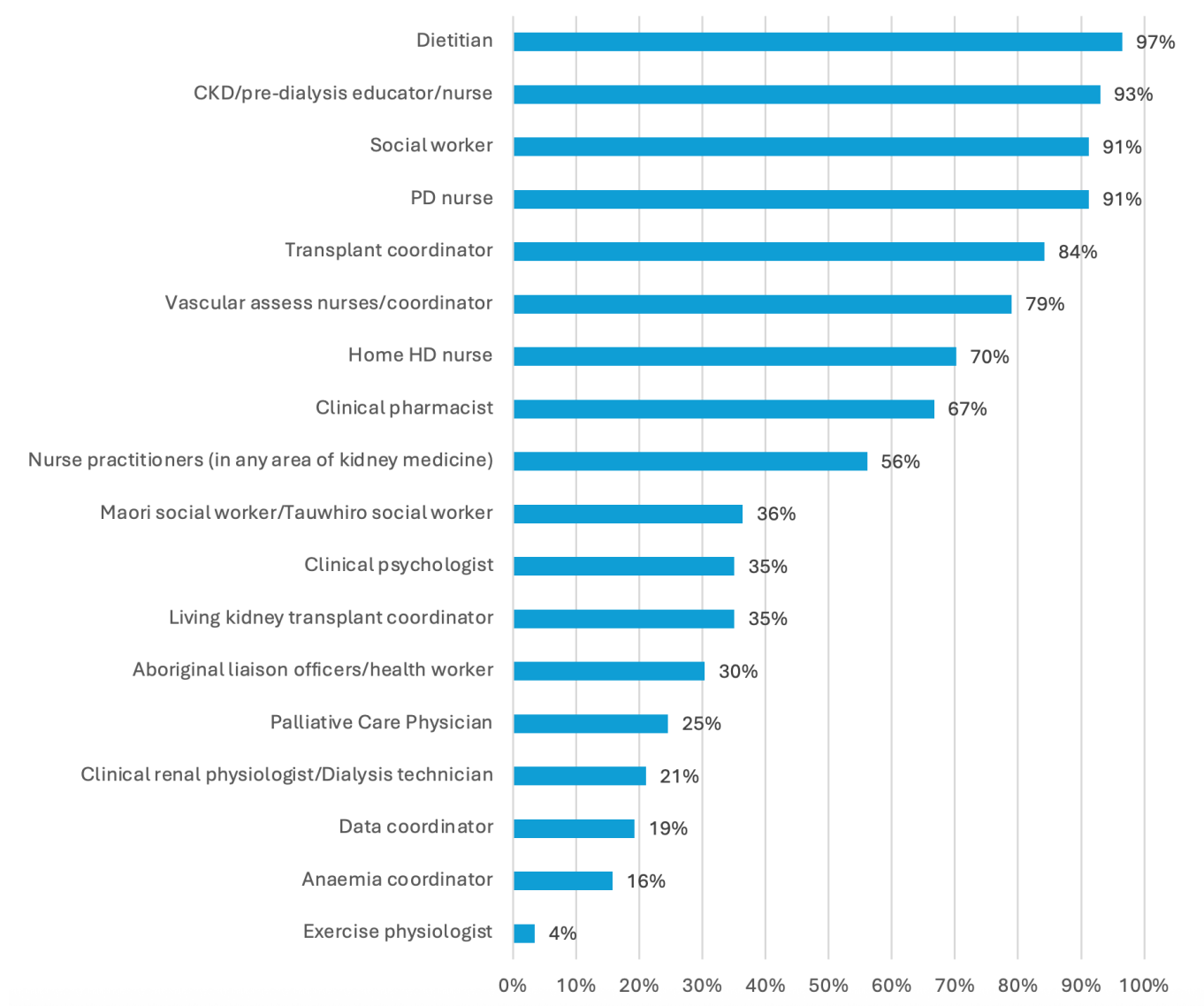


FTE - Full time equivalent

7. Specialised Nephrology and Allied Health staff

A range of specialised Nephrology and Allied Health staff work within Nephrology units in Australia and New Zealand. 84% of respondent units (Australia n=43, New Zealand n=10) completed questions regarding specialised Nephrology and Allied Health staff within their unit and FTE staffing of each role. The proportion of units that reported employing specific specialised Nephrology and Allied Health staff in their units is shown in **Figure 11**. Units' specialised Nephrology and Allied Health workforce varied (**Table 5**).

Figure 11: Proportion of adult public Nephrology units in Australia and New Zealand employing specialised Nephrology and Allied Health staff within their units.



Maori/Tauwhiro social worker shown as a percentage of New Zealand units only, Aboriginal liaison officers/ health workers shown as a percentage of Australian units only. CKD - Chronic kidney disease, PD - Peritoneal dialysis, HD - Haemodialysis.

Table 5: Full-time equivalent specialised Nephrology and Allied Health staff, and ratio of patients (dialysis, transplant, and total patients receiving kidney replacement therapy) to these staff, for adult public Nephrology units in Australia and New Zealand employing these staff.

Specialised Nephrology and Allied Health staff	FTE Median, (IQR)	Dialysis patient: staff FTE ratio, median (IQR)	Transplant patient: staff FTE ratio, median (IQR) ^{&}	KRT patient: staff FTE ratio, median (IQR)
Allied Health				
Dietitian	1.0 (0.5-2.0)	203.5 (122.0-341.0)	421.0 (251.0-700.0)	400.0 (190.5-705.0)
Pharmacist	1.0 (0.8-1.5)	234.0 (144.7-364.0)	285.8 (180.0-535.5)	424.4 (310.4-273.2)
Psychologist	0.5 (0.2-1.0)	393.0 (281.5-887.5)	1092.5 (717.5-2887.5)	697.5 (452.7-1780.8)
Coordinators[#]				
Anaemia coordinator	0.5 (0.3-0.7)	454.7 (283.5-624.8)	N/A	
CKD/ pre-dialysis coordinator	1.0 (0.7-1.4)	226.0 (129.0-344.0)	N/A	
Living kidney donor coordinator	0.6 (0.5-1.0)	466.3 (264.4-728.0)	485.5 (351.0-700.0)	1008.0 (641.0-1394.8)
Transplant coordinator	1.0 (0.8-2.0)	196.0 (132.5-286.1)	263.1 (191.7-381.1)	388.6 (258.0-556.7)
Vascular access coordinator	1.0 (0.8-1.0)	260.1 (192.0-389.0)	N/A	
Social Work				
Aboriginal Torres Strait Islander liaison officer/ health worker [*]	1.0 (0.5-1.5)	366.5 (109.0-661.5)	593.3 (575.0-795.0)	710.0 (171.0-1231.3)
Maori/Tauwhiro social worker [^]	1.0 (1.0-1.0)	245.5 (142.5-562.5)	1715.0 (N/A)	440.0 (249.0-1556.5)
Social worker (any)	1.0 (0.6-1.6)	233.5 (145.3-338.0)	377.3 (258.0-575.0)	389.6 (245.0-695.0)
Specialty Nursing				
Home HD nurse	2.5 (1.0-3.6)	9.0 (6.0-12.5) [@]	N/A	
Nurse practitioner (any area)	1.0 (1.0-2.0)	155.5 (90.0-247.0)	281.8 (225.3-354.0)	295.5 (172.7-575.3)
PD nurse	2.5 (1.0-3.6)	15.2 (12.0-26.0) [“]	N/A	
Data manager	0.6 (0.4-1.0)	381.3 (291.5-711.0)	622.0 (575.0-701.7)	959.5 (594.0-1464.8)
Palliative care physician	0.5 (0.2-0.9)	481.7 (206.7-737.0)	575.0 (501.4-842.0)	1073.9 (702.5-1400.0)

[&]Transplanting units only, ^{*}Australian units only, [^]New Zealand units only, [@]ratio only includes home HD patients, [“]ratio only includes PD patients, [#]May include specialist nursing staff.

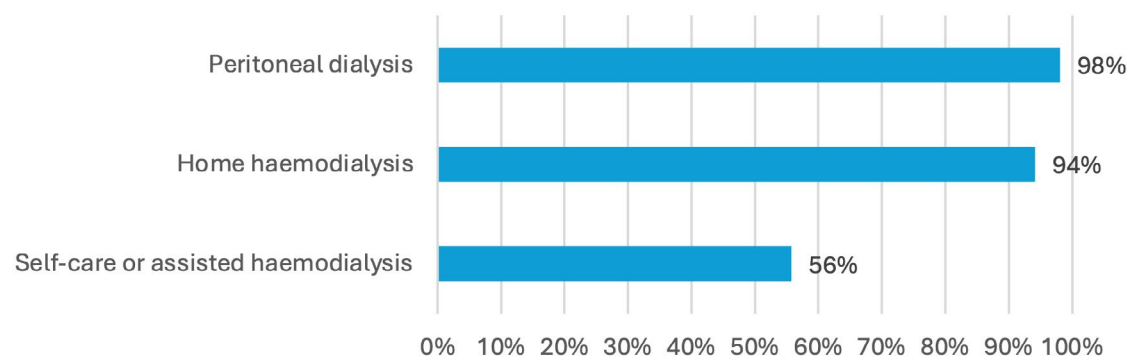
FTE - Full-time equivalent, IQR - Inter-quartile range (N/A where only 1 respondent unit for that subgroup),

CKD - Chronic kidney disease, HD - Haemodialysis, KRT - Kidney replacement therapy, PD - Peritoneal dialysis.

8. Therapy training offered to patients at each Nephrology unit

84% of respondent units (n=53) completed questions regarding the home therapy dialysis treatment options available at their unit. Almost all units had access to peritoneal dialysis and home haemodialysis training. (**Figure 12**).

Figure 12: Proportion of adult public Nephrology units in Australia and New Zealand with access to dialysis training pathways.

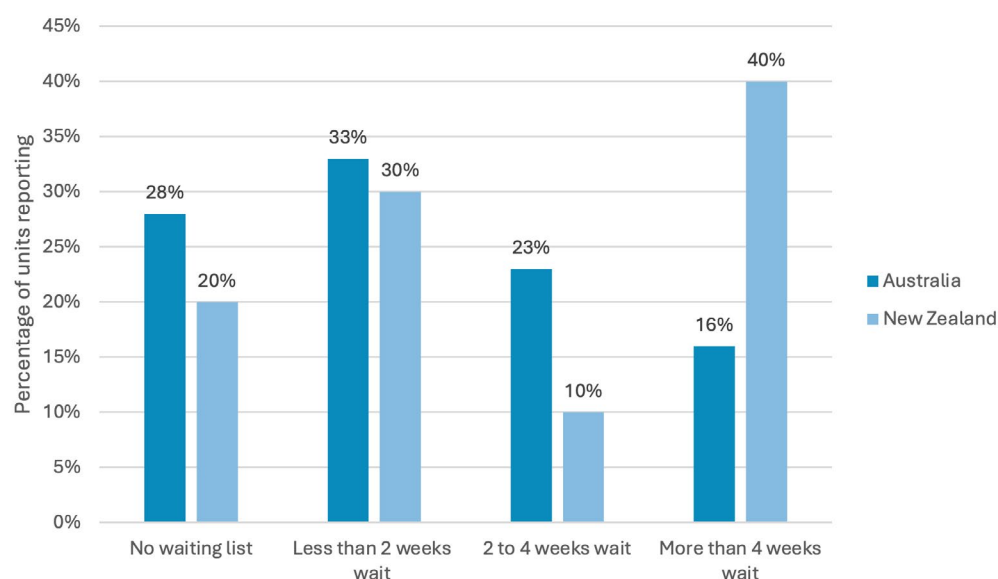


75% of units that reported access to home therapies dialysis treatment options within their unit reported that there was a waiting list to commence training for home haemodialysis or peritoneal dialysis (excluding acute start peritoneal dialysis) after suitable dialysis access was in place and assessed by a Nephrologist as appropriate to begin training (**Table 6**). Presence of waiting lists and duration of waiting time varied by region (**Figure 13**).

Table 6: Proportion of adult public Nephrology units in Australia and New Zealand with waiting list to begin home therapies training.

Region	Number of units with waiting list/ total number of units (%)
Australia	31/43 (72.1)
Victoria	6/8 (75.0)
Tasmania	0/2 (0.0)
New South Wales	13/15 (86.7)
Australian Capital Territory	1/1 (100.0)
Queensland	6/10 (60.0)
Western Australia	3/10 (30.0)
South Australia	1/2 (50.0)
Northern Territory	1/2 (50.0)
New Zealand	8/10 (80.0)

Figure 13: Waiting times to begin home therapies training in adult public Nephrology units in Australia and New Zealand.

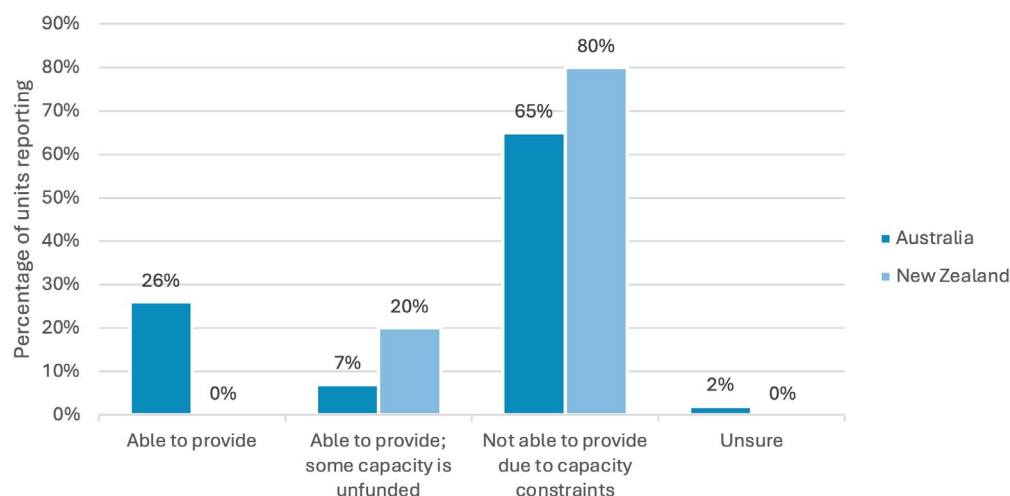


Part 2: Dialysis capacity in Australia and New Zealand adult public Nephrology units

1. Haemodialysis capacity

84% of respondent units (n=53) completed questions regarding haemodialysis capacity at their unit (Australia, n=43, New Zealand, n=10). Of these, 68% of units (n=36) reported that they did not have adequate haemodialysis capacity to offer haemodialysis at patients' preferred location. The proportion of units reporting these haemodialysis capacity constraints was highest in New Zealand, in which all units reported some degree of haemodialysis capacity constraint limiting ability to offer haemodialysis at patients' preferred location (**Figure 14**).

Figure 14: Adult public Nephrology units in Australia and New Zealand and their capacity to provide haemodialysis at patients' preferred location.



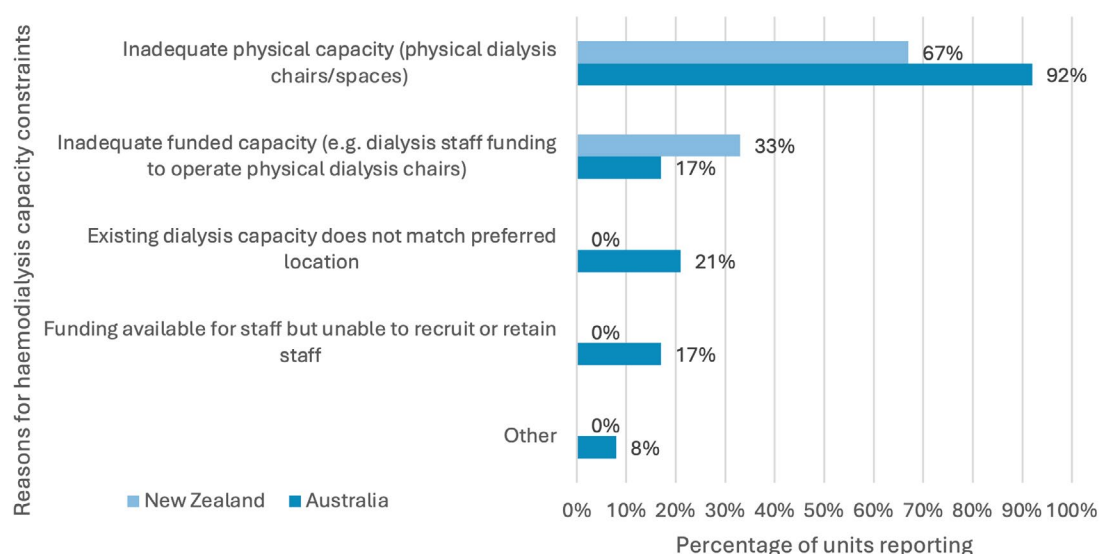
Units' ability to offer haemodialysis at patients' preferred location varied by region but constrained ability to offer haemodialysis at patients' preferred location was evident in all regions to some extent (**Table 7**).

Table 7: Local haemodialysis capacity: Adult public Nephrology units in Australia and New Zealand and their capacity to offer haemodialysis at patients' preferred location.

Region	FTE Consultant Nephrologists			
	Yes	Yes, but unfunded	No	Unsure
Australia	11/43 (25.6)	3/43 (7.0)	28/43 (65.1)	1/43 (2.3)
Victoria	3/8 (37.5)	0/8 (0.0)	4/8 (50.0)	1/43 (2.3)
Tasmania	1/2 (50.0)	0/2 (0.0)	1/2 (50.0)	0/2 (0.0)
New South Wales	5/15 (33.3)	2/15 (13.3)	8/15 (53.3)	0/15 (0.0)
Australian Capital Territory	0/1 (0.0)	1/1 (100.0)	0/1 (0.0)	0/1 (0.0)
Queensland	2/10 (20.0)	0/10 (0.0)	8/10 (80.0)	0/10 (0.0)
Western Australia	0/3 (0.0)	0/3 (0.0)	3/3 (100.0)	0/3 (0.0)
South Australia	0/2 (0.0)	0/2 (0.0)	2/2 (100.0)	0/2 (0.0)
Northern Territory	0/2 (0.0)	0/2 (0.0)	2/2 (100.0)	0/2 (0.0)
New Zealand	0/10 (0.0)	2/10 (20.0)	8/10 (80.0)	0/10 (0.0)

The reasons for constraints in haemodialysis capacity were varied (**Figure 15**). Commonest reasons were inadequate physical capacity, including dialysis chairs and physical space. There was evidence in discordance between locations of haemodialysis capacity and demand, with many units reporting that their existing dialysis capacity did not match their patients' preferred location to receive haemodialysis care.

Figure 15: Proportion of adult public Nephrology units in Australia and New Zealand reporting reasons for haemodialysis capacity constraints.



43 Australian and nine New Zealand units responded to questions regarding out of area dialysis. 58% of these (n=24 (56%) in Australia, n=6 (67%) in New Zealand) reported that they had patients living within their catchment area but receiving dialysis out of area. In 90% of cases, this was because the haemodialysis facilities closer to patients' location had capacity constraints or waiting lists for patients to transfer care.

2. Care restrictions in response to haemodialysis capacity constraints

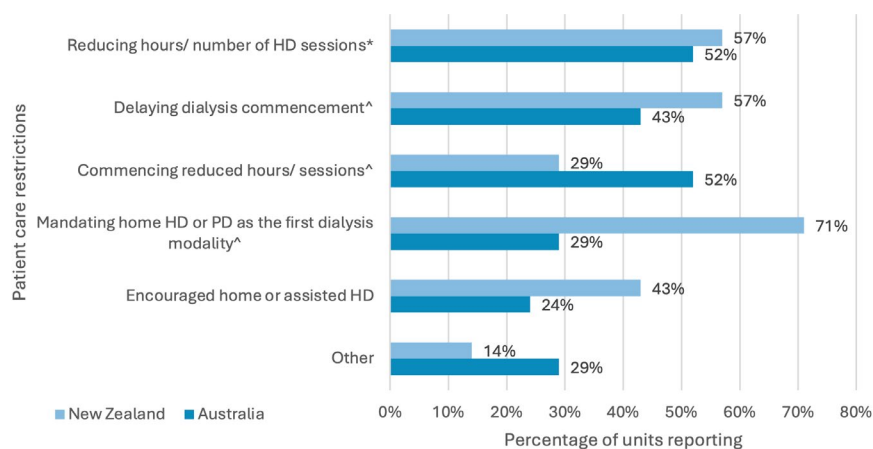
Over 50% of units (n=28) reported implementing restrictions on patient care due to haemodialysis capacity constraints. Numbers of units undertaking these measures varied by location (**Table 8**).

Table 8: Adult public Nephrology units in Australia and New Zealand reporting restrictions to patient care due to haemodialysis capacity constraints.

Region	Number of units reporting restrictions/ total number of units (%)
Australia	22/43 (51.1)
Victoria	2/8 (25.0)
Tasmania	1/2 (50.0)
New South Wales	8/15 (53.3)
Australian Capital Territory	0/1 (0.0)
Queensland	6/10 (60.0)
Western Australia	2/3 (66.7)
South Australia	0/2 (0.0)
Northern Territory	2/2 (100.0)
New Zealand	7/10 (70.0)

Units were surveyed about the nature of patient care restrictions undertaken due to haemodialysis capacity constraints. The commonest restrictions were reducing the duration or number of haemodialysis treatments patients received, delaying commencement of dialysis or undertaking incremental start haemodialysis despite being biochemically or clinically unsuitable for incremental start (**Figure 16**).

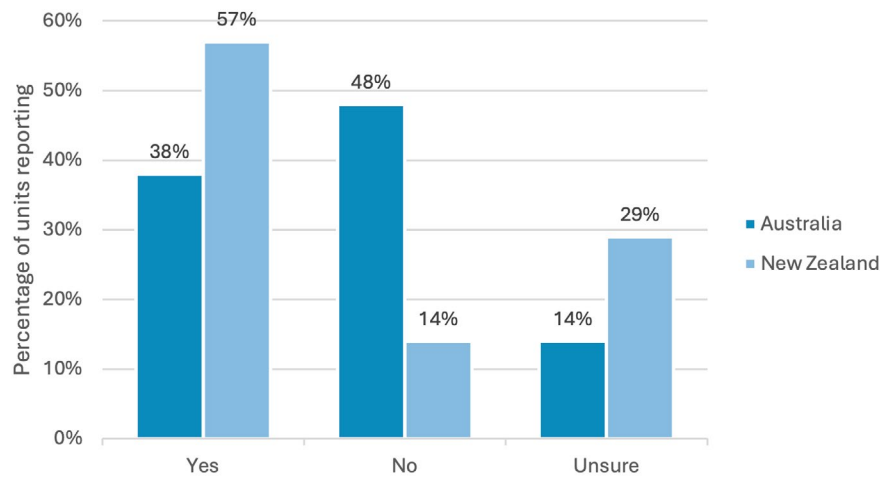
Figure 16: Proportion of adult public Nephrology units in Australian and New Zealand reporting modifications to patient care due to haemodialysis capacity constraints



^for patients newly commencing dialysis, *for established dialysis patients. HD - Haemodialysis, PD - Peritoneal dialysis

43% of units (n=12) reported that restricted access to haemodialysis care had resulted in adverse patient events and outcomes. (*Figure 17*).

Figure 17: Proportion of adult public Nephrology units in Australia and New Zealand reporting adverse patient outcome and events due to restrictions in patient care made in response to haemodialysis capacity constraints.



3. Concerns regarding haemodialysis capacity constraints and measures taken in response

74% of respondent units (n=52) completed questions about their concerns facing haemodialysis capacity constraints (*Table 9*). 87% of these (n=45) reported that they were concerned or very concerned about their ability to provide adequate haemodialysis care to their patients. 96% of concerned units (n=43) had raised dialysis capacity issues with their hospital/ health service and 37% (n=16) had raised capacity issues with the government (state/ territory/ national). 56% (n=24) had raised capacity issues with patients.

Table 9: Proportion of adult public Nephrology units in Australian and New Zealand reporting concern about capacity constraints affecting their ability to offer adequate haemodialysis to patients.

Region	Units reporting concern/ total number of units (%)
Australia	37/43 (86.0)
Victoria	7/8 (87.5)
Tasmania	2/2 (100.0)
New South Wales	11/15 (73.3)
Australian Capital Territory	1/1 (100.0)
Queensland	9/10 (90.0)
Western Australia	3/3 (100.0)
South Australia	2/2 (100.0)
Northern Territory	2/2 (100.0)
New Zealand	8/9 (88.9)

Units were taking a variety of measures to address their haemodialysis capacity constraints (**Table 10**).

Table 10: Measures undertaken to address dialysis capacity constraints in adult public Nephrology units in Australian and New Zealand

	Units undertaking/ total units (%)
Unit modifications	
Increasing the number of working dialysis chairs	17/52 (32.7)
Installing and equipping additional ports for haemodialysis	8/52 (15.4)
Commissioning construction of a new dialysis facility	16/52 (30.8)
Staffing modifications	
Modifications of existing workforce to provide more dialysis sessions (eg. over-time shifts, moving non-clinical staff into clinical dialysis roles)	32/52 (61.5)
Hiring more staff to provide permanent increase in number of dialysis shifts (without increasing dialysis chair number)	21/52 (40.4)
Scheduling modifications	
Addition of extra haemodialysis shift per day (temporary measure, using existing staff)	25/52 (48.1)
Double-book haemodialysis spots (anticipating non-attendance)	4/52 (7.7)
Transfer of patient care	
Transferring patients to a dialysis facility out of area	16/52 (30.8)
Using private facilities (establishing private-public partnership arrangements)	12/52 (23.1)
Care pathways	
Invest in education to patients to encourage alternative treatments to in-centre haemodialysis	23/52 (44.2)
Invest in supportive care pathways for patients who may not do well on dialysis	19/52 (36.5)

“Most of our issues relate to limited capacity in regional satellite units.”

“Limiting patients’ [dialysis] modality choice may cause social harm to them and their families.”

“The biggest problem in a remote setting is staff recruitment and retention.”

“Our unit has started urgent start PD and a night [haemodialysis] shift.”

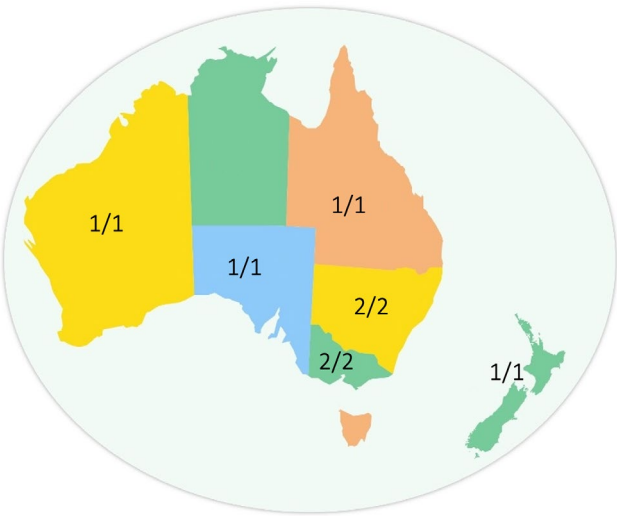
“Many of our patients travel long distances for dialysis. Facilities closer to home are full.”

“Patients’ dialysis has sometimes been deferred or cancelled.”

SECTION 2: PAEDIATRIC PUBLIC NEPHROLOGY UNITS

Section 2 of this Special Report details responses from paediatric public Nephrology units in Australia in New Zealand. Number of survey-respondent units over total number paediatric public units by New Zealand/ Australian state/territory is shown in **Figure 18**. Survey response rate was 100% for all questions.

Figure 18: Number of responses from paediatric public Nephrology parent units by the total number of paediatric public Nephrology units in the region (New Zealand/ Australian state/ territory).



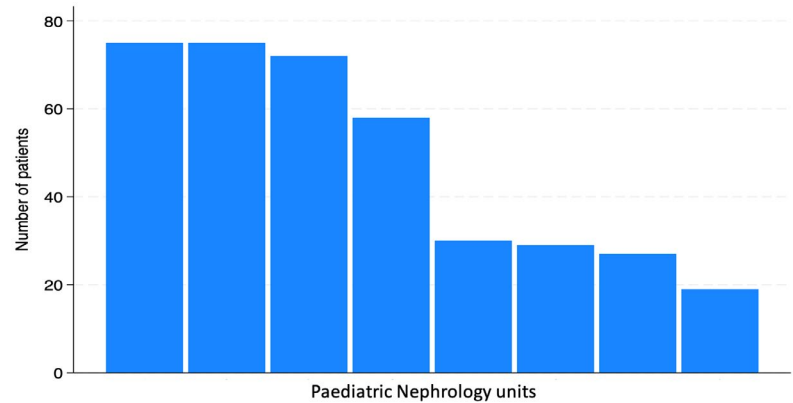
1. Individuals completing the survey

All surveys were completed by the Head of the paediatric Nephrology unit.

2. Total patients receiving kidney replacement therapy

Number of prevalent patients receiving KRT cared for by each Nephrology unit varied (**Figure 19**).

Figure 19: Number of prevalent patients receiving kidney replacement therapy (dialysis and transplant) in paediatric Nephrology units in Australia and New Zealand.



Part 1: Australian and New Zealand paediatric public Nephrology unit workforce

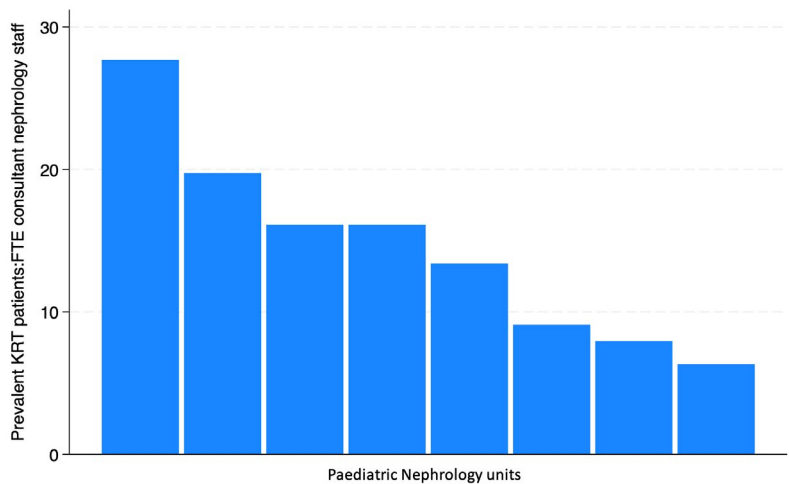
3. Number of full-time equivalent consultant Nephrologists in each Nephrology unit

The median number of FTE consultant Nephrologists in paediatric Nephrology units was 3.4 (IQR 2.8-3.7, range 1.8-5.6).

4. Ratio of full-time equivalent consultant Nephrologists to prevalent patients receiving KRT.

The ratio of prevalent patients receiving KRT to FTE consultant Nephrologists in paediatric Nephrology units was 14.8 (IQR 8.5-17.9, range 6.3-27.7) but varied (**Figure 20**). The ratio of prevalent patients receiving dialysis to consultant Nephrologists was 2.1 (IQR 1.7-4.5, range 0.4-6.7) and the ratio of prevalent patients in receipt of a kidney transplant to consultant Nephrologists was 11.2 (IQR 6.4-14.9, range 4.7-23.1).

Figure 20: Ratio of prevalent patients receiving kidney replacement therapy (dialysis and transplant) to full-time equivalent consultant Nephrologists in paediatric Nephrology units in Australian and New Zealand.



KRT - Kidney replacement therapy, FTE - Full time equivalent

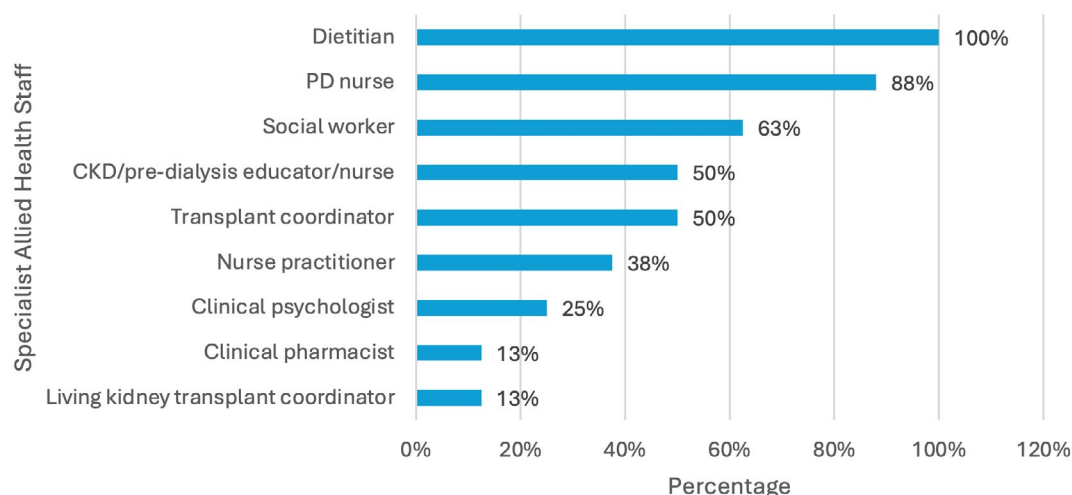
5. Nephrology physician trainees

All Australian paediatric Nephrology units reported 1.0 FTE Nephrology physician trainees within their unit; the New Zealand paediatric unit reported no Nephrology physician trainees in their unit.

6. Allied Health staff

A narrower range of specialised Nephrology and Allied Health staff were employed in paediatric Nephrology units compared to adult Nephrology units (**Figure 21**). All units employed a dietitian, and the majority also employed a PD nurse and social worker. 50% of units employed a transplant coordinator and a CKD/pre-dialysis coordinator. The FTE of these staff is shown in **Table 11**.

Figure 21: Percentage of paediatric Nephrology units in Australia and New Zealand employing specialised Nephrology and Allied Health staff within their units.



CKD - Chronic kidney disease, PD - Peritoneal dialysis.

Table 11: Full-time equivalent specialised Nephrology and Allied Health staff, and ratio of patients (dialysis, transplant, and total patients receiving kidney replacement therapy) to these staff, for paediatric public Nephrology units in Australia and New Zealand employing these staff.

Specialised Allied Health staff	FTE Median, (IQR)	Dialysis patient: allied health FTE ratio, median (IQR)	Transplant patient: allied health FTE ratio, median (IQR) ^a	KRT patient: allied health FTE ratio, median (IQR)
Allied Health				
Dietitian	0.7 (0.4-0.9)	20.0 (6.8-31.2)	64.8 (53.5-91.4)	85.8 (66.5-113.6)
Pharmacist	0.5 (N/A)	24.0 (N/A)	120.0 (N/A)	144.0 (N/A)
Psychologist	0.4 (0.3-0.5)	12.0 (4.0-20.0)	159.7 (146.0-173.3)	171.7 (150.0-193.3)
Social Work				
Social worker	0.4 (0.3-0.5)	26.7 (24.0-42.5)	120.0 (85.0-121.7)	144.0 (125.0-145.0)
Specialty nursing				
Nurse practitioner (any area)	0.8 (0.6-1.0)	15.0 (2.0-20.0)	73.0 (28.3-75.0)	75.0 (48.3-90.0)
PD nurse	0.8 (0.5-1.0)	8.3 (5.0-13.3) ^a		
Coordinators[#]				
CKD/ pre-dialysis coordinator	0.5 (0.3-0.8)	14.9 (12.0-33.9)		
Living kidney donor coordinator	0.1 (N/A)	170.0 (N/A)	580.0 (N/A)	750.0 (N/A)
Transplant coordinator	0.8 (0.5-0.9)	18.1 (11.5-23.1)	71.3 (46.0-73.8)	91.9 (60.0-94.4)

[#]May include specialist nursing staff. ^aRatio only includes PD patients.

FTE - Full-time equivalent, IQR - Inter-quartile range (N/A where only 1 respondent unit for that subgroup), HD - Haemodialysis, KRT - Kidney replacement therapy, PD - Peritoneal dialysis, CKD - Chronic kidney disease.

7. Therapy training offered to patients at each Nephrology unit

All units reported access to PD training, one unit additionally reported access to home haemodialysis training.

Part 2: Dialysis capacity in Australia and New Zealand paediatric public Nephrology units

8. Dialysis Capacity

No paediatric Nephrology units reported delays to commencing home therapy dialysis training once appropriate access had been established and assessed by a Nephrologist as suitable to start dialysis. 25% of units (n=2) reported that they had capacity to offer haemodialysis at patients' preferred location; 37.5% (n=3) reported that they did not have capacity to offer haemodialysis at patients' preferred location; 37.5% of units (n=3) were unsure. No units reported use of unfunded haemodialysis capacity.

Regarding reasons for inability to offer patients haemodialysis at their preferred location, one unit reported that this was due to inadequate physical capacity (physical dialysis chairs/ spaces); others reported that they only offered in-centre haemodialysis. One unit reported that adult units "reluctance to dialyse paediatric patients in their units" limited options of haemodialysis locations for their paediatric patients.

Two units reported that they had made modifications to patient care due to dialysis capacity constraints, including shortened haemodialysis hours or sessions and mandating home haemodialysis or PD as first start modality; no units reported adverse events resulting from these modifications.

CONCLUSION

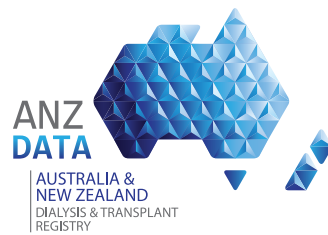
There is a large and varied workforce caring for patients with kidney failure in Australia and New Zealand. There is national and regional variation in units' staffing of Nephrologists and specialised Nephrology and Allied Health staff ratios of these staff to patients receiving kidney replacement therapy for in their unit. Many Nephrology units in Australia and New Zealand report challenges in their ability to offer timely and sufficient dialysis to patients due to constraints in haemodialysis capacity and access to timely peritoneal dialysis training. Many units have undertaken measures to address these constraints; some of these are despite recommendations by the ANZSN Position Statement on Dialysis Capacity, indicating the significant challenge facing care providers in the face of rising numbers of patients requiring dialysis. Many units are taking steps to expand their haemodialysis capacity however many of these initiatives remain unfunded. Further work is required to quantify and address haemodialysis capacity constraints to optimise care for patients with kidney failure in Australia and New Zealand.

CORRESPONDENCE

Units may provide feedback on this Report, at: anzdata@anzdata.org.au

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