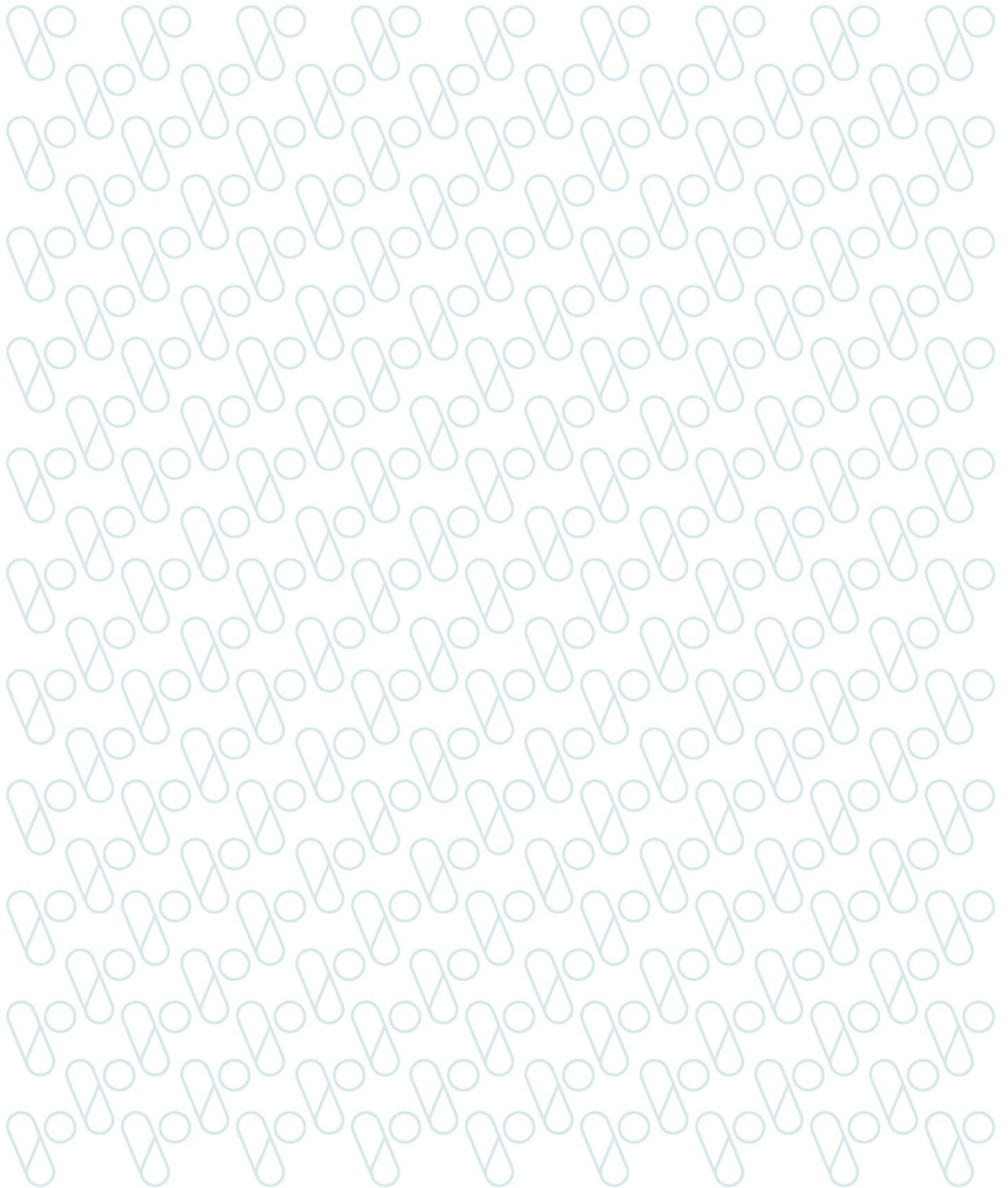

Victorian renal key performance indicators

Report 2: July to December 2021





To receive this publication in an accessible format phone 03 9096 1384, using the National Relay Service 13 36 77 if required, or email Safer Care Victoria info@safercare.vic.gov.au

Authorised and published by the Victorian Government, 1 Treasury Place, Melbourne.

© State of Victoria, Australia, Safer Care Victoria, March 2022.

ISSN 2209-9069 - Online (pdf/word)

Available at Safer Care Victoria
www.safercare.vic.gov.au



Contents

Introduction	2
Performance	3
KPI 1: Proportion of new, planned patients who have received CKD education before starting dialysis	3
KPI 2: The proportion of planned maintenance haemodialysis (HD) patients who successfully use an arteriovenous fistula (AVF) or graft (AVG) access at first HD treatment	5
KPI 3: Proportion of dialysis patients who are dialysing at home	7
KPI 4: Peritonitis rates of each hub service	8
KPI 5: Access to kidney transplantation: Status at 6 and 12 months after starting renal replacement therapy (RRT) for patients ≤70 years of age at RRT start	10
Australia and New Zealand Dialysis and Transplant (ANZDATA) Clinical quality registry measures – Mortality rates and graft failure rates	14
Appendix 1: Detailed definitions	16

LIST OF ABBREVIATIONS

AVF	Arteriovenous fistula
AVG	Arteriovenous graft
CKD	Chronic kidney disease
ESKD	End stage kidney disease
HD	Haemodialysis
KPI	Key performance indicator
PD	Peritoneal dialysis
RRT	Renal replacement therapy
SCV	Safer Care Victoria

Introduction

The Victorian renal key performance indicators (KPIs) measure the performance of renal services in Victoria. These indicators aim to drive quality improvement and increase efficiency and consistency through transparent comparison of performance.

Each indicator has clear definitions and parameters. Data has been collected monthly through a specially designed website portal.

This report is the 29th and final edition and reports data from July 2021 to December 2021. Each health service CEO has given formal permission to participate in the data collection and benchmarking program.

Of note, this report includes data submitted during the COVID-19 pandemic.

Review of targets

A review of the renal KPI program was undertaken in 2018–19 to ensure that the measures remain relevant and effective. The review report is available at: <<https://www.bettersafecare.vic.gov.au/publications/renal-kpis>>

Several recommendations were made as an outcome from the review. As a result, some elements of the report changed, including the addition of a new KPI (KPI 5). The targets for KPI 2 were removed due to emerging evidence recommending a more individualised approach to this aspect of renal patient care.

Final report

The Renal Clinical Network has had a KPI program in place since 2012, to facilitate quality improvement in care for renal patients in Victoria.

A binational Renal Quality Indicator program has now been established by the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA). The indicators are similar and comparable to the indicators currently measured in the Victorian program. The ANZDATA Registry generates regular Quality Indicator reports, which are circulated to health services.

To avoid duplicating effort, the Victorian program ceased on 31 December 2021 (with data submitted by 15 January 2022) and reporting of these indicators has transitioned to the binational ANZDATA Registry program.

This Victorian Renal KPI report will be the final report generated by SCV, for circulation to Victorian health services. Reports published by SCV will remain accessible on the SCV website at: <<https://www.bettersafecare.vic.gov.au/publications/renal-kpis>>.

We would like to thank you for your significant contribution to the program over the many years it has been in place.

We also wish to thank and acknowledge the many clinicians who have contributed to the output and successes of the Victorian Renal KPI program over the past decade and have worked to continue to improve the outcomes for patients with kidney disease.

If you have any feedback on this report, please email Renal.ClinicalNetwork@safercare.vic.gov.au

Performance

KPI 1: PROPORTION OF NEW, PLANNED PATIENTS WHO HAVE RECEIVED CKD EDUCATION BEFORE STARTING DIALYSIS

Definition

The percentage of patients that attended a chronic kidney disease (CKD) education session that is documented in their medical record, before commencement of renal replacement therapy (RRT).

Target

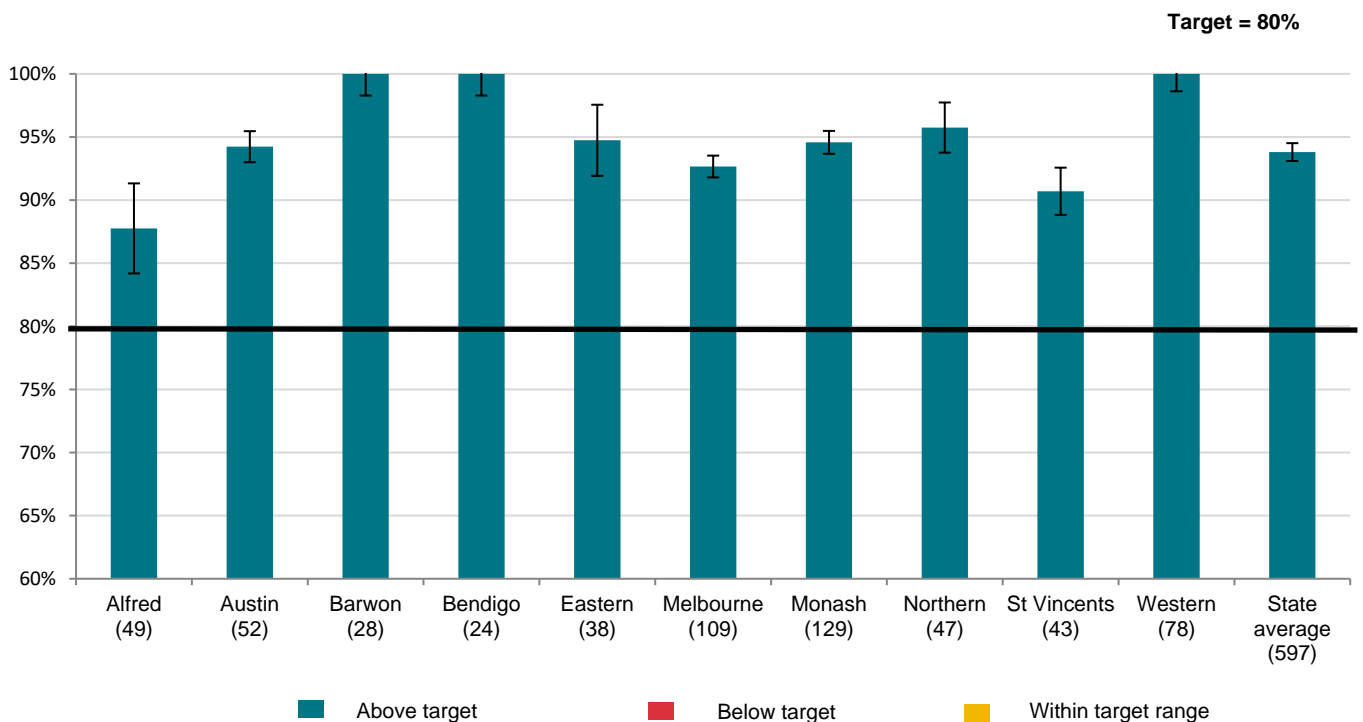
80 per cent of new, planned patients who start dialysis have attended a CKD education session.

Exclusions

- Late referrals (patients commencing dialysis within three months of first renal consultation).
- Patients returning to dialysis with a failed transplant.

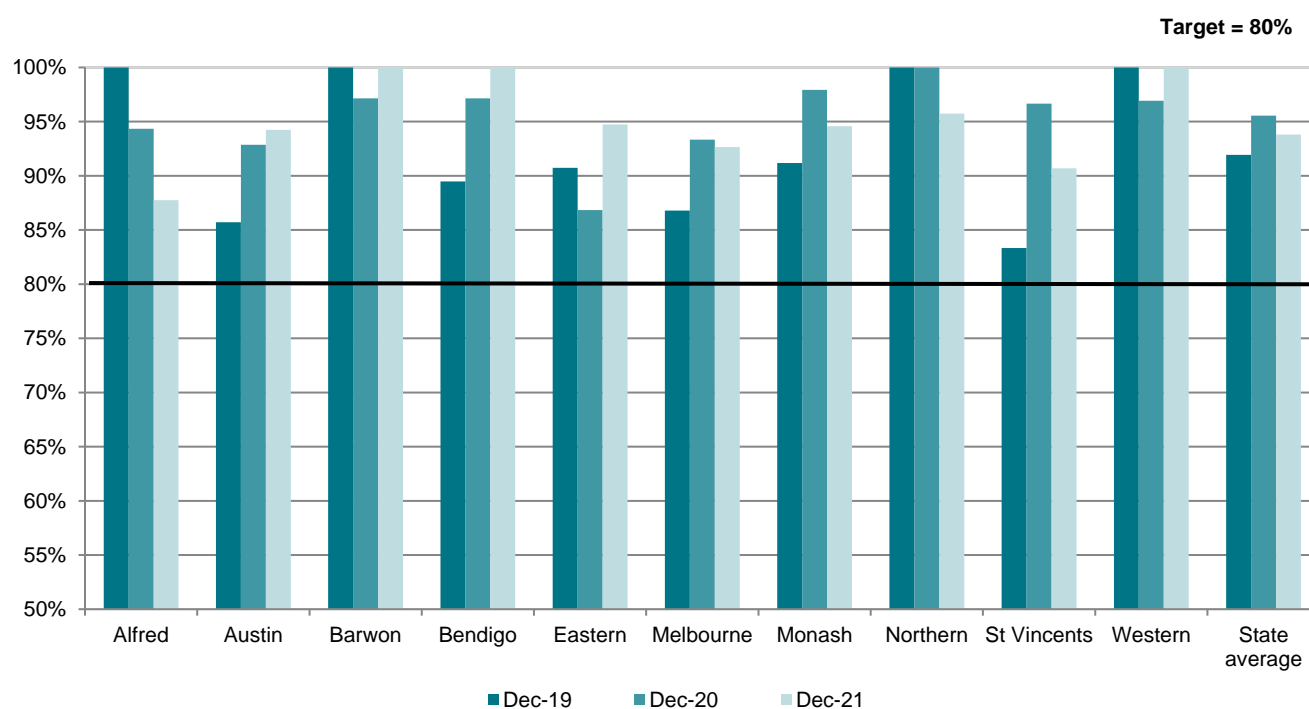
Results

Percentage of new planned patients who have received CKD education before starting dialysis



Note: Actual numbers in brackets. Results based on data for the period January 2021–December 2021.

Percentage of new planned patients to receive CKD education before starting dialysis 2019-2021



Note: Results showing trend over time: based on 12-month averages for the previous three years.
2021 (January 21–December 21), 2020 (January 20–December 20) and 2019 (January 19–December 19).

KPI 2: THE PROPORTION OF PLANNED MAINTENANCE HAEMODIALYSIS (HD) PATIENTS WHO SUCCESSFULLY USE AN ARTERIOVENOUS FISTULA (AVF) OR GRAFT (AVG) ACCESS AT FIRST HD TREATMENT

Definition

The percentage of planned maintenance HD patients (excluding late referrals) who successfully use an arteriovenous fistula (AVF) or graft (AVG) access at first HD treatment.

Inclusions

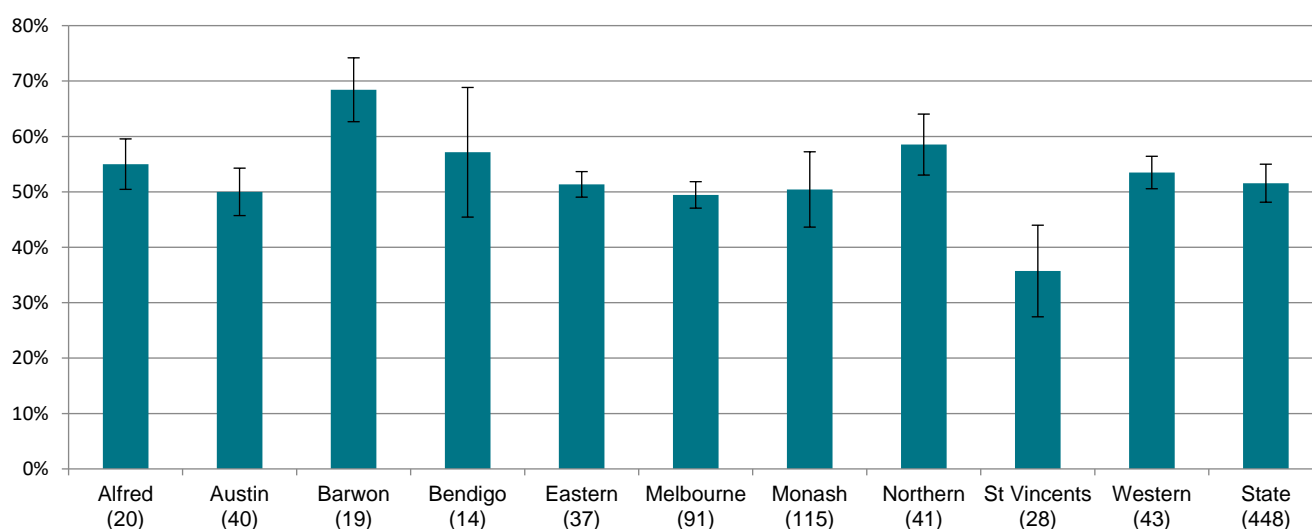
Patients with a failed transplant or transferring long-term from peritoneal dialysis (PD) to maintenance HD are included from 1 January 2020.

Exclusions

- Late referrals (patients commencing dialysis within three months of first renal consultation).
- Patients who have not had any renal consultation (public or private nephrologist) within the previous three years.
- Patients requiring temporary HD for the treatment of acute kidney injury.
- PD with a transient (expected less than three months) need for HD.
- Patients requiring HD for less than two weeks prior to live donor transplantation.

Results

Percentage of new planned maintenance HD patients that successfully used an arteriovenous vascular access at first HD treatment (12-month rolling average)

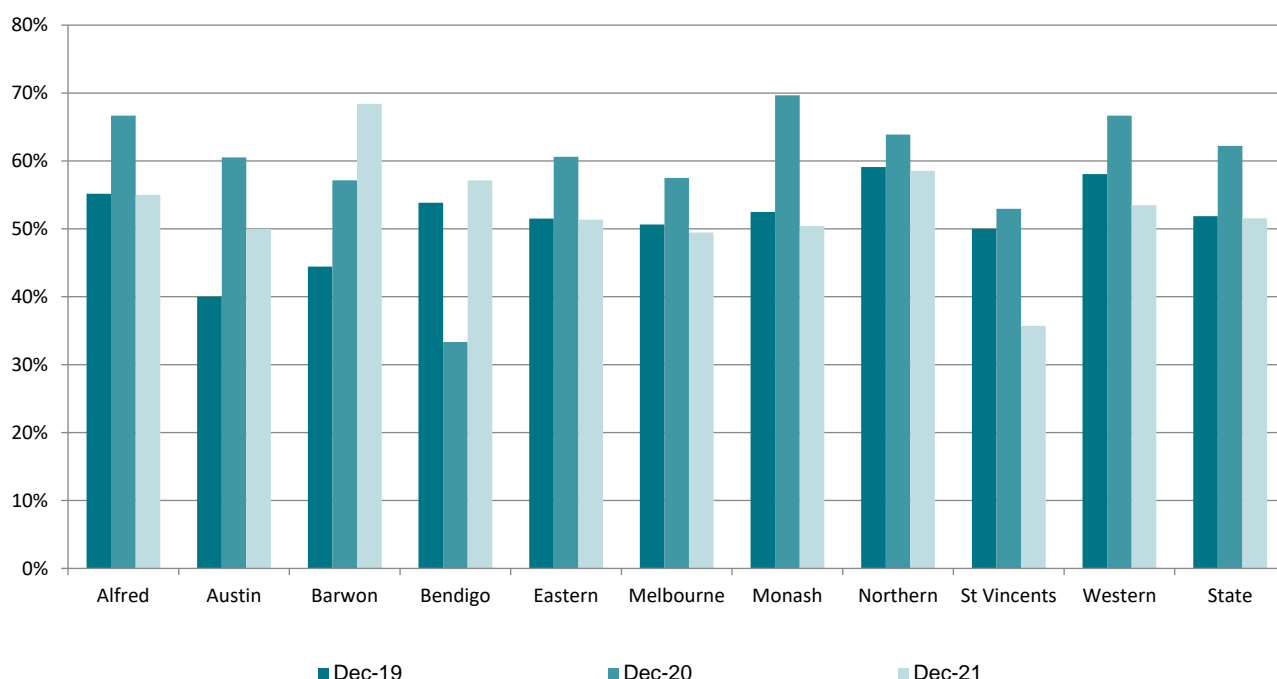


Note: Results based on 12-month rolling averages for the period January 2021–December 2021.

The previous target of 70 per cent has been removed for this KPI, based on current international guidelines¹ which recommend a more individualised approach to vascular access for renal patients requiring haemodialysis. This was supported by Victorian data collected by SCV through the Central Venous Catheter Questionnaires submitted by Victorian hub renal services from January 2020.

The inclusion criteria changed for KPI 2 from 1 January 2020, to include patients with a failed transplant or those transferring from PD to maintenance HD.

Percentage of new planned maintenance HD patients that successfully used an arteriovenous vascular access at first HD treatment for 2019 to 2021 (12-month rolling average)



Note: Results showing trend over time: based on 12-month rolling averages for the previous 3 years. 2021 (January 21–December 21), 2020 (January 20–December 20) and 2019 (January 19–December 19).

The inclusion criteria changed for this KPI 2 from 1 January 2020, to include patients with a failed transplant or those transferring from PD.

¹ Lok CE, Huber TS, Lee T, et al. KDOQI Vascular Access Guideline Work Group. KDOQI clinical practice guideline for vascular access: 2019 update. Am J Kidney Dis. 2020;75(4)(suppl 2):S1-S164.

KPI 3: PROPORTION OF DIALYSIS PATIENTS WHO ARE DIALYSING AT HOME

Definition

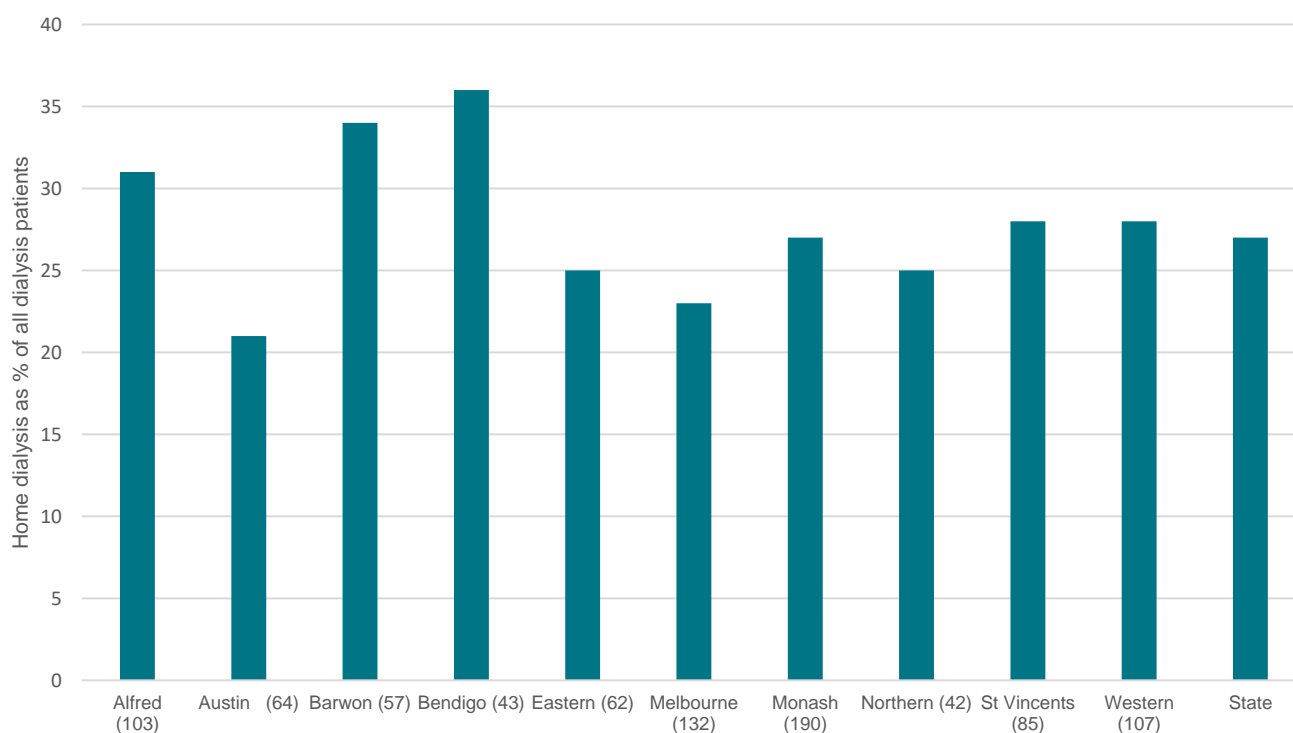
Prevalent patients – the overall percentage of patients who are dialysing at home.

Exclusions

Patients who are in home training units.

Results

Prevalence of home dialysis patients from July to Dec 2021



Note: number in brackets represents average monthly home dialysis patient numbers for the six months from July to December 2021.

KPI 4: PERITONITIS RATES OF EACH HUB SERVICE

Definition

The average number of months between peritonitis episodes.

Target

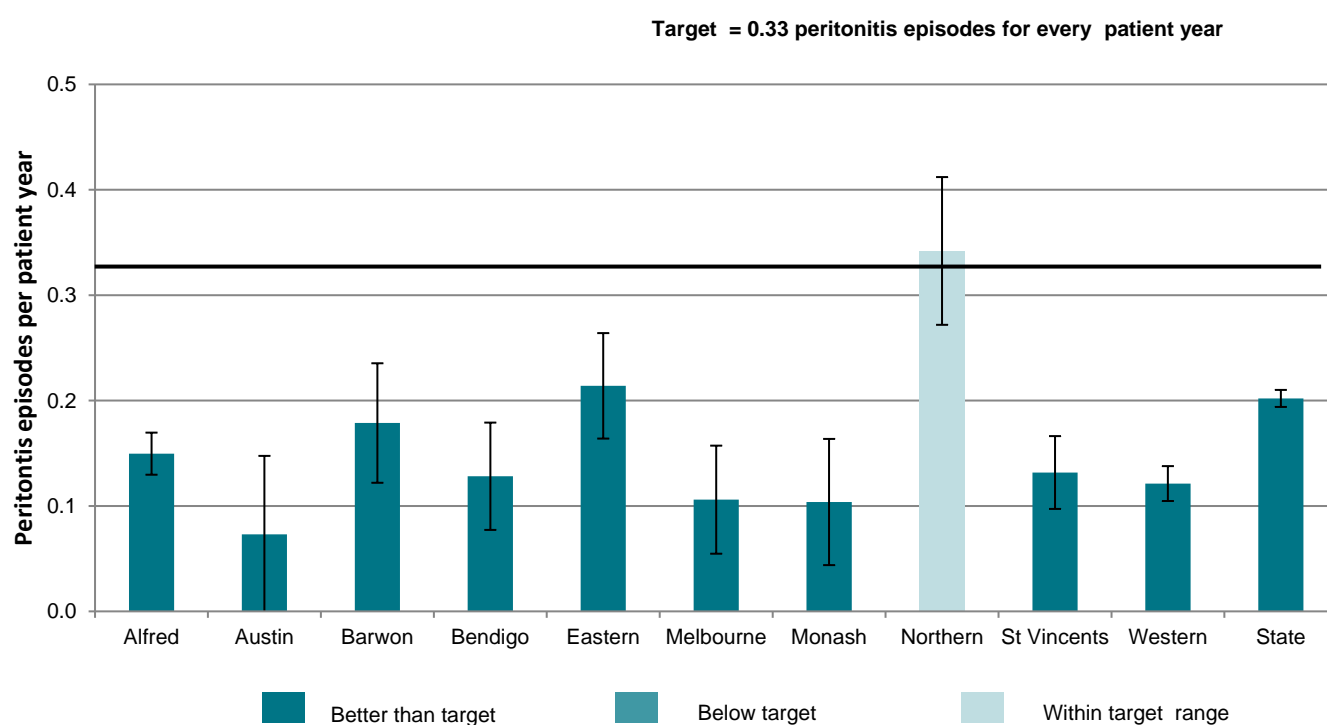
Less than 0.33 peritonitis episodes for every patient year.

Exclusions

Patients who have a catheter in situ but are still pre-dialysis.

Results

Peritonitis rates of each renal hub service

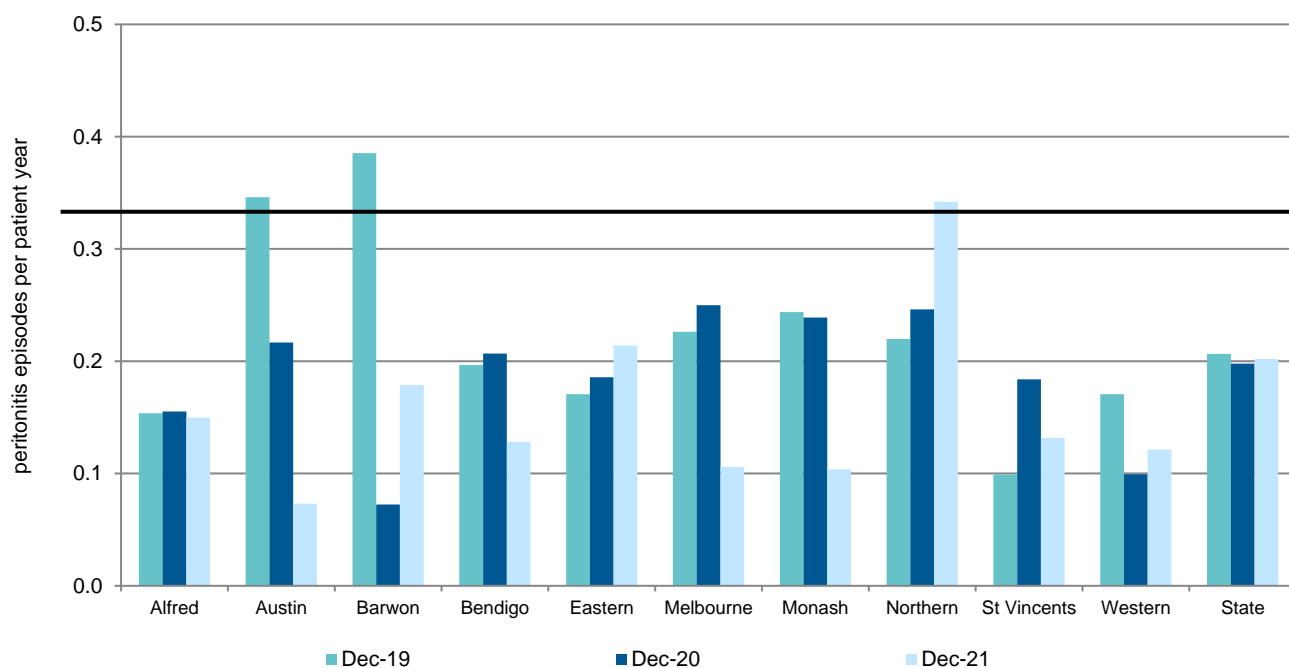


Note: Results based on data average for the period Jan 2021 - Dec 2021.

Improved hub performance in this KPI is reflected in a smaller bar in the above graph. If better than the benchmark value of 0.33 peritonitis episodes per patient year the bar is reported as 'better than target'.

Peritonitis rates for 2019 to 2021

Target = 0.33 peritonitis episodes for every patient year



Note: Results showing trend over time: based on 12-month averages for the previous three years. 2021 (January 21–December 21), 2020 (January 20–December 20) and 2019 (January 19–December 19).

The International Society of Peritoneal Dialysis (ISPD) 2016 guidelines² recommend the peritonitis rate should be reported as number of episodes per patient-year. The ISPD have also recommends 0.5 episodes per patient per year at risk as the minimum guideline for peritonitis incidence. However, as part of a continuous quality improvement program the VRCN recommended the target be lowered to 0.33 episodes per year at risk. Note lower results reported for this KPI represent better performance.

² Li PK, Szeto CC, Piraino B, et al. The International Society of Peritoneal Dialysis (ISPD) peritonitis recommendations: 2016 update on prevention and treatment. Perit Dial Int. 2016;36(5):481-508; Erratum: Perit Dial Int. 2018 38(4):313.

KPI 5: ACCESS TO KIDNEY TRANSPLANTATION: STATUS AT 6 AND 12 MONTHS AFTER STARTING RENAL REPLACEMENT THERAPY (RRT) FOR PATIENTS ≤70 YEARS OF AGE AT RRT START

Definition

- The percentage of patients falling into each of these groups:
 1. Received a living donor kidney transplant (includes pre-emptive).
 2. Received a deceased donor kidney transplant.
 3. Been made active (at any time) on a kidney transplant list (deceased donor or live donor).
 4. Unsuitable for kidney transplant (temporary or permanent barrier).*
 5. Transplant suitability assessment incomplete.*

* If patient has been made active (at any time) on a kidney transplant list (deceased donor or live donor) place in group 3.

- Start of RRT is defined as the date of commencement of maintenance dialysis or receiving a pre-emptive kidney transplant.

Inclusions

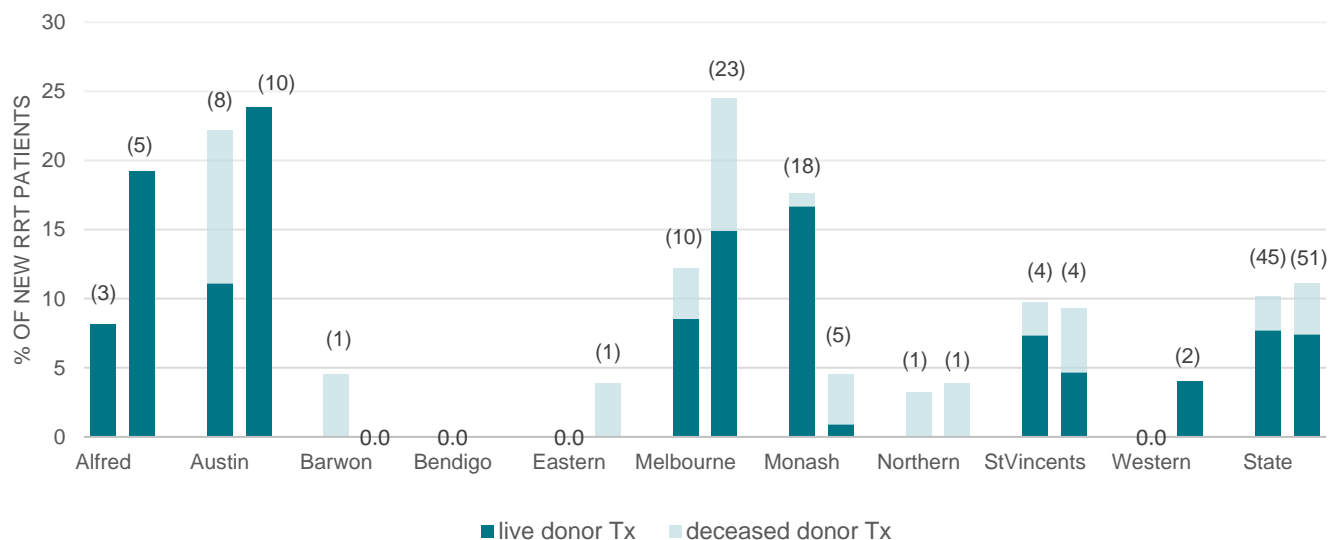
- Patients ≤70 years of age at the time of commencing chronic dialysis or receiving a pre-emptive transplant.
- Late presenters.
- Patients who die within 6 and 12 months of commencing RRT are included.

Exclusions

- Multi-organ transplants (e.g. liver/kidney, kidney/pancreas).
- Previous kidney transplant.
- Age >70 years.

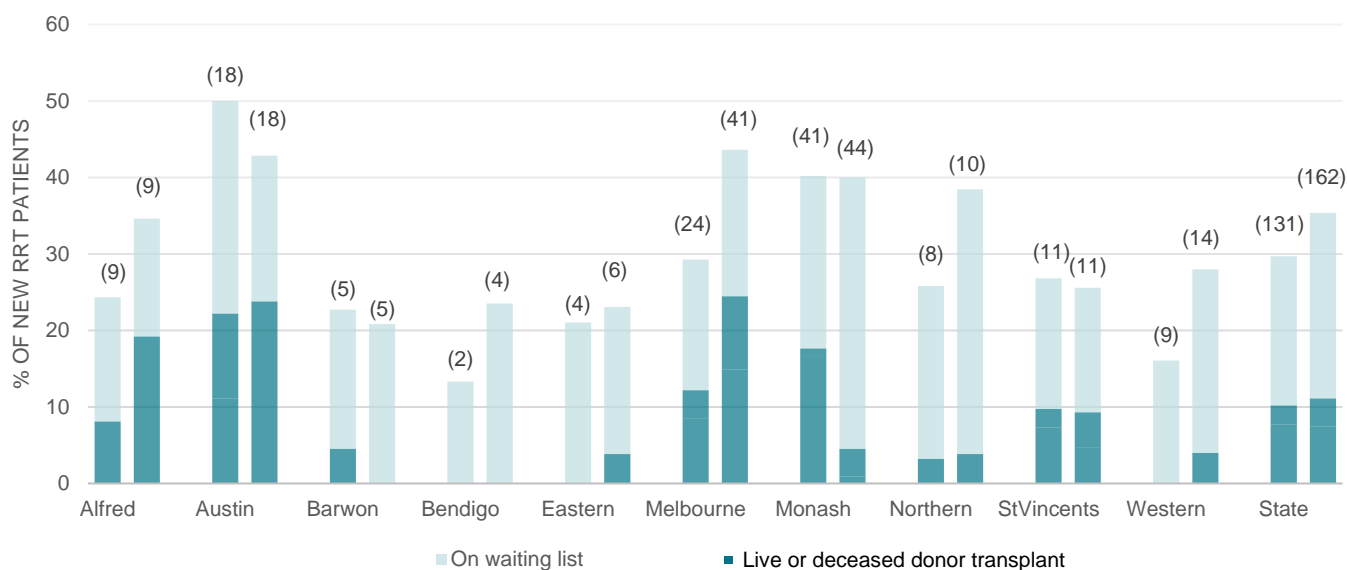
Results

Percentage of patients who started RRT 6 or 12 months ago, who have had a transplant (live or deceased donor)



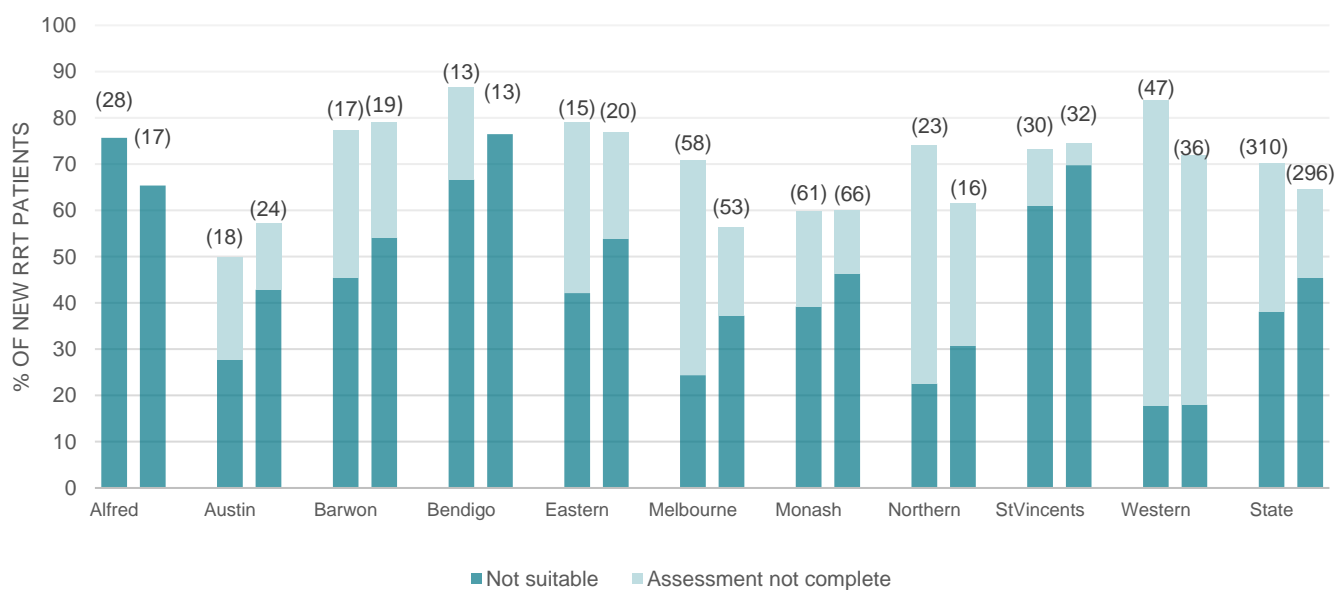
Note: left column is at six months; right column is at 12 months; actual transplant numbers in brackets.

Percentage of patients who started RRT 6 or 12 months ago who have had a kidney transplant or been active on a transplant list



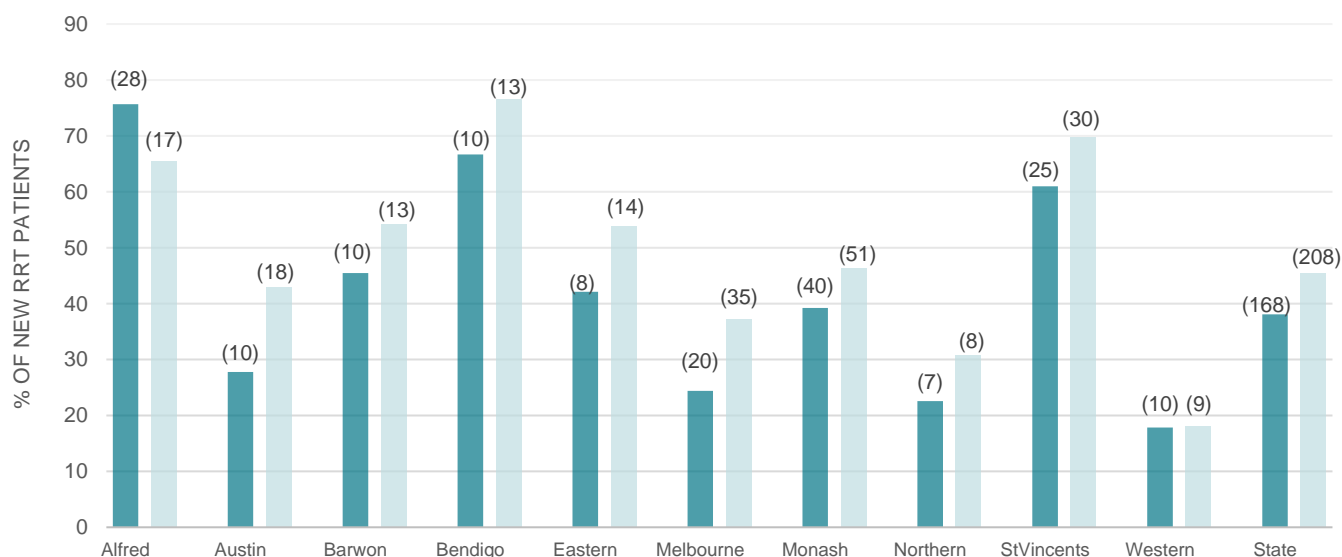
Note: left column is at six months; right column is at 12 months; actual transplant or waitlisted numbers in brackets.

Percentage of patients who started RRT 6 and 12 months ago, who are not suitable for a transplant or a suitability assessment is incomplete



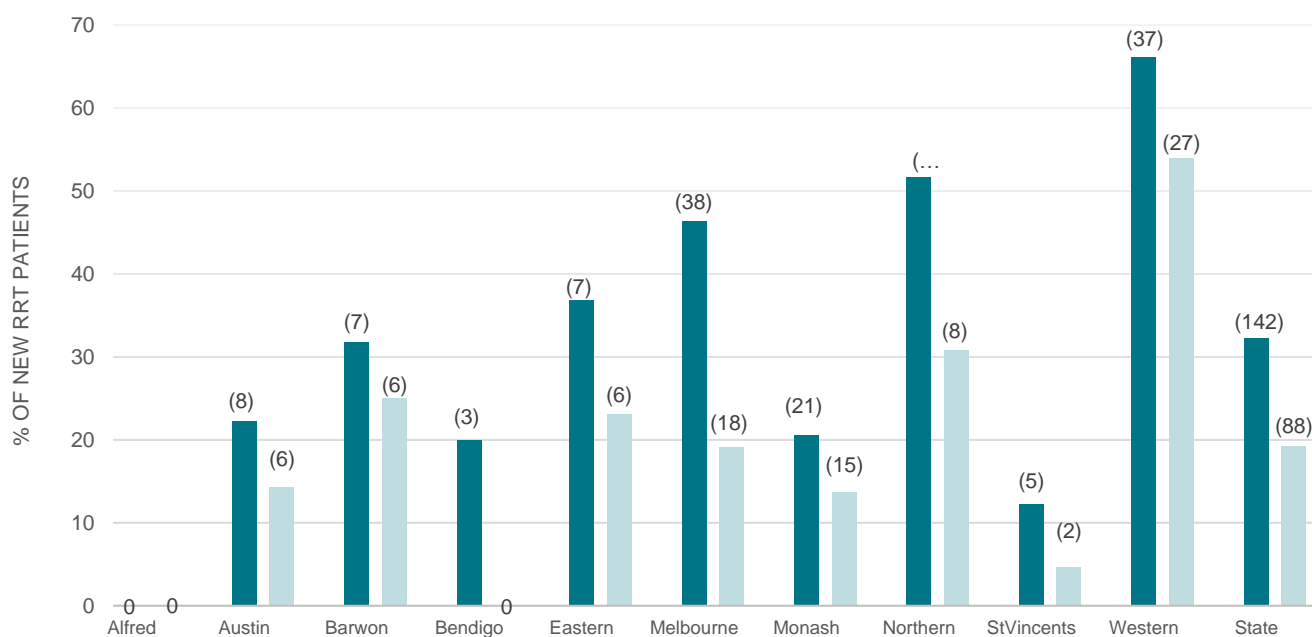
Note: left column is at six months; right column is at 12 months; actual not suitable for transplant or assessment incomplete numbers in brackets.

Percentage of patients who started RRT 6 and 12 months ago, who are not suitable for a transplant.



Note: left column is at six months; right column is at 12 months; reported not suitable for transplant numbers in brackets.

Percentage of patients who started RRT 6 and 12 months ago, and a transplant suitability assessment is incomplete



Note: left column is at six months; right column is at 12 months; actual assessment not complete numbers in brackets.

AUSTRALIA AND NEW ZEALAND DIALYSIS AND TRANSPLANT (ANZDATA) CLINICAL QUALITY REGISTRY MEASURES – MORTALITY RATES AND GRAFT FAILURE RATES

Dialysis

Standardised mortality ratios (SMR) for dialysis patient in Victorian health services (2015–2020)[#]

Health service	No patients*	No deaths	No expected	SMR (95% FDR CI)
Alfred Hospital	366 (20)	117	85.5	1.37 (1.05-1.78)
Austin Hospital	305 (4)	60	69.3	0.87 (0.63-1.19)
Bendigo Hospital	106 (1)	26	25.5	1.02 (0.56-1.85)
Eastern Health	296 (8)	45	68.4	0.66 (0.44-0.99)
Barwon Health	178 (1)	40	43.7	0.92 (0.59-1.43)
Monash Medical Centre	771 (34)	113	139.6	0.81 (0.63-1.04)
Northern Health	188 (32)	36	41.3	0.87 (0.53-1.45)
Royal Melbourne Hospital	667 (88)	118	105.2	1.12 (0.86-1.46)
St Vincent's Hospital	327 (11)	59	77.8	0.76 (0.53-1.08)
Western Health	383 (8)	62	89.2	0.70 (0.50-0.96)

*The number in brackets is the number of patients who were excluded due to missing data.

[#] Sourced from ANZDATA Dialysis Hospital Report 2015–2020 - available at: <https://www.anzdata.org.au/report/anzdata-abridged-dialysis-hospital-report-2015-2020/>
FDR CI = false discovery rate confidence interval

Transplant

Risk-adjusted graft failure ratios at 1 year following transplant for patients receiving a kidney transplant in Victorian health services 2015–2020[#]

Health service	Grafts*	Observed	Expected	Observed rate (95% CI)	Ratio (95% FDR CI)
Alfred Hospital	135 (13)	6	5.2	0.044 (0.016-0.094)	1.15 (0.25-5.32)
Austin Hospital	311 (13)	13	12.6	0.042 (0.022-0.070)	1.03 (0.49-2.18)
Monash Medical Centre	386 (14)	20	17.4	0.062 (0.040-0.091)	1.15 (0.58-2.27)
Royal Melbourne Hospital	670 (52)	21	25.7	0.034 (0.022-0.051)	0.82 (0.44-1.52)
St Vincent's Hospital	126 (1)	6	6.1	0.056 (0.023-0.111)	0.98 (0.28-3.40)

*The number in brackets is the number of grafts excluded from analysis due to missing data.

Transplant procedures performed 2015-2020

[#] Sourced from ANZDATA Transplanting hospital report 2015 - 2020 - available at: <https://www.anzdata.org.au/anzdata/publications/reports/>

FDR CI = false discovery rate confidence interval

Risk-adjusted mortality ratios at 1 year following transplant for patients receiving a kidney transplant in Victorian health services[#]

Health service	Patients*	Observed	Expected	Observed rate (95% CI)	Ratio (95% FDR CI)
Alfred Hospital	116 (11)	1	1.7	0.009 (0.000-0.047)	0.60 (0.11-3.30)
Austin Hospital	285 (11)	5	5.9	0.018 (0.006-0.040)	0.84 (0.18-3.95)
Monash Medical Centre	335 (12)	9	6.6	0.027 (0.012-0.050)	1.36 (0.48-3.89)
Royal Melbourne Hospital	548 (38)	9	8.9	0.018 (0.009-0.033)	1.01 (0.37-2.77)
St Vincent's Hospital	110 (1)	1	2.6	0.009 (0.000-0.050)	0.38 (0.06-2.34)

*The number in brackets is the number of grafts excluded from analysis due to missing data.

Transplant procedures performed 2015 - 2020

[#] Sourced from ANZDATA Transplanting hospital report 2015 - 2020 - available at:

<https://www.anzdata.org.au/anzdata/publications/reports/>

FDR CI = false discovery rate confidence interval

Appendix 1: Detailed definitions

KPI 1: PROPORTION OF NEW, PLANNED PATIENTS WHO HAVE RECEIVED CKD EDUCATION BEFORE STARTING DIALYSIS

Definitions

- 'Planned' patients are those that were referred and have had their initial consultation with any public or private nephrologist earlier than three months before starting renal replacement therapy (RRT), and have been seen by a nephrologist (public or private) in the preceding three years.
- CKD education is defined as either attending a CKD session or a one-on-one session with a member of the CKD team (not a nephrologist consultation only). This education session is to be documented in the patient's medical record.
- Numerator: All new, planned patients who have received CKD education before starting dialysis.
- Denominator: All new planned patients who have started dialysis.
- Inclusions:
 - Patients included would need to be considered as a chronic dialysis patient, defined as having commenced maintenance dialysis, and a medical opinion that recovery of kidney function and independence from RRT is not expected.
 - Patients who previously received CKD care or education at another health service.
- Exclusions:
 - Late referrals (patients commencing dialysis within three months of first renal consultation).
 - Patients returning to dialysis after a failed kidney transplant.
 - Patients who have not had any renal consultation (public or private nephrologist) within the previous three years.
 - People switching from haemodialysis (HD) to peritoneal dialysis (PD) or vice versa.
 - Patients receiving a kidney transplant.
 - Patients who have chosen to have supportive care.

KPI 2: THE PROPORTION OF PLANNED MAINTENANCE HAEMODIALYSIS (HD) PATIENTS WHO SUCCESSFULLY USE AN ARTERIOVENOUS FISTULA (AVF) OR GRAFT (AVG) ACCESS AT FIRST HD TREATMENT

Definitions

- 'Planned' maintenance HD patients are defined as patients commencing maintenance HD that are not late referrals. This includes patients who are doing maintenance HD as their first RRT modality, and patients who have previously been on PD or have had a kidney transplant.
- 'Planned' patients are those that were referred and have had their initial consultation with any public or private nephrologist earlier than three months before starting RRT, and have seen a nephrologist (public or private) in the previous three years.
- Arteriovenous vascular access is defined as either an arterio-venous fistula (AVF) or an arterio-venous graft (AVG).
- 'Successful use of arteriovenous vascular access (fistula or graft) at first treatment' is defined as not requiring a central venous catheter for the first HD treatment.
- Numerator: Number of planned patients starting maintenance HD using an AVF/AVG.
- Denominator: Total number of planned patients starting maintenance HD.
- Inclusions:
 - Patients with a failed kidney transplant transferring to ongoing maintenance HD (as of 1 January 2020).
 - PD patients transferring to maintenance (chronic) HD (as of 1 January 2020).
- Exclusions:
 - Late referrals (patients commencing dialysis within three months of first renal consultation).
 - Patients who have not had any renal consultation (public or private nephrologist) within the previous three years.
 - Patients requiring temporary HD for the treatment of acute kidney injury.
 - PD with a transient (expected less than three months) need for HD.
 - Patients requiring HD for less than two weeks prior to live donor transplantation.

KPI 3: PROPORTION OF DIALYSIS PATIENTS WHO ARE DIALYSING AT HOME

Definitions

- Patients dialysing at home includes nocturnal and conventional HD, and automated and continuous ambulatory PD.
- Prevalent patients – proportion of total dialysis population.
- Numerator (prevalence): number of patients on home dialysis.
- Denominator (prevalence): all new planned patients who have started dialysis.
- Inclusion: patients who have successfully been on home dialysis during any of the six months.
- Exclusion: patients who are in home training units.

KPI 4: PERITONITIS RATES OF EACH HUB SERVICE

Definitions

- Peritonitis rate is calculated as the total number of peritonitis episodes experienced by all patients on dialysis (PD) during the reporting month, divided by the total number of months all patients have spent on dialysis (PD), and then multiplied by 12 to be expressed as yearly rate (0.33 episodes per patient year).
- Peritoneal dialysis peritonitis diagnosed when **at least two** of the following are present:
 - Clinical features consistent with peritonitis i.e. abdominal pain and/or cloudy dialysis effluent.
 - Dialysis effluent white cell count $> 100 \mu\text{L}$ or $> 0.1 \times 10^9/\text{L}$ (after a dwell time of at least two hours with > 50 per cent polymorphonuclear).
 - Positive dialysis effluent culture.
- Relapsing peritonitis: An episode occurring **within four weeks** of peritonitis therapy being completed with the same causative organism (or sterile episode) – to be considered as a **single continuous event**.
- Recurrent peritonitis: An episode occurring **within four weeks** of peritonitis therapy being completed with a different causative organism – to be considered as a **new peritonitis event**.
- Any event beyond four weeks after the completion of peritonitis therapy to be considered as a **new peritonitis event**.
- Numerator: number of peritonitis episodes in all PD patients.
- Denominator: total number of patient-months on PD (expressed as a whole number).
- Peritonitis rate expressed as number of episodes per patient year.
- Exclusions: patients who have a catheter in situ but are still pre-dialysis.

KPI 5: ACCESS TO KIDNEY TRANSPLANTATION: STATUS AT 6 AND 12 MONTHS AFTER STARTING RENAL REPLACEMENT THERAPY (RRT) FOR PATIENTS ≤70 YEARS OF AGE AT RRT START

Definitions

- The KPI is defined by the percentage of patients falling into each of these groups:

1. Received a living donor kidney transplant (includes pre-emptive).
2. Received a deceased donor kidney transplant.
3. Been made active (at any time) on a kidney transplant list (deceased donor or live donor).
4. Unsuited for kidney transplant (temporary or permanent barrier).*
5. Transplant suitability assessment incomplete.*

* If patient has been made active (at any time) on a kidney transplant list (deceased donor or live donor) place in group 3.

- Start of RRT is defined as the date of commencement of maintenance dialysis or receiving a pre-emptive kidney transplant.
- **Group 3 (been made active at any time)** is defined by any of the following:
 - Active on the OrganMatch deceased donor kidney transplant waiting list.
 - A booked date for a live donor kidney transplant.
 - Active acceptance for matching in the ANZKX live donor kidney exchange program.
- **Group 4 (currently not suitable for transplantation)** is defined by:
 - Has not been transplanted and never previously been made active on a kidney transplant list (deceased donor or live donor).
 - A specific barrier (either temporary or permanent) is identified that prevents the patient being suitable for transplantation at the present time.
 - Reasons for current unsuitability are determined by the responsible clinicians according to interpretation of appropriate guidelines. Specific reasons for current unsuitability may be medical, surgical or psychosocial in nature. If a patient dies before they have received a transplant or been made active for transplantation, they are assigned to Group 4.
- **Group 5 (transplant suitability assessment incomplete)** is defined by:
 - Patient has not been transplanted and never previously been made active on a kidney transplant list (deceased donor or live donor), but no specific reason for unsuitability has been determined.
 - There are still aspects of the assessment and preparation that are incomplete or are yet to be commenced.
 - Examples of outstanding requirements that might result in patients being in Group 5 include awaiting things such as: required investigations, review by the transplant nephrologist, review by the transplant surgeon, review by other specialists, referral without an identified barrier to explain non-referral, and completion of necessary documentation.

- Inclusions
 - Patients ≤ 70 years of age at the time of commencing chronic dialysis or receiving a pre-emptive transplant.
 - Late presenters.
 - Patients who die within 6 and 12 months of commencing RRT.
- Exclusions
 - Multi-organ transplants (e.g. liver/kidney; kidney/pancreas).
 - Previous kidney transplant.
 - Age > 70 years.
- Data submission:
 - 6 months – For ESKD patients 70 years of age and under who started RRT 6 months ago.
 - 12 months – For ESKD patients 70 years of age and under who started RRT 12 months ago:
 - Numerators:
 1. Number with live donor transplant (including pre-emptive).
 2. Number with deceased donor kidney transplant.
 3. Number active on or have previously been active on a kidney transplant list (deceased donor or live donor).
 4. Number not suitable for a kidney transplant list (deceased or live donor) due to an identified barrier (either temporary or permanent) and have not been on a kidney transplant list at any time (deceased donor or live donor).
 5. Number with kidney transplant suitability assessment not yet completed (but no specific identified barrier) and have not been on a kidney transplant list at any time (deceased donor or live donor).
 - Denominator: Total number of patients ≤ 70 years of age who started RRT either 6 or 12 months prior.
 - The monthly data values for this KPI are reported retrospectively. In any month work back to either 6 or 12 months previously and count all the patients ≤ 70 years of age who first started RRT in that month. Then of that total, count the number of patients who were either transplanted from a living or deceased donor, or placed on an active list, or have been found not suitable for renal transplant, or have not yet had their suitability assessment completed yet within the timeframe.

AUSTRALIA AND NEW ZEALAND DIALYSIS AND TRANSPLANT (ANZDATA) CLINICAL QUALITY REGISTRY MEASURES – MORTALITY RATES AND GRAFT FAILURE RATES

Definitions

Standardised mortality ratios

Calculated based on observed versus expected deaths within each of the hospitals. The expected number of deaths is defined as the number of deaths which would be expected if patients were treated at any hospital in Australia and New Zealand, with the hospital weighted according to size. The number of patients is determined as per the 'effective sample size'. A more detailed explanation of the methodology is found in the ANZDATA source reports at:

- <https://www.anzdata.org.au/report/anzdata-abridged-dialysis-hospital-report-2015-2020/>
- <https://www.anzdata.org.au/report/2016-methodology-information-effective-sample-size/>

Graft failure ratio

Inclusions:

- All Australian and New Zealand patients transplanted between 1 January 2015 and 31 December 2020 and who were aged 16 years or older at the time of operation.
- Both deceased and living donor transplants.
- Recipients aged 18 years or older at the time of transplant for hospitals that provide transplantation services for all ages.

Exclusions:

- Patients who received multi-organ grafts.
- Patients transplanted at a paediatric hospital.

The data are based on reports to the ANZDATA Registry. Interpretation of these results should consider both the limitations of the methodology and the context. The results presented are estimates of true values and are subject to random variation. Confidence intervals are used to present this variability. To account for the multiple comparisons made between centres, 95 per cent false discovery rate (FDR) confidence intervals are used.

Data sourced from ANZDATA Transplanting hospital report 2015 - 2020 available at:

<https://www.anzdata.org.au/anzdata/publications/reports/>

