



Chapter 10

End Stage Kidney Disease in Aboriginal and Torres Strait Islander Australians

Reporting the incidence, prevalence and survival of Aboriginal and Torres Strait Islander Australians receiving renal replacement.

Contents

Introduction	2
Suggested Citation	2
New Patients	3
Primary Renal Disease.....	4
Incidence Rates	4
Prevalent Patients	7
Transplantation	9
Transplant Survival.....	11
Dialysis.....	13
Timing of Renal Replacement Therapy Initiation.....	14
Incidence and Prevalence by State	15
State Incidence.....	15
Dialysis by Resident State.....	17
Transplantation by Referring State	18
Deaths by Resident State	18
Geographical Distribution	19
Late Referral	20
Vascular Access	21
Incident Vascular Access	21
Prevalent Vascular Access.....	22
Patient Flow	23
Cause of Death	24
References.....	25

Introduction

In this chapter, the rates and practice patterns for end-stage kidney disease for people identifying as Aboriginal and Torres Strait Islander living in Australia are reported. We acknowledge the distinctiveness of many nations of Aboriginal and Torres Strait Islander peoples, and respectfully refer to them as Indigenous Australians within this report. Self-identified ethnicity is reported by renal units on behalf of patients.

The collection of ethnicity data in ANZDATA now allows for a patient to nominate more than one ethnicity group, however, consultation regarding reporting of ethnicity data is currently ongoing and reporting guidelines have not been finalised at the time of publication. As a result, ethnicity data throughout this report includes only the first ethnicity category entered for each patient. Future publications will aim to report more accurately on patients identifying as more than one ethnicity.

Denominator population statistics were sourced from the Australian Bureau of Statistics (2019)¹ and are stratified by ethnicity. For example, the incidence of renal replacement therapy (RRT) for Indigenous Australians includes the Indigenous Australian population as the denominator. In Australia, Indigenous and non-Indigenous populations possess different age structures: Indigenous populations tend to be younger and demonstrate onset of long-term conditions at ages 10-20 years younger than non-Indigenous communities.

Suggested Citation

ANZDATA Registry. 43rd Report, Chapter 10: End Stage Kidney Disease in Aboriginal and Torres Strait Islander Australians. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2021. Available at: <http://www.anzdata.org.au>

New Patients

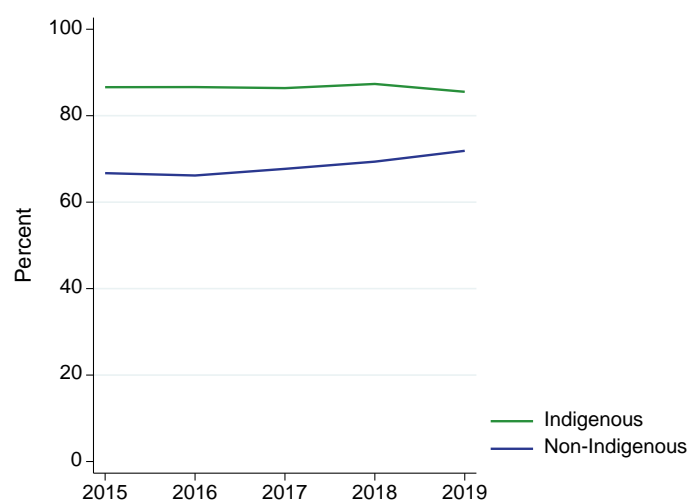
A total of 351 Aboriginal and 29 Torres Strait Islander people (n=380 total of Indigenous Australians) commenced renal replacement therapy (RRT) for kidney failure in Australia during 2019 (table 10.1). The majority (86%) were treated with haemodialysis as their initial RRT modality (figure 10.1). Two pre-emptive kidney transplants were accessed by Indigenous Australians in 2019.

Haemodialysis incidence was approximately 5-fold higher for Indigenous Australians (383 pmp) than for non-Indigenous Australians (81 pmp). In 2019, only 14% of Indigenous Australians accessed peritoneal dialysis as first treatment compared with almost one-quarter of non-Indigenous Australians.

Table 10.1 New Patients (pmp) Australia 2015-2019, with Kidney replacement modality at first treatment

Year	Modality	Indigenous	Non-Indigenous	Total
2015	HD	252 (322)	1557 (68)	1809 (76)
	PD	38 (49)	691 (30)	729 (31)
	Graft	1 (1)	86 (4)	87 (4)
2016	HD	272 (341)	1602 (68)	1874 (77)
	PD	41 (51)	735 (31)	776 (32)
	Graft	1 (1)	84 (4)	85 (4)
2017	HD	311 (382)	1822 (77)	2133 (87)
	PD	49 (60)	748 (31)	797 (32)
	Graft	0 (0)	121 (5)	121 (5)
2018	HD	283 (341)	1887 (78)	2170 (87)
	PD	39 (47)	738 (31)	777 (31)
	Graft	2 (2)	95 (4)	97 (4)
2019	HD	325 (383)	1996 (81)	2321 (92)
	PD	53 (63)	680 (28)	733 (29)
	Graft	2 (2)	101 (4)	103 (4)

Figure 10.1 - Percentage of New Patients Commencing on Haemodialysis – Australia



Primary Renal Disease

The primary renal diseases of new Australian patients over 2015-2019 are shown in table 10.2. The proportion of Indigenous patients with diabetic nephropathy was substantially higher than for non-Indigenous patients.

Table 10.2 Primary Renal Disease of New Patients Australia 2015-2019

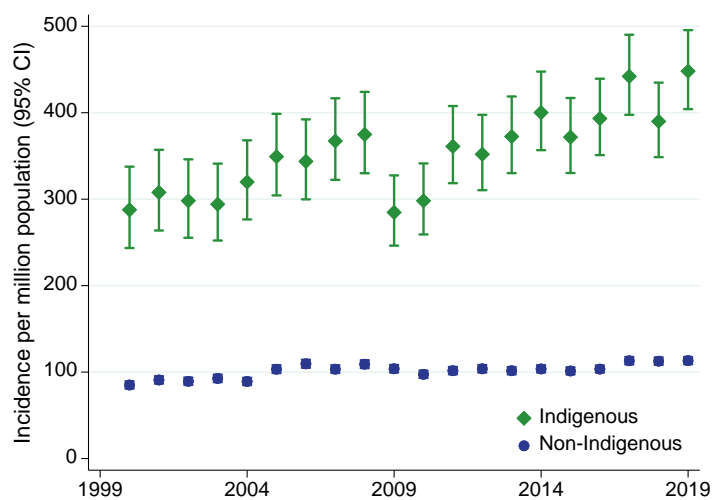
Primary Renal Disease	Indigenous	Non-Indigenous
Diabetic Nephropathy	1158 (69%)	4488 (35%)
Glomerulonephritis	151 (9%)	2385 (18%)
Hypertension	116 (7%)	1820 (14%)
Polycystic Disease	8 (<1%)	890 (7%)
Reflux Nephropathy	15 (1%)	270 (2%)
Other	114 (7%)	2152 (17%)
Uncertain	66 (4%)	708 (5%)
Not reported	41 (2%)	230 (2%)
Total	1669	12943

Incidence Rates

Overall, the incidence rates (per million of population) of end-stage kidney disease for Indigenous patients were markedly and persistently higher than those for non-Indigenous patients.

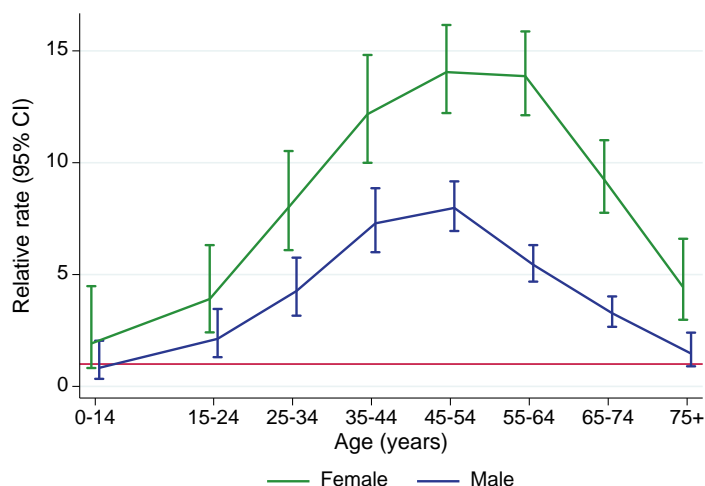
Although rates fluctuate from year to year, in Australia the incidence rate among Indigenous people is gradually increasing (figure 10.2). The relative rate differs with age and also with gender - this is illustrated in figure 10.3.

Figure 10.2 - Unadjusted Incident RRT Rate – Australia



Indigenous Australians experience higher rates of end-stage kidney disease at all ages. This disparity is greater among Indigenous women and shows a particular pattern with age with the highest relative rates in the 35-64-year age group (figure 10.3).

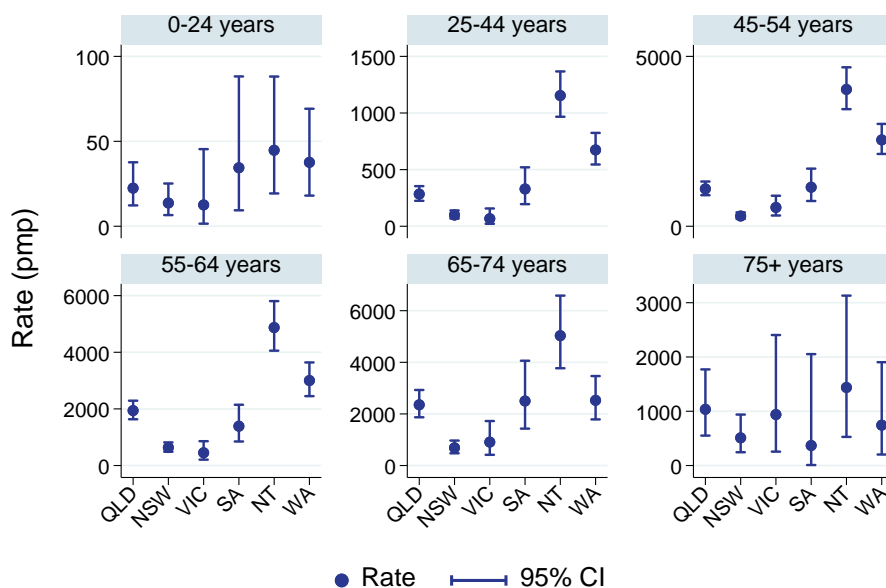
Figure 10.3 - Relative Incidence Rate of Treated ESKD for Indigenous Patients by Gender (Comparison to Non-Indigenous Australians) - 2015-2019



There is also considerable variation in the incidence of renal replacement therapy for Indigenous Australians across Australian States and Territories (figure 10.4; note that the Y axis scales vary).

While rates for the very young (<25 years) and older (>75 years) groups are similar in each State/Territory, the rates for people 25-74 years of age show a clear trend of progressively higher rates from NSW/Victoria to Queensland then South Australia, Western Australia and the Northern Territory (highest). Data are shown for a five-year period given the small numbers in some locations.

Figure 10.4 - Age-specific Incidence Rates of Treated ESKD - Among Indigenous Australians, by State and Age at RRT start 2015-2019

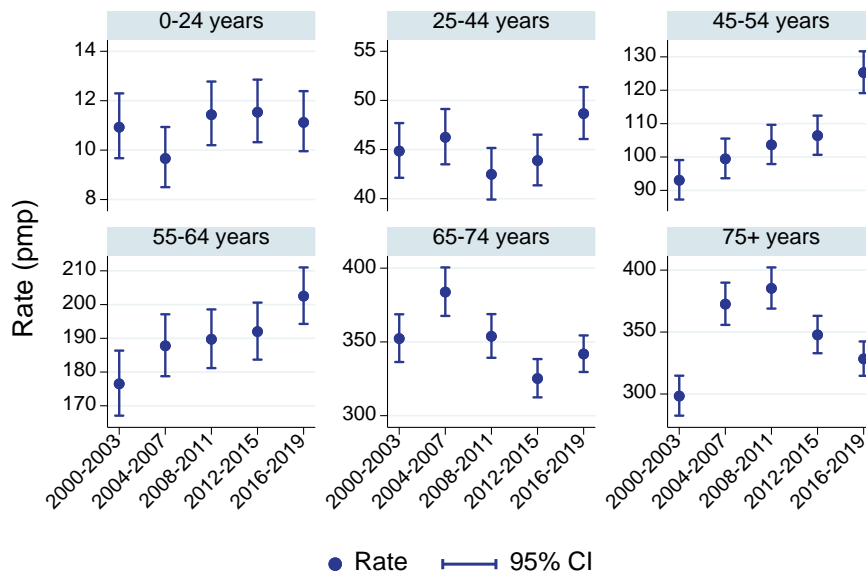


Note the Y axis scales vary between panels

There are a number of factors which contribute to incident numbers of RRT (among both Indigenous and non-Indigenous people). These may include underlying rates of diabetes or other medical conditions, rates of disease progression, referral patterns, access to treatment and patient treatment decisions.

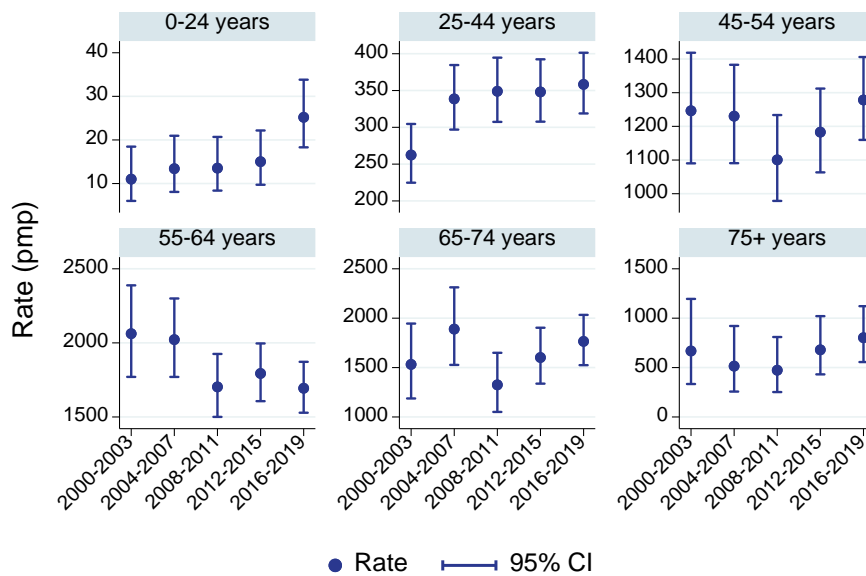
The trends in age-specific rates for the non-Indigenous population are shown in figure 10.5.1; the increasing overall rate is driven by increases in the 25-64-year age groups in the non-Indigenous age groups but trends in the Indigenous age groups differ (figure 10.5.2).

Figure 10.5.1 - Age-specific Incidence Rates of Treated ESKD - Non-Indigenous, Australia



Note the Y axis scales vary between panels

Figure 10.5.2 - Age-specific Incidence Rates of Treated ESKD - Indigenous, Australia



Note the Y axis scales vary between panels

Prevalent Patients

The number of Indigenous Australians with treated end-stage kidney disease at the end of 2019 increased from 2248 persons in 2018 to 2378 persons (table 10.3).

There were marked differences in treatment modalities for Indigenous Australians (figures 10.6 and 10.7). Most Indigenous Australians were treated with facility-based haemodialysis (75%), with very few accessing home haemodialysis (5%), long-term peritoneal dialysis (7%), or kidney transplantation (14%). The proportion of Indigenous Australians with a kidney transplant as long-term treatment for end-stage kidney disease was 14% during 2019 compared with half (50%) of non-Indigenous Australians. Only 5% of Indigenous Australians accessed home-based haemodialysis compared with 10% of non-Indigenous Australians.

Table 10.3 Prevalent Patients by Ethnicity and Treatment Modality Australia 2015-2019

Year	Modality	Indigenous	Non-Indigenous
2015	HD	1549 (81%)	8249 (41%)
	% HD at home	7%	13%
	PD	134 (7%)	2295 (12%)
	Tx	237 (12%)	9392 (47%)
2016	HD	1627 (81%)	8322 (41%)
	% HD at home	6%	12%
	PD	134 (7%)	2228 (11%)
	Tx	260 (13%)	9861 (48%)
2017	HD	1743 (81%)	8521 (40%)
	% HD at home	6%	11%
	PD	145 (7%)	2208 (10%)
	Tx	272 (13%)	10363 (49%)
2018	HD	1796 (80%)	8819 (40%)
	% HD at home	5%	11%
	PD	152 (7%)	2219 (10%)
	Tx	300 (13%)	10876 (50%)
2019	HD	1887 (79%)	9243 (40%)
	% HD at home	5%	10%
	PD	157 (7%)	2184 (10%)
	Tx	334 (14%)	11407 (50%)

Figure 10.6.1 - Prevalent Patients by Modality - Australia – Indigenous

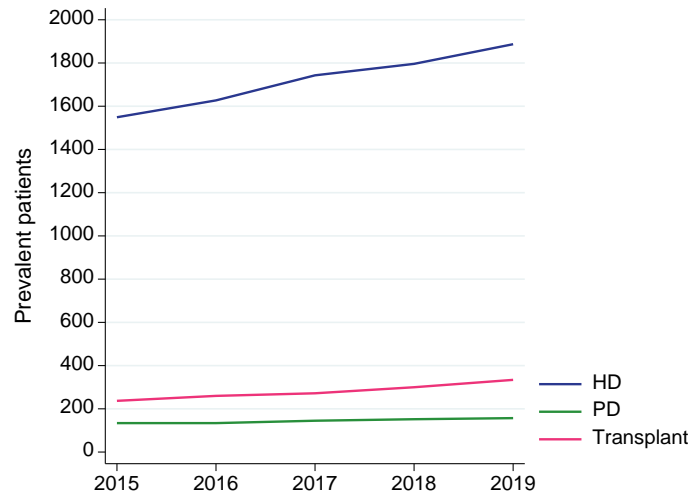


Figure 10.6.2 - Prevalent Patients by Modality - Australia - Non-Indigenous

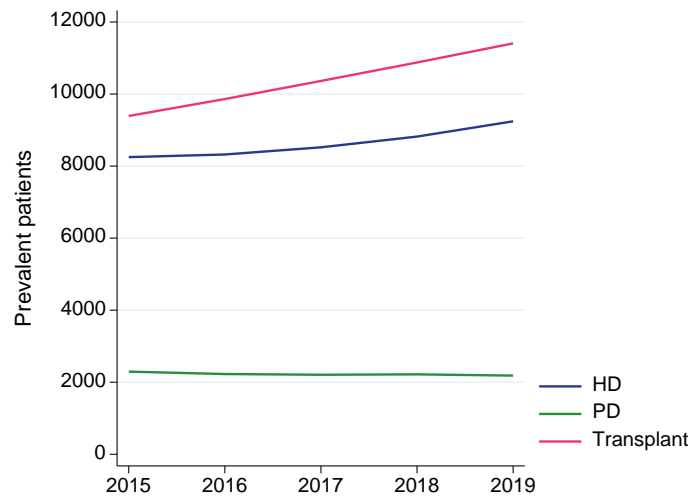
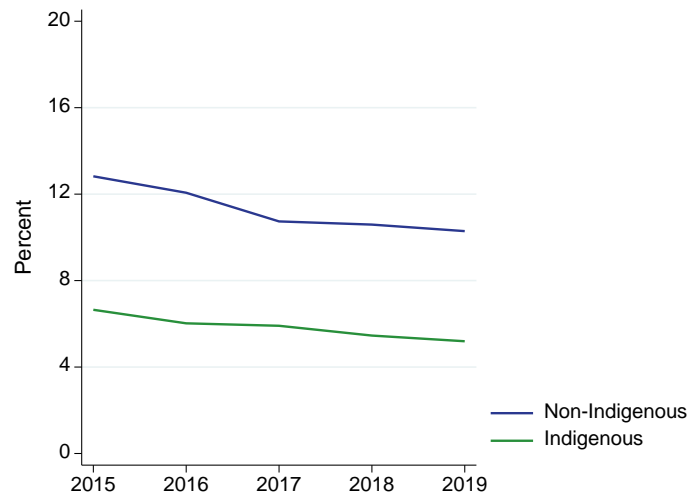


Figure 10.7 - Prevalent Haemodialysis at Home by Ethnicity – Australia



Transplantation

In Australia, the proportion of Indigenous patients with end-stage kidney disease (ESKD) who receive a kidney transplant is very low relative to the number receiving dialysis. However, due to the high number of Indigenous people experiencing ESKD, the number of transplants per million population is higher for Indigenous patients than non-Indigenous patients (table 10.4). Information on donor type is shown in figure 10.8 and trends are shown in figure 10.9. There are substantially lower rates of living donation for Indigenous Australians.

Table 10.4 Number of Transplant Recipients (pmp) by Ethnicity Australia 2010-2019

Year	Donor Type	Indigenous	Non-Indigenous
2010	DD	28 (40)	489 (23)
	LD	0 (0)	263 (12)
	Total	28 (40)	752 (35)
2011	DD	26 (36)	503 (23)
	LD	2 (3)	230 (11)
	Total	28 (39)	733 (34)
2012	DD	21 (29)	555 (25)
	LD	0 (0)	208 (9)
	Total	21 (29)	763 (35)
2013	DD	30 (40)	569 (25)
	LD	1 (1)	226 (10)
	Total	31 (41)	795 (36)
2014	DD	36 (47)	573 (25)
	LD	4 (5)	234 (10)
	Total	40 (52)	807 (36)
2015	DD	32 (41)	633 (27)
	LD	3 (4)	212 (9)
	Total	35 (45)	845 (37)
2016	DD	32 (40)	736 (31)
	LD	2 (3)	226 (10)
	Total	34 (43)	962 (41)
2017	DD	32 (39)	757 (32)
	LD	2 (2)	253 (11)
	Total	34 (42)	1010 (42)
2018	DD	46 (55)	800 (33)
	LD	3 (4)	209 (9)
	Total	49 (59)	1009 (42)
2019	DD	54 (64)	761 (31)
	LD	1 (1)	222 (9)
	Total	55 (65)	983 (40)

Figure 10.8 - Donor Type by Ethnicity - Australia 2010-2019



Over the period 2010-2017 there was a gradual increase in the number of overall kidney transplants for non-Indigenous patients that appears to have levelled out in the last 3 years (figure 10.9). In contrast, after a period of relatively little growth in transplant numbers for Indigenous patients up to 2017, numbers appear to have increased in the last 2 years (note differences in y-axes).

Figure 10.9 - Donor Type by Ethnicity and Year – Australia

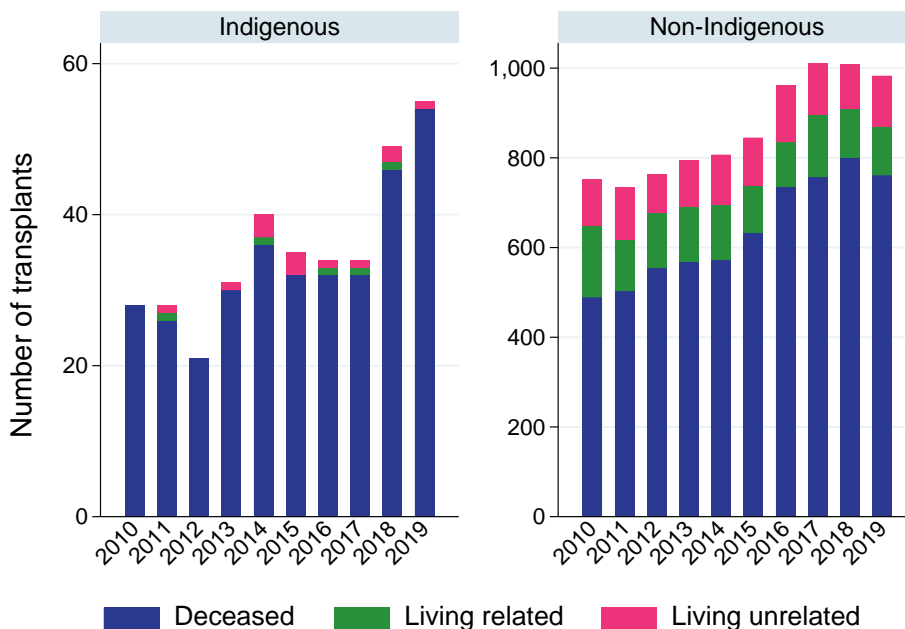
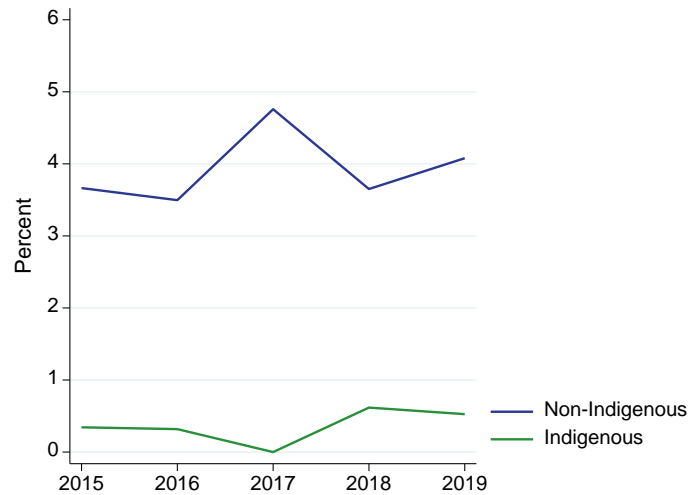


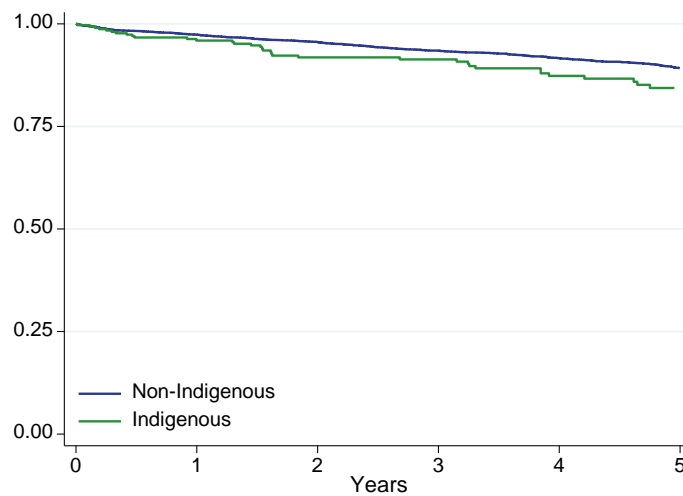
Figure 10.10 - Percentage of Patients Starting RRT with Pre-emptive Kidney Transplant – Australia



Transplant Survival

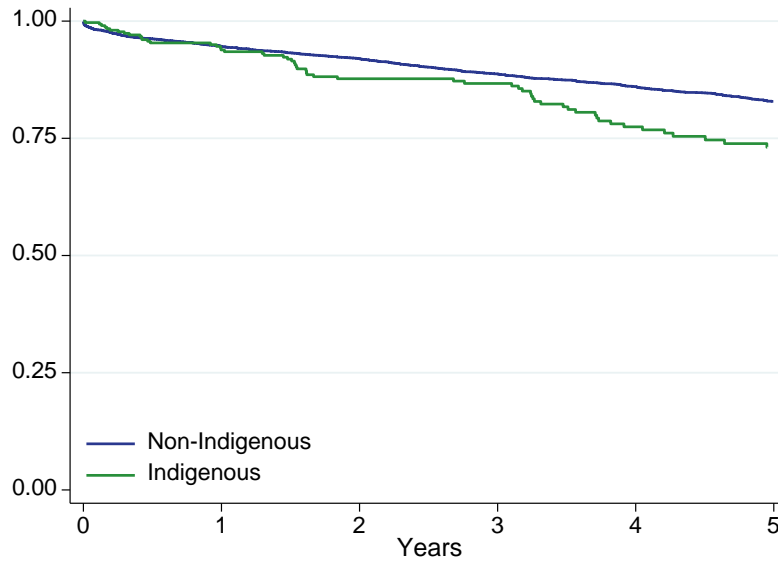
Figure 10.11 shows patient survival after receiving a primary kidney transplant for both Indigenous and non-Indigenous Australians; 84% of Indigenous Australians and 89% of non-Indigenous persons were alive 5 years after kidney transplantation from a deceased donor.

Figure 10.11 - Patient Survival, Recipients of Primary DD Transplants - Australia 2010-2019



Kidney transplants may be lost, either through the transplant failing or the patient dying with a functioning kidney. In the first year following primary deceased donor kidney transplant, there was no difference in the proportions of Indigenous and non-Indigenous recipients who experienced graft loss. However, transplant kidney function at 5 years post-transplant was recorded in 73% of Indigenous recipients compared with 83% of non-Indigenous persons (figure 10.12).

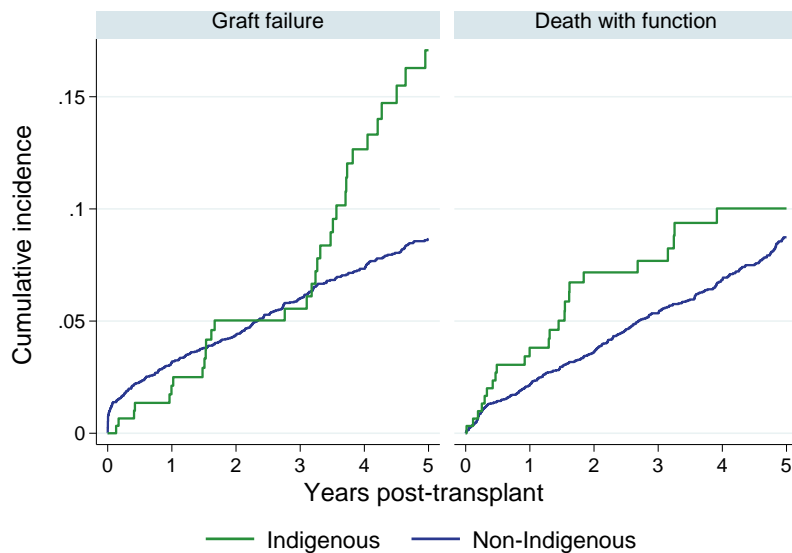
Figure 10.12 - Graft Survival, Recipients of Primary DD Transplants - Australia 2010-2019



Cumulative incidence curves (utilising competing risk techniques to account for the effects of both components of graft failure) are shown for Indigenous transplant outcomes in figure 10.13.

For Indigenous Australians, there are markedly higher rates of transplant loss, particularly evident beyond 3 years post-transplant. Indigenous Australians experience higher mortality rates after the first 1.5 years.

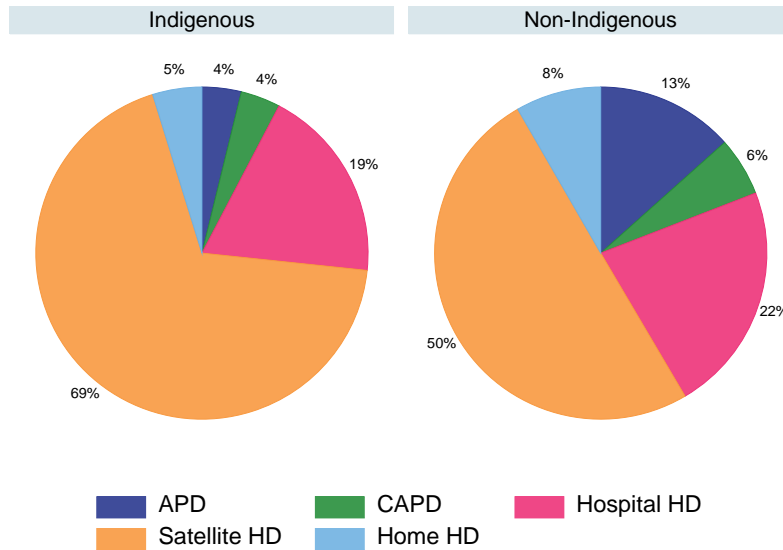
Figure 10.13 - Transplant Outcomes - Primary Deceased Donor Kidney-only Transplants Australia 2010-2019



Dialysis

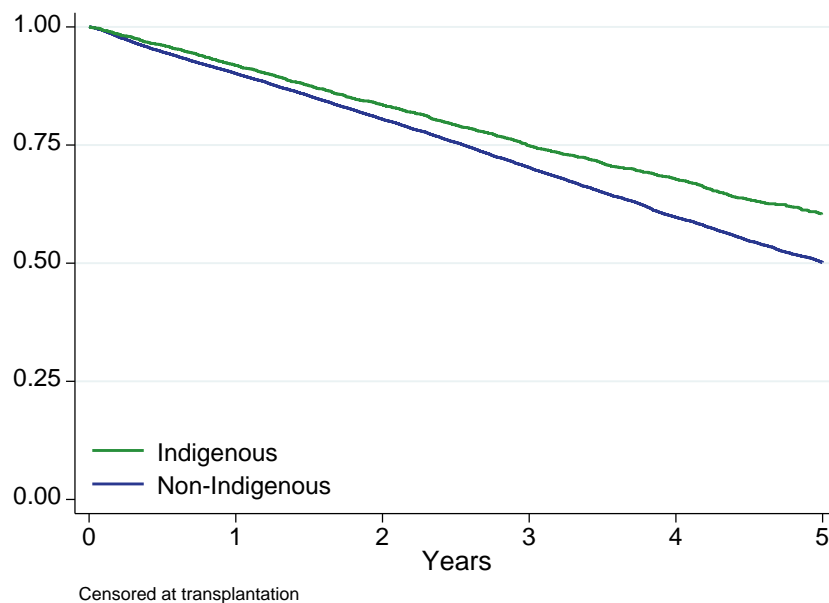
The distribution of dialysis modality is shown graphically in figure 10.14. For Indigenous Australians, the predominant modality is satellite haemodialysis. Access to home-based dialysis care including both haemodialysis and peritoneal dialysis is proportionally much lower. Indigenous Australians utilise automated peritoneal dialysis (APD) at much lower rates than non-Indigenous Australians.

Figure 10.14 - Dialysis Modality End 2019 - Australia, by Ethnicity



60% of the Indigenous Australians who started dialysis over 2010-2019 were alive 5 years later (figure 10.15). This was a slightly higher proportion in Indigenous compared with non-Indigenous patients (50%). These are unadjusted figures; differences between populations including age distribution and access to competing treatments (transplantation) will affect mortality comparisons.

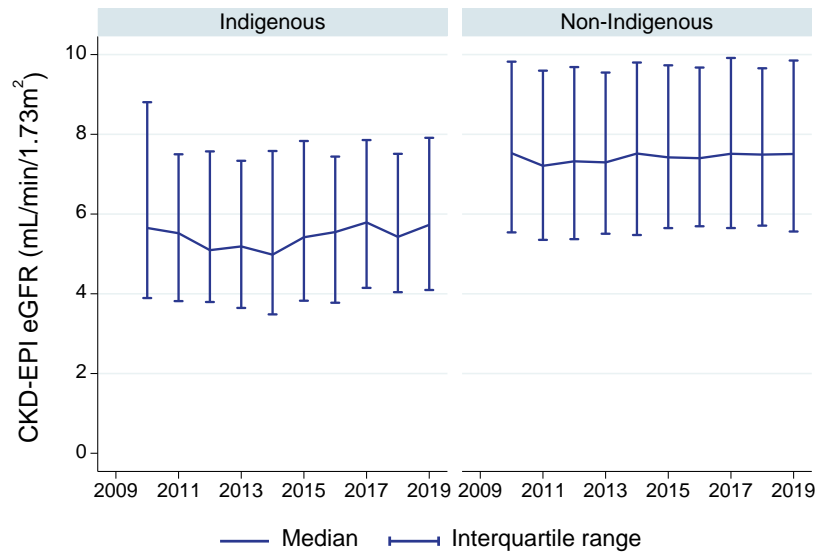
Figure 10.15 - Incident Dialysis Patient Survival 2010-2019 – Australia



Timing of Renal Replacement Therapy Initiation

In Australia, the level of kidney function at which dialysis is commenced ranges between eGFR 5-6 mL/min/1.73m² for Indigenous Australians while the kidney function at dialysis commencement for non-Indigenous Australians is approximately 7 mL/min/1.73m².

Figure 10.16 - eGFR at RRT start – Australia



Incidence and Prevalence by State

The next few pages show a variety of figures that summarise various key rates (incidence, prevalence, transplant rates) for Indigenous Australians. In large part they show information from previous pages, in a series of differing formats.

State Incidence

There is marked variation in the incidence of renal replacement therapy between States and Territories in Australia. NT had the highest national incidence for Indigenous Australians treated for end-stage kidney disease at 1429 per million of population in 2019; the next highest was in WA (747 pmp) (figure 10.17).

Kidney transplantation is offered in major metropolitan centres in NSW, QLD, WA, VIC and SA. There is a marked State/Territory variation in the incidence of kidney transplantation in Australia and between years (figure 10.18). In 2019, Australia had its highest rate of kidney transplants per million population for Indigenous Australians in the last 5 years, driven by an increase in the rate in NT residents (who are transplanted in SA).

Figure 10.17 - Incidence of New Indigenous Australian Patients

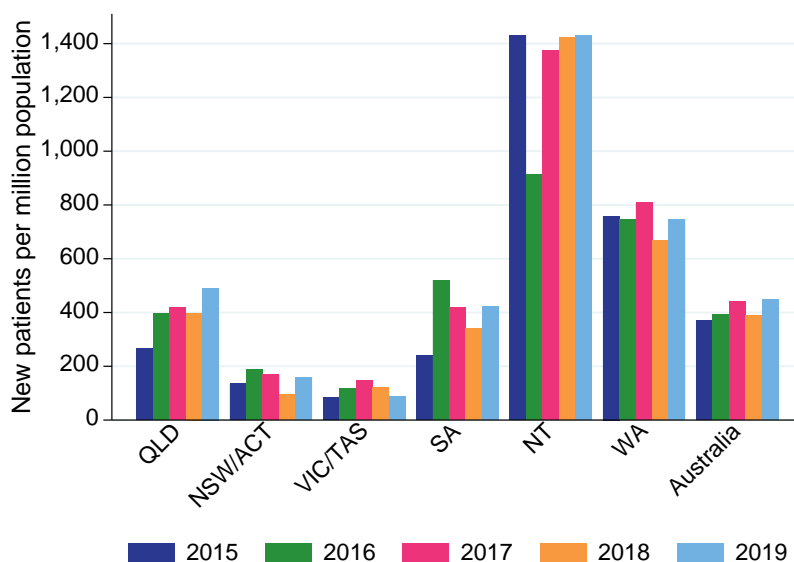
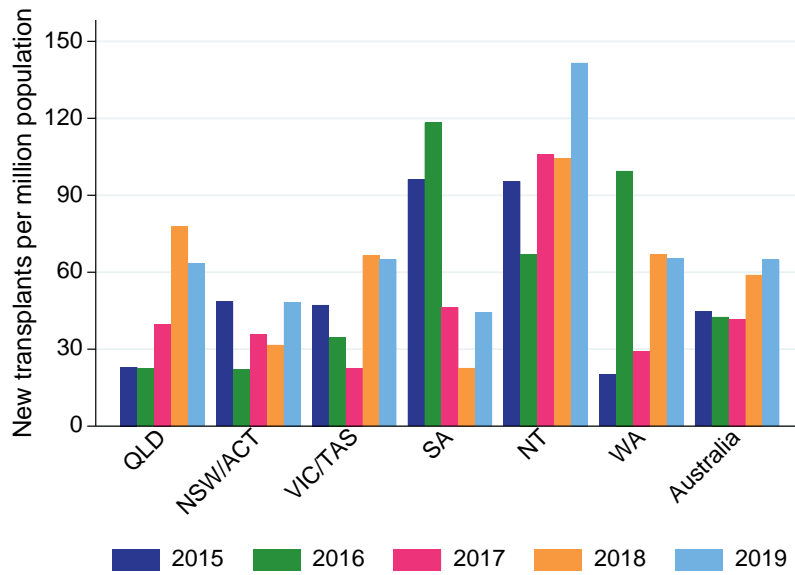
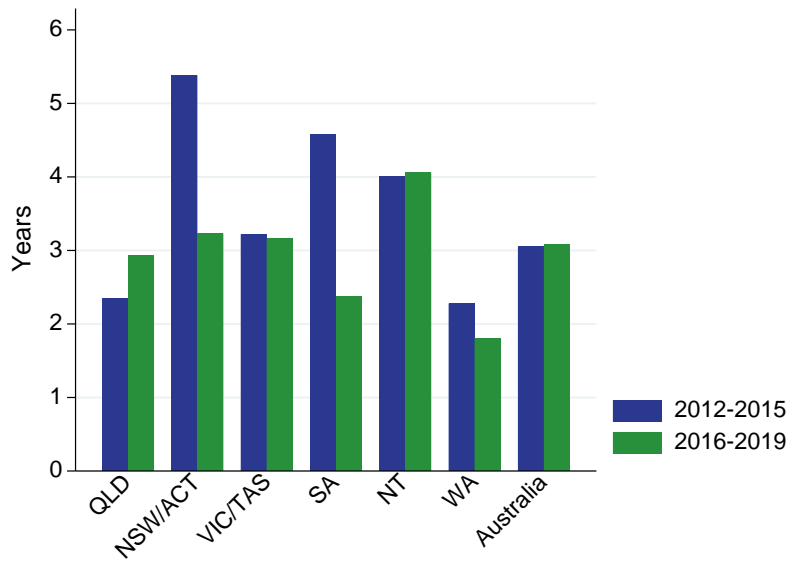


Figure 10.18 - Incidence of New Transplants Indigenous Australian Patients - By referring state



The time from commencement of dialysis to receipt of first transplant is shown in figure 10.19, with varying patterns between different states and territories.

Figure 10.19 - Median Time to Primary Transplant Indigenous Australian Patients - By referring state, Transplants during 2012-2015 vs 2016-2019



Dialysis by Resident State

Treatment patterns for Indigenous Australians vary by state. The highest rates for haemodialysis are in the Northern Territory, Western Australia and South Australia. The highest rates for peritoneal dialysis have historically been in Queensland and Western Australia. However, the Northern Territory showed sustained increase in prevalent patients utilising peritoneal dialysis over 2018-2019, and in 2019, recorded the highest national prevalence rate for PD.

Figure 10.20 - Prevalent Indigenous Australian Haemodialysis Patients

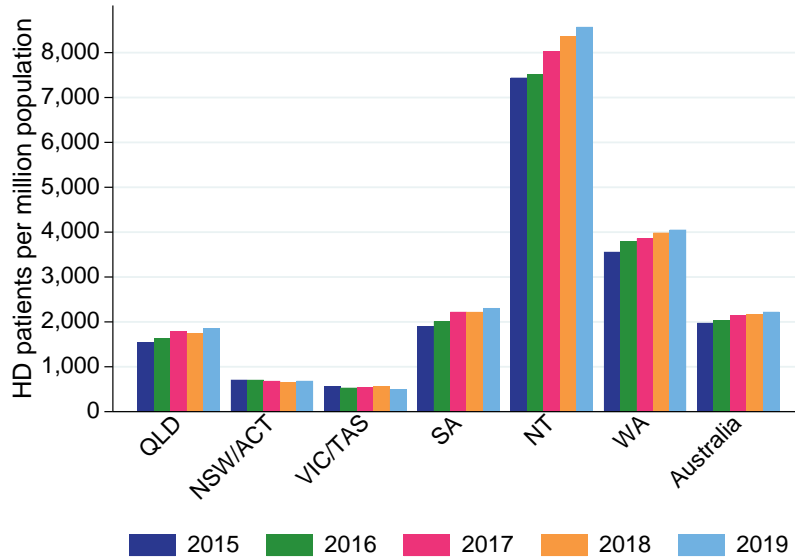
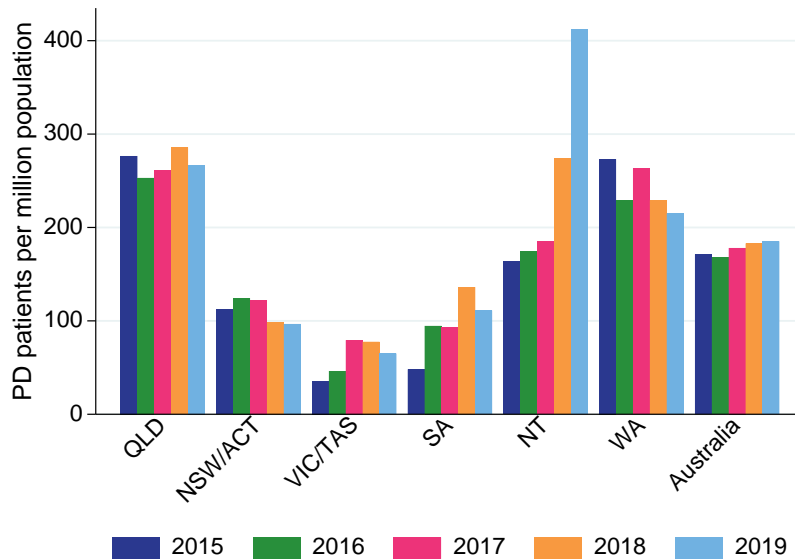


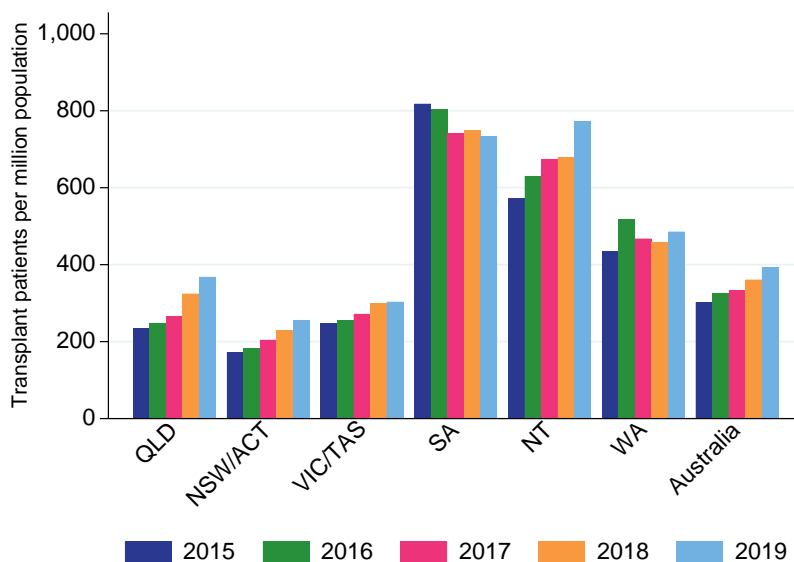
Figure 10.21 - Prevalent Indigenous Australian Peritoneal Dialysis Patients



Transplantation by Referring State

Rates of prevalent transplants vary substantially between states with the highest prevalence rates in South Australia, the Northern Territory and Western Australia. These rates are per population, not per dialysis patient, and they reflect both background rates of kidney disease and transplant practices. Transplant rates per dialysis patient are presented in Chapter 7 of this Report. Transplantation prevalence rates appear to be increasing overall and, in most jurisdictions, apart from SA (figure 10.22).

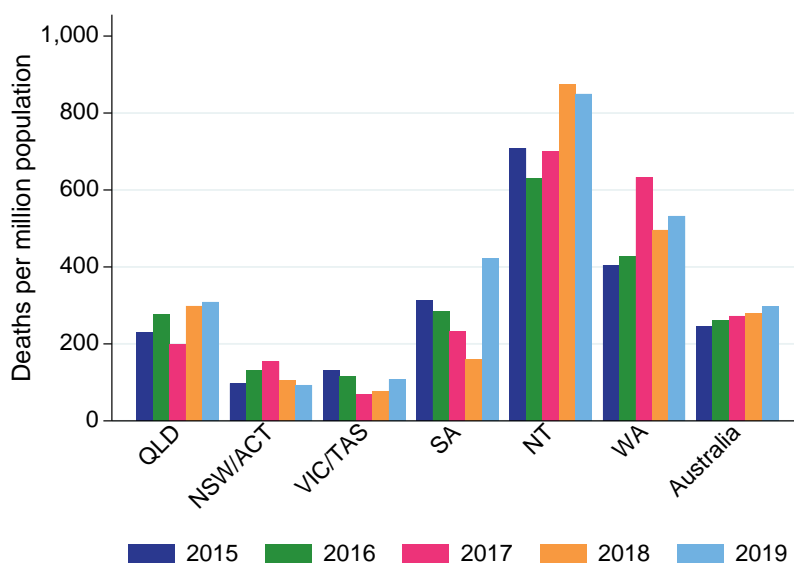
Figure 10.22 - Prevalent Indigenous Australian Transplant Patients



Deaths by Resident State

State based mortality rates for Indigenous Australians on renal replacement therapy are shown in figure 10.23. The differences in death rates between states are likely to reflect a combination of the differences in ESKD prevalence, practice patterns and patient factors.

Figure 10.23 - Deaths of Indigenous Australian RRT patients



Geographical Distribution

Figure 10.24 shows the number of incident Indigenous Australian renal replacement therapy patients by postcode. The percentage of prevalent renal replacement therapy patients identifying as Indigenous Australian is summarised in figure 10.25 (by state) and the number of prevalent Indigenous Australian dialysis patients in figure 10.26 by statistical area level 3 (SA3, obtained by mapping postcodes to SA3). Note that some postcodes are distributed over more than one SA3; in that case incidence numbers are allocated pro-rata with the population distribution. Mapping data are based on the 2016 Australian Statistical Geography Standard courtesy of the Australian Bureau of Statistics (2016)².

Figure 10.24 - Incident Indigenous Australian Renal Replacement Therapy Patients 2015-2019 - By Postcode

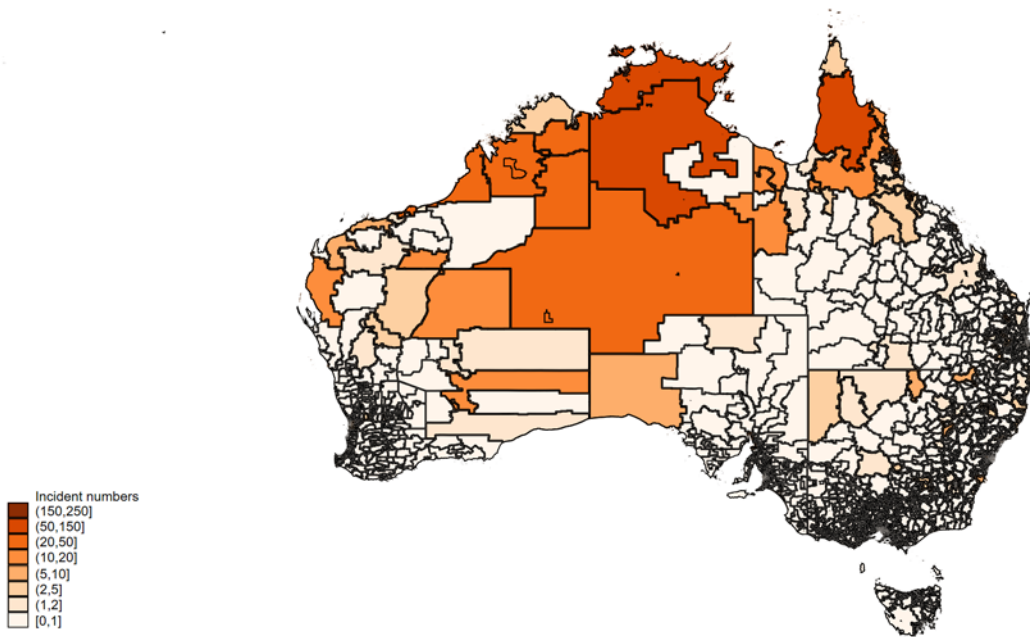


Figure 10.25 - Percentage of Prevalent Renal Replacement Therapy Patients Identifying as Indigenous Australian - 2019 By State

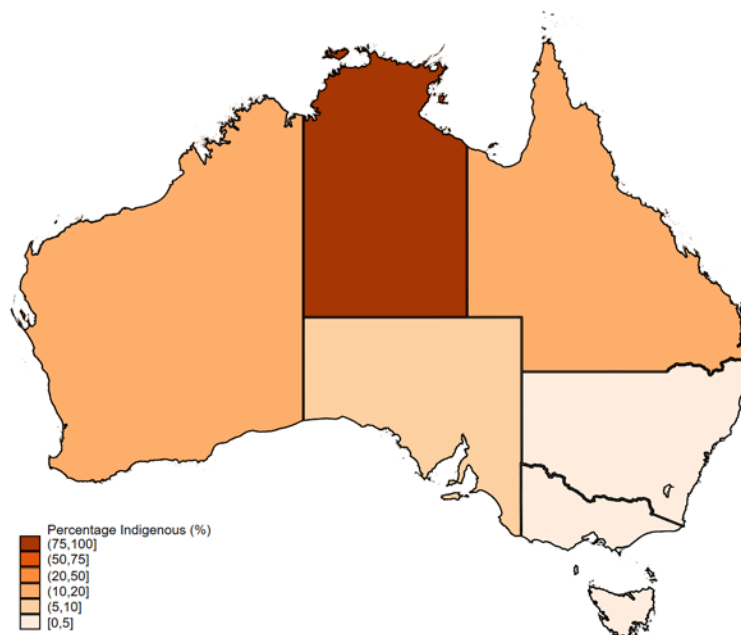
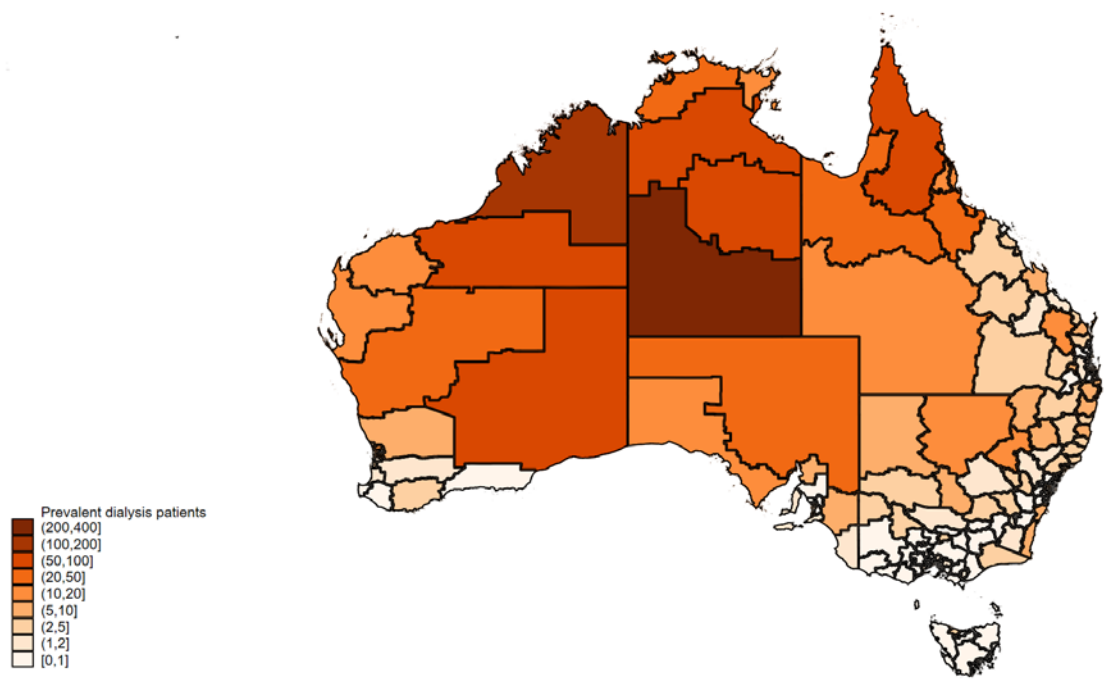


Figure 10.26 - Prevalent Indigenous Australian Dialysis Patients 2019 - By Statistical Area Level 3



Late Referral

The percentage of Indigenous Australians who experienced late referral to a nephrologist prior to commencing renal replacement therapy (RRT) (<3 months between referral and review by a nephrologist and RRT start) has not changed substantially over 2015-2019 and has typically been slightly lower compared to non-Indigenous patients (table 10.5).

Table 10.5 Percentage of Late Referral by Ethnicity Australia 2015-2019

Year	Indigenous	Non-Indigenous
2015	17%	18%
2016	14%	18%
2017	16%	18%
2018	18%	17%
2019	15%	19%

Vascular Access

Incident Vascular Access

Incident vascular access data are presented in table 10.6, and prevalent data in table 10.7.

The proportion of Indigenous Australian patients commencing RRT with haemodialysis using a catheter rather than permanent access was very similar to non-Indigenous patients in 2019 (table 10.6).

Table 10.6 Incident Vascular Access Australia 2015-2019

Year	Vascular access	Indigenous	Non-Indigenous
2015	AVF	93 (37%)	667 (43%)
	AVG	5 (2%)	24 (2%)
	CVC	150 (60%)	838 (54%)
	Not reported	4 (2%)	28 (2%)
2016	AVF	107 (39%)	666 (42%)
	AVG	1 (<1%)	20 (1%)
	CVC	163 (60%)	893 (56%)
	Not reported	1 (<1%)	23 (1%)
2017	AVF	113 (36%)	763 (42%)
	AVG	9 (3%)	22 (1%)
	CVC	188 (60%)	1015 (56%)
	Not reported	1 (<1%)	22 (1%)
2018	AVF	107 (38%)	765 (41%)
	AVG	3 (1%)	21 (1%)
	CVC	173 (61%)	1087 (58%)
	Not reported	0 (0%)	14 (1%)
2019	AVF	134 (41%)	792 (40%)
	AVG	2 (1%)	23 (1%)
	CVC	188 (58%)	1176 (59%)
	Not reported	1 (<1%)	5 (<1%)

Prevalent Vascular Access

In contrast to incident vascular access, the rate of catheter usage for prevalent dialysis patients in 2019 was lower for Indigenous Australian patients than non-Indigenous patients (table 10.7).

Table 10.7 Prevalent Vascular Access Australia 2015-2019

Year	Vascular access	Indigenous	Non-Indigenous
2015	AVF	1186 (77%)	6204 (75%)
	AVG	47 (3%)	531 (6%)
	CVC	177 (11%)	1097 (13%)
	Not reported	139 (9%)	417 (5%)
2016	AVF	1252 (77%)	6191 (74%)
	AVG	51 (3%)	436 (5%)
	CVC	164 (10%)	1137 (14%)
	Not reported	160 (10%)	558 (7%)
2017	AVF	1380 (79%)	6516 (76%)
	AVG	51 (3%)	404 (5%)
	CVC	207 (12%)	1338 (16%)
	Not reported	105 (6%)	263 (3%)
2018	AVF	1419 (79%)	6744 (76%)
	AVG	50 (3%)	394 (4%)
	CVC	240 (13%)	1479 (17%)
	Not reported	87 (5%)	202 (2%)
2019	AVF	1530 (81%)	6757 (73%)
	AVG	53 (3%)	394 (4%)
	CVC	233 (12%)	1634 (18%)
	Not reported	71 (4%)	458 (5%)

Patient Flow

Table 10.8 shows the overall flow of Indigenous Australian patients, by state. For new and pre-emptive transplants, numbers are shown by referring state. The differences in death rates between states are likely to reflect a combination of the differences in ESKD prevalence, practice patterns and patient factors.

Table 10.8 Patient Flow (pmp) Australian Indigenous Patients 2015-2019

Year	Event	QLD	NSW/ACT	VIC/TAS	SA	NT	WA	Australia
2015	New patients	58 (267)	36 (135)	7 (83)	10 (241)	105 (1431)	75 (759)	291 (372)
	New transplants	5 (23)	13 (49)	4 (47)	4 (96)	7 (95)	2 (20)	35 (45)
	Pre-emptive transplants	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
	Prevalent dialysis	394 (1816)	220 (824)	51 (602)	81 (1949)	558 (7606)	379 (3835)	1683 (2150)
	Prevalent transplants	51 (235)	46 (172)	21 (248)	34 (818)	42 (572)	43 (435)	237 (303)
	Total prevalence	445 (2051)	266 (996)	72 (850)	115 (2767)	600 (8178)	422 (4270)	1920 (2453)
	Deaths	50 (230)	26 (97)	11 (130)	13 (313)	52 (709)	40 (405)	192 (245)
2016	New patients	88 (398)	51 (187)	10 (116)	22 (521)	68 (912)	75 (746)	314 (393)
	New transplants	5 (23)	6 (22)	3 (35)	5 (118)	5 (67)	10 (99)	34 (43)
	Pre-emptive transplants	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	1 (1)
	Prevalent dialysis	416 (1880)	228 (835)	50 (579)	89 (2106)	573 (7687)	405 (4029)	1761 (2206)
	Prevalent transplants	55 (249)	50 (183)	22 (255)	34 (804)	47 (630)	52 (517)	260 (326)
	Total prevalence	471 (2129)	278 (1018)	72 (834)	123 (2910)	620 (8317)	457 (4547)	2021 (2531)
	Deaths	61 (276)	36 (132)	10 (116)	12 (284)	47 (630)	43 (428)	209 (262)
2017	New patients	95 (420)	47 (169)	13 (147)	18 (417)	104 (1376)	83 (809)	360 (442)
	New transplants	9 (40)	10 (36)	2 (23)	2 (46)	8 (106)	3 (29)	34 (42)
	Pre-emptive transplants	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Prevalent dialysis	464 (2052)	225 (808)	55 (624)	100 (2317)	621 (8216)	423 (4121)	1888 (2318)
	Prevalent transplants	60 (265)	57 (205)	24 (272)	32 (742)	51 (675)	48 (468)	272 (334)
	Total prevalence	524 (2318)	282 (1013)	79 (896)	132 (3059)	672 (8891)	471 (4589)	2160 (2652)
	Deaths	45 (199)	43 (154)	6 (68)	10 (232)	53 (701)	65 (633)	222 (273)
2018	New patients	92 (398)	27 (95)	11 (122)	15 (340)	109 (1422)	70 (668)	324 (390)
	New transplants	18 (78)	9 (32)	6 (67)	1 (23)	8 (104)	7 (67)	49 (59)
	Pre-emptive transplants	1 (4)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)	2 (2)
	Prevalent dialysis	469 (2030)	213 (750)	58 (643)	104 (2360)	662 (8639)	442 (4217)	1948 (2345)
	Prevalent transplants	75 (325)	65 (229)	27 (299)	33 (749)	52 (679)	48 (458)	300 (361)
	Total prevalence	544 (2355)	278 (979)	85 (943)	137 (3108)	714 (9318)	490 (4675)	2248 (2706)
	Deaths	69 (299)	30 (106)	7 (78)	7 (159)	67 (874)	52 (496)	232 (279)
2019	New patients	116 (491)	46 (159)	8 (87)	19 (422)	111 (1429)	80 (747)	380 (448)
	New transplants	15 (64)	14 (48)	6 (65)	2 (44)	11 (142)	7 (65)	55 (65)
	Pre-emptive transplants	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)
	Prevalent dialysis	501 (2121)	227 (784)	52 (564)	109 (2421)	698 (8987)	457 (4270)	2044 (2410)
	Prevalent transplants	87 (368)	74 (256)	28 (304)	33 (733)	60 (772)	52 (486)	334 (394)
	Total prevalence	588 (2490)	301 (1039)	80 (867)	142 (3154)	758 (9759)	509 (4756)	2378 (2804)
	Deaths	73 (309)	27 (93)	10 (108)	19 (422)	66 (850)	57 (533)	252 (297)

Cause of Death

The causes of death in 2019 are shown in figure 10.27 and table 10.9, categorised by ethnicity and modality at time of death.

238 Indigenous Australian patients who were receiving dialysis died in 2019, with cardiovascular disease followed by withdrawal from treatment and 'other causes' as the most common causes of death.

Among non-Indigenous Australian dialysis patients, withdrawal from dialysis was the most common cause of death.

Figure 10.27 - Cause of Death by Modality and Ethnicity, Australia - Deaths Occurring During 2019

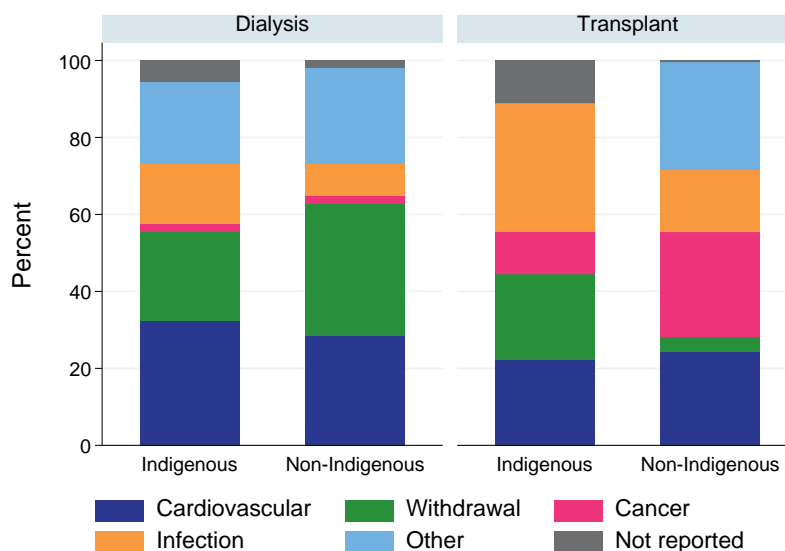


Table 10.9 Cause of Death by Modality and Ethnicity, Australia 2019

Modality	Cause of death	Indigenous	Non-Indigenous
Dialysis	Cardiovascular	77 (32%)	442 (28%)
	Withdrawal	55 (23%)	534 (34%)
	Cancer	5 (2%)	34 (2%)
	Infection	37 (16%)	130 (8%)
	Other	51 (21%)	385 (25%)
	Not reported	13 (5%)	30 (2%)
	Total		238
Transplant	Cardiovascular	2 (22%)	54 (24%)
	Withdrawal	2 (22%)	9 (4%)
	Cancer	1 (11%)	60 (27%)
	Infection	3 (33%)	36 (16%)
	Other	0 (0%)	62 (28%)
	Not reported	1 (11%)	1 (0%)
	Total		9

References

¹ Australian Bureau of Statistics, 2019, Australian Demographic Statistics, Jun 2019, time series spreadsheets, cat. no. 3101.0, viewed 19 Dec 2019,
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Jun%202019?OpenDocument>

² Australian Bureau of Statistics, 2016, Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas, July 2016, cat. no. 1270.0.55.001, viewed 22 May 2018,
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1270.0.55.001July%202016?OpenDocument>