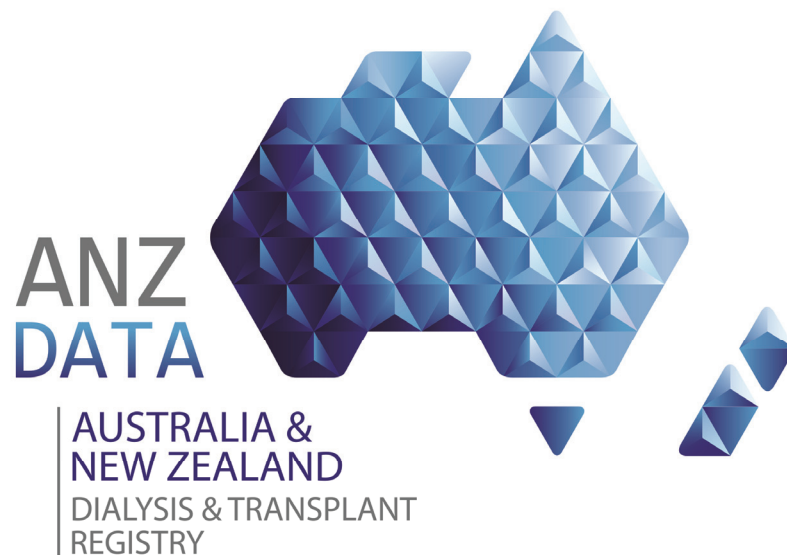


# Chapter 12

## End Stage Kidney Disease Among Indigenous Peoples of Australia and New Zealand



2016

ANZDATA Registry  
39th Annual Report

*Data to 31-Dec-2015*

Preliminary Release

## Introduction

In this chapter, rates of end-stage kidney disease among Indigenous Peoples of Australia and New Zealand are presented. For Australia, these are Aboriginal and Torres Strait Islanders (TSI); for New Zealand, analyses include Māori and Pacific Peoples. ANZDATA acknowledges that Pacific Peoples are not “indigenous” to New Zealand, but have included them here as a major cultural and ethnic group in New Zealand with substantial disadvantages. In all cases, ethnicity is reported by the renal unit on the basis of self-description.

Where population statistics are used to calculate rates, they are stratified by ethnicity. For example, the incidence of RRT in Australian indigenous patients uses the indigenous population of Australia as the denominator.

## New Patients

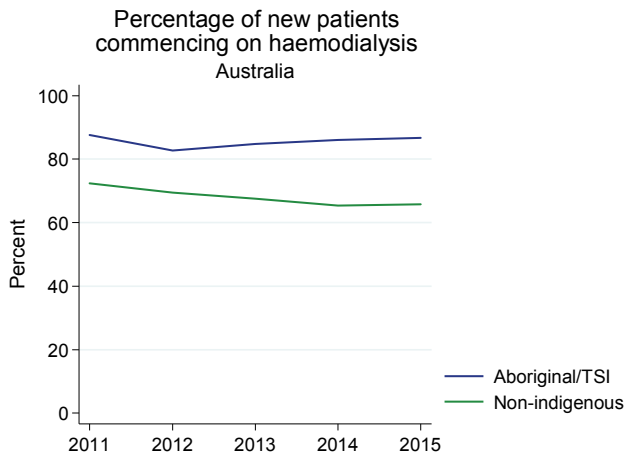
A total of 277 Aboriginal and Torres Strait Islander patients commenced dialysis in Australia during 2015 (table 12.1). The majority (87%) were treated with haemodialysis as their initial RRT modality (figure 12.1.1). One pre-emptive transplant was performed among Aboriginal Australians in 2015.

The numbers of Māori patients starting dialysis was stable in 2015, but the number of Pacific People starting dialysis fell. Haemodialysis was the most common modality (figure 12.1.2). 65 (30% of total) Māori patients commenced on PD in 2015 while the proportion of Pacific Peoples starting dialysis with PD was 39%.

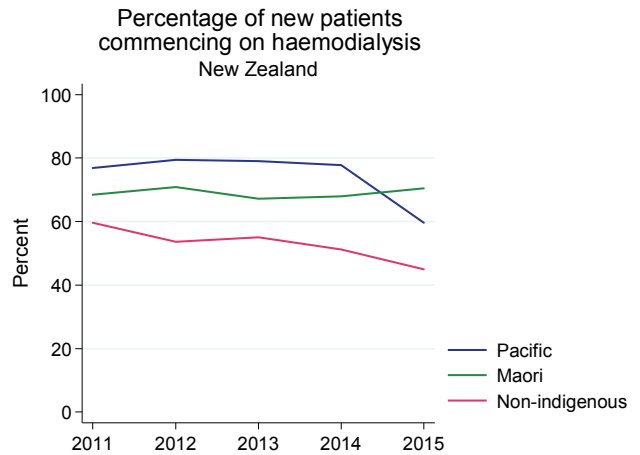
**Table 12.1 Number (pmp) of People who commenced Renal Replacement Therapy in Australia and New Zealand 2011-2015**

		Australia			New Zealand			
Year	Modality	Non-indigenous	Aboriginal/TSI	Total	Non-indigenous	Māori	Pacific People	Total
2011	HD	1632 (75)	226 (337)	1858 (83)	157 (46)	89 (132)	73 (222)	319 (73)
	PD	524 (24)	32 (48)	556 (25)	91 (27)	41 (61)	22 (67)	154 (35)
	Graft	99 (5)	0 (0)	99 (4)	15 (4)	0 (0)	0 (0)	15 (3)
2012	HD	1611 (73)	211 (308)	1822 (80)	134 (40)	119 (174)	77 (229)	330 (75)
	PD	629 (29)	44 (64)	673 (30)	100 (30)	48 (70)	19 (57)	167 (38)
	Graft	80 (4)	0 (0)	80 (4)	16 (5)	1 (1)	1 (3)	18 (4)
2013	HD	1563 (70)	234 (335)	1797 (78)	136 (40)	127 (183)	94 (273)	357 (80)
	PD	667 (30)	42 (60)	709 (31)	95 (28)	60 (87)	24 (70)	179 (40)
	Graft	83 (4)	0 (0)	83 (4)	16 (5)	2 (3)	1 (3)	19 (4)
2014	HD	1556 (68)	247 (346)	1803 (77)	132 (38)	108 (154)	105 (297)	345 (77)
	PD	742 (33)	36 (50)	778 (33)	106 (31)	51 (73)	29 (82)	186 (41)
	Graft	82 (4)	4 (6)	86 (4)	20 (6)	0 (0)	1 (3)	21 (5)
2015	HD	1477 (64)	241 (330)	1718 (72)	119 (34)	110 (154)	62 (171)	291 (63)
	PD	686 (30)	36 (49)	722 (30)	124 (35)	46 (65)	40 (111)	210 (46)
	Graft	81 (4)	1 (1)	82 (3)	22 (6)	0 (0)	2 (6)	24 (5)

**Figure 12.1.1**



**Figure 12.1.2**



## Primary Renal Disease

The primary renal diseases of new patients over 2011-2015 are shown in table 12.2. Diabetes is by far the most common cause of ESKD in Aboriginal and Torres Strait Islanders, Māori and Pacific Peoples, followed by glomerulonephritis.

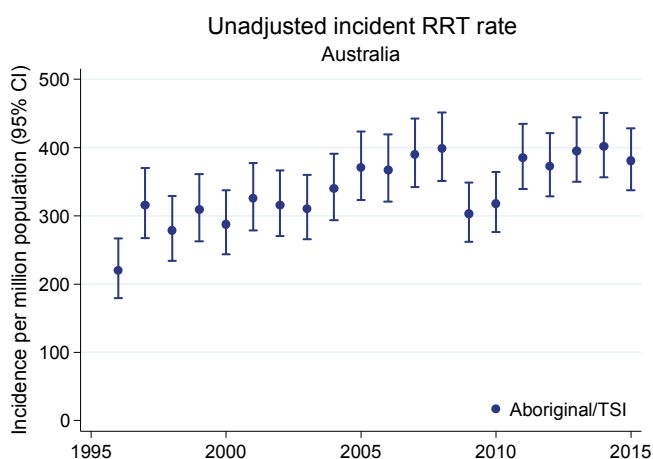
**Table 12.2 Primary Renal Disease of New Patients 2011- 2015**

Primary Renal Disease	Australia		New Zealand		
	Non-indigenous	Aboriginal/TSI	Non-indigenous	Māori	Pacific Peoples
<b>Glomerulonephritis</b>	2481 (22%)	128 (9%)	333 (26%)	110 (14%)	98 (18%)
<b>Analgesic</b>	133 (1%)	2 (<1%)	11 (1%)	2 (<1%)	2 (<1%)
<b>Polycystic</b>	766 (7%)	12 (1%)	106 (8%)	15 (2%)	7 (1%)
<b>Reflux</b>	261 (2%)	16 (1%)	46 (4%)	13 (2%)	7 (1%)
<b>Hypertension</b>	1663 (14%)	114 (8%)	181 (14%)	40 (5%)	30 (5%)
<b>Diabetic Nephropathy</b>	3807 (33%)	952 (70%)	343 (27%)	560 (70%)	369 (67%)
<b>Other</b>	1673 (15%)	55 (4%)	200 (16%)	40 (5%)	28 (5%)
<b>Uncertain</b>	587 (5%)	39 (3%)	55 (4%)	17 (2%)	6 (1%)
<b>Not reported</b>	141 (1%)	36 (3%)	8 (1%)	5 (1%)	3 (1%)
<b>Total</b>	<b>11512</b>	<b>1354</b>	<b>1283</b>	<b>802</b>	<b>550</b>

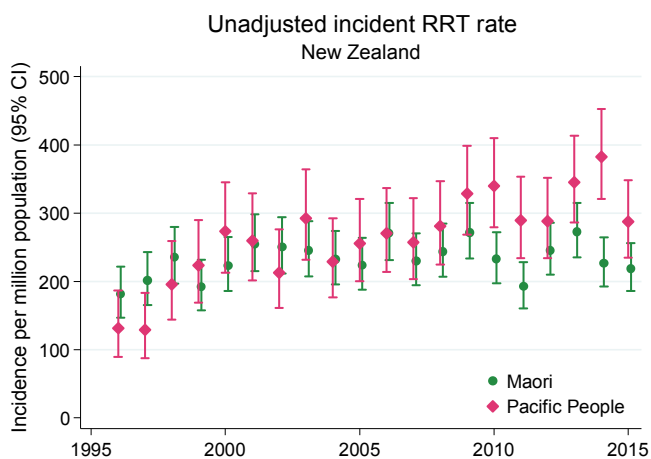
## Incidence Rates

Overall, the incidence rates (per million population) of indigenous peoples in Australia and NZ are considerably higher than those for non-indigenous people. Direct comparisons are confounded by the different age distributions - the indigenous population for both countries is considerably younger than the non-indigenous population. Although rates fluctuate from year to year, in both countries the indigenous incidence rates have stabilised in recent years (figure 12.2). The relative rate differs with age and also (for Aboriginal Australians) with gender - this is illustrated in figures 12.3 and 12.4.

**Figure 12.2.1**



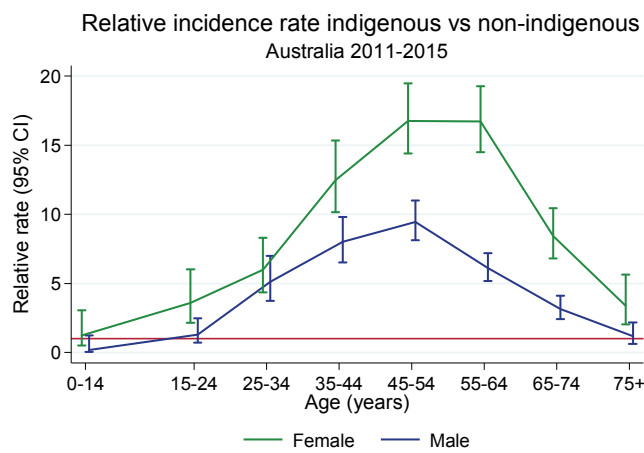
**Figure 12.2.2**



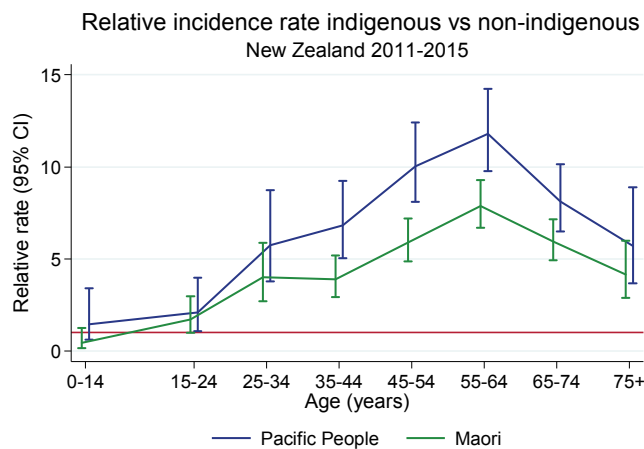
Among Aboriginal Australians, there is a marked excess relative rate among those aged 35-64 years. The relative rate is higher among females than males (figure 12.3).

Among Māori and Pacific People the excess rate is concentrated among older groups, and there is no gender difference (figure 12.4).

**Figure 12.3**



**Figure 12.4**

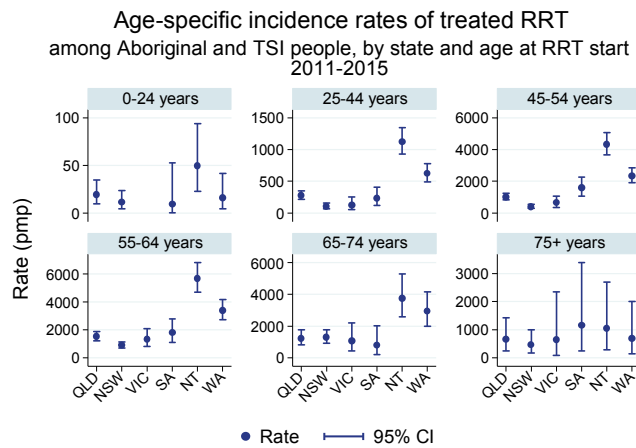


There is also considerable variation between Australian jurisdictions in the Aboriginal/TSI RRT incident rates. The incidence rates for each State/Territory can be seen in figure 12.5.

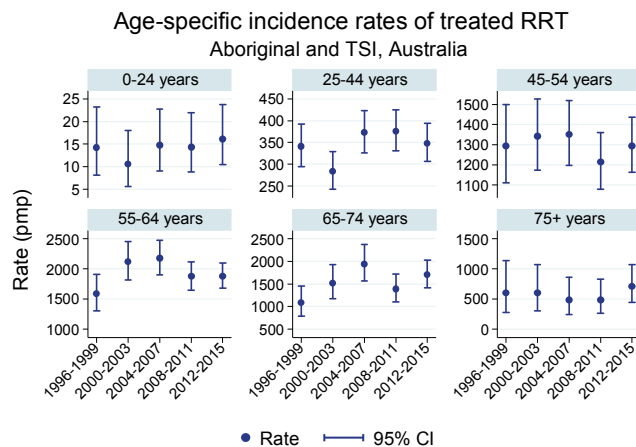
While rates for the very young (<25 years) and older (>75 years) groups are similar in each State/Territory, the rates for people 25-74 years of age show a clear trend of progressively higher rates from NSW/Victoria to Queensland then South Australia, Western Australia and the Northern Territory. Data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

The overall stabilisation of rates among Aboriginal Australians is seen consistently across each age group (figure 12.6). There are a number of factors which contribute to incident numbers of RRT (among both indigenous and non-indigenous people). It is not clear whether this stabilisation reflects the underlying rates of diabetes, rates of disease progression, referral patterns or other diseases.

**Figure 12.5**



**Figure 12.6**



Age specific trends for Māori and Pacific Peoples are shown in figures 12.7 and 12.8 respectively. Note that the Y axis scales vary.

Figure 12.7

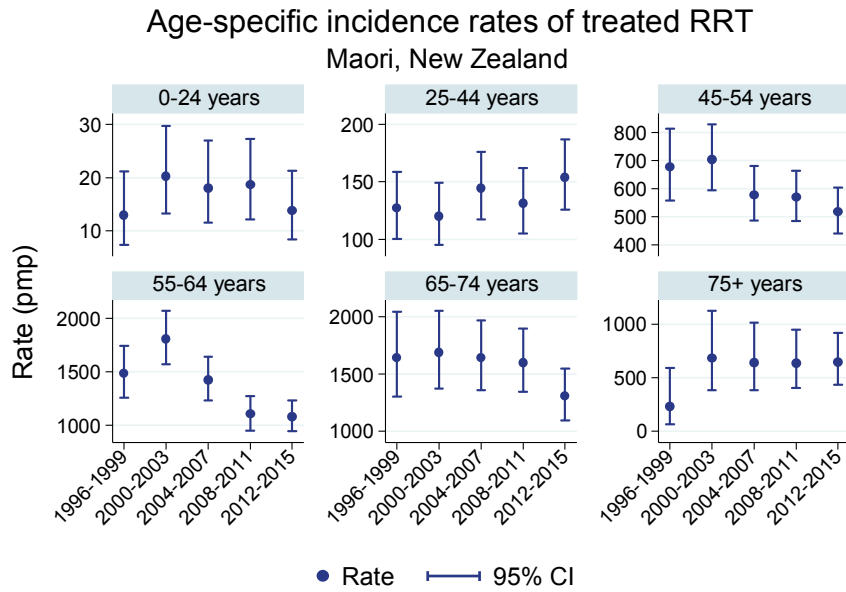
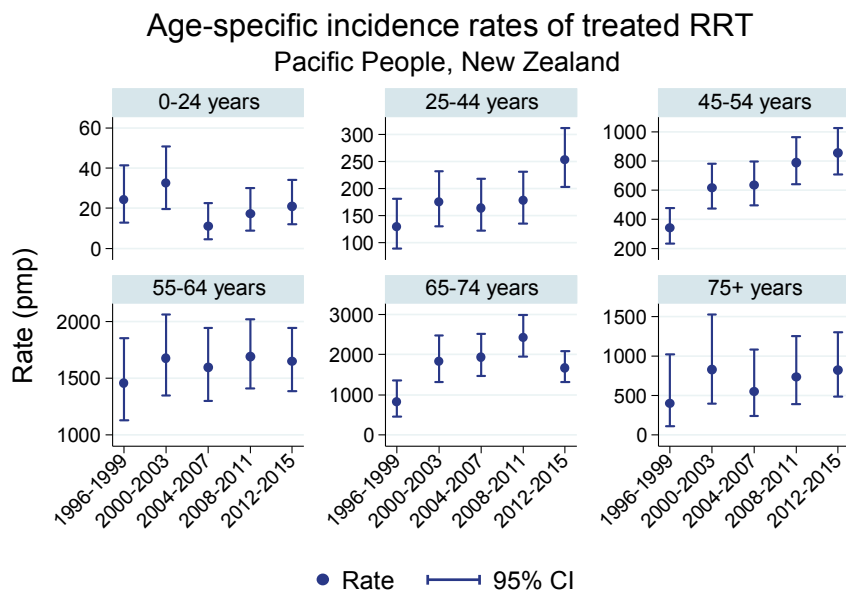


Figure 12.8



## Treatment of Prevalent Patients

The number of prevalent Aboriginal and Torres Strait Islander People with treated end-stage kidney disease increased to 1888, continuing a gradual increase (table 12.3). The percentage of Aboriginal/TSI on home haemodialysis was 6% in 2015 (this includes patients who perform independent self-care dialysis in community settings).

The percentage of Aboriginal/TSI patients treated with peritoneal dialysis was steady in 2015 at 7%.

The number of prevalent Māori and Pacific People with treated end-stage kidney disease continues to rise (table 12.3). The percentage of Māori treated with home haemodialysis (23% of HD) remains similar to past years, whilst in Pacific People this percentage (22%) has increased since 2011.

Table 12.3 Number of People with End Stage Kidney Disease by Treatment Modality 2011 - 2015						
		Australia		New Zealand		
Year	Modality	Non-indigenous	Aboriginal/TSI	Non-indigenous	Māori	Pacific People
2011	HD	7814 (42%)	1176 (78%)	648 (28%)	502 (56%)	448 (68%)
	% HD at home	12%	7%	36%	25%	16%
	PD	1945 (11%)	135 (9%)	429 (18%)	247 (28%)	119 (18%)
	Tx	8670 (47%)	191 (13%)	1254 (54%)	140 (16%)	88 (13%)
2012	HD	7980 (42%)	1277 (79%)	665 (28%)	534 (58%)	491 (71%)
	% HD at home	13%	8%	39%	24%	18%
	PD	2092 (11%)	149 (9%)	425 (18%)	240 (26%)	111 (16%)
	Tx	9058 (47%)	192 (12%)	1284 (54%)	148 (16%)	89 (13%)
2013	HD	8160 (41%)	1326 (79%)	660 (27%)	564 (57%)	533 (72%)
	% HD at home	13%	8%	35%	25%	20%
	PD	2146 (11%)	156 (9%)	436 (18%)	286 (29%)	111 (15%)
	Tx	9433 (48%)	205 (12%)	1329 (55%)	146 (15%)	94 (13%)
2014	HD	8218 (40%)	1424 (79%)	680 (28%)	606 (59%)	572 (72%)
	% HD at home	13%	7%	34%	24%	21%
	PD	2324 (11%)	151 (8%)	431 (17%)	270 (26%)	116 (15%)
	Tx	9827 (48%)	220 (12%)	1356 (55%)	156 (15%)	105 (13%)
2015	HD	8319 (40%)	1513 (80%)	686 (27%)	623 (61%)	568 (70%)
	% HD at home	13%	6%	31%	23%	22%
	PD	2334 (11%)	134 (7%)	437 (17%)	226 (22%)	127 (16%)
	Tx	10240 (49%)	241 (13%)	1404 (56%)	170 (17%)	118 (15%)

## New Transplants

In both Australia and New Zealand numbers of transplants to indigenous recipients were low (table 12.4). Information on donor source is shown in figures 12.9 and 12.10 (showing trends). There are substantially lower rates of living donation among indigenous groups in Australia, with a lesser difference in New Zealand.

Table 12.4 Number of Transplant Recipients by Indigenous Status 2006 - 2015						
		Australia		New Zealand		
Year	Donor type	Non-indigenous	Aboriginal/TSI	Non-indigenous	Māori	Pacific People
2006	DD	344	24	31	6	4
	LD	270	3	42	4	3
	<b>Total</b>	614	27	73	10	7
2007	DD	330	14	55	8	2
	LD	267	4	45	9	4
	<b>Total</b>	597	18	100	17	6
2008	DD	435	24	42	5	6
	LD	347	7	58	7	4
	<b>Total</b>	782	31	100	12	10
2009	DD	426	20	38	11	5
	LD	323	4	58	8	1
	<b>Total</b>	749	24	96	19	6
2010	DD	522	28	32	13	5
	LD	296	0	49	7	4
	<b>Total</b>	818	28	81	20	9
2011	DD	544	26	40	14	7
	LD	253	2	49	6	2
	<b>Total</b>	797	28	89	20	9
2012	DD	586	20	37	11	6
	LD	230	0	49	4	1
	<b>Total</b>	816	20	86	15	7
2013	DD	598	30	45	5	6
	LD	249	1	53	4	2
	<b>Total</b>	847	31	98	9	8
2014	DD	604	37	44	13	9
	LD	252	4	56	9	7
	<b>Total</b>	856	41	100	22	16
2015	DD	663	33	44	13	16
	LD	217	3	54	15	5
	<b>Total</b>	880	36	98	28	21

Figure 12.9

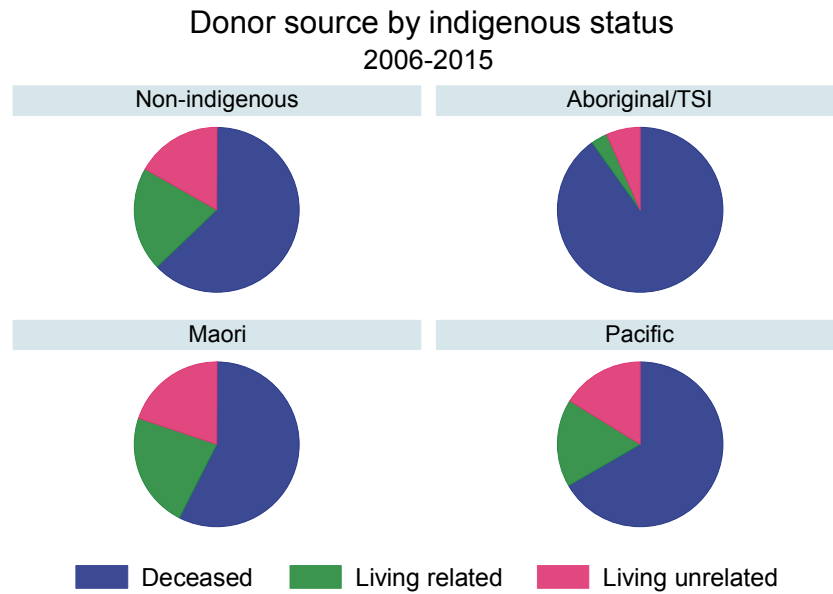
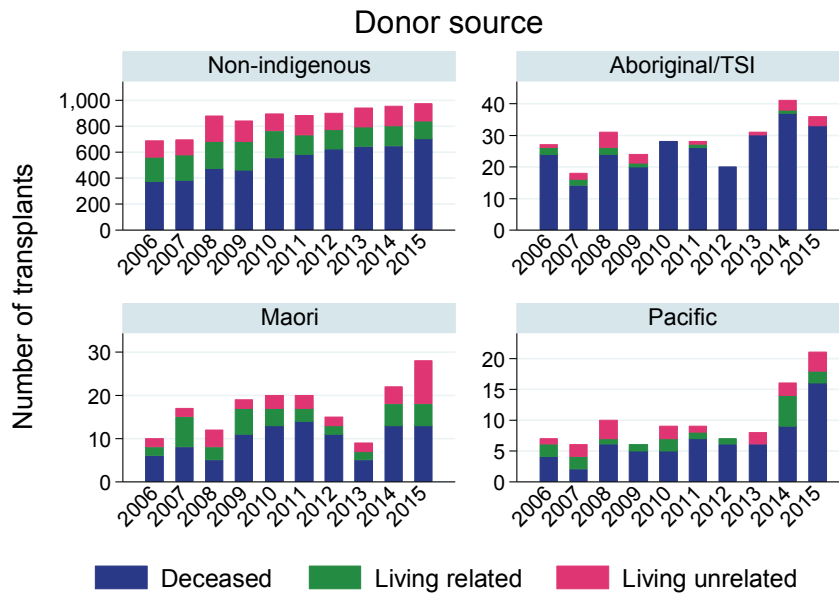


Figure 12.10



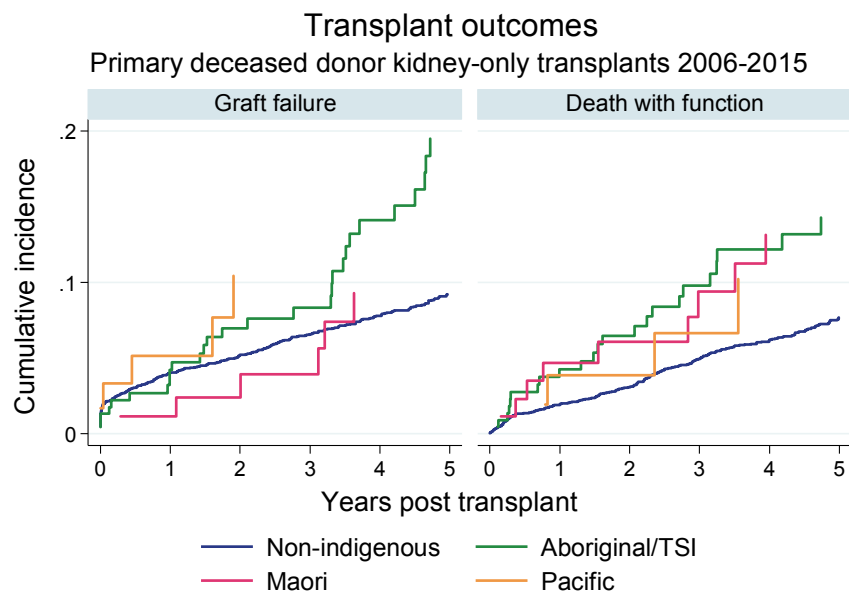
Over the period 2006-2015 there has been a gradual, but small, increase in the number of deceased donor transplants overall, but this trend is less clear in the Australian Indigenous Patients. Numbers from living donors remain extremely low.

The number of transplants to Māori and Pacific Peoples recipients increased in 2014-15. In contrast to the situation in Australia, there is a higher proportion of transplants from living donors.

## Transplant Outcomes

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 12.11. It can be seen that for Aboriginal and TSI, there are higher rates of loss of graft function, and substantially higher rates of death with graft function compared with non-indigenous patients. Both of these differences are progressive over time. For Māori patients, the excess rate of death with function is less pronounced. Pacific People have a higher rate of graft failure; there are insufficient data to examine death with function.

Figure 12.11



## Dialysis Modality

The distribution of dialysis modality is shown graphically in figure 12.12. Among indigenous Australians (figure 12.12.1), the principal differences are a substantially lower proportion of home HD and APD. Similar data are shown for New Zealand in figure 12.12.2. Again, rates of home treatments (home HD in particular) are lower among the indigenous groups.

Figure 12.12.1

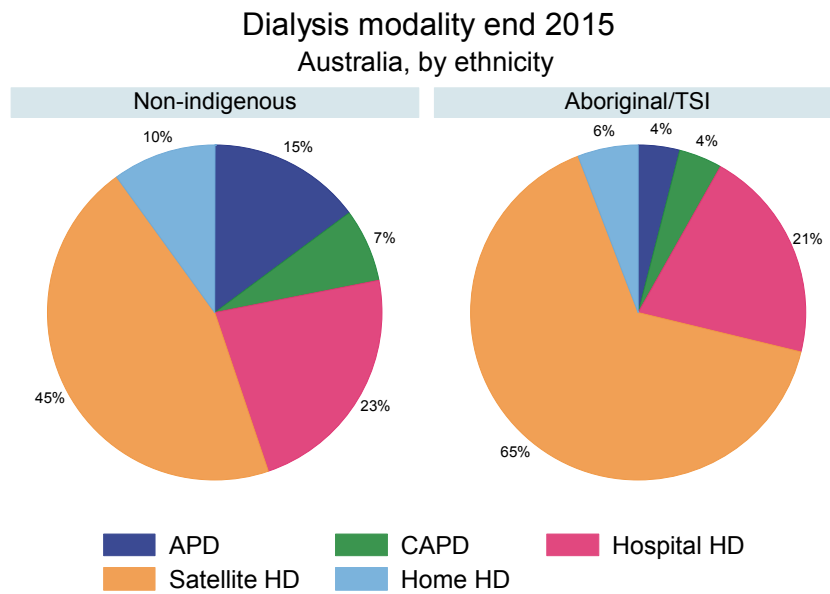
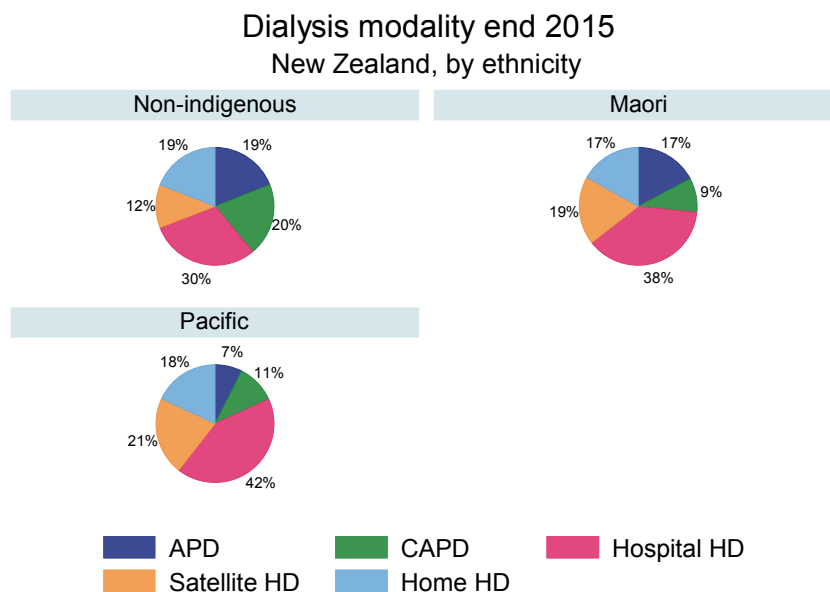


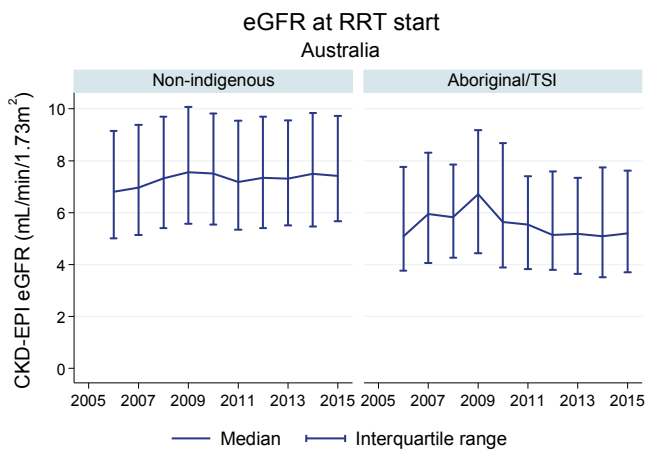
Figure 12.12.2



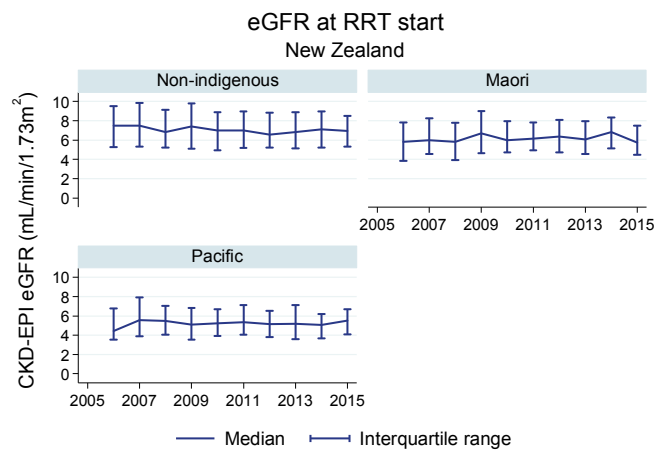
## Timing of Renal Replacement Therapy Initiation

In Australia there has been a gradual trend towards lower eGFR at the time of renal replacement therapy start in Aboriginal/TSI patients since 2010 although this has stabilized in recent years (figure 12.13). In New Zealand eGFR at RRT start is steady among all groups.

**Figure 12.13.1**



**Figure 12.13.2**



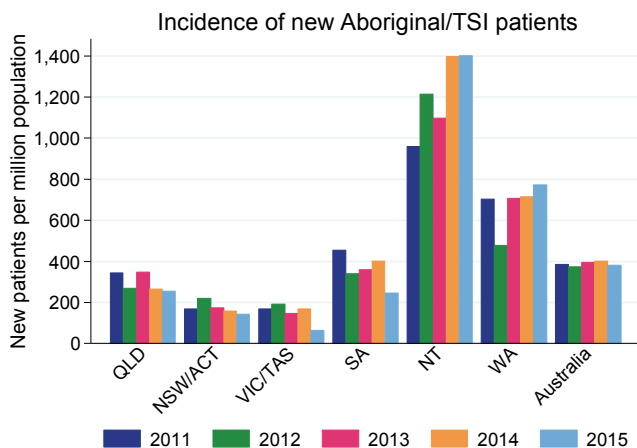
## Incidence and Prevalence by State/Territory/Country

The next two pages show a variety of figures that summarise various key rates (incidence, prevalence, transplant rates) among indigenous people in Australia and New Zealand. In large part they show information from previous pages, in a series of differing formats.

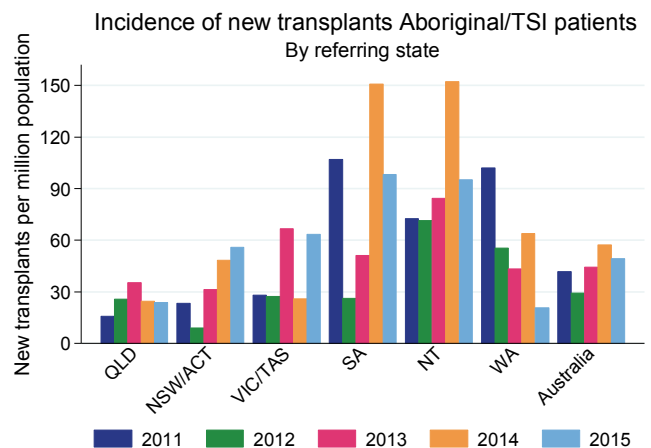
### State Incidence

The Northern Territory had the highest national incidence among indigenous people of treated end-stage kidney disease in Australia at (1402pmp) in 2015; the next highest was in Western Australia (772pmp) (figure 12.14).

**Figure 12.14**



**Figure 12.15**



## Dialysis by Resident State

Treatment patterns for Aboriginal and Torres Strait Islander People vary by State. The highest rates for hemodialysis are in the Northern Territory, Western Australia and South Australia. The highest rates for peritoneal dialysis are in the Queensland, Western Australia and Northern Territory.

Figure 12.16

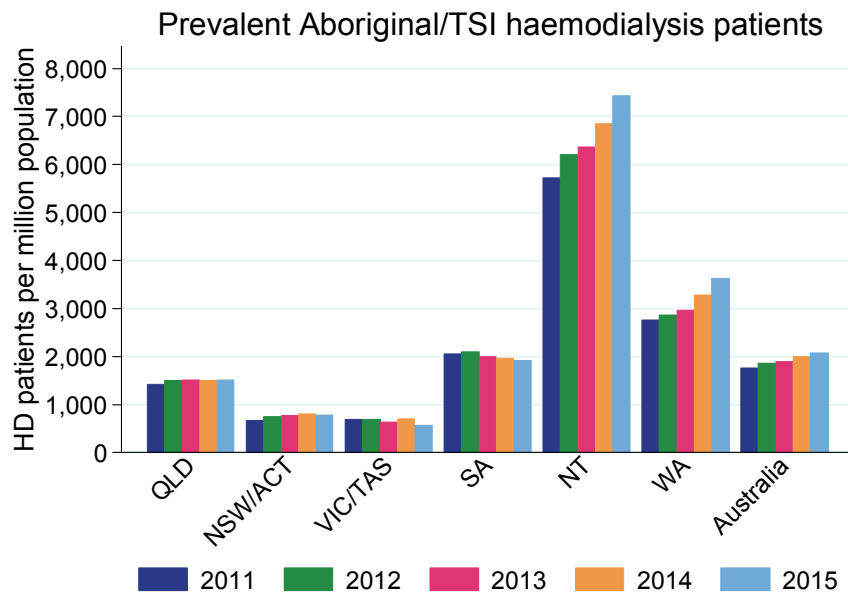
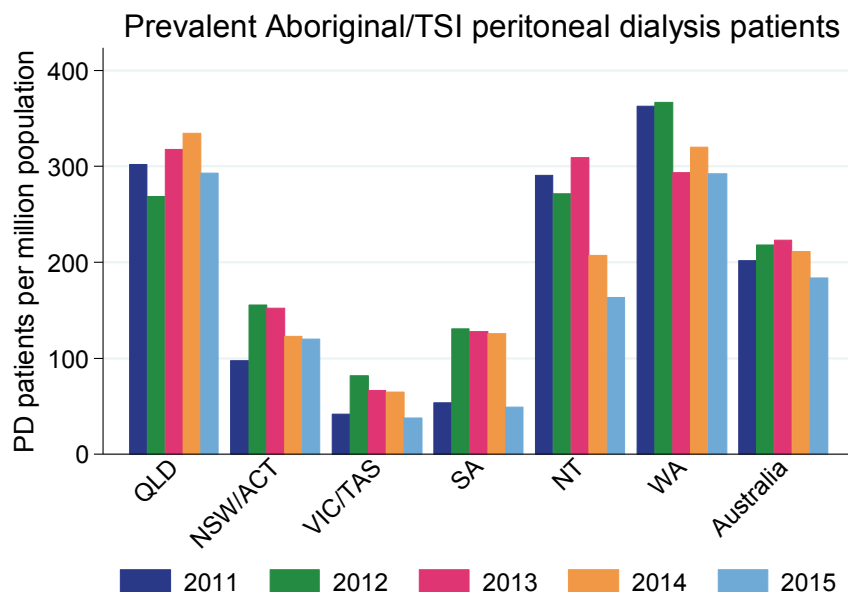


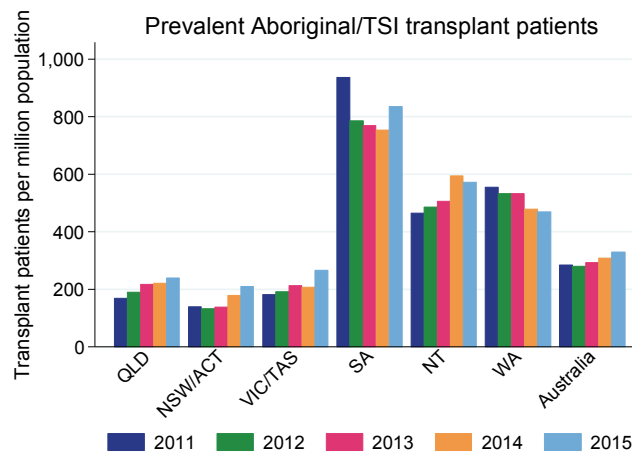
Figure 12.17



## Transplant by Referring State

Rates of prevalent transplants vary substantially between States with the highest rates in South Australia Western Australian and Northern Territory. These rates are per population, not per dialysis patient, and they reflect both background rates of kidney disease and transplant rates.

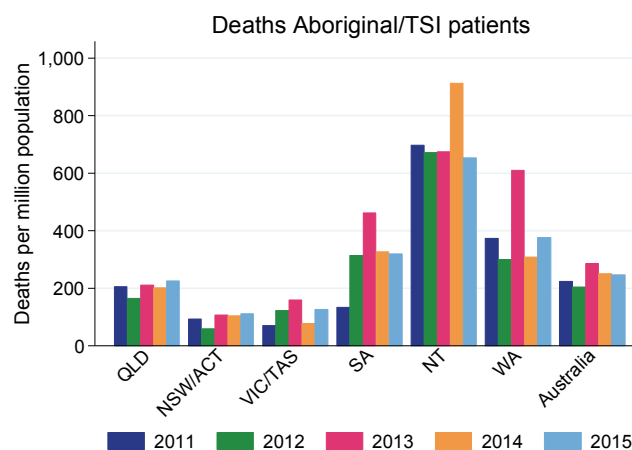
**Figure 12.18**



## Deaths by Resident State

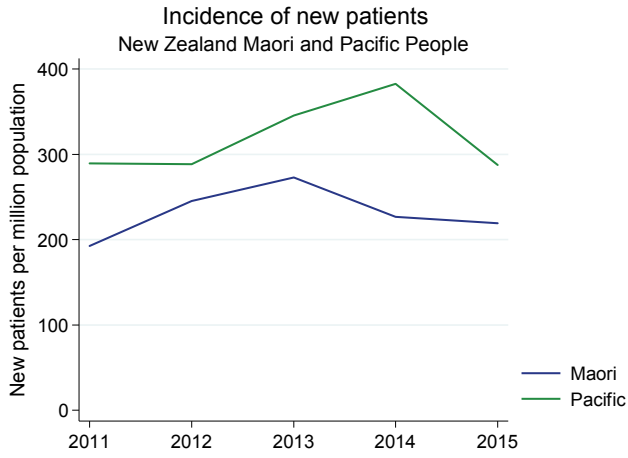
State based mortality rates of Aboriginal and Torres Strait Islander People on renal replacement therapy are shown in Figure 12.19.

**Figure 12.19**

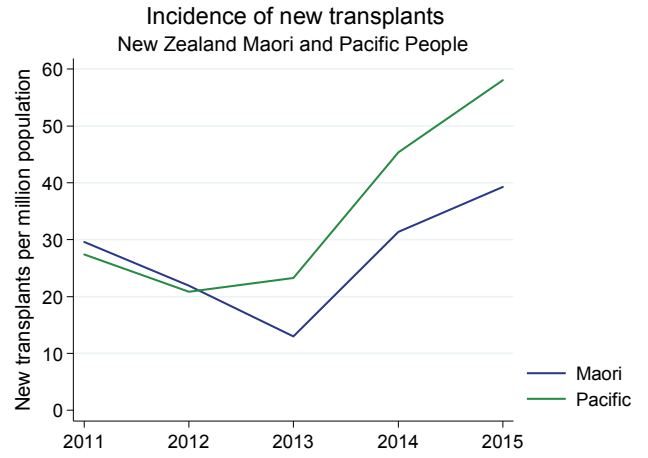


# New Zealand

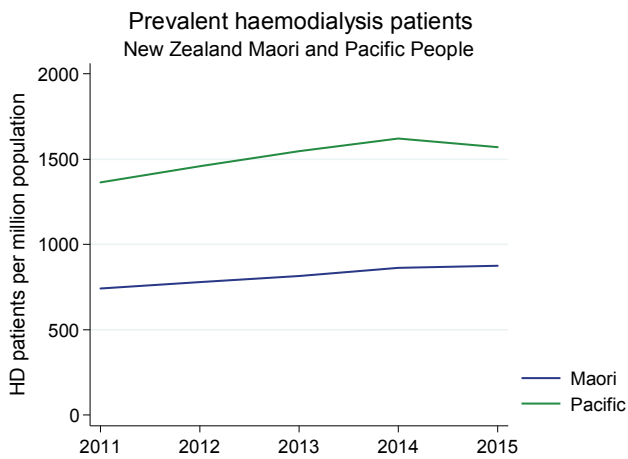
**Figure 12.20**



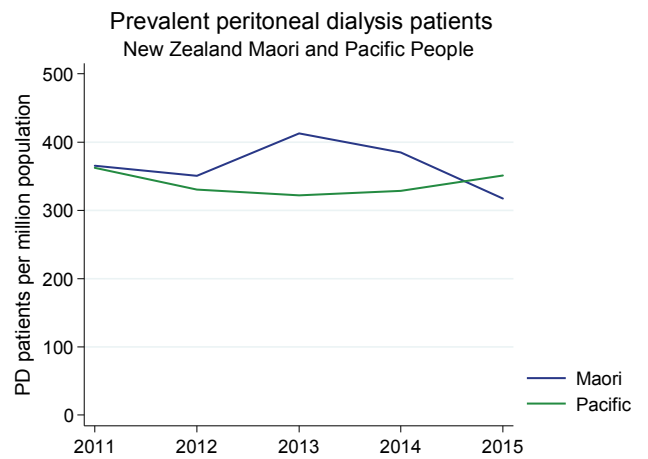
**Figure 12.21**



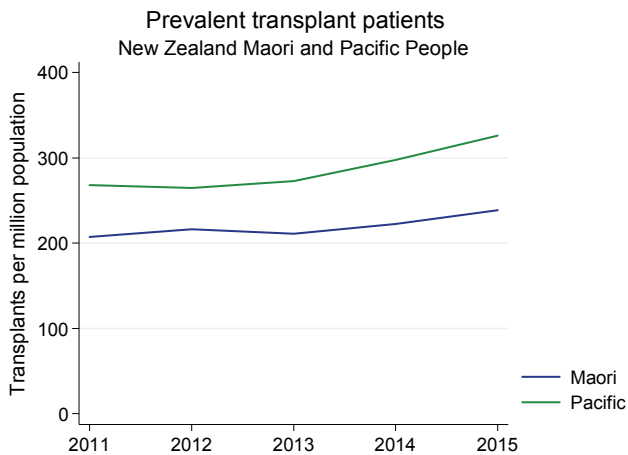
**Figure 12.22**



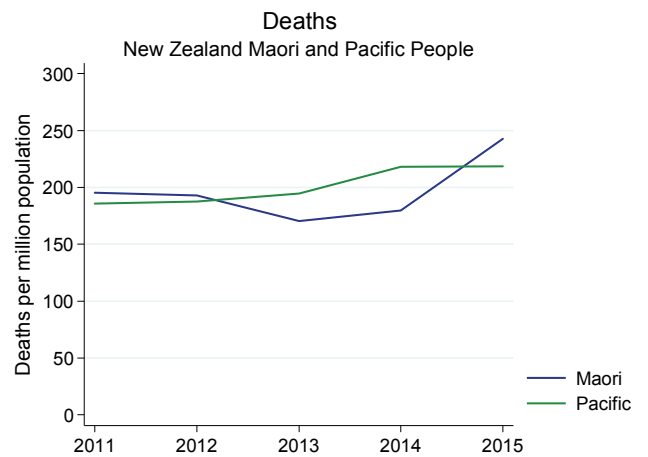
**Figure 12.23**



**Figure 12.24**



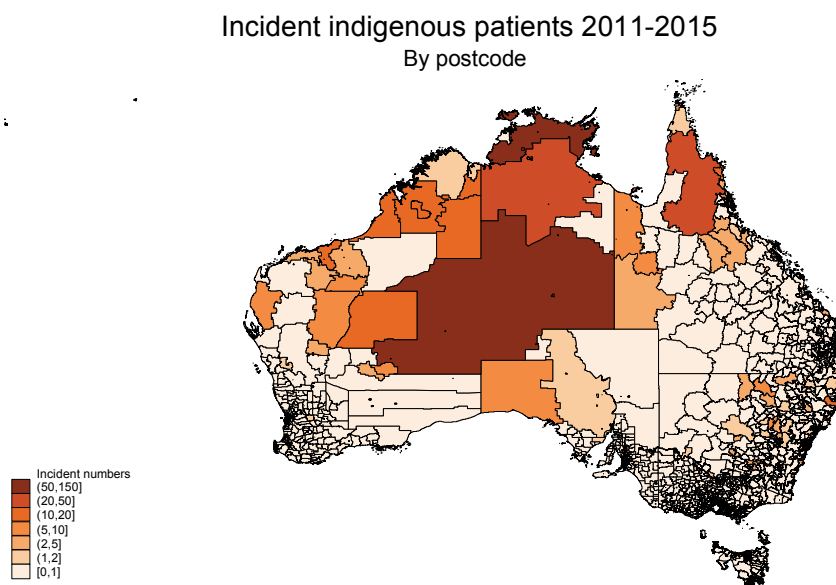
**Figure 12.25**



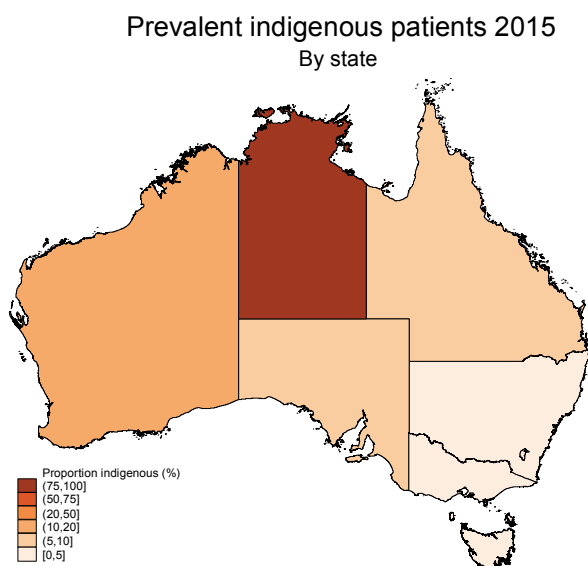
## Geographical Distribution

Figure 12.26 shows the number of incident Aboriginal/TSI patients by postcode. The distribution of prevalent dialysis patients is summarised in figure 12.27 (by state) and 12.28 by statistical subdivision (SSD, obtained by mapping postcodes to SSD). Note that some postcodes are distributed over more than one SSD. Mapping data are courtesy of the Australian Bureau of Statistics.

**Figure 12.26**

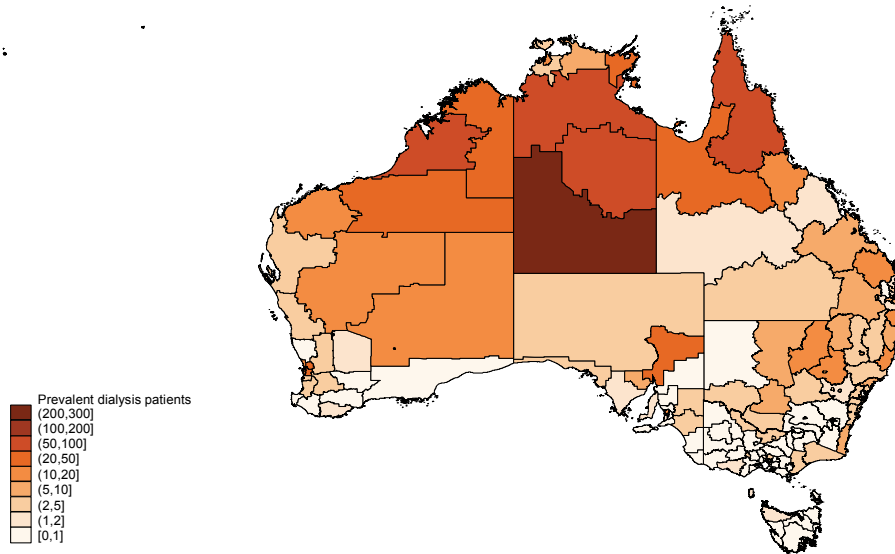


**Figure 12.27**



**Figure 12.28**

**Prevalent indigenous dialysis patients 2015**  
By statistical subdivision



**Late Referral**

The percentage of Aboriginal and Torres Strait Islander People referred late for treatment has been stable over 2013-2015 with the same rates and Patterns as seen in the Non-Indigenous population (table 12.5). The proportion of Māori people referred late in 2015 increased to 16% from 8% in 2014. For Pacific People, the proportion referred late decreased to 11% in 2015.

Table 12.5 Percentage of Late Referral by Indigenous Status 2011-2015					
Year	Australia		New Zealand		
	Non-indigenous	Aboriginal/TSI	Non-indigenous	Māori	Pacific People
2011	22%	30%	22%	18%	26%
2012	22%	25%	15%	17%	17%
2013	19%	17%	11%	15%	22%
2014	18%	15%	14%	8%	20%
2015	18%	17%	13%	16%	11%

## Vascular Access

Incident vascular access data are presented in table 12.6, and prevalent data in table 12.7. In Australia the proportion of indigenous patients commencing dialysis with a catheter rather than permanent access was slightly higher than in non-indigenous patients in 2015 (table 12.6). In New Zealand rates of catheter use are similar between non-indigenous, Māori and Pacific People.

**Table 12.6 Incident Vascular Access 2011-2015**

		Australia		New Zealand		
Year	Vascular access	Non-indigenous	Aboriginal/TSI	Non-indigenous	Māori	Pacific People
2011	AVF	641 (39%)	85 (38%)	41 (26%)	25 (28%)	10 (14%)
	AVG	28 (2%)	2 (1%)	1 (1%)	0 (0%)	1 (1%)
	CVC	830 (51%)	110 (49%)	104 (66%)	51 (57%)	49 (67%)
	Not reported	133 (8%)	29 (13%)	11 (7%)	13 (15%)	13 (18%)
2012	AVF	583 (36%)	69 (33%)	38 (28%)	30 (25%)	20 (26%)
	AVG	21 (1%)	3 (1%)	3 (2%)	0 (0%)	0 (0%)
	CVC	791 (49%)	108 (51%)	75 (56%)	68 (57%)	38 (49%)
	Not reported	216 (13%)	31 (15%)	18 (13%)	21 (18%)	19 (25%)
2013	AVF	495 (32%)	45 (19%)	37 (27%)	24 (19%)	19 (20%)
	AVG	23 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	CVC	743 (48%)	112 (48%)	76 (56%)	62 (49%)	49 (52%)
	Not reported	302 (19%)	77 (33%)	23 (17%)	41 (32%)	26 (28%)
2014	AVF	544 (35%)	64 (26%)	30 (23%)	30 (28%)	16 (15%)
	AVG	22 (1%)	4 (2%)	1 (1%)	2 (2%)	1 (1%)
	CVC	687 (44%)	122 (49%)	76 (58%)	51 (47%)	54 (51%)
	Not reported	303 (19%)	57 (23%)	25 (19%)	25 (23%)	34 (32%)
2015	AVF	622 (42%)	90 (37%)	30 (25%)	31 (28%)	24 (39%)
	AVG	18 (1%)	3 (1%)	2 (2%)	3 (3%)	0 (0%)
	CVC	801 (54%)	145 (60%)	83 (70%)	76 (69%)	38 (61%)
	Not reported	36 (2%)	3 (1%)	4 (3%)	0 (0%)	0 (0%)

## Prevalent Vascular Access 2011-2015

In contrast to incident vascular access, the rates of catheter use in prevalent dialysis patients in Australia are similar between non-indigenous and indigenous patients (table 12.7). Rates in New Zealand are also similar.

Tab 12.7 Prevalent Vascular Access 2011-2015

Year	Vascular access	Australia		New Zealand		
		Non-indigenous	Aboriginal/TSI	Non-indigenous	Māori	Pacific People
2011	AVF	6081 (78%)	981 (83%)	457 (71%)	371 (74%)	341 (76%)
	AVG	660 (8%)	37 (3%)	38 (6%)	34 (7%)	8 (2%)
	CVC	1036 (13%)	152 (13%)	153 (24%)	95 (19%)	99 (22%)
	Not reported	37 (<1%)	6 (1%)	0 (0%)	2 (<1%)	0 (0%)
2012	AVF	6093 (76%)	1040 (81%)	467 (70%)	391 (73%)	373 (76%)
	AVG	622 (8%)	40 (3%)	33 (5%)	26 (5%)	9 (2%)
	CVC	1103 (14%)	165 (13%)	160 (24%)	113 (21%)	102 (21%)
	Not reported	162 (2%)	32 (3%)	5 (1%)	4 (1%)	7 (1%)
2013	AVF	6322 (77%)	1072 (81%)	460 (70%)	403 (71%)	403 (76%)
	AVG	589 (7%)	41 (3%)	39 (6%)	30 (5%)	18 (3%)
	CVC	1171 (14%)	202 (15%)	159 (24%)	129 (23%)	110 (21%)
	Not reported	78 (1%)	11 (1%)	2 (<1%)	2 (<1%)	2 (<1%)
2014	AVF	6256 (76%)	1142 (80%)	460 (68%)	455 (75%)	428 (75%)
	AVG	646 (8%)	45 (3%)	36 (5%)	29 (5%)	16 (3%)
	CVC	1103 (13%)	186 (13%)	169 (25%)	117 (19%)	122 (21%)
	Not reported	213 (3%)	51 (4%)	15 (2%)	5 (1%)	6 (1%)
2015	AVF	6211 (75%)	1158 (77%)	457 (67%)	426 (68%)	432 (76%)
	AVG	553 (7%)	45 (3%)	27 (4%)	35 (6%)	26 (5%)
	CVC	1081 (13%)	172 (11%)	184 (27%)	141 (23%)	105 (18%)
	Not reported	474 (6%)	138 (9%)	18 (3%)	21 (3%)	5 (1%)

## Patient Flow

Table 12.8.1 shows the overall flow of Aboriginal and Torres Strait Islander patients in Australia, by state.

<b>Table 12.8.1 Patient Flow (pmp) Australia 2011-2015</b>								
<b>Year</b>	<b>Event</b>	<b>QLD</b>	<b>NSW/ACT</b>	<b>VIC/TAS</b>	<b>SA</b>	<b>NT</b>	<b>WA</b>	<b>Australia</b>
<b>2011</b>	<b>New patients</b>	65 (344)	36 (168)	12 (169)	17 (454)	66 (959)	62 (702)	258 (385)
	<b>New Tx</b>	4 (21)	4 (19)	2 (28)	9 (241)	0 (0)	9 (102)	28 (42)
	<b>Preemptive Tx</b>	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	<b>Prevalent dialysis</b>	325 (1720)	165 (769)	52 (731)	79 (2112)	414 (6013)	276 (3127)	1311 (1957)
	<b>Prevalent Tx</b>	32 (169)	30 (140)	13 (183)	35 (936)	32 (465)	49 (555)	191 (285)
	<b>Total prevalence</b>	357 (1889)	195 (909)	65 (913)	114 (3047)	446 (6478)	325 (3682)	1502 (2242)
	<b>Deaths</b>	39 (206)	20 (93)	5 (70)	5 (134)	48 (697)	33 (374)	150 (224)
<b>2012</b>	<b>New patients</b>	52 (269)	48 (219)	14 (191)	13 (340)	85 (1215)	43 (477)	255 (373)
	<b>New Tx</b>	5 (26)	2 (9)	2 (27)	6 (157)	0 (0)	5 (56)	20 (29)
	<b>Preemptive Tx</b>	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	<b>Prevalent dialysis</b>	342 (1767)	198 (905)	57 (779)	85 (2226)	453 (6473)	291 (3231)	1426 (2085)
	<b>Prevalent Tx</b>	37 (191)	29 (133)	14 (191)	30 (786)	34 (486)	48 (533)	192 (281)
	<b>Total prevalence</b>	379 (1958)	227 (1037)	71 (970)	115 (3011)	487 (6959)	339 (3764)	1618 (2365)
	<b>Deaths</b>	32 (165)	13 (59)	9 (123)	12 (314)	47 (672)	27 (300)	140 (205)
<b>2013</b>	<b>New patients</b>	69 (348)	39 (175)	11 (147)	14 (359)	78 (1097)	65 (707)	276 (395)
	<b>New Tx</b>	7 (35)	7 (31)	5 (67)	8 (205)	0 (0)	4 (44)	31 (44)
	<b>Preemptive Tx</b>	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	<b>Prevalent dialysis</b>	364 (1836)	207 (927)	53 (707)	83 (2128)	475 (6678)	300 (3263)	1482 (2121)
	<b>Prevalent Tx</b>	43 (217)	31 (139)	16 (213)	30 (769)	36 (506)	49 (533)	205 (293)
	<b>Total prevalence</b>	407 (2053)	238 (1066)	69 (920)	113 (2898)	511 (7184)	349 (3796)	1687 (2414)
	<b>Deaths</b>	42 (212)	24 (108)	12 (160)	18 (462)	48 (675)	56 (609)	200 (286)
<b>2014</b>	<b>New patients</b>	54 (266)	36 (158)	13 (169)	16 (402)	101 (1397)	67 (714)	287 (402)
	<b>New Tx</b>	7 (34)	9 (40)	3 (39)	16 (402)	0 (0)	6 (64)	41 (57)
	<b>Preemptive Tx</b>	1 (5)	3 (13)	0 (0)	0 (0)	0 (0)	0 (0)	4 (6)
	<b>Prevalent dialysis</b>	374 (1840)	211 (926)	59 (767)	83 (2084)	510 (7054)	338 (3601)	1575 (2205)
	<b>Prevalent Tx</b>	45 (221)	41 (180)	16 (208)	30 (753)	43 (595)	45 (479)	220 (308)
	<b>Total prevalence</b>	419 (2062)	252 (1106)	75 (975)	113 (2837)	553 (7649)	383 (4081)	1795 (2513)
	<b>Deaths</b>	41 (202)	24 (105)	6 (78)	13 (326)	66 (913)	29 (309)	179 (251)
<b>2015</b>	<b>New patients</b>	53 (254)	33 (142)	5 (63)	10 (246)	103 (1402)	74 (772)	278 (381)
	<b>New Tx</b>	5 (24)	13 (56)	6 (76)	10 (246)	0 (0)	2 (21)	36 (49)
	<b>Preemptive Tx</b>	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
	<b>Prevalent dialysis</b>	376 (1804)	209 (898)	48 (609)	80 (1965)	558 (7594)	376 (3923)	1647 (2256)
	<b>Prevalent Tx</b>	50 (240)	49 (211)	21 (266)	34 (835)	42 (572)	45 (469)	241 (330)
	<b>Total prevalence</b>	426 (2044)	258 (1109)	69 (875)	114 (2801)	600 (8166)	421 (4392)	1888 (2586)
	<b>Deaths</b>	47 (226)	26 (112)	10 (127)	13 (319)	48 (653)	36 (376)	180 (247)

Table 12.8.2 shows the overall patient flow in New Zealand by ethnicity.

<b>Table 12.8.2 Patient Flow (pmp) New Zealand 2010-2014</b>				
<b>Year</b>	<b>Event</b>	<b>Non-Indigenous</b>	<b>Māori</b>	<b>Pacific</b>
<b>2011</b>	New patients	263 (78)	130 (192)	95 (289)
	New Tx	89 (26)	20 (30)	9 (27)
	Preemptive Tx	15 (4)	0 (0)	0 (0)
	Prevalent dialysis	1077 (319)	749 (1109)	567 (1727)
	Prevalent Tx	1254 (371)	140 (207)	88 (268)
	<b>Total prevalence</b>	<b>2331 (690)</b>	<b>889 (1316)</b>	<b>655 (1995)</b>
	Deaths	223 (66)	132 (195)	61 (186)
<b>2012</b>	New patients	250 (74)	168 (246)	97 (289)
	New Tx	86 (25)	15 (22)	7 (21)
	Preemptive Tx	16 (5)	1 (1)	1 (3)
	Prevalent dialysis	1090 (322)	774 (1131)	602 (1791)
	Prevalent Tx	1284 (379)	148 (216)	89 (265)
	<b>Total prevalence</b>	<b>2374 (701)</b>	<b>922 (1348)</b>	<b>691 (2055)</b>
	Deaths	202 (60)	132 (193)	63 (187)
<b>2013</b>	New patients	247 (73)	189 (273)	119 (345)
	New Tx	98 (29)	9 (13)	8 (23)
	Preemptive Tx	16 (5)	2 (3)	1 (3)
	Prevalent dialysis	1096 (322)	850 (1228)	644 (1870)
	Prevalent Tx	1329 (390)	146 (211)	94 (273)
	<b>Total prevalence</b>	<b>2425 (712)</b>	<b>996 (1439)</b>	<b>738 (2143)</b>
	Deaths	202 (59)	118 (170)	67 (195)
<b>2014</b>	New patients	258 (75)	159 (227)	135 (382)
	New Tx	100 (29)	22 (31)	16 (45)
	Preemptive Tx	20 (6)	0 (0)	1 (3)
	Prevalent dialysis	1111 (322)	876 (1249)	688 (1949)
	Prevalent Tx	1356 (392)	156 (222)	105 (297)
	<b>Total prevalence</b>	<b>2467 (714)</b>	<b>1032 (1471)</b>	<b>793 (2247)</b>
	Deaths	220 (64)	126 (180)	77 (218)
<b>2015</b>	New patients	265 (75)	156 (219)	104 (288)
	New Tx	98 (28)	28 (39)	21 (58)
	Preemptive Tx	22 (6)	0 (0)	2 (6)
	Prevalent dialysis	1123 (319)	849 (1192)	695 (1922)
	Prevalent Tx	1404 (399)	170 (239)	118 (326)
	<b>Total prevalence</b>	<b>2527 (718)</b>	<b>1019 (1431)</b>	<b>813 (2248)</b>
	Deaths	198 (56)	173 (243)	79 (218)

## Cause of Death

The causes of death in 2015 are shown in table 12.9, categorised by country, ethnicity and modality at time of death. Cardiovascular disease was the leading cause of death amongst all ethnic groups on dialysis, apart from non-indigenous dialysis patients in whom withdrawal was the most common cause of death.

Modality	Cause of death	Australia		New Zealand		
		Non-indigenous	Aboriginal/TSI	Non-indigenous	Māori	Pacific People
Dialysis	Cardiovascular	447 (31%)	51 (30%)	56 (34%)	69 (42%)	33 (45%)
	Withdrawal	505 (35%)	45 (26%)	53 (32%)	36 (22%)	7 (10%)
	Cancer	52 (4%)	6 (3%)	7 (4%)	7 (4%)	2 (3%)
	Infection	124 (9%)	27 (16%)	21 (13%)	21 (13%)	8 (11%)
	Other	319 (22%)	43 (25%)	30 (18%)	30 (18%)	23 (32%)
	<b>Total</b>		<b>1447</b>	<b>172</b>	<b>167</b>	<b>163</b>
Transplant	Cardiovascular	42 (19%)	1 (14%)	6 (21%)	3 (33%)	1 (25%)
	Withdrawal	21 (10%)	0 (0%)	1 (4%)	0 (0%)	0 (0%)
	Cancer	59 (27%)	3 (43%)	15 (54%)	1 (11%)	1 (25%)
	Infection	29 (13%)	1 (14%)	4 (14%)	2 (22%)	0 (0%)
	Other	65 (30%)	2 (29%)	2 (7%)	3 (33%)	2 (50%)
	<b>Total</b>		<b>216</b>	<b>7</b>	<b>28</b>	<b>9</b>

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