



# CHAPTER 9

## **Kidney Failure in Aotearoa New Zealand**

*ANZDATA gratefully acknowledges the patients and their whānau/families and the clinicians who provided data, and the contributions of the Aotearoa New Zealand Working Group and the National Renal Transplant Service.*

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## Summary and Highlights

This chapter presents information about the rates of kidney failure in Aotearoa New Zealand, including information stratified by age and ethnicity. Clinical care patterns for treatment of kidney failure including dialysis and transplantation are described. Population statistics are drawn from estimates provided by Statistics New Zealand to calculate disease and treatment rates<sup>1</sup>. Ethnicity population data are projections produced by Statistics New Zealand according to assumptions agreed to by the New Zealand Ministry of Health; these include data from the 2018 census and incorporate additional information gained from the post-enumeration survey.

The key findings of this report include:

### Incident and Prevalent Kidney Failure Patients

- Continual rise of in the rate of new patients starting treatment for kidney failure in Aotearoa New Zealand: 124 per million population (pmp) in 2016, 132 in 2019 and 139 in 2020. There is also a rise in total number of patients receiving treatment for kidney failure: 967 pmp in 2016, 989 pmp 2018, and 1022 pmp in 2020
- Diabetic kidney disease remains the main cause (48%) of new kidney failure patients (Figure 9.3), followed by glomerulonephritis. Māori (66%) and Pasifika (67%) people have a substantially higher rate of diabetic kidney disease than non-Māori, no-Pasifika patients (27%).

### Treatment Modality

- Increasing prevalence of hospital-based haemodialysis (Figure 9.9)
- 41% of the population received a form of home based dialysis: peritoneal dialysis, community house haemodialysis or home dialysis
- Maori (60%) and Pasifika (75%) are more likely to start dialysis in the form of haemodialysis than non-Maori and non-Pasifika (43%)

### Transplantation

- There is a drop in transplantation rate 37pmp in 2020 comparing to 47pmp in 2019 in Aotearoa New Zealand, which could be COVID-19 related
- Maori and Pasifika have lower proportion of transplantation and only 5 Maori and 0 Pasifika received pre-emptive renal transplantation in 2020
- There appears to be increasing proportion of Maori and Pasifika recipients who experienced graft loss at 5 years.

## Suggested Citation

ANZDATA Registry. 44th Report, Chapter 9: Kidney Failure in Aotearoa New Zealand. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2021. Available at: <http://www.anzdata.org.au>

# Kidney Replacement Therapy in Aotearoa New Zealand

## Incidence of Kidney Replacement Therapy (KRT)

In 2020, 710 adults and children started kidney replacement therapy (KRT) in Aotearoa New Zealand, equivalent to 139 per million of population (pmp) (figure 9.1 and table 9.1). The proportion of the Aotearoa New Zealand population commencing KRT is similar to that of Australia (139 versus 127 pmp in 2020).

Figure 9.1 - Incidence of Kidney Replacement Therapy - Aotearoa New Zealand 1991-2020

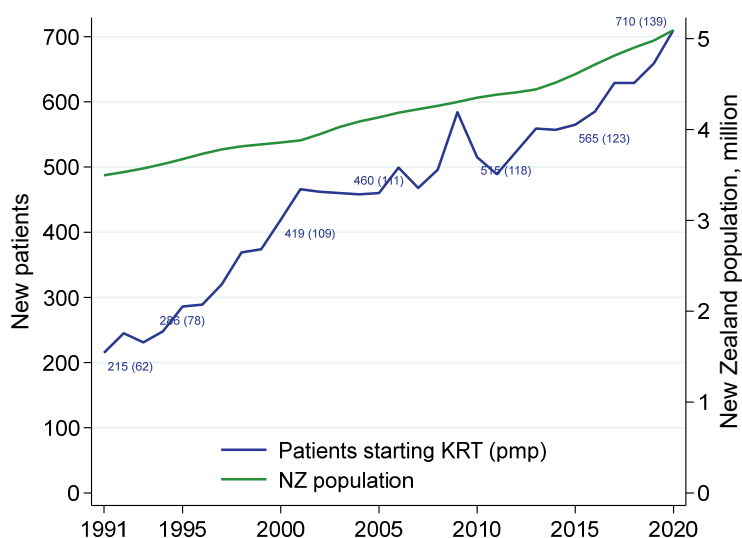
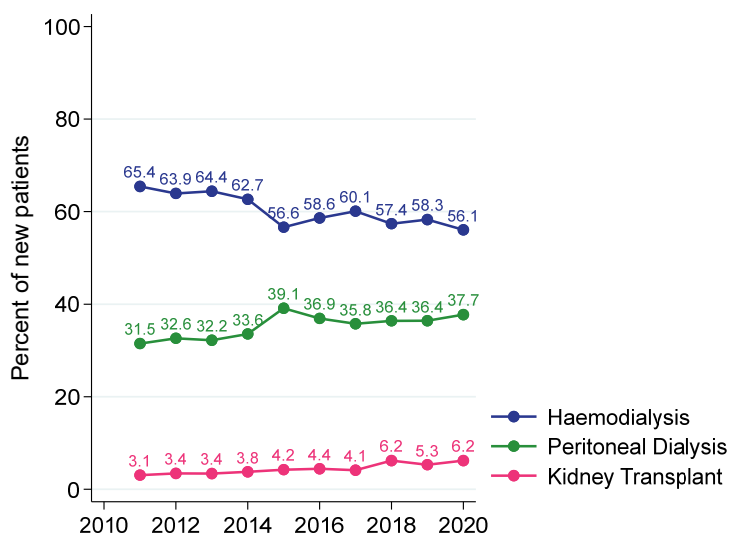


Table 9.1 Number (pmp) who Commenced Kidney Replacement Therapy in Aotearoa New Zealand, 2016-2020

	2016	2017	2018	2019	2020
<b>Total</b>	<b>585 (124)</b>	<b>629 (131)</b>	<b>629 (128)</b>	<b>659 (132)</b>	<b>710 (139)</b>
<b>Pre-Emptive Transplant</b>	26 (6)	26 (5)	39 (8)	35 (7)	44 (9)
<b>Haemodialysis</b>	343 (73)	378 (79)	361 (74)	384 (77)	398 (78)
<b>Peritoneal Dialysis</b>	216 (46)	225 (47)	229 (47)	240 (48)	268 (53)

Trends in the proportion of patients starting KRT by treatment modality are shown in figure 9.2.

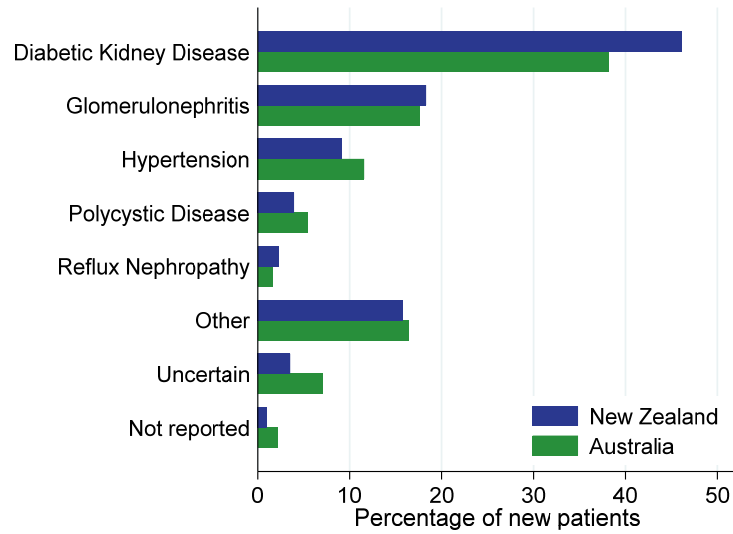
Figure 9.2 - Trends in Modality at Start of Kidney Replacement Therapy - Aotearoa New Zealand 2011-2020



## Primary Cause of Kidney Disease

Figure 9.3 shows the primary cause of kidney disease for all patients commencing KRT in 2020.

**Figure 9.3 - Primary Cause of Kidney Disease of New Patients Commencing Kidney Replacement Therapy, 2020**

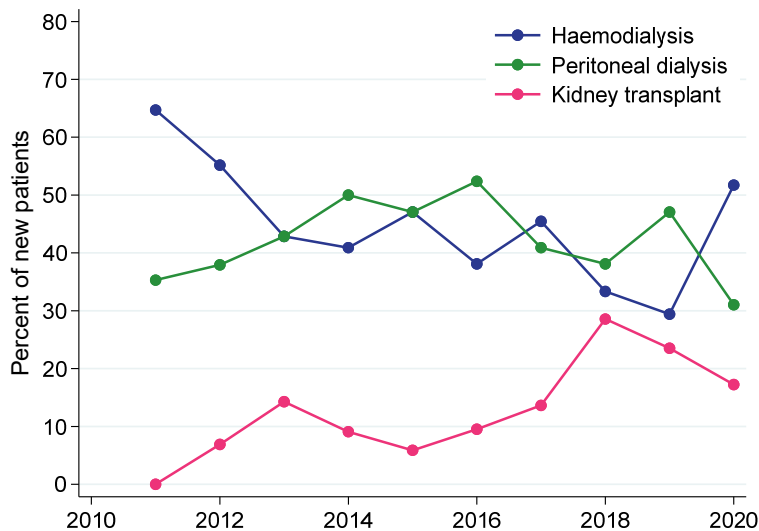


## Children and Young Adults

In 2020, 29 patients in the 0-24 age group commenced renal replacement therapy (18 pmp) in Aotearoa New Zealand. The incidence rate of KRT among young patients has ranged between 11 and 18 pmp from 2016-2020. The incidence rate of KRT is variable due to the low numbers of patients commencing KRT in this age group.

Of the 29 younger patients commencing KRT in Aotearoa New Zealand in 2020, 5 (17%) patients received a pre-emptive transplant, 9 (31%) patients commenced with peritoneal dialysis, and 15 (52%) patients commenced with haemodialysis (figure 9.4).

**Figure 9.4 - Children and Young Adults (0-24 years) Commencing KRT - Aotearoa New Zealand 2011-2020**

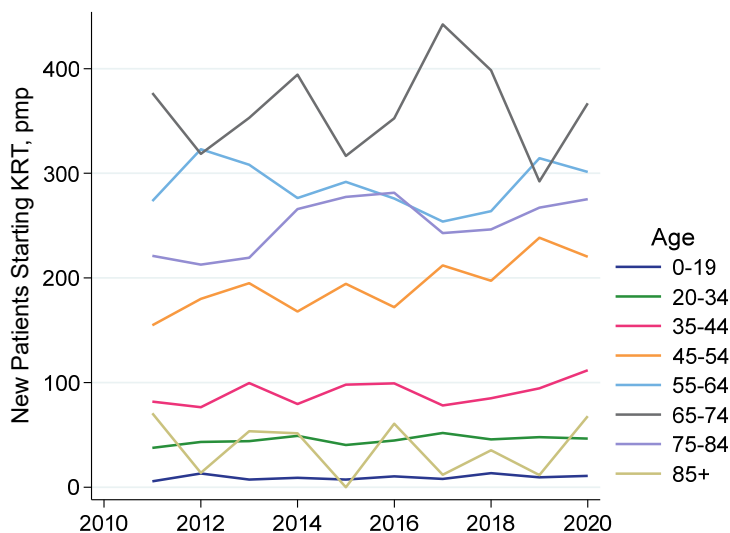


## Age

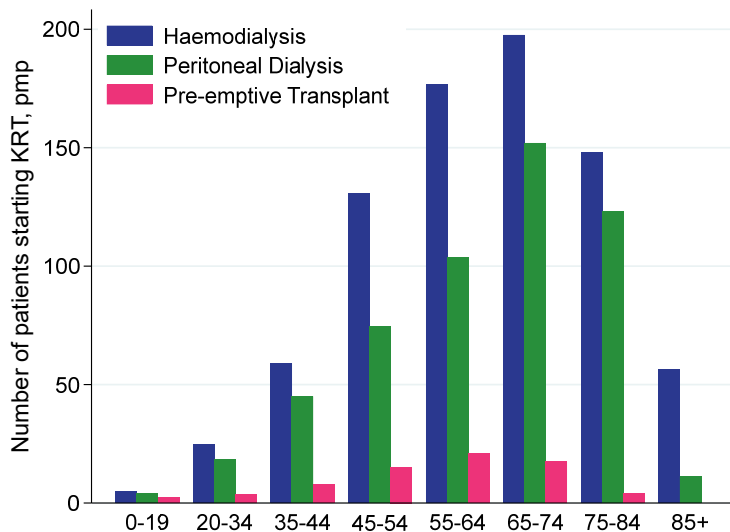
Kidney replacement therapy incidence rates vary widely by age group and modality (figures 9.5 and 9.6).

In 2020, the highest incidence of kidney replacement therapy in Aotearoa New Zealand is among people in the 65-74 age group (367 pmp). Children, young adults, and adults 85 years and older have the lowest rates of kidney replacement therapy

**Figure 9.5 - Incidence of Kidney Replacement Therapy by Age Group - Aotearoa New Zealand, 2011-2020**



**Figure 9.6 - Incidence of KRT by Age Group and Modality - Per Million Population, Aotearoa New Zealand 2020**



## Prevalence of Kidney Replacement Therapy

There were 5203 people (1022 pmp) receiving kidney replacement therapy in the form of dialysis or a kidney transplant in Aotearoa New Zealand at the end of 2020 (figures 9.7-9.8 and table 9.2). Overall Aotearoa New Zealand has a higher prevalence (590 pmp) of dialysis patients as compared with kidney transplant (432 pmp).

Figure 9.7 - Prevalence of Dialysis and Transplantation - Aotearoa New Zealand 1991-2020

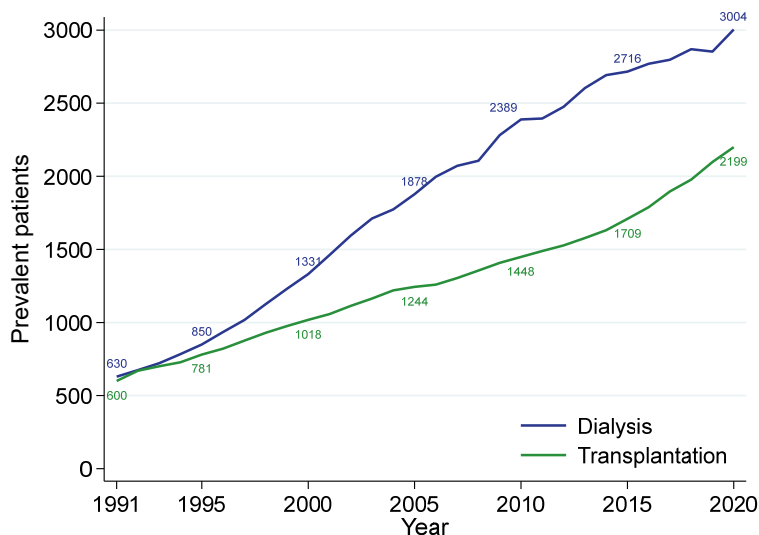
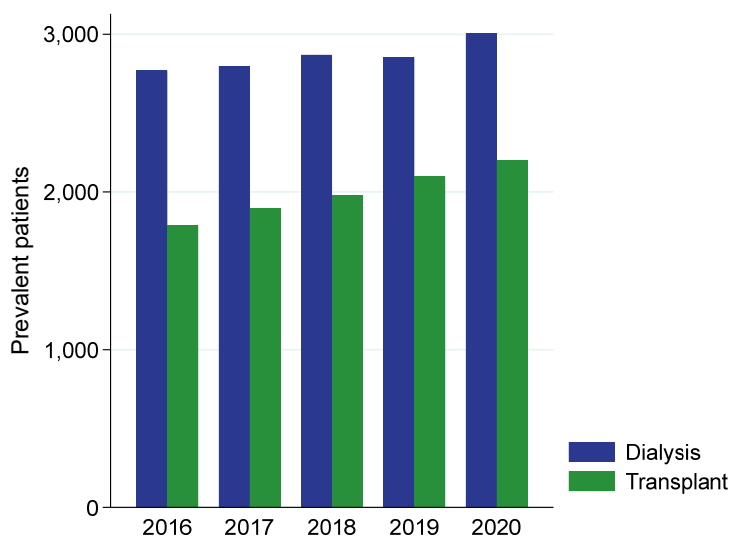


Table 9.2 Prevalence of Kidney Replacement Therapy (pmp) in Aotearoa New Zealand 2016-2020

	2016	2017	2018	2019	2020
<b>Total</b>	<b>4559 (967)</b>	<b>4693 (975)</b>	<b>4846 (989)</b>	<b>4951 (994)</b>	<b>5203 (1022)</b>
<b>Transplant</b>	1789 (379)	1896 (394)	1977 (403)	2098 (421)	2199 (432)
<b>Dialysis</b>	2770 (588)	2797 (581)	2869 (585)	2853 (573)	3004 (590)

Figure 9.8 - Prevalence of Kidney Replacement Therapy - Aotearoa New Zealand 2016-2020



## Dialysis

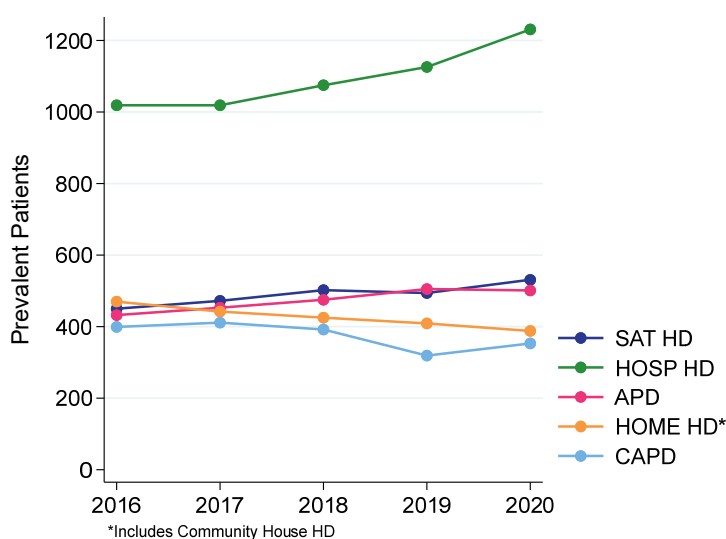
In 2020, 41% of the 3004 Aotearoa New Zealand dialysis patients were treated with home-based dialysis (peritoneal dialysis, community house haemodialysis or home haemodialysis).

17% of the dialysis population were treated with automated peritoneal dialysis, 12% with continuous ambulatory peritoneal dialysis, and 13% with home haemodialysis.

Figure 9.9 shows trends in the method and location of dialysis in Aotearoa New Zealand over 2016-2020.

The Registry has recognized that previous definitions for dialysis location have not accurately reflected the care delivery for all patients in Aotearoa New Zealand and in 2020 introduced new data definitions to capture patients receiving community based therapy. Due to the small numbers of Community House Dialysis patients reported to the registry in 2020 (33 patients across New Zealand) this data has been combined with Home Haemodialysis number for reporting purposes in this year's annual report.

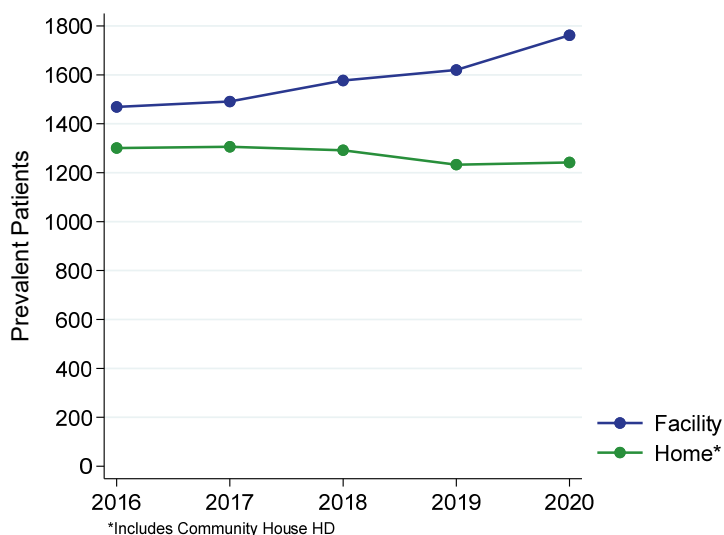
**Figure 9.9 - Method and Location of Dialysis - Aotearoa New Zealand, 2016-2020**



Overall, 59% of patients on dialysis were treated with haemodialysis in a satellite unit (18%) or in a hospital unit (41%).

Figure 9.10 shows trends in home (including community house) and facility-based dialysis in Aotearoa New Zealand over 2016-2020.

**Figure 9.10 - Home and Facility Based Dialysis - Aotearoa New Zealand, 2016-2020**

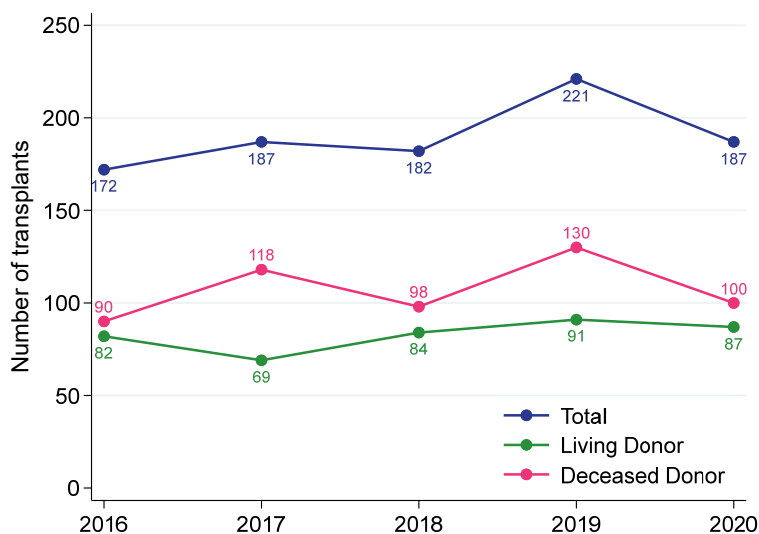




## Transplantation

In 2020, 187 patients (37 pmp) were treated with a kidney transplant (figure 9.11).

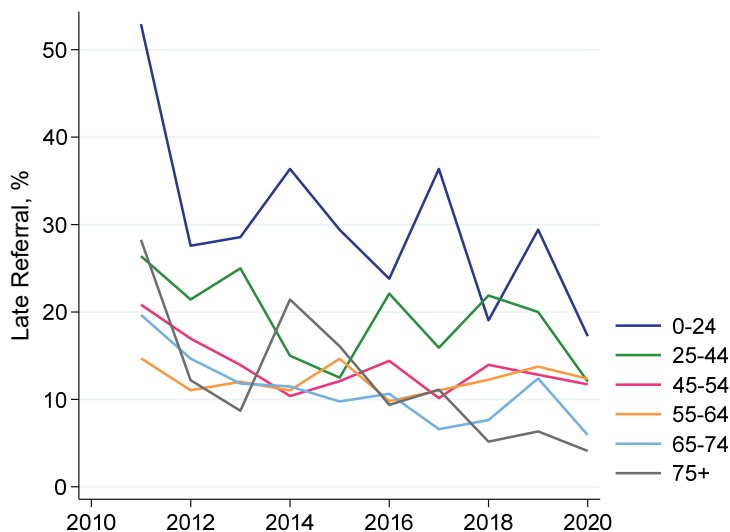
**Figure 9.11 - New Kidney Transplants in Aotearoa New Zealand 2016-2020**



## Late Referral to Nephrology Services

Figure 9.12 shows the rate of late referrals (defined as the first assessment by a specialist nephrologist within 3 months of commencing dialysis) in Aotearoa New Zealand over time by age group. Late referrals represented 10% of all patients who commenced kidney replacement therapy in 2020.

**Figure 9.12 - Late Referral Rates by Age Group - Aotearoa New Zealand 2011 – 2020**



## Ethnicity and Kidney Replacement Therapy in Aotearoa New Zealand

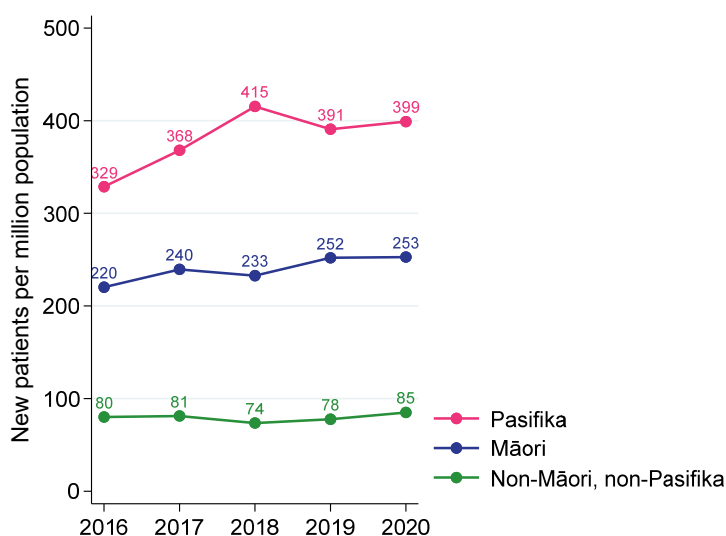
### New Patients

There are marked and persistent inequities in the incidence and prevalence of kidney failure and the kidney replacement therapies provided based on ethnicity in Aotearoa New Zealand.

The incidence of kidney replacement therapy is markedly higher among Pasifika (475 pmp) and Māori (253 pmp) patients, compared with Asian (99 pmp) and European and other ethnicities (79 pmp) (figure 9.13).

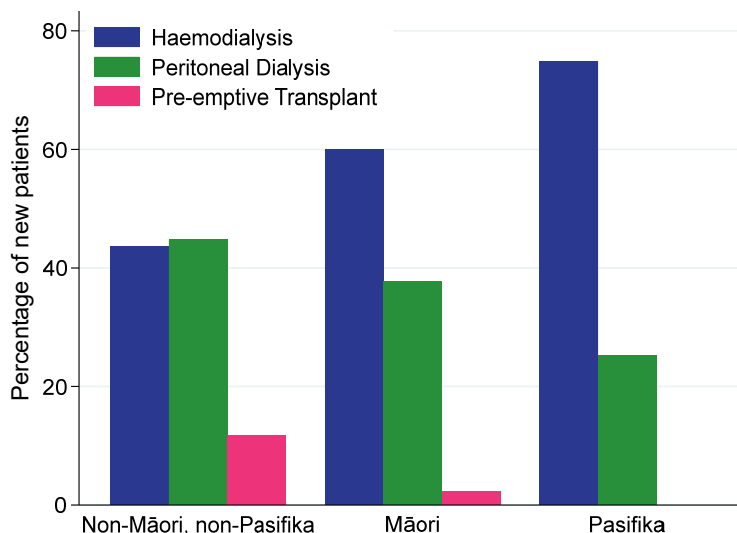
Please note that collection of ethnicity data in ANZDATA has evolved to align with Australian Bureau of Statistics Australian Standard Classification of Cultural and Ethnic Groups<sup>2</sup> and data collection now allows for a patient to nominate more than one ethnicity group, however, consultation 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 reporting will aim to report more accurately on patients identifying as more than one ethnicity.

**Figure 9.13 - Incidence of KRT by Ethnicity - Aotearoa New Zealand 2016-2020**



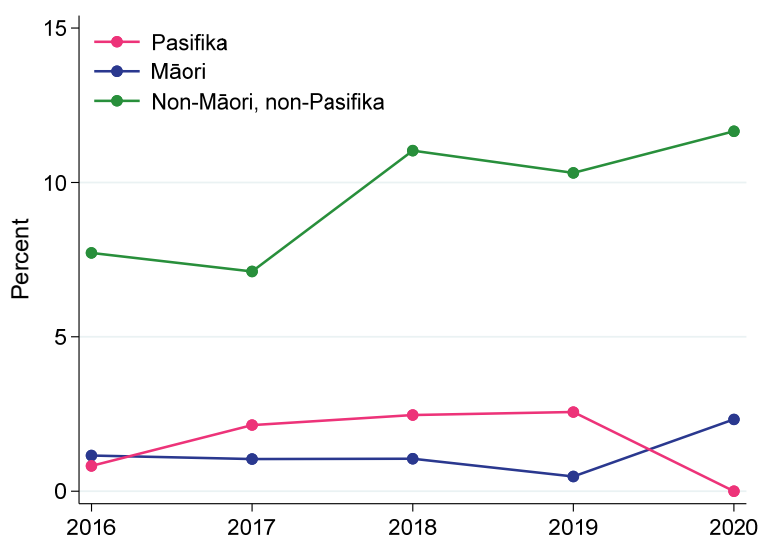
Among Māori, Pasifika and European/Other ethnicity patients commencing kidney replacement therapy in 2019, the highest proportion of patients started with haemodialysis as their initial therapy (60, 75 and 43 per 100 incident KRT patients, respectively), while among Asian patients, an equal proportion of patients started KRT on haemodialysis and peritoneal dialysis (46 per 100 incident KRT patients each) (figure 9.14). Overall, 12% of European/Other ethnicity patients had a pre-emptive kidney transplant, while 2% of incident Māori patients received pre-emptive kidney transplants, 0% of Pasifika patients, and 10% among Asian patients.

**Figure 9.14 - Incidence of KRT by Ethnicity and Modality - Aotearoa New Zealand 2020**



The rate of pre-emptive kidney transplants has continued to be markedly lower among Māori, Pasifika, and Asian patients, compared to European/Other ethnicities (figure 9.15).

Figure 9.15 - Percentage of Patients Starting KRT with Pre-emptive Kidney Transplant in Aotearoa New Zealand 2016-2020

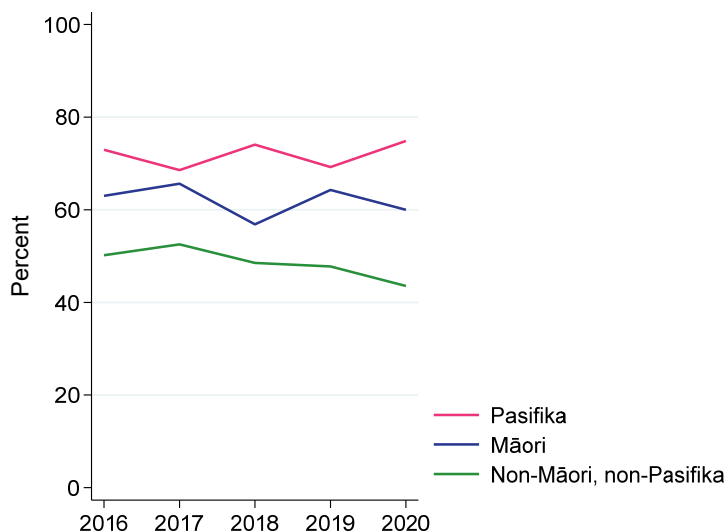


A total of 215 patients identifying as Māori commenced treatment for kidney failure in 2020, representing 31% of all patients starting kidney replacement therapy. This inequity in the incidence of kidney failure treated with kidney replacement therapy in Māori is persistent. The rate of haemodialysis commencement for non-Māori, non-Pasifika patients was 4-fold lower than for Māori. Māori were more likely to commence dialysis with haemodialysis than peritoneal dialysis compared with non-Māori patients (figure 9.16). Only 5 Māori patients were provided with a pre-emptive kidney transplant during 2020. In the last 5 years, 12 Māori patients have been provided with a pre-emptive kidney transplant compared with 141 non-Māori, non-Pasifika patients (a 12-fold difference).

Table 9.3 New Patients (pmp) Aotearoa New Zealand 2016-2020

Year	Modality	Non-Māori, non-Pasifika	Māori	Pasifika	Total
2016	HD	143 (40)	109 (139)	89 (240)	341 (72)
	PD	120 (34)	62 (79)	32 (86)	214 (45)
	Pre-emptive Transplant	22 (6)	2 (3)	1 (3)	25 (5)
2017	HD	155 (43)	126 (157)	96 (252)	377 (78)
	PD	119 (33)	64 (80)	41 (108)	224 (47)
	Pre-emptive Transplant	21 (6)	2 (2)	3 (8)	26 (5)
2018	HD	132 (36)	108 (132)	120 (308)	360 (73)
	PD	110 (30)	80 (98)	38 (97)	228 (47)
	Pre-emptive Transplant	30 (8)	2 (2)	4 (10)	36 (7)
2019	HD	139 (37)	135 (162)	108 (271)	382 (77)
	PD	122 (33)	74 (89)	44 (110)	240 (48)
	Pre-emptive Transplant	30 (8)	1 (1)	4 (10)	35 (7)
2020	HD	142 (37)	129 (152)	122 (299)	393 (77)
	PD	146 (38)	81 (95)	41 (100)	268 (53)
	Pre-emptive Transplant	38 (10)	5 (6)	0 (0)	43 (8)

Figure 9.16 - Percentage of New Patients Commencing on Haemodialysis - Aotearoa New Zealand



### Primary Kidney Disease

The primary kidney diseases of incident patients in Aotearoa New Zealand during 2016-2020 are shown in table 9.4. Māori and Pasifika peoples have a substantially higher rate of diabetic kidney disease than non-Māori, non-Pasifika patients.

Table 9.4 Primary Kidney Disease of New Patients in Aotearoa New Zealand 2016-2020

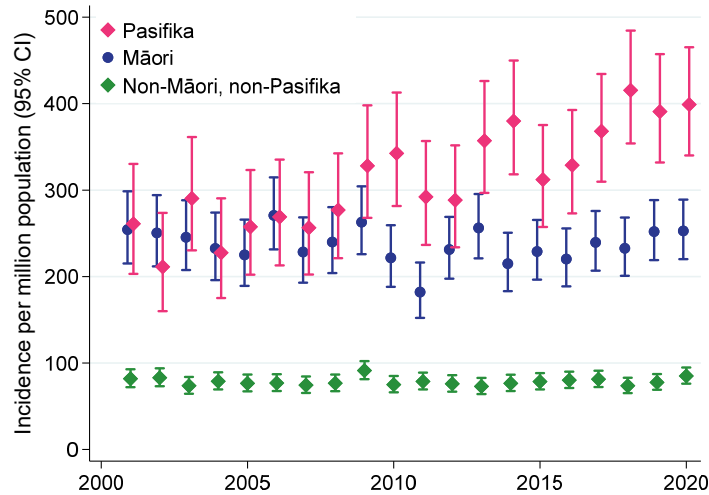
Primary Kidney Disease	Non-Māori, non-Pasifika	Māori	Pasifika
Diabetic Kidney Disease	403 (27%)	646 (66%)	497 (67%)
Glomerulonephritis	366 (25%)	143 (15%)	86 (12%)
Hypertension	190 (13%)	50 (5%)	35 (5%)
Polycystic Disease	126 (9%)	13 (1%)	8 (1%)
Reflux Nephropathy	39 (3%)	13 (1%)	5 (1%)
Other	271 (18%)	90 (9%)	83 (11%)
Uncertain	65 (4%)	23 (2%)	27 (4%)
Not reported	9 (1%)	2 (<1%)	2 (<1%)
<b>Total</b>	<b>1469</b>	<b>980</b>	<b>743</b>

## Incidence Rates

Overall, the incidence rates (per million of population) of kidney failure for Māori and Pasifika patients are markedly and persistently higher than those for non-Māori, non-Pasifika patients. This inequity is likely confounded and underestimated by the age distributions of each population - Māori and Pasifika populations are considerably younger.

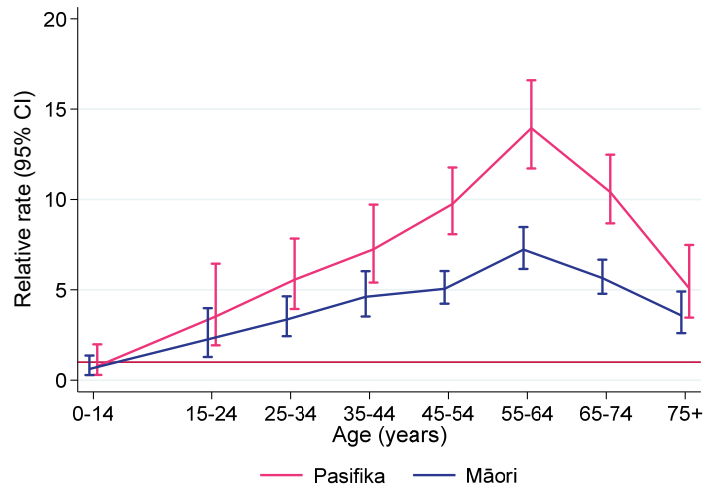
The incidence rates for KRT by ethnicity are shown in figure 9.17. The relative rate differs with age - this is illustrated in figure 9.18.

**figure 9.17 - Unadjusted Incident KRT Rate - Aotearoa New Zealand**



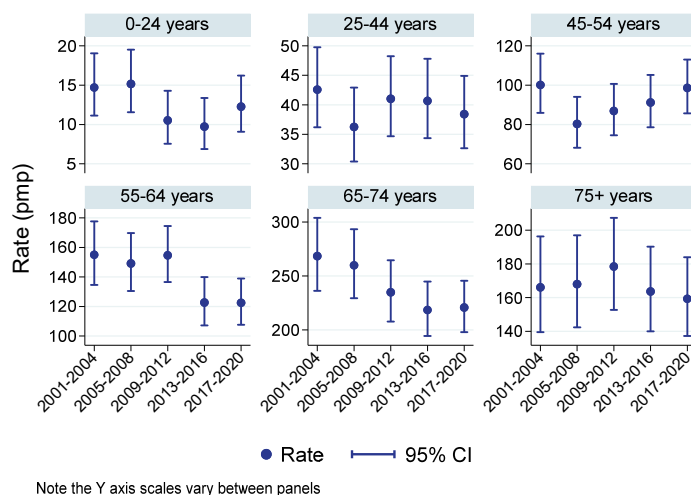
Among Māori and Pasifika peoples, inequities in the incidence of kidney failure occur as early as ages 15 to 24 years and are evident across all age groups (figure 9.18).

**Figure 9.18 - Relative Incidence Rate of Treated Kidney Failure for Māori and Pasifika Patients, compared with non-Māori, non-Pasifika patients - Aotearoa New Zealand 2016-2020**

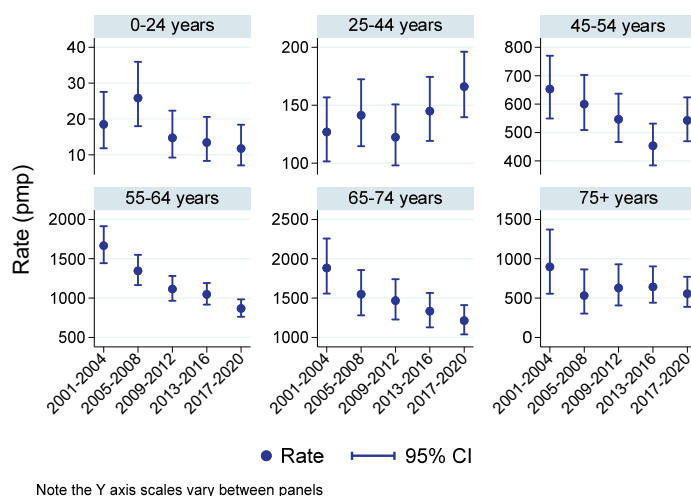


Age specific trends in kidney replacement therapy are shown in figures 9.19.1-9.19.3, by patient ethnicity; note that the Y axis scales vary.

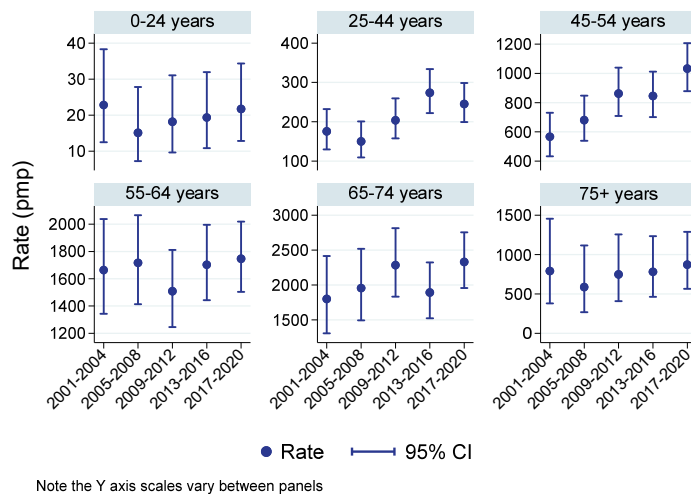
**Figure 9.19.1 - Age-specific Incidence Rates of Treated Kidney Failure - Non-Māori, non-Pasifika, Aotearoa New Zealand**



**Figure 9.19.2 - Age-specific Incidence Rates of Treated Kidney Failure - Māori, Aotearoa New Zealand**



**Figure 9.19.3 - Age-specific Incidence Rates of Treated Kidney Failure - Pasifika, Aotearoa New Zealand**



## Prevalent Patients

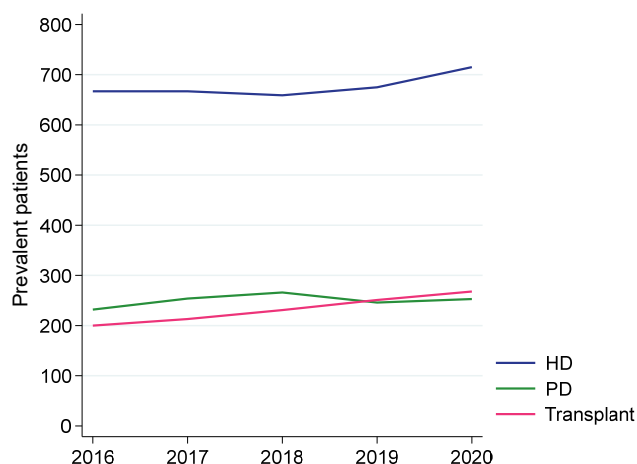
The number of prevalent patients with treated kidney failure by treatment modality and ethnicity is shown in table 9.5 and figure 9.20. The proportion of patients undergoing haemodialysis at home in each ethnic group is shown in figure 9.21.

**Table 9.5 Prevalent Patients by Ethnicity and Treatment Modality Aotearoa New Zealand 2016-2020**

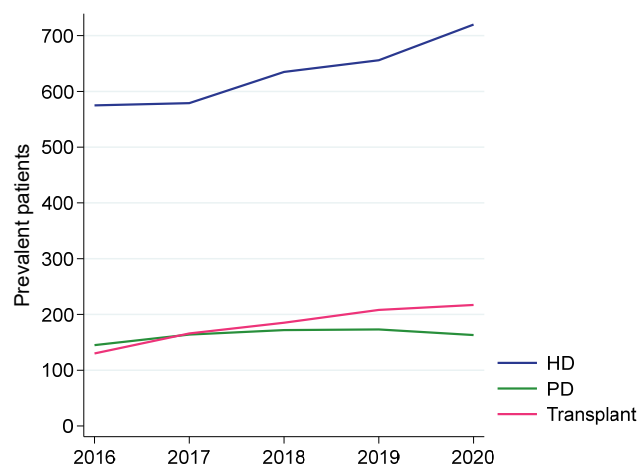
Year	Modality	Non-Māori, non-Pasifika	Māori	Pasifika
2016	HD	691 (27%)	667 (61%)	575 (68%)
	% HD at home*	30%	21%	21%
	PD	451 (17%)	232 (21%)	145 (17%)
	Tx	1454 (56%)	200 (18%)	130 (15%)
2017	HD	682 (26%)	667 (59%)	579 (64%)
	% HD at home*	28%	21%	18%
	PD	443 (17%)	254 (22%)	164 (18%)
	Tx	1511 (57%)	213 (19%)	166 (18%)
2018	HD	701 (26%)	659 (57%)	635 (64%)
	% HD at home*	27%	20%	16%
	PD	426 (16%)	266 (23%)	172 (17%)
	Tx	1552 (58%)	231 (20%)	185 (19%)
2019	HD	694 (25%)	675 (58%)	656 (63%)
	% HD at home*	26%	20%	15%
	PD	401 (15%)	246 (21%)	173 (17%)
	Tx	1629 (60%)	251 (21%)	208 (20%)
2020	HD	707 (25%)	715 (58%)	720 (65%)
	% HD at home*	24%	17%	14%
	PD	432 (15%)	253 (20%)	163 (15%)
	Tx	1703 (60%)	268 (22%)	217 (20%)

\*Includes Community House HD

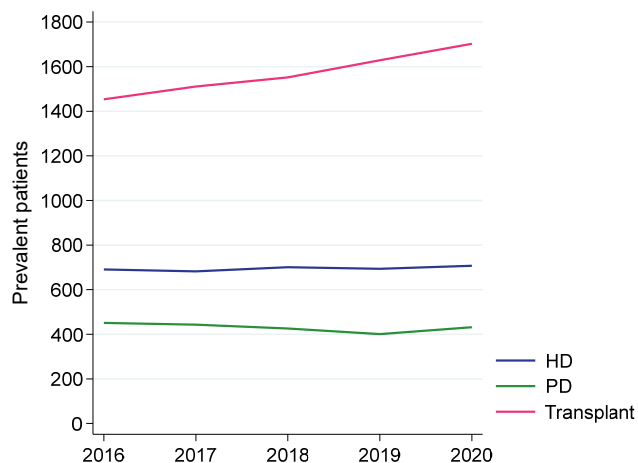
**Figure 9.20.1 - Prevalent Patients by Modality - Aotearoa New Zealand - Māori**



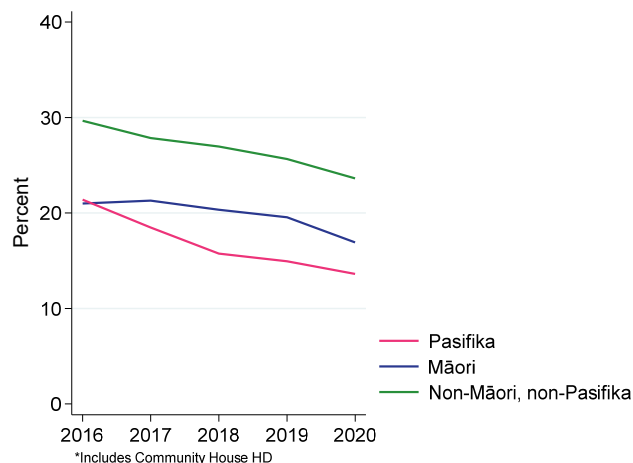
**Figure 9.20.2 - Prevalent Patients by Modality - Aotearoa New Zealand - Pasifika**



**Figure 9.20.3 - Prevalent Patients by Modality - Aotearoa New Zealand - Non-Māori, non-Pasifika**



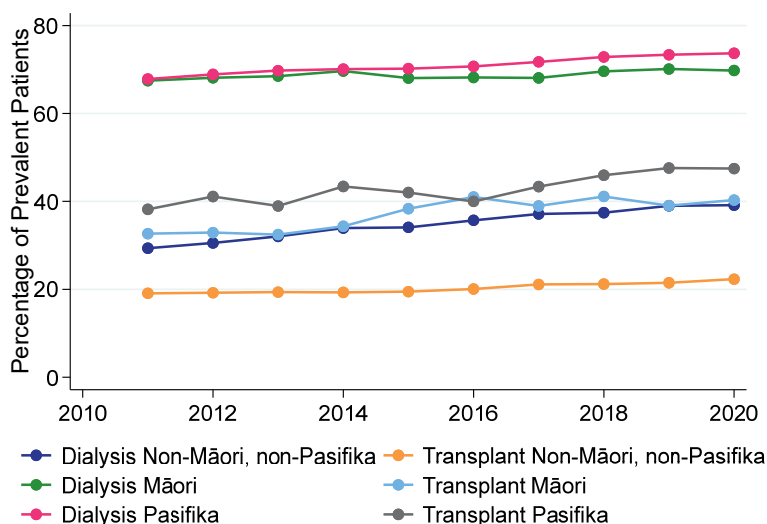
**Figure 9.21 - Prevalent Haemodialysis at Home\* (% of all HD) by Ethnicity - Aotearoa New Zealand**



## Diabetes

The percentage of prevalent, KRT patients with diabetes as a comorbidity is shown in figure 9.22 by ethnicity and treatment modality.

**Figure 9.22 - Diabetes as a Comorbidity in Prevalent Patients - Aotearoa New Zealand, 2011-2020**

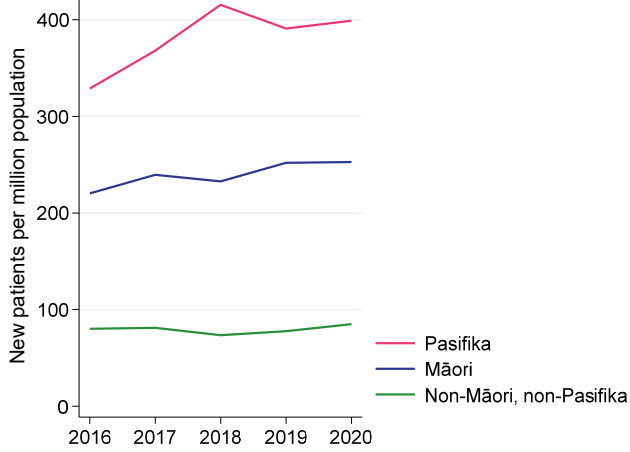


## Incidence and Prevalence per Population

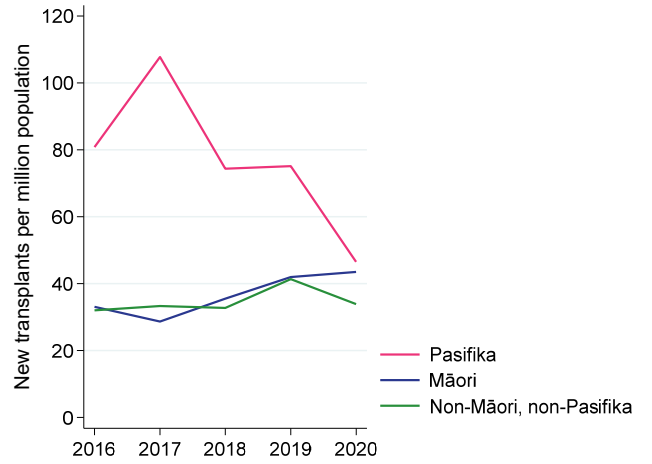
Figures 9.23 to 9.28 show trends in the incidence and prevalence of kidney failure treatment overall, haemodialysis, peritoneal dialysis and transplantation, and mortality by ethnicity. Of note is the increasing prevalence of transplantation amongst Māori and Pasifika patients (figure 9.27).



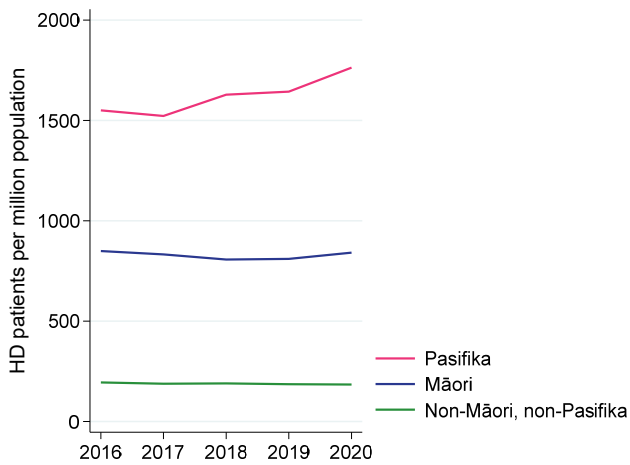
**Figure 9.23 - Incidence of New Patients - Aotearoa New Zealand**



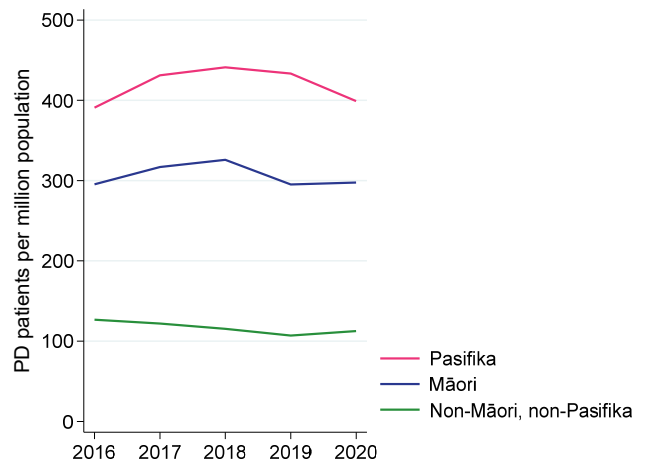
**Figure 9.24 - Incidence of New Transplants - Aotearoa New Zealand**



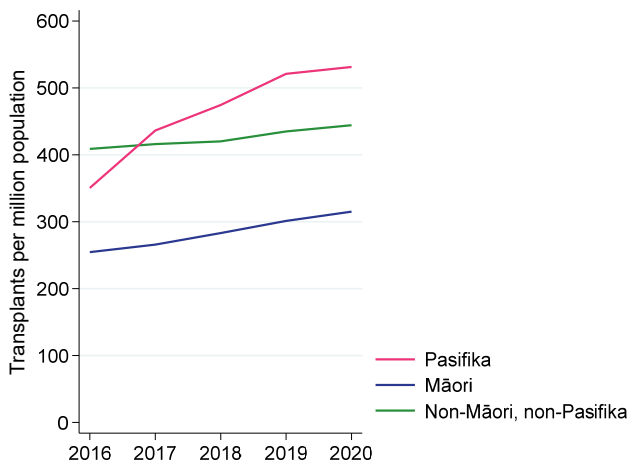
**Figure 9.25 - Prevalent Haemodialysis Patients - Aotearoa New Zealand**



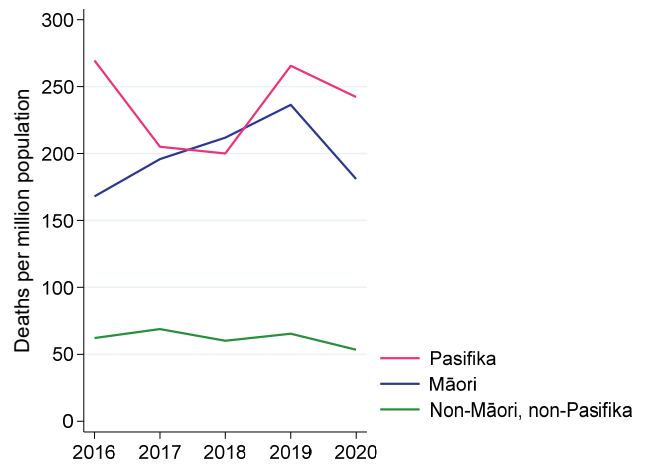
**Figure 9.26 - Prevalent Peritoneal Dialysis Patients - Aotearoa New Zealand**



**Figure 9.27 - Prevalent Transplant Patients - Aotearoa New Zealand**



**Figure 9.28 - Deaths of KRT Patients - Aotearoa New Zealand**



## Transplantation

In Aotearoa New Zealand, the proportion of Māori and Pasifika patients who receive a kidney transplant is very low, although the transplant rate per million population is high due to the prevalence of kidney failure in these populations (table 9.6). Information on donor source is shown in figure 9.29 and trends are shown in figure 9.30.

**Table 9.6 Number of Transplant Recipients (pmp) by Ethnicity Aotearoa New Zealand 2011-2020**

Year	Donor Type	Non-Māori, non-Pasifika	Māori	Pasifika
2011	DD	39 (12)	15 (21)	7 (21)
	LD	49 (15)	6 (8)	2 (6)
	<b>Total</b>	<b>88 (26)</b>	<b>21 (29)</b>	<b>9 (27)</b>
2012	DD	37 (11)	11 (15)	6 (18)
	LD	49 (15)	4 (6)	1 (3)
	<b>Total</b>	<b>86 (26)</b>	<b>15 (21)</b>	<b>7 (21)</b>
2013	DD	46 (14)	5 (7)	6 (17)
	LD	52 (15)	5 (7)	2 (6)
	<b>Total</b>	<b>98 (29)</b>	<b>10 (13)</b>	<b>8 (23)</b>
2014	DD	44 (13)	13 (17)	9 (26)
	LD	55 (16)	10 (13)	7 (20)
	<b>Total</b>	<b>99 (29)</b>	<b>23 (31)</b>	<b>16 (45)</b>
2015	DD	44 (13)	13 (17)	16 (44)
	LD	54 (16)	15 (20)	5 (14)
	<b>Total</b>	<b>98 (28)</b>	<b>28 (36)</b>	<b>21 (58)</b>
2016	DD	58 (16)	13 (17)	19 (51)
	LD	56 (16)	13 (17)	11 (30)
	<b>Total</b>	<b>114 (32)</b>	<b>26 (33)</b>	<b>30 (81)</b>
2017	DD	70 (19)	17 (21)	30 (79)
	LD	51 (14)	6 (7)	11 (29)
	<b>Total</b>	<b>121 (33)</b>	<b>23 (29)</b>	<b>41 (108)</b>
2018	DD	65 (18)	15 (18)	18 (46)
	LD	56 (15)	14 (17)	11 (28)
	<b>Total</b>	<b>121 (33)</b>	<b>29 (36)</b>	<b>29 (74)</b>
2019	DD	82 (22)	24 (29)	23 (58)
	LD	73 (19)	11 (13)	7 (18)
	<b>Total</b>	<b>155 (41)</b>	<b>35 (42)</b>	<b>30 (75)</b>
2020	DD	60 (16)	23 (27)	17 (42)
	LD	70 (18)	14 (16)	2 (5)
	<b>Total</b>	<b>130 (34)</b>	<b>37 (44)</b>	<b>19 (47)</b>

Figure 9.29 - Donor Type by Ethnicity - Aotearoa New Zealand 2011-2020

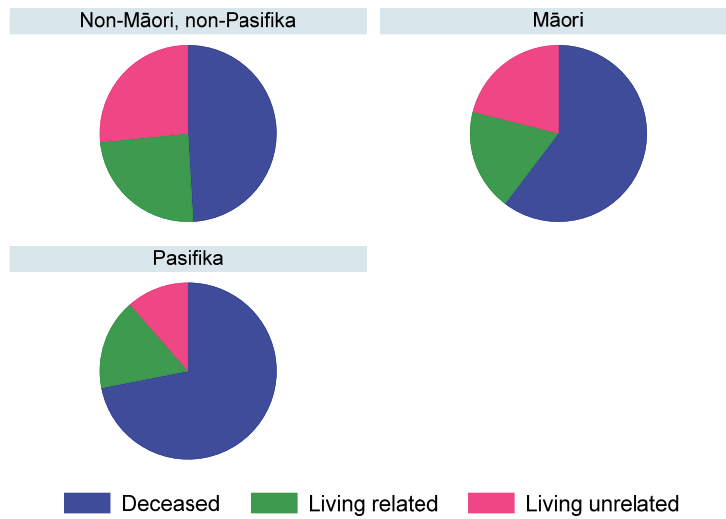


Figure 9.30 - Donor Type by Ethnicity and Year - Aotearoa New Zealand

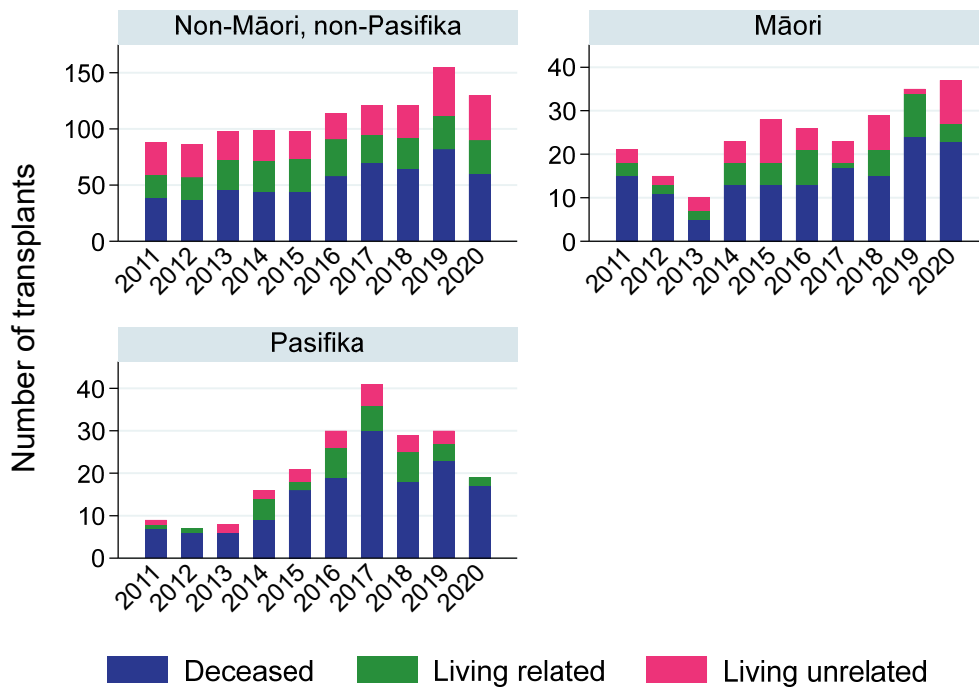
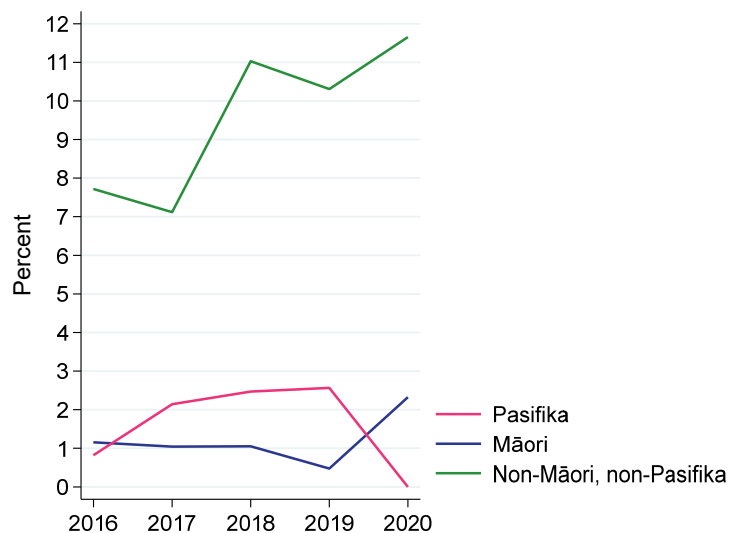


Figure 9.31 - Percentage of Patients Starting KRT with Pre-emptive Kidney Transplant - Aotearoa New Zealand

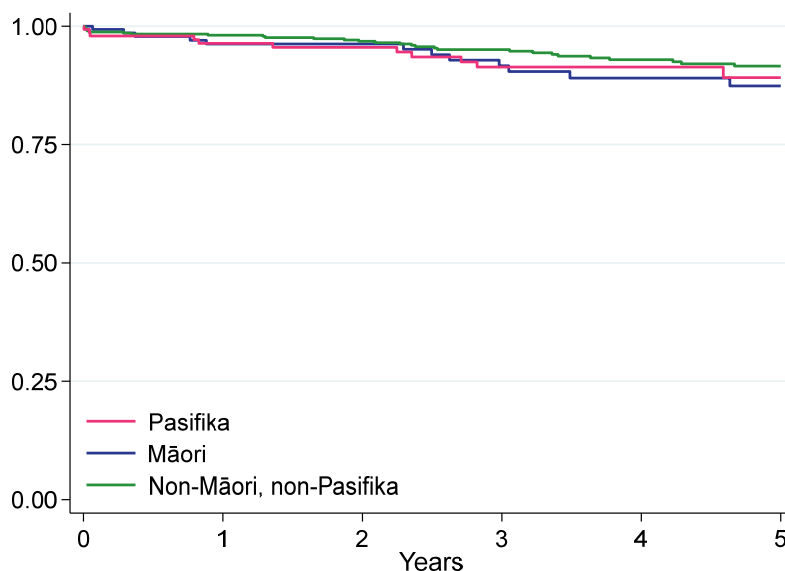


## Transplant Survival

Graft and patient survival for kidney transplant recipients in Aotearoa New Zealand, calculated by the Kaplan-Meier method, are shown in figures 9.32-9.33.

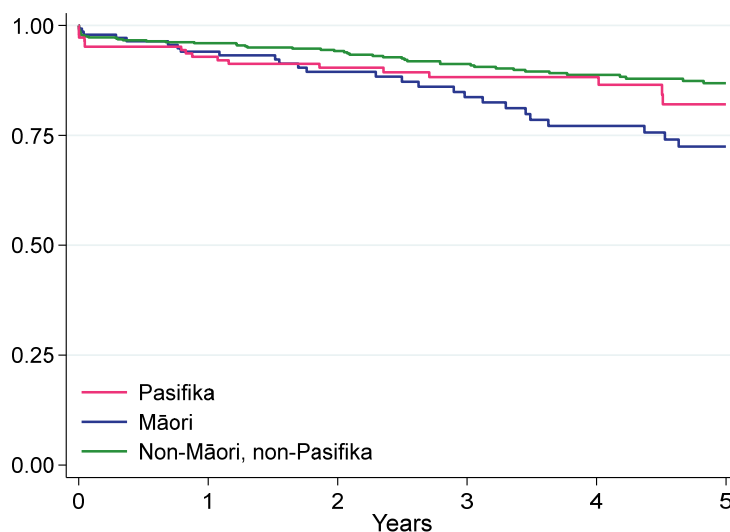
There is a small difference in patient survival after kidney transplantation from a deceased donor between Māori and non-Māori, non-Pasifika recipients, which is apparent from 6 months after transplantation. At 5 years post-transplant, 87% of Māori recipients, 89% of Pasifika recipients, and 92% of non-Māori, non-Pasifika recipients were alive 5 years after kidney transplantation from a deceased donor (figure 9.32).

**Figure 9.32 - Patient Survival, Recipients of Primary Deceased Donor Grafts - Aotearoa New Zealand 2011-2020**



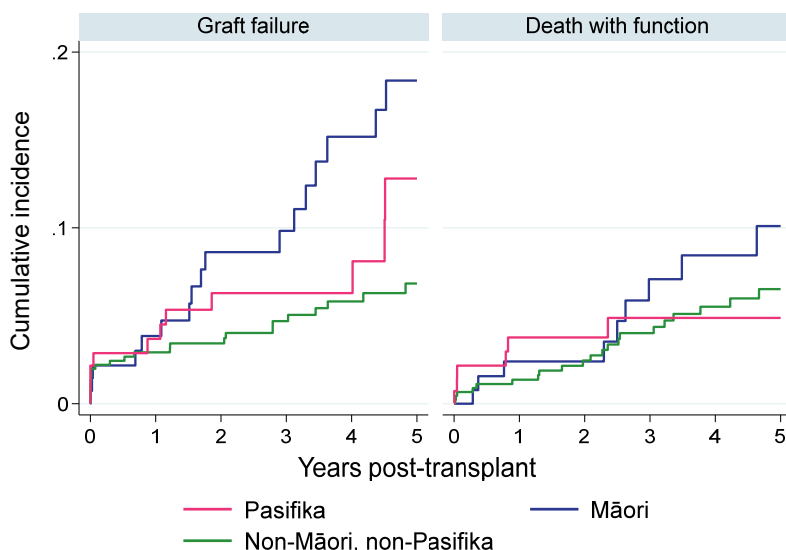
Over the first 5 years after kidney transplant from a deceased donation, some kidney transplants have been lost either through the transplant failing or the patient dying with a functioning kidney. Over time, there appears to be increasing proportions of Māori and Pasifika recipients who experienced graft loss compared with non-Māori, non-Pasifika persons. The proportion of functioning kidney transplants at 5 years post-transplant was 72% for Māori and 82% for Pasifika recipients, compared with 87% for non-Māori, non-Pasifika persons (figure 9.33).

**Figure 9.33 - Graft Survival, Recipients of Primary Deceased Donor Grafts - Aotearoa New Zealand 2011-2020**



Cumulative incidence curves (utilising competing risk techniques to account for the effects of both components of graft failure) are shown for transplant outcomes by ethnicity in figure 9.34.

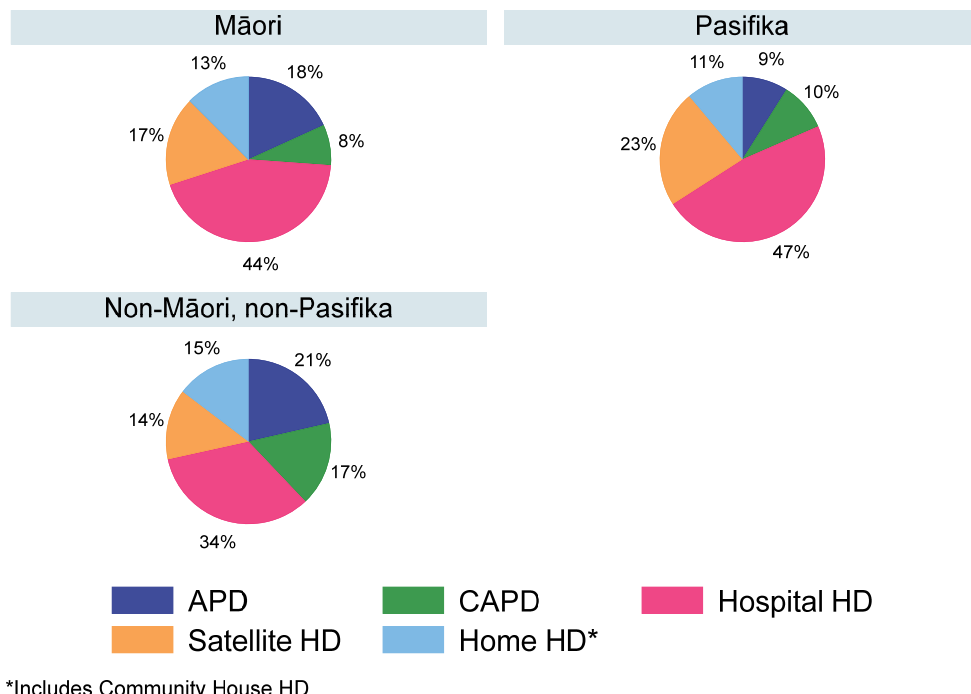
Figure 9.34 - Transplant Outcomes, Aotearoa New Zealand - Primary Deceased Donor Kidney-only Transplants 2011-2020



## Dialysis

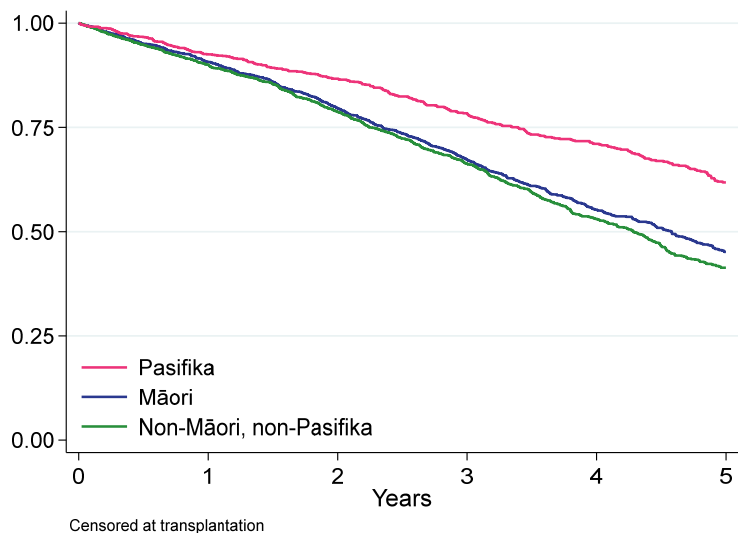
The distribution of dialysis modality is shown graphically in figure 9.35. Māori and Pasifika patients have a higher use of facility dialysis as the principal modality of care, and lower use of each of the home-based modalities.

Figure 9.35 - Dialysis Modality End 2020 - Aotearoa New Zealand, by Ethnicity



Half of the people who started dialysis over 2011-2020 were alive 5 years later (figure 9.36). Non-Māori non-Pasifika and Māori patients experienced similar survival over 5 years after starting dialysis, with Pasifika patients having apparently better survival. It is possible that observed differences in survival between populations reflect different age distributions and access to competing treatments (transplantation), which may have impacted mortality estimates.

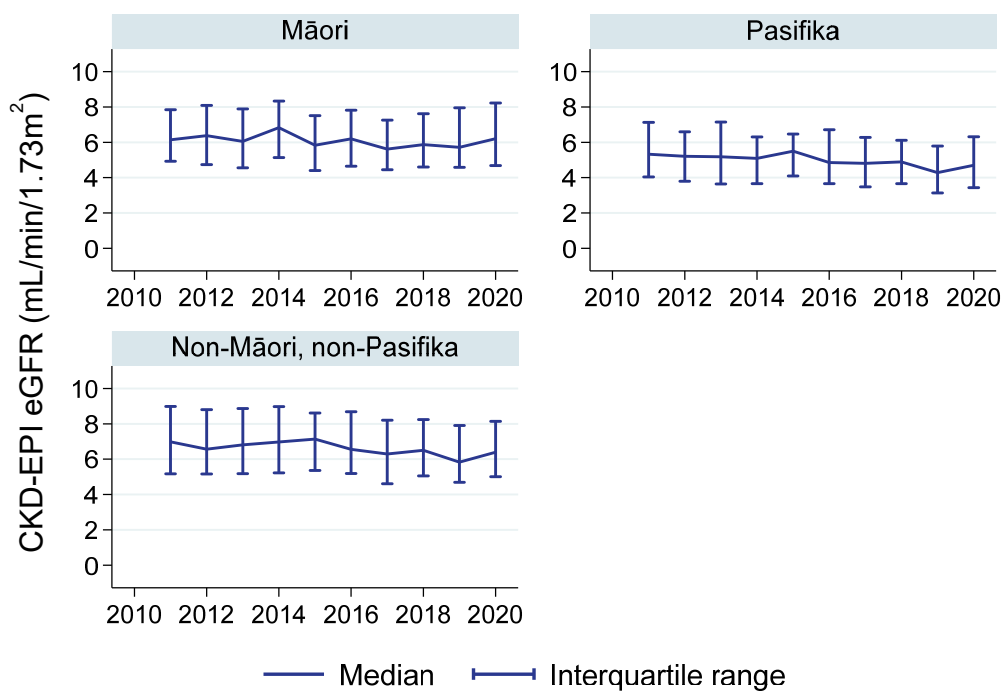
Figure 9.36 - Patient Survival, Incident Dialysis Patients - Aotearoa New Zealand 2011-2020



### Timing of Dialysis Initiation

The level of kidney function at which dialysis is commenced (based on estimated Glomerular Filtration Rate (eGFR)) is shown in figure 9.37 by patient ethnicity.

Figure 9.37 - eGFR at Dialysis Initiation - Aotearoa New Zealand



## Vascular Access

### Incident Vascular Access

Incident vascular access data by patient ethnicity are presented in table 9.7, and prevalent data in table 9.8.

**Table 9.7 Incident Vascular Access Aotearoa New Zealand 2016-2020**

Year	Vascular access	Non-Māori, non-Pasifika	Māori	Pasifika
2016	AVF	33 (23%)	31 (28%)	24 (27%)
	AVG	1 (1%)	0 (0%)	1 (1%)
	CVC	105 (73%)	76 (70%)	63 (71%)
	Not reported	4 (3%)	2 (2%)	1 (1%)
2017	AVF	35 (23%)	33 (26%)	25 (26%)
	AVG	2 (1%)	3 (2%)	1 (1%)
	CVC	116 (75%)	88 (70%)	70 (73%)
	Not reported	2 (1%)	2 (2%)	0 (0%)
2018	AVF	30 (23%)	22 (20%)	22 (18%)
	AVG	2 (2%)	0 (0%)	1 (1%)
	CVC	99 (75%)	86 (80%)	97 (81%)
	Not reported	1 (1%)	0 (0%)	0 (0%)
2019	AVF	33 (24%)	27 (20%)	21 (19%)
	AVG	2 (1%)	0 (0%)	1 (1%)
	CVC	104 (75%)	107 (79%)	86 (80%)
	Not reported	0 (0%)	1 (1%)	0 (0%)
2020	AVF	29 (20%)	22 (17%)	33 (27%)
	AVG	0 (0%)	0 (0%)	0 (0%)
	CVC	112 (79%)	107 (83%)	88 (72%)
	Not reported	1 (1%)	0 (0%)	1 (1%)

### Prevalent Vascular Access

Vascular access for prevalent dialysis patients is shown in table 9.8 by patient ethnicity.

**Table 9.8 Prevalent Vascular Access Aotearoa New Zealand 2016-2020**

Year	Vascular access	Non-Māori, non-Pasifika	Māori	Pasifika
2016	AVF	438 (63%)	456 (68%)	413 (72%)
	AVG	26 (4%)	27 (4%)	26 (5%)
	CVC	204 (30%)	168 (25%)	125 (22%)
	Not reported	23 (3%)	16 (2%)	11 (2%)
2017	AVF	419 (61%)	452 (68%)	412 (71%)
	AVG	19 (3%)	26 (4%)	15 (3%)
	CVC	223 (33%)	177 (27%)	140 (24%)
	Not reported	21 (3%)	12 (2%)	12 (2%)
2018	AVF	417 (59%)	443 (67%)	420 (66%)
	AVG	17 (2%)	21 (3%)	11 (2%)
	CVC	247 (35%)	180 (27%)	191 (30%)
	Not reported	20 (3%)	15 (2%)	13 (2%)
2019	AVF	397 (57%)	420 (62%)	432 (66%)
	AVG	15 (2%)	18 (3%)	5 (1%)
	CVC	252 (36%)	212 (31%)	190 (29%)
	Not reported	30 (4%)	25 (4%)	29 (4%)
2020	AVF	385 (54%)	409 (57%)	436 (61%)
	AVG	11 (2%)	17 (2%)	13 (2%)
	CVC	278 (39%)	252 (35%)	255 (35%)
	Not reported	33 (5%)	37 (5%)	16 (2%)

## Patient Flow

Table 9.9 shows the overall patient flow in New Zealand by ethnicity. Notably, mortality for Māori and Pasifika patients is 3 to 5-fold higher per million of population than that of non-Māori, non-Pasifika patients.

**Table 9.9 Patient Flow (pmp) Aotearoa New Zealand 2016-2020**

Year	Event	Non-Māori, non-Pasifika	Māori	Pasifika
2016	New patients	285 (80)	173 (220)	122 (329)
	New transplants	114 (32)	26 (33)	30 (81)
	Pre-emptive transplants	22 (6)	2 (3)	1 (3)
	Prevalent dialysis	1142 (321)	899 (1144)	720 (1940)
	Prevalent transplants	1454 (409)	200 (255)	130 (350)
	Total prevalence	2596 (730)	1099 (1399)	850 (2291)
	Deaths	221 (62)	132 (168)	100 (270)
2017	New patients	295 (81)	192 (240)	140 (368)
	New transplants	121 (33)	23 (29)	41 (108)
	Pre-emptive transplants	21 (6)	2 (2)	3 (8)
	Prevalent dialysis	1125 (310)	921 (1149)	743 (1953)
	Prevalent transplants	1511 (416)	213 (266)	166 (436)
	Total prevalence	2636 (726)	1134 (1415)	909 (2390)
	Deaths	250 (69)	157 (196)	78 (205)
2018	New patients	272 (74)	190 (233)	162 (415)
	New transplants	121 (33)	29 (36)	29 (74)
	Pre-emptive transplants	30 (8)	2 (2)	4 (10)
	Prevalent dialysis	1127 (305)	925 (1133)	807 (2069)
	Prevalent transplants	1552 (420)	231 (283)	185 (474)
	Total prevalence	2679 (725)	1156 (1416)	992 (2544)
	Deaths	222 (60)	173 (212)	78 (200)
2019	New patients	291 (78)	210 (252)	156 (391)
	New transplants	155 (41)	35 (42)	30 (75)
	Pre-emptive transplants	30 (8)	1 (1)	4 (10)
	Prevalent dialysis	1095 (292)	921 (1105)	829 (2077)
	Prevalent transplants	1629 (435)	251 (301)	208 (521)
	Total prevalence	2724 (727)	1172 (1406)	1037 (2598)
	Deaths	245 (65)	197 (236)	106 (266)
2020	New patients	326 (85)	215 (253)	163 (399)
	New transplants	129 (34)	37 (44)	19 (47)
	Pre-emptive transplants	38 (10)	5 (6)	0 (0)
	Prevalent dialysis	1139 (297)	968 (1138)	883 (2162)
	Prevalent transplants	1703 (444)	268 (315)	217 (531)
	Total prevalence	2842 (741)	1236 (1453)	1100 (2693)
	Deaths	205 (53)	154 (181)	99 (242)



## Cause of Death

The causes of death in 2020 are shown in figure 9.38 and table 9.10, categorised by ethnicity and modality at time of death.

Differences between ethnicities are likely to reflect, at least in part, the different age distributions of these populations.

Figure 9.38 - Cause of Death by Modality and Ethnicity - Deaths Occurring During 2020, Aotearoa New Zealand

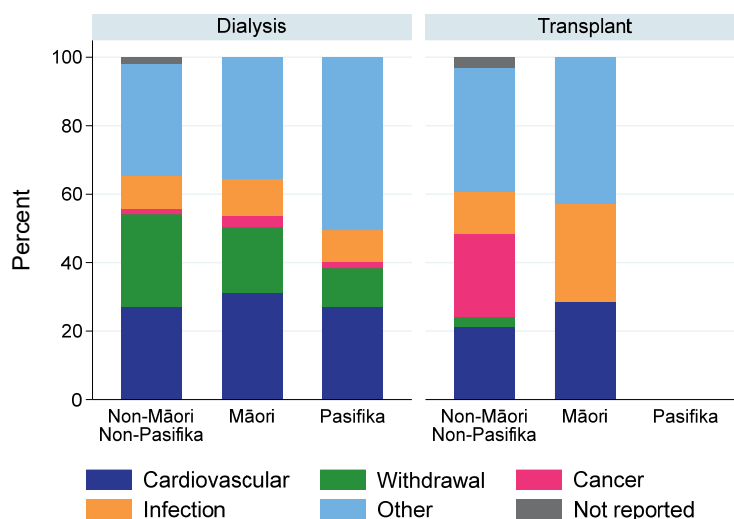


Table 9.10 Cause of Death by Modality and Ethnicity, Aotearoa New Zealand 2020

Modality	Cause of death	Non-Māori, non-Pasifika	Māori	Pasifika
Dialysis	Cardiovascular	46 (27%)	46 (31%)	27 (27%)
	Withdrawal	46 (27%)	28 (19%)	11 (11%)
	Cancer	3 (2%)	5 (3%)	2 (2%)
	Infection	16 (9%)	16 (11%)	9 (9%)
	Other	56 (33%)	52 (35%)	50 (51%)
	Not reported	3 (2%)	0 (0%)	0 (0%)
	<b>Total</b>		<b>170</b>	<b>147</b>
Transplant	Cardiovascular	7 (21%)	2 (29%)	0 (0%)
	Withdrawal	1 (3%)	0 (0%)	0 (0%)
	Cancer	8 (24%)	0 (0%)	0 (0%)
	Infection	4 (12%)	2 (29%)	0 (0%)
	Other	12 (36%)	3 (43%)	0 (0%)
	Not reported	1 (3%)	0 (0%)	0 (0%)
	<b>Total</b>		<b>33</b>	<b>7</b>

## Late Referral to Nephrology Services

Late referral rates (defined as the first assessment by a specialist nephrologist within 3 months of commencing dialysis) by ethnicity in Aotearoa New Zealand are shown in figure 9.39 and table 9.11.

Figure 9.39 - Late Referral Rates by Ethnicity - Aotearoa New Zealand 2016 – 2020

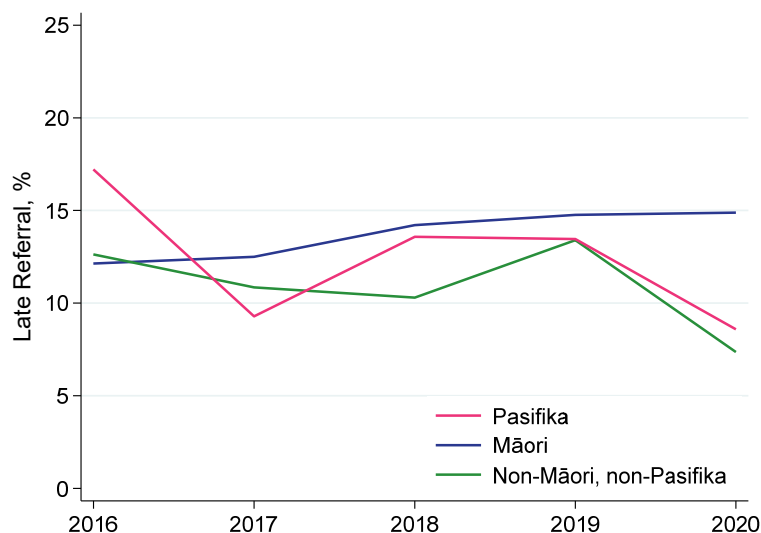


Table 9.11 Percentage of Late Referral by Ethnicity Aotearoa New Zealand 2016-2020

Year	Non-Māori, non-Pasifika	Māori	Pasifika
2016	13%	12%	17%
2017	11%	13%	9%
2018	10%	14%	14%
2019	13%	15%	13%
2020	7%	15%	9%

## References

<sup>1</sup> This work is based on/includes Stats NZ's data which are licensed by Stats NZ for re-use under the Creative Commons Attribution 4.0 International licence. Stats NZ, 2020, Estimated Resident Population by Age and Sex (1991+) (Annual-Jun), NZ Infoshare, viewed 4 Jan 2021, <http://archive.stats.govt.nz/infoshare/>

<sup>2</sup> Australian Bureau of Statistics, 2019, Australian Standard Classification of Cultural and Ethnic Groups (ASCCEG), December 2019, viewed 23 Oct 2020, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/1249.0Main+Features12019?OpenDocument>