



# CHAPTER 11

## Kidney Failure among Māori in Aotearoa New Zealand

*Reporting the incidence, prevalence and survival in Māori patients of Aotearoa/New Zealand receiving kidney replacement therapy*

# Contents

Executive Summary .....	3
Suggested Citation .....	3
New Patients .....	4
Primary Kidney Disease .....	5
Incidence Rates .....	5
Prevalent Patients .....	8
Incidence and Prevalence per Population.....	9
Transplantation .....	10
Transplant Survival .....	13
Dialysis.....	15
Timing of Dialysis Initiation .....	16
Late Referral .....	16
Vascular Access .....	16
Patient Flow .....	18
Cause of Death .....	19
References.....	20

## Executive Summary

In this chapter, the rates, practice patterns and outcomes of treatment for kidney failure for people identifying as Māori living in Aotearoa New Zealand are reported.

The 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 enables for a patient to have up to two ethnicities recorded. Consultation regarding collection and reporting of ethnicity data is ongoing and reporting guidelines have not been finalised at the time of publication. Ethnicity data throughout this report includes only the first ethnicity category entered for each patient.

Future reporting will report more accurately on patients identifying as more than one ethnicity, following reporting best practice for residents of each country. Protocols for ensuring ethnicity is self-identified are not yet established. ANZDATA recognises that this approach does not yet align with the Ethnicity Data Protocols for the Health and Disability Sector<sup>3</sup> issued by the New Zealand Ministry of Health.

Denominator population statistics are stratified by ethnicity. For example, the incidence of Kidney Replacement Therapy (RRT) among Māori includes the national Māori population as the denominator. The denominator population is derived from the mid-year population (30 June) estimated each year by Statistics New Zealand based on the census (currently 2018) and incorporating additional post-enumeration survey information<sup>2</sup>. Denominator populations are not age-standardised in this report. Notably, Māori and non-Māori, non-Pasifika populations possess different age structures: Māori tend to be younger and demonstrate onset of long-term conditions at ages 10-20 years younger than non-Māori, non-Pasifika.

Overall, the inequity in the incidence rates of kidney failure among Māori patients are markedly and persistently higher than those for non-Māori, non-Pasifika patients. Māori are provided with facility dialysis as the principal modality of care, with lower provision of home-based modalities compared with non-Māori, non-Pasifika patients. Māori also continue to be provided with significantly lower rates pre-emptive kidney transplantation.

Health services and health funders in Aotearoa New Zealand are required to fulfil Te Tiriti o Waitangi obligations to provide health and wellbeing to whānau Māori, including kidney health. This report provides monitoring of the current state of health provision to whānau Māori to monitor equity. These data are intended to inform quality improvement within health systems and by health providers.

## Suggested Citation

ANZDATA Registry. 43rd Report, Chapter 11: Kidney Failure among in Māori in Aotearoa New Zealand. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2020. Available at: <http://www.anzdata.org.au>

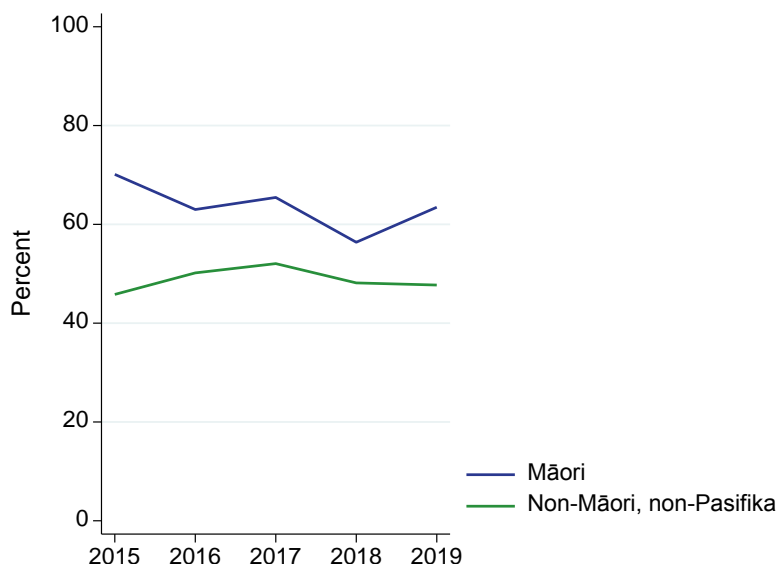
## New Patients

A total of 208 patients identifying as Māori commenced treatment for kidney failure in 2019, representing 32% of all patients starting kidney replacement therapy in Aotearoa New Zealand. The rate of haemodialysis commencement in non-Māori, non-Pasifika patients was 5-fold lower than for Māori. Māori were more likely to commence dialysis with haemodialysis than peritoneal dialysis compared with non-Māori, non-Pasifika patients (figure 11.1). One Māori patient was provided with a pre-emptive kidney transplant during 2019. In the last 5 years, 7 Māori patients have been provided with a pre-emptive kidney transplant compared with 125 non-Māori, non-Pasifika patients.

**Table 11.1 New Patients (pmp) Aotearoa New Zealand 2015-2019**

Year	Treatment at incidence	Māori	Non-Māori, non-Pasifika
2015	Haemodialysis	122 (171)	126 (36)
	Peritoneal Dialysis	52 (73)	127 (36)
	Pre-Emptive Transplant	0 (0)	22 (6)
2016	Haemodialysis	109 (151)	142 (40)
	Peritoneal Dialysis	62 (86)	119 (33)
	Pre-Emptive Transplant	2 (3)	22 (6)
2017	Haemodialysis	125 (170)	152 (42)
	Peritoneal Dialysis	64 (87)	119 (33)
	Pre-Emptive Transplant	2 (3)	21 (6)
2018	Haemodialysis	106 (142)	130 (35)
	Peritoneal Dialysis	80 (107)	110 (30)
	Pre-Emptive Transplant	2 (3)	30 (8)
2019	Haemodialysis	132 (169)	136 (36)
	Peritoneal Dialysis	75 (96)	119 (32)
	Pre-Emptive Transplant	1 (1)	30 (8)

**Figure 11.1 - Percentage of New Patients Commencing on Haemodialysis – Aotearoa New Zealand 2015-2019**



## Primary Kidney Disease

The primary kidney diseases of incident Aotearoa New Zealand patients over 2015-2019 are shown in table 11.2. Māori experience diabetes-related nephropathy at a substantially higher rate than non-Māori, non-Pasifika patients.

**Table 11.2 Primary Kidney Disease of New Patients Aotearoa New Zealand 2015-2019**

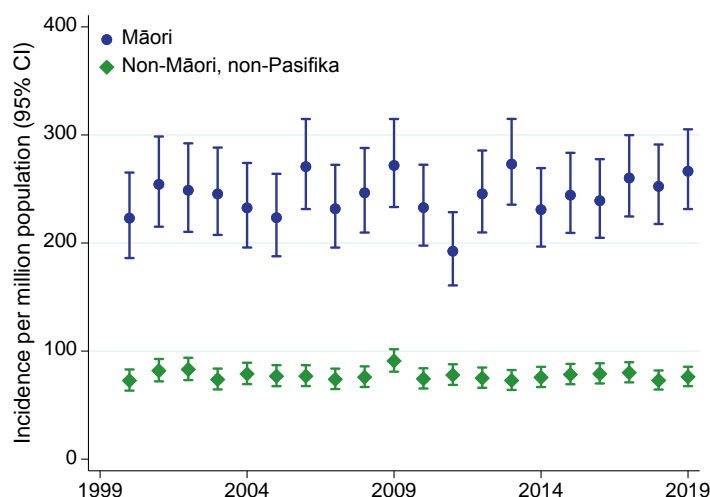
Primary Kidney Disease	Māori	Non-Māori, non-Pasifika
Diabetes-related Nephropathy	626 (67%)	386 (27%)
Glomerulonephritis	133 (14%)	358 (25%)
Hypertension	50 (5%)	174 (12%)
Polycystic Disease	10 (1%)	124 (9%)
Reflux Nephropathy	9 (1%)	41 (3%)
Other	82 (9%)	254 (18%)
Uncertain	22 (2%)	61 (4%)
Not reported	2 (<1%)	7 (<1%)
<b>Total</b>	<b>934</b>	<b>1405</b>

## Incidence Rates

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

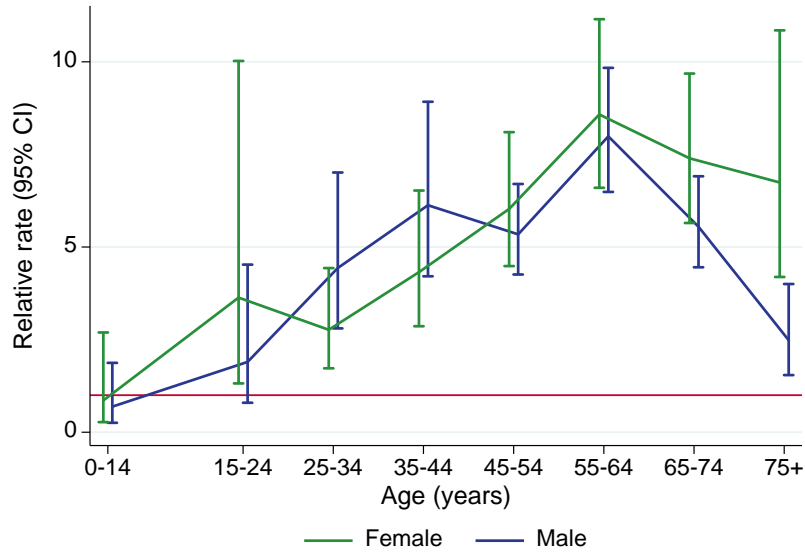
Although rates fluctuate from year to year, the incidence rates have been stable in recent years (figure 11.2). The relative rate differs with age - this is illustrated in figure 11.3.

**Figure 11.2 - Unadjusted Incident KRT Rate – Aotearoa New Zealand**



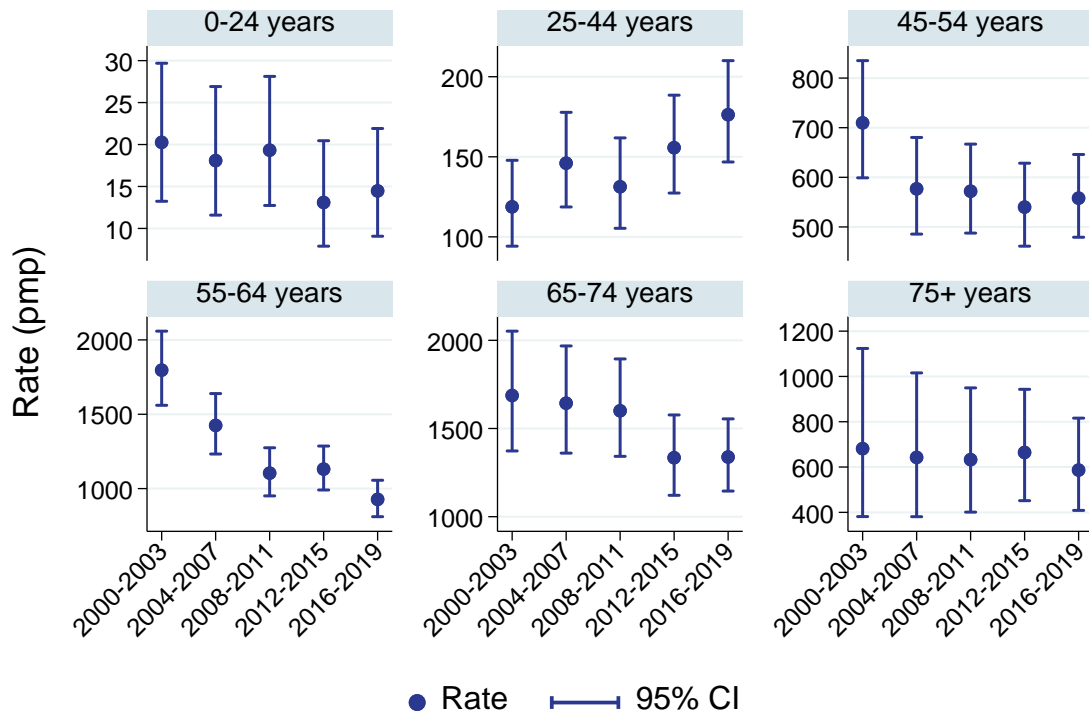
Among Māori, inequities in the incidence of kidney failure from non-Māori, non-Pasifika persons occur as early as ages 15 to 24 years and are evident across all age groups (figure 11.3). There is no indication of gender differences in incidence rates for Māori.

**Figure 11.3 - Relative Incidence Rate of Treated Kidney Failure for Māori Patients compared with non-Māori, non-Pasifika Patients by Gender - Aotearoa New Zealand 2015-2019**



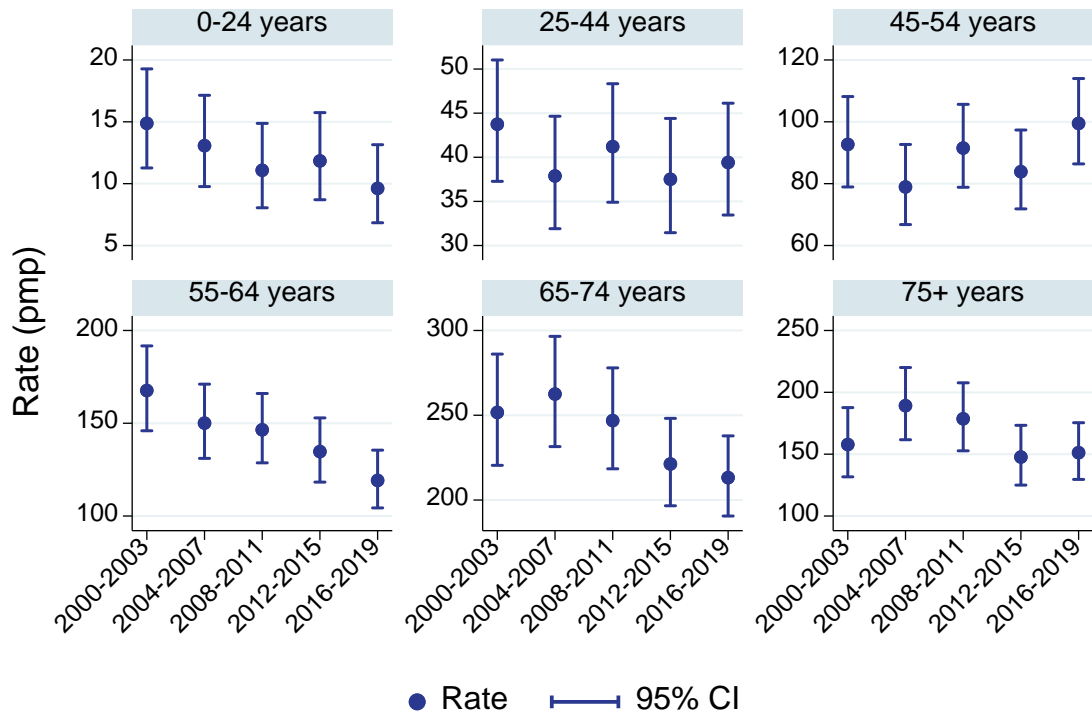
Age specific trends in renal replacement therapy practices for Māori are shown in figure 11.4; note that the Y axis scales vary.

**Figure 11.4.1 - Age-specific Incidence Rates of Treated Kidney Failure - Māori, Aotearoa New Zealand 2000-2019**



Note the Y axis scales vary between panels

Figure 11.4.2 - Age-specific Incidence Rates of Treated Kidney Failure- Non-Māori, non-Pasifika, Aotearoa New Zealand 2000-2019



Note the Y axis scales vary between panels

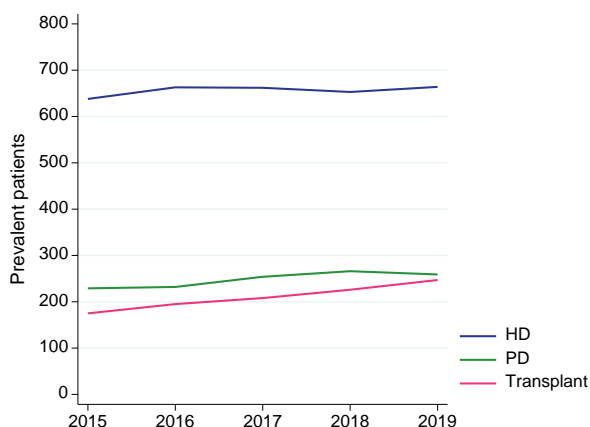
## Prevalent Patients

The number of prevalent Māori patients with treated kidney failure continues to rise year-on-year (table 11.3 and figures 11.5 and 11.6). From 2016 to 2018, there were notable increases in the numbers of Māori people receiving peritoneal dialysis and with a kidney transplant.

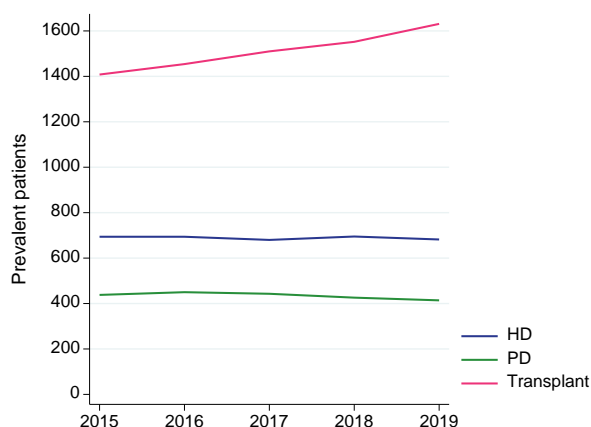
**Table 11.3 Prevalent Patients by Ethnicity and Treatment Modality Aotearoa New Zealand 2015-2019**

Year	Modality	Māori	Non-Māori, non-Pasifika
2015	Haemodialysis (HD)	638 (61%)	694 (27%)
	% HD at home	22%	31%
	Peritoneal Dialysis (PD)	229 (22%)	438 (17%)
	Transplant	175 (17%)	1408 (55%)
2016	Haemodialysis (HD)	663 (61%)	694 (27%)
	% HD at home	21%	30%
	Peritoneal Dialysis (PD)	232 (21%)	450 (17%)
	Transplant	195 (18%)	1454 (56%)
2017	Haemodialysis (HD)	662 (59%)	680 (26%)
	% HD at home	21%	28%
	Peritoneal Dialysis (PD)	254 (23%)	443 (17%)
	Transplant	208 (19%)	1510 (57%)
2018	Haemodialysis (HD)	653 (57%)	695 (26%)
	% HD at home	20%	27%
	Peritoneal Dialysis (PD)	266 (23%)	426 (16%)
	Transplant	226 (20%)	1552 (58%)
2019	Haemodialysis (HD)	664 (57%)	682 (25%)
	% HD at home	20%	26%
	Peritoneal Dialysis (PD)	259 (22%)	414 (15%)
	Transplant	247 (21%)	1631 (60%)

**Figure 11.5.1 - Prevalent Patients by Modality – Aotearoa New Zealand – Māori**

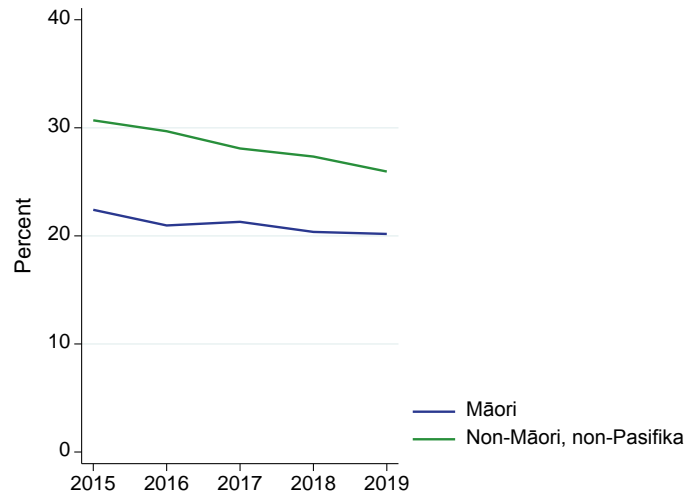


**Figure 11.5.2 - Prevalent Patients by Modality – Aotearoa New Zealand - Non-Māori, non-Pasifika**



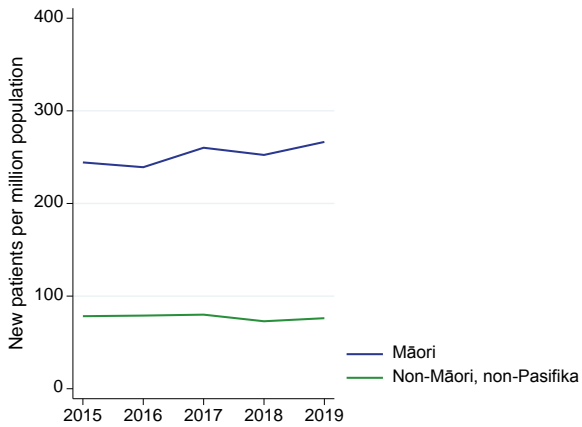
**Figure 11.6 - Prevalent Haemodialysis at Home by Ethnicity - Aotearoa New Zealand**



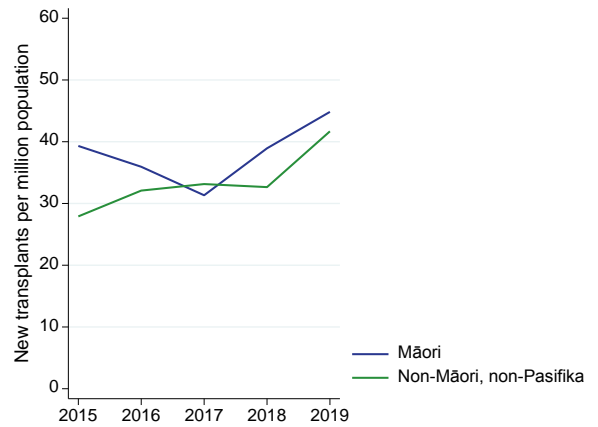


## Incidence and Prevalence per Population

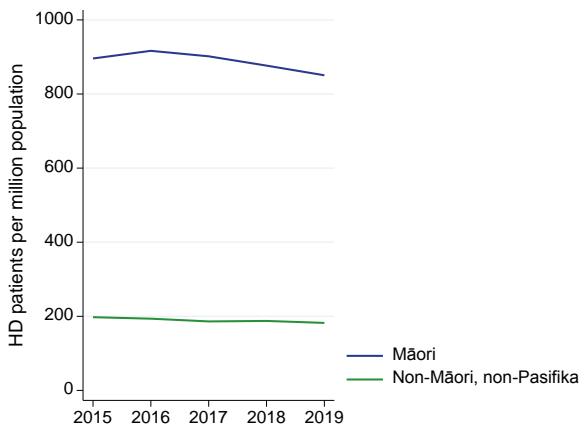
**Figure 11.7 - Incidence of New Kidney Replacement Therapy Patients - Aotearoa New Zealand**



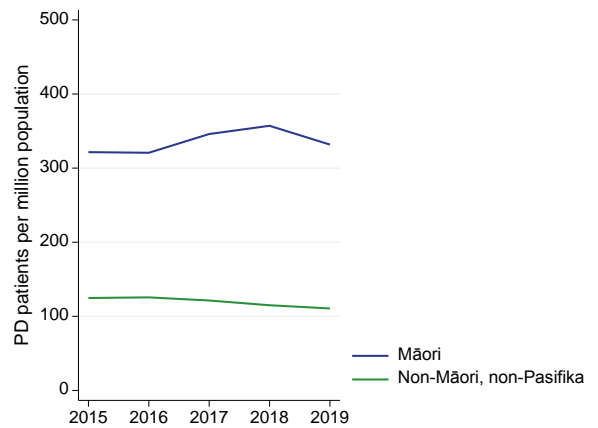
**Figure 11.8 - Incidence of New Transplants - Aotearoa New Zealand**



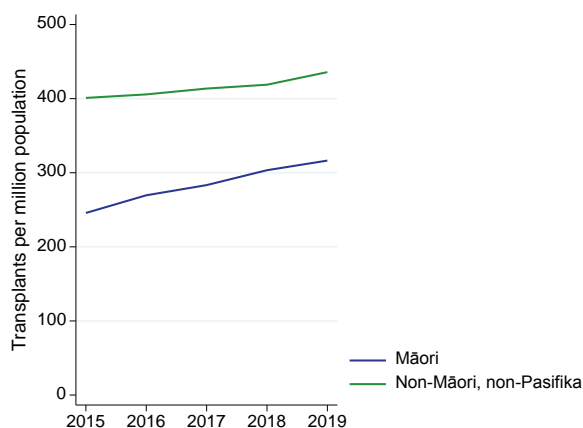
**Figure 11.9 - Prevalent Haemodialysis Patients - Aotearoa New Zealand**



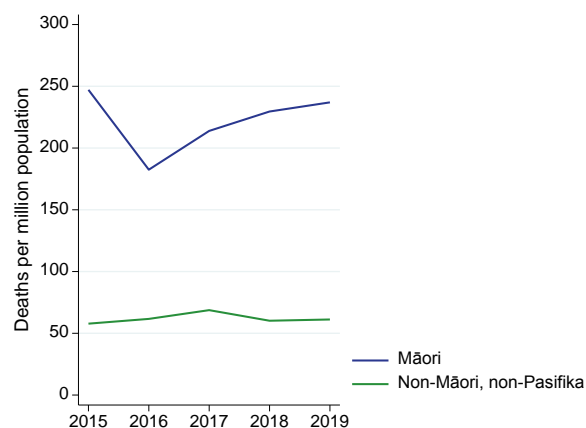
**Figure 11.10 - Prevalent Peritoneal Dialysis Patients - Aotearoa New Zealand**



**Figure 11.11 - Prevalent Transplant Patients – Aotearoa New Zealand**



**Figure 11.12 - Deaths of KRT Patients – Aotearoa New Zealand**



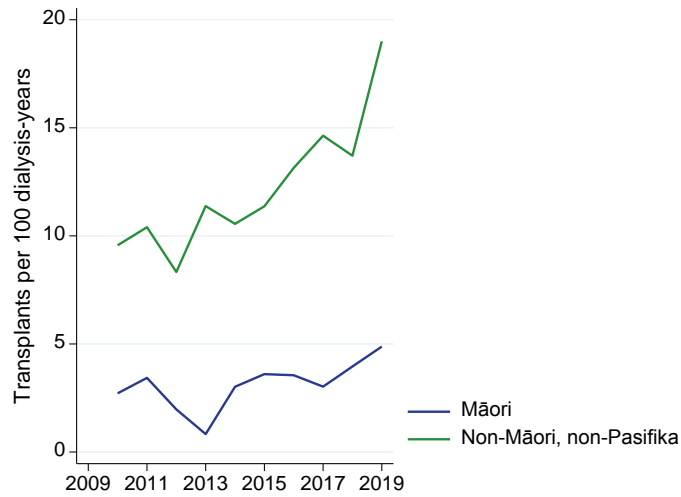
## Transplantation

The numbers of transplant recipients over the last 10 years are shown in table 11.4 by ethnicity and donor type. Figure 11.13 shows the transplant rate of dialysed patients aged 15-64, using dialysis time as the denominator, which illustrates that Māori patients are provided with a kidney transplant at a much lower rate than non-Māori, non-Pasifika patients. Information on donor source is shown in figure 11.14 and trends are shown in figure 11.15. Living donor kidney transplant rates have increased for Māori patients since 2013, with increases in live unrelated donors.

**Table 11.4 Number of Transplant Recipients (pmp) by Ethnicity Aotearoa New Zealand 2010-2019**

Year	Donor Type	Māori	Non-Māori, non-Pasifika
2010	Deceased	13 (20)	32 (10)
	Live	7 (11)	49 (15)
	<b>Total</b>	<b>20 (30)</b>	<b>81 (24)</b>
2011	Deceased	15 (22)	39 (12)
	Live	6 (9)	49 (14)
	<b>Total</b>	<b>21 (31)</b>	<b>88 (26)</b>
2012	Deceased	11 (16)	37 (11)
	Live	4 (6)	49 (14)
	<b>Total</b>	<b>15 (22)</b>	<b>86 (25)</b>
2013	Deceased	5 (7)	46 (14)
	Live	4 (6)	53 (16)
	<b>Total</b>	<b>9 (13)</b>	<b>99 (29)</b>
2014	Deceased	13 (19)	44 (13)
	Live	9 (13)	56 (16)
	<b>Total</b>	<b>22 (31)</b>	<b>100 (29)</b>
2015	Deceased	13 (18)	44 (13)
	Live	15 (21)	54 (15)
	<b>Total</b>	<b>28 (39)</b>	<b>98 (28)</b>
2016	Deceased	13 (18)	58 (16)
	Live	13 (18)	57 (16)
	<b>Total</b>	<b>26 (36)</b>	<b>115 (32)</b>
2017	Deceased	17 (23)	70 (19)
	Live	6 (8)	51 (14)
	<b>Total</b>	<b>23 (31)</b>	<b>121 (33)</b>
2018	Deceased	15 (20)	65 (18)
	Live	14 (19)	56 (15)
	<b>Total</b>	<b>29 (39)</b>	<b>121 (33)</b>
2019	Deceased	24 (31)	83 (22)
	Live	11 (14)	73 (20)
	<b>Total</b>	<b>35 (45)</b>	<b>156 (42)</b>

**Figure 11.13 - Transplant Rate of Dialysed Patients by Ethnicity 2010-2019 – Aotearoa New Zealand, Patients Aged 15-64**  
 ANZDATA Annual report – Chapter 11 – End Stage Kidney Disease in Māori patients in Aotearoa New Zealand Page | 10



The number of transplants provided to Māori recipients has increased since 2013, through a higher proportion of transplants from living donors, however, there are ongoing inequities in the rate of transplants between Māori and the non-Māori non-Pasifika population. There is marked and increasing inequity in provision of pre-emptive kidney transplantation to Māori in Aotearoa New Zealand (figure 11.16).

Figure 11.14 - Donor Type by Ethnicity – Aotearoa New Zealand 2010-2019

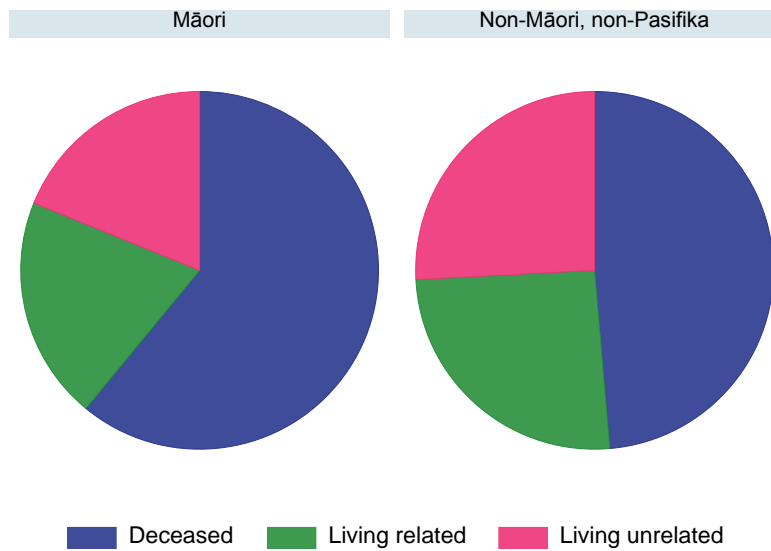


Figure 11.15 - Donor Type by Ethnicity and Year – Aotearoa New Zealand

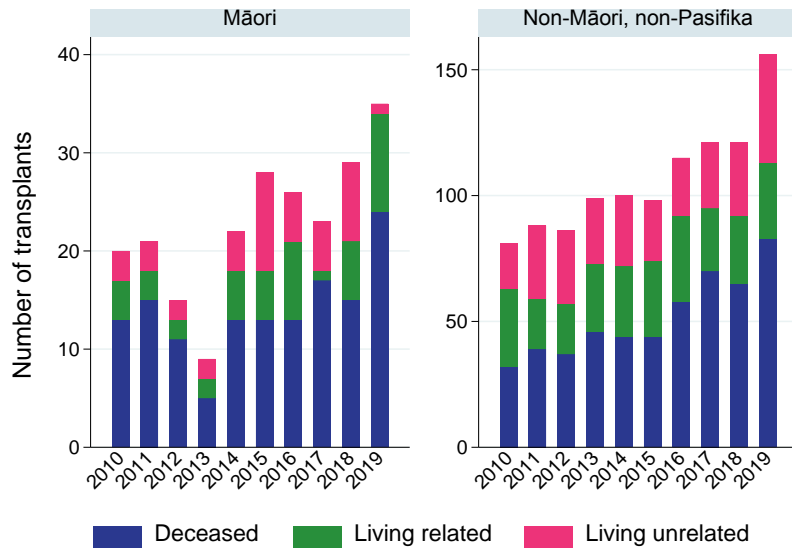
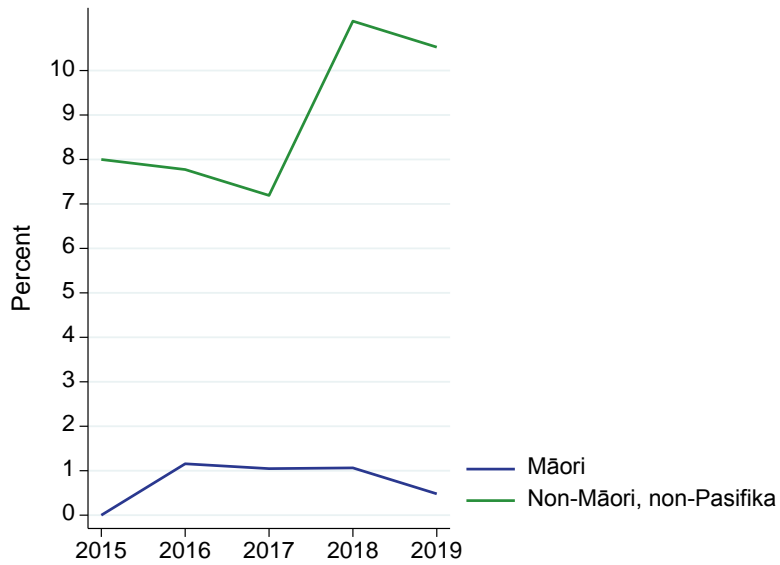


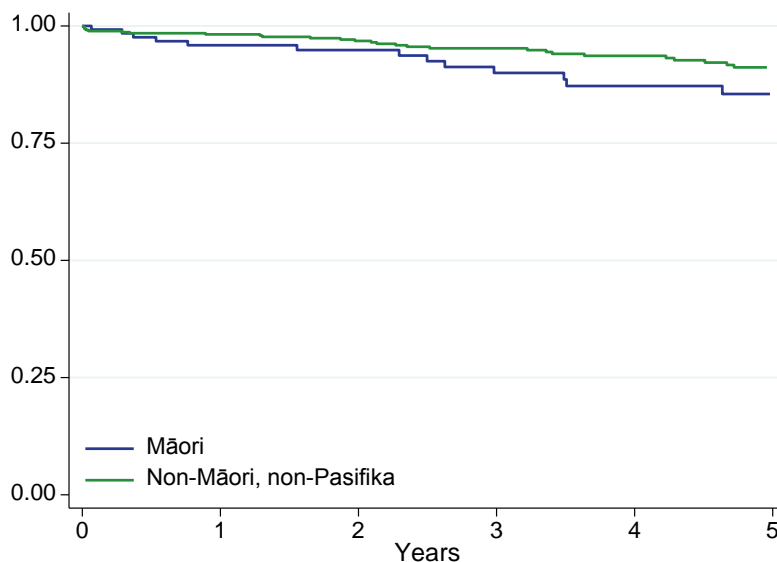
Figure 11.16 - Percentage of Patients Starting Kidney Replacement Therapy with Pre-emptive Kidney Transplant – Aotearoa New Zealand



## Transplant Survival

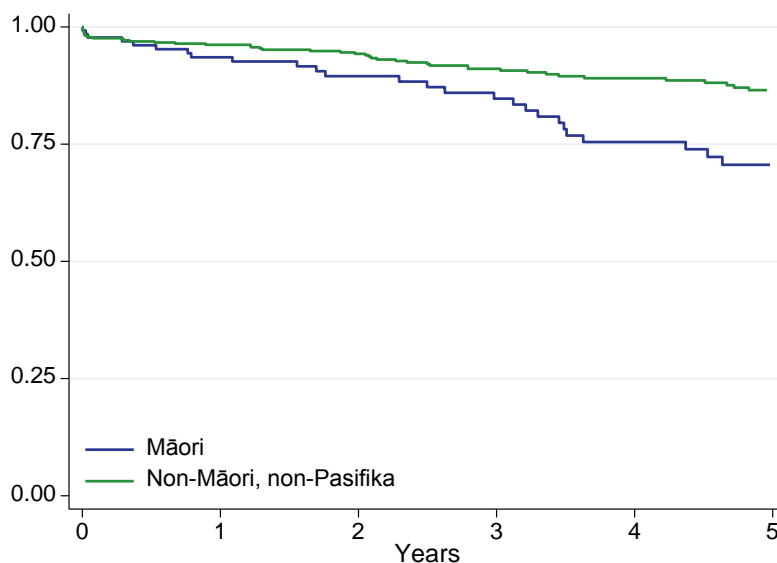
There is a small difference in patient survival after kidney transplantation from a deceased donor between Māori and non-Māori, non-Pasifika recipients, which is apparent from 6 months after transplantation. At 5 years after kidney transplantation from a deceased donor, 85% of Māori recipients and 91% of non-Māori, non-Pasifika recipients were alive (figure 11.17).

**Figure 11.17 - Patient Survival, Recipients of Primary Deceased Donor Kidney Transplants - Aotearoa New Zealand 2010-2019**



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. Transplant kidney function at 5 years post-transplant was recorded in 71% of Māori recipients compared with 87% of non-Māori, non-Pasifika persons (figure 11.18).

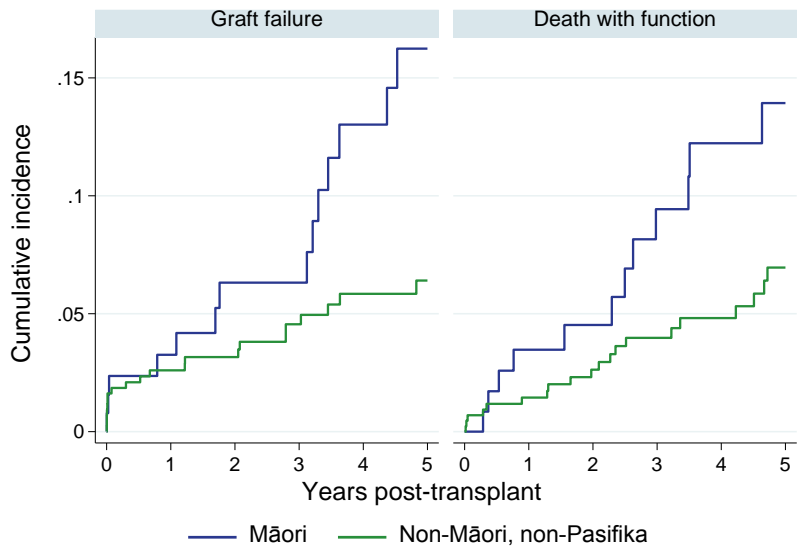
**Figure 11.18 - Graft Survival, Recipients of Primary Deceased Donor Kidney Transplants - Aotearoa New Zealand 2010-2019**



Cumulative incidence curves (utilising competing risk techniques to account for the effects of both components of graft loss, ie graft failure and death with a functioning graft) are shown for Māori transplant outcomes in figure 11.19.

For Māori patients, mortality is increased immediately after transplantation, while rates of graft failure, at least in the first 3 years, appears to be comparable with non-Māori, non-Pasifika patients.

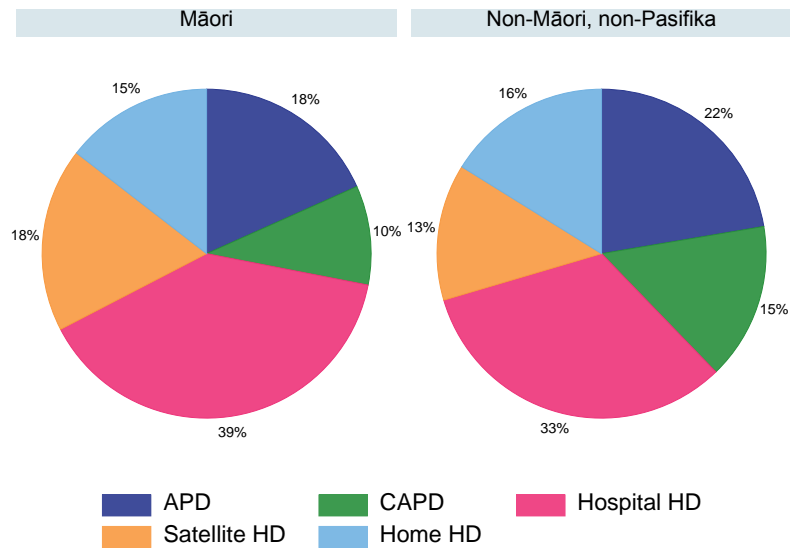
**Figure 11.19 - Transplant Outcomes, Aotearoa New Zealand - Primary Deceased Donor Kidney-only Transplants 2010-2019**



## Dialysis

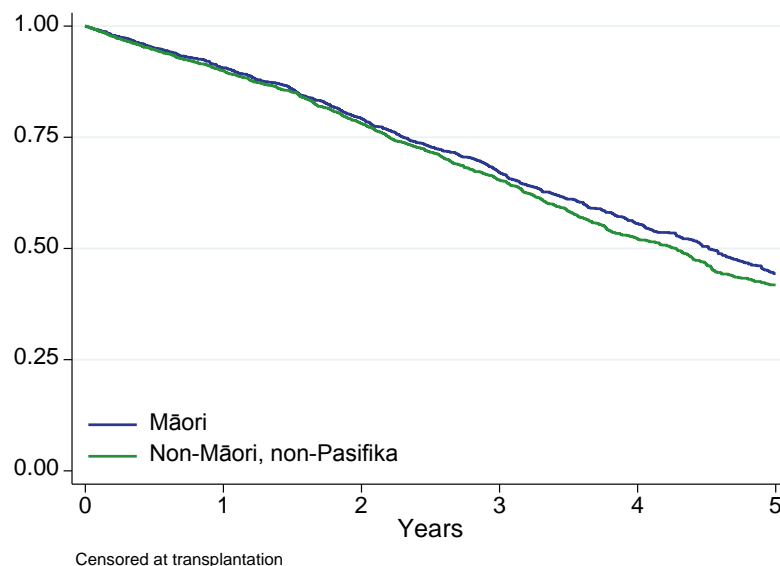
The distribution of dialysis modality is shown graphically in figure 11.20. Māori patients had a higher provision of facility dialysis as the principal modality of care, and lower provision of each of the home-based modalities. For non-Māori, non-Pasifika patients, over half were provided with home-based care. The proportion of Māori patients provided with home-based dialysis was approximately 10% lower.

**Figure 11.20 - Dialysis Modality End 2019 - Aotearoa New Zealand, by Ethnicity**



Half of the people who started dialysis over 2010-2019 were alive 5 years later (figure 11.21). Non-Māori-non-Pasifika and Māori cohorts experienced similar survival over 5 years after starting dialysis, although it is possible that differences between populations including age distribution and access to competing treatments (transplantation) may have impacted mortality estimates.

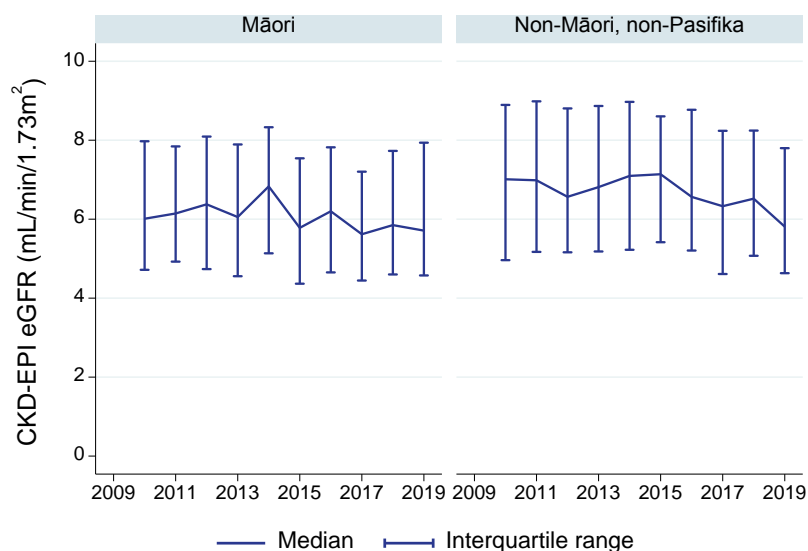
**Figure 11.21 - Patient Survival, Incident Dialysis Patients – Aotearoa New Zealand 2010-2019**



## Timing of Dialysis Initiation

In Aotearoa New Zealand, the level of kidney function at which dialysis was commenced ranged between estimated Glomerular Filtration Rate (eGFR) 5-7 mL/min/1.73m<sup>2</sup> for Māori patients and 6-8 mL/min/1.73m<sup>2</sup> for non-Māori, non-Pasifika patients.

**Figure 11.22 - eGFR at Dialysis Initiation – Aotearoa New Zealand**



## Late Referral

The proportion of patients who experienced late referral to specialist nephrology services (defined as the first assessment by a specialist nephrologist within 3 months of commencing dialysis) in Aotearoa New Zealand over 2015-2019 is shown in table 11.5. Late referral has not significantly changed over this time period, and tends to be higher than for non-Māori, non-Pasifika patients.

**Table 11.5 Percentage of Late Referral by Ethnicity Aotearoa New Zealand 2015-2019**

Year	Māori	Non-Māori, non-Pasifika
2015	15%	13%
2016	13%	13%
2017	13%	11%
2018	14%	10%
2019	15%	14%

## Vascular Access

### Incident Vascular Access

Incident vascular access data are presented in table 11.6, and prevalent data in table 11.7.

The proportion of Māori patients commencing RRT with haemodialysis using a catheter rather than permanent access was similar to that in non-Māori, non-Pasifika patients in 2019 (table 11.6).



**Table 11.6 Incident Vascular Access Aotearoa New Zealand 2015-2019**

Year	Vascular access	Māori	Non-Māori, non-Pasifika
2015	AV Fistula (AVF)	34 (28%)	34 (27%)
	AV Graft (AVG)	3 (2%)	2 (2%)
	Central Venous Catheter (CVC)	82 (67%)	87 (69%)
	Not reported	3 (2%)	3 (2%)
2016	AV Fistula (AVF)	31 (28%)	33 (23%)
	AV Graft (AVG)	0 (0%)	1 (1%)
	Central Venous Catheter (CVC)	76 (70%)	104 (73%)
	Not reported	2 (2%)	4 (3%)
2017	AV Fistula (AVF)	32 (26%)	35 (23%)
	AV Graft (AVG)	3 (2%)	2 (1%)
	Central Venous Catheter (CVC)	88 (70%)	114 (75%)
	Not reported	2 (2%)	1 (1%)
2018	AV Fistula (AVF)	22 (21%)	29 (22%)
	AV Graft (AVG)	0 (0%)	2 (2%)
	Central Venous Catheter (CVC)	84 (79%)	98 (75%)
	Not reported	0 (0%)	1 (1%)
2019	AV Fistula (AVF)	27 (20%)	33 (24%)
	AV Graft (AVG)	0 (0%)	2 (1%)
	Central Venous Catheter (CVC)	105 (80%)	101 (74%)
	Not reported	0 (0%)	0 (0%)

### Prevalent Vascular Access

In contrast to incident vascular access, the rate of catheter provision for prevalent dialysis patients is lower for Māori patients in 2019 than non-Māori, non-Pasifika patients (table 11.7).

**Table 11.7 Prevalent Vascular Access Aotearoa New Zealand 2015-2019**

Year	Vascular access	Māori	Non-Māori, non-Pasifika
2015	AV Fistula (AVF)	428 (67%)	452 (65%)
	AV Graft (AVG)	35 (5%)	26 (4%)
	Central Venous Catheter (CVC)	141 (22%)	180 (26%)
	Not reported	34 (5%)	36 (5%)
2016	AV Fistula (AVF)	452 (68%)	444 (64%)
	AV Graft (AVG)	27 (4%)	26 (4%)
	Central Venous Catheter (CVC)	168 (25%)	202 (29%)
	Not reported	16 (2%)	22 (3%)
2017	AV Fistula (AVF)	449 (68%)	422 (62%)
	AV Graft (AVG)	26 (4%)	19 (3%)
	Central Venous Catheter (CVC)	176 (27%)	222 (33%)
	Not reported	11 (2%)	17 (3%)
2018	AV Fistula (AVF)	441 (68%)	418 (60%)
	AV Graft (AVG)	21 (3%)	17 (2%)
	Central Venous Catheter (CVC)	178 (27%)	245 (35%)
	Not reported	13 (2%)	15 (2%)
2019	AV Fistula (AVF)	415 (63%)	391 (57%)
	AV Graft (AVG)	18 (3%)	15 (2%)
	Central Venous Catheter (CVC)	202 (30%)	242 (35%)
	Not reported	29 (4%)	34 (5%)

## Patient Flow

Table 11.8 shows the overall patient flow in New Zealand by ethnicity. Notably, mortality for Māori patients is 3 to 4-fold higher per million of population than non-Māori-non-Pasifika patients.

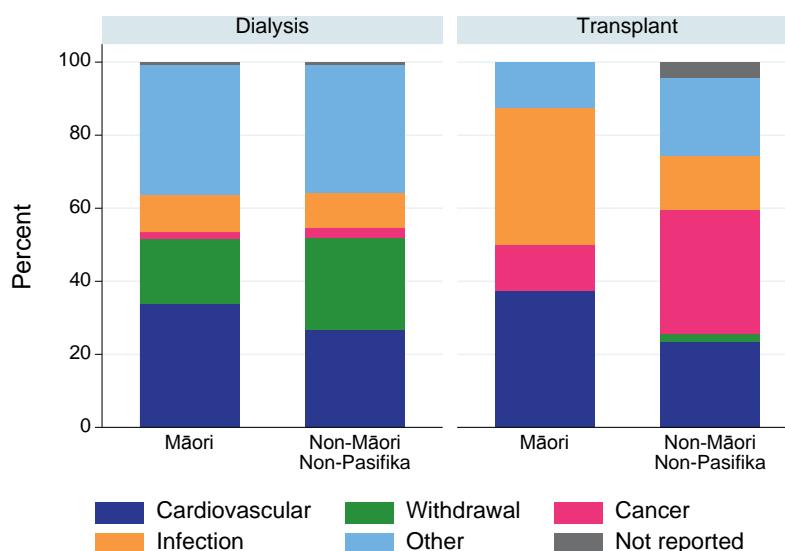
**Table 11.8 Patient Flow (pmp) Aotearoa New Zealand 2015-2019**

Year	Event	Māori	Non-Māori, non-Pasifika
2015	New patients	174 (244)	275 (78)
	New transplants	28 (39)	99 (28)
	Pre-emptive transplants	0 (0)	22 (6)
	Prevalent dialysis	867 (1217)	1132 (322)
	Prevalent transplants	175 (246)	1408 (401)
	Total prevalence	1042 (1463)	2540 (723)
	Deaths	176 (247)	203 (58)
2016	New patients	173 (239)	283 (79)
	New transplants	26 (36)	115 (32)
	Pre-emptive transplants	2 (3)	22 (6)
	Prevalent dialysis	895 (1237)	1144 (319)
	Prevalent transplants	195 (270)	1454 (406)
	Total prevalence	1090 (1507)	2598 (725)
	Deaths	132 (182)	221 (62)
2017	New patients	191 (260)	292 (80)
	New transplants	23 (31)	121 (33)
	Pre-emptive transplants	2 (3)	21 (6)
	Prevalent dialysis	916 (1248)	1123 (308)
	Prevalent transplants	208 (283)	1510 (414)
	Total prevalence	1124 (1531)	2633 (721)
	Deaths	157 (214)	251 (69)
2018	New patients	188 (252)	270 (73)
	New transplants	29 (39)	121 (33)
	Pre-emptive transplants	2 (3)	30 (8)
	Prevalent dialysis	919 (1234)	1121 (302)
	Prevalent transplants	226 (303)	1552 (419)
	Total prevalence	1145 (1537)	2673 (721)
	Deaths	171 (230)	223 (60)
2019	New patients	208 (266)	285 (76)
	New transplants	35 (45)	156 (42)
	Pre-emptive transplants	1 (1)	30 (8)
	Prevalent dialysis	923 (1182)	1096 (293)
	Prevalent transplants	247 (316)	1631 (436)
	Total prevalence	1170 (1499)	2727 (729)
	Deaths	185 (237)	229 (61)

## Cause of Death

The causes of death in 2019 are shown in figure 11.23 and table 11.9, categorised by ethnicity and modality at time of death.

**Figure 11.23 - Cause of Death by Modality and Ethnicity - Deaths Occurring During 2019, Aotearoa New Zealand**



**Table 11.9 Cause of Death by Modality and Ethnicity, Aotearoa New Zealand 2019**

Modality	Cause of death	Māori	Non-Māori, non-Pasifika
Dialysis	Cardiovascular	59 (34%)	48 (27%)
	Withdrawal	31 (18%)	45 (25%)
	Cancer	3 (2%)	5 (3%)
	Infection	18 (10%)	17 (9%)
	Other	62 (36%)	63 (35%)
	Not reported	1 (1%)	1 (1%)
	<b>Total</b>		<b>174</b>
Transplant	Cardiovascular	3 (38%)	11 (23%)
	Withdrawal	0 (0%)	1 (2%)
	Cancer	1 (13%)	16 (34%)
	Infection	3 (38%)	7 (15%)
	Other	1 (13%)	10 (21%)
	Not reported	0 (0%)	2 (4%)
	<b>Total</b>		<b>8</b>

## References

<sup>1</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>

<sup>2</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, 2019, Estimated Resident Population by Age and Sex (1991+) (Annual-Jun), NZ Infoshare, viewed 19 Dec 2019, <http://archive.stats.govt.nz/infoshare/SelectVariables.aspx?pxID=782e8afc-96ab-49e7-bb65-994c51b2e715>*

<sup>3</sup> Ministry of Health. 2017. HISO 10001:2017 Ethnicity Data Protocols. Wellington: Ministry of Health.