



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*

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Summary and Highlights

This chapter describes the rates, clinical care patterns and outcomes of treatment for kidney failure for people identifying as Maori living in Aotearoa New Zealand.

The denominator population statistics are stratified by ethnicity, and drawn from estimates provided by Statistics New Zealand to calculate disease and treatment rates¹. 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.

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 Groups² 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 person. Future reporting will aim to report more accurately on patients identifying as more than one ethnicity.

There are marked and persistent inequities in the incidence and prevalence of kidney failure and treatment practices in kidney replacement therapy for Māori, comparing to non-Maori and non-Pasifika population in Aotearoa New Zealand.

Maori has higher rate of diabetic nephropathy causing kidney failure and are less likely to receive kidney transplantation and more likely to initiate dialysis with haemodialysis. The disparity occurs as early as ages 15 to 24 years and are evident across all age groups. In addition, Maori patients with kidney failure have 3-4 folds increase in mortality comparing to non-Maori and non-Pasifika patients, likely secondary to lower transplantation rate.

The renal services of Aotearoa New Zealand acknowledges Te Tiriti ō Waitangi / The Treaty of Waitangi principles. 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. 44th Report, Chapter 11: Kidney Failure in Māori patients in Aotearoa New Zealand. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2021. Available at: <http://www.anzdata.org.au>

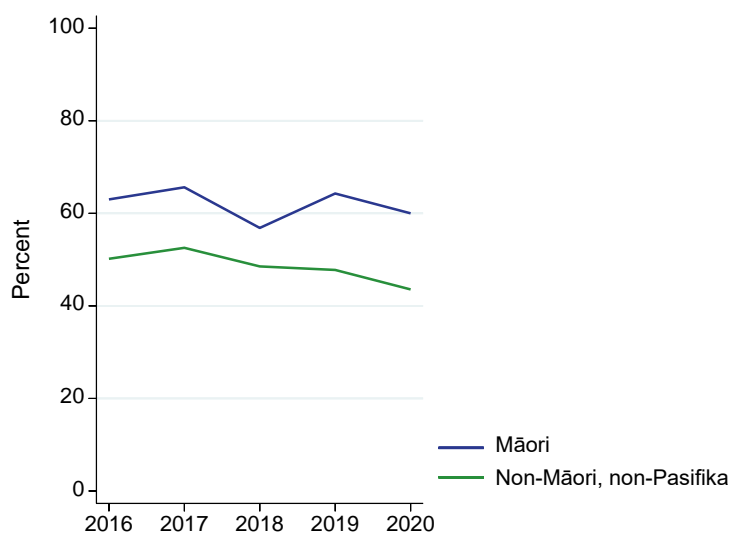
New Patients

A total of 215 patients identifying as Māori commenced treatment for kidney failure in 2020, representing 31% of all patients starting kidney replacement therapy. The rate of haemodialysis commencement in 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, non-Pasifika patients (figure 11.1). Only 5 Māori patients received a pre-emptive kidney transplant during 2020. In the last 5 years, 12 Māori patients have received a pre-emptive kidney transplant compared with 141 non-Māori, non-Pasifika patients.

Table 11.1 New Patients (pmp) Aotearoa New Zealand 2016-2020

Year	Modality	Māori	Non-Māori, non-Pasifika
2016	HD	109 (139)	143 (40)
	PD	62 (79)	120 (34)
	Graft	2 (3)	22 (6)
2017	HD	126 (157)	155 (43)
	PD	64 (80)	119 (33)
	Graft	2 (2)	21 (6)
2018	HD	108 (132)	132 (36)
	PD	80 (98)	110 (30)
	Graft	2 (2)	30 (8)
2019	HD	135 (162)	139 (37)
	PD	74 (89)	122 (33)
	Graft	1 (1)	30 (8)
2020	HD	129 (152)	142 (37)
	PD	81 (95)	146 (38)
	Graft	5 (6)	38 (10)

Figure 11.1 - Percentage of New Patients Commencing on Haemodialysis - Aotearoa New Zealand 2016-2020



Primary Kidney Disease

The primary renal diseases of incident New Zealand patients over 2016-2020 are shown in table 11.2. Māori experience diabetic nephropathy at a substantially higher rate than non-Māori, non-Pasifika patients, whilst experiencing GN or polycystic kidney disease at reduced rates.

Table 11.2 Primary Kidney Disease of New Patients Aotearoa New Zealand 2016-2020

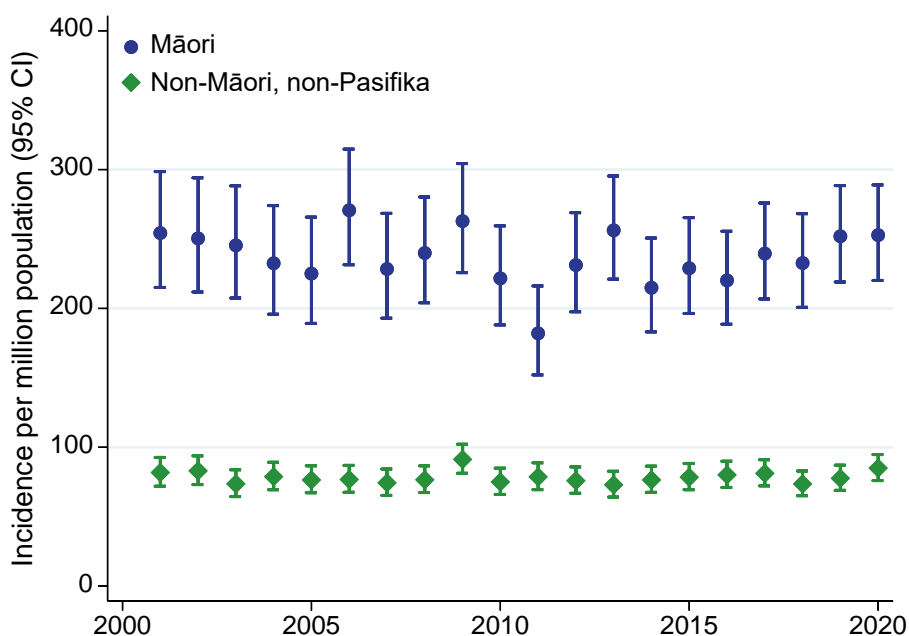
Primary Kidney Disease	Māori	Non-Māori, non-Pasifika
Diabetic Kidney Disease	646 (66%)	403 (27%)
Glomerulonephritis	143 (15%)	366 (25%)
Hypertension	50 (5%)	190 (13%)
Polycystic Disease	13 (1%)	126 (9%)
Reflux Nephropathy	13 (1%)	39 (3%)
Other	90 (9%)	271 (18%)
Uncertain	23 (2%)	65 (4%)
Not reported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

Incidence Rates

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

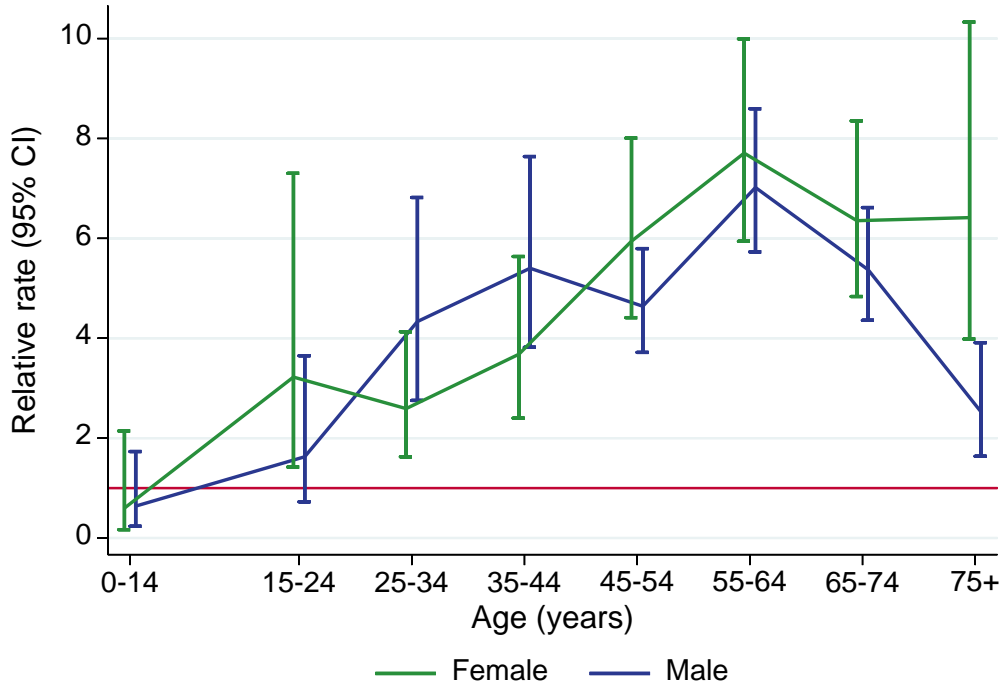
Although rates fluctuate from year to year, the incidence rates have been stable in recent years (figure 11.2). The relative rate differs with age - this is illustrated in figure 11.3.

Figure 11.2 - Unadjusted Incident KRT Rate - Aotearoa New Zealand



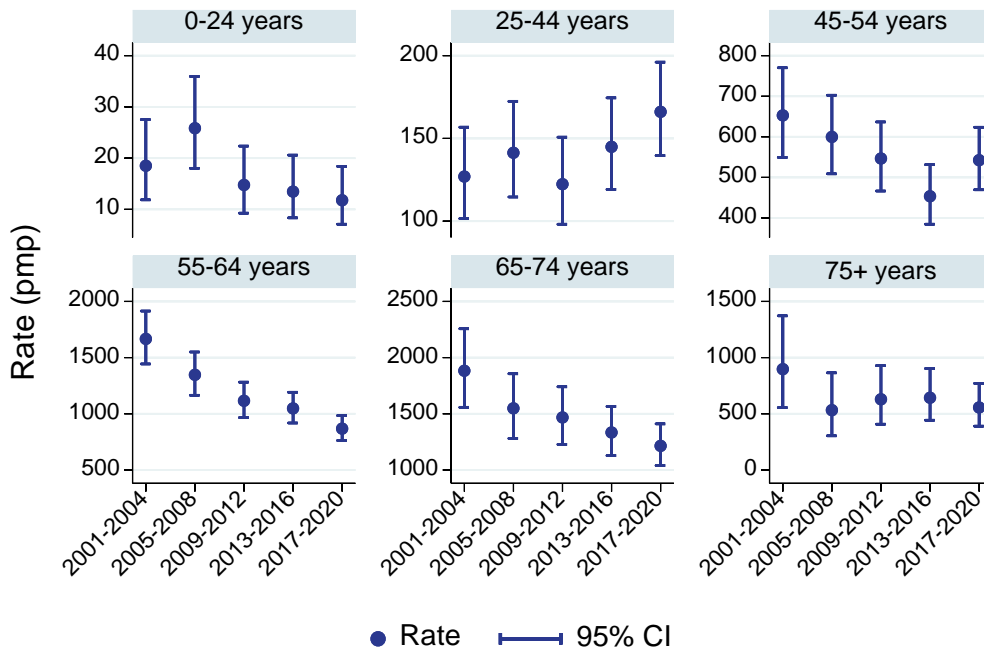
Among Māori, disparities in the incidence of kidney failure from non-Māori, non-Pasifika persons occur as early as ages 15 to 24 years and are evident across all age groups above this (figure 11.3).

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 2016-2020



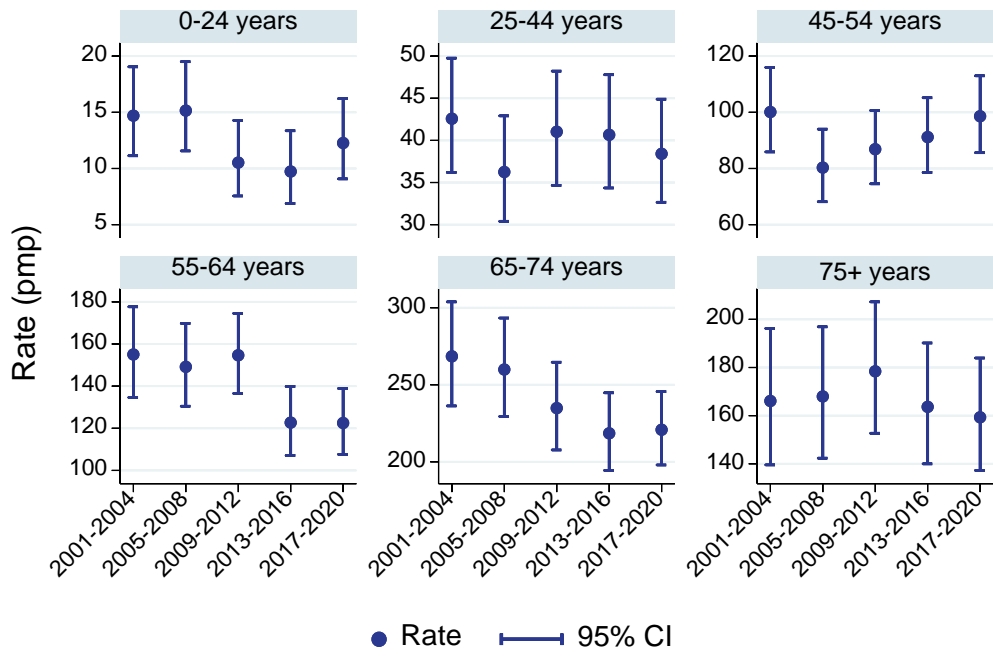
Age specific trends in kidney replacement therapy practices for Māori are shown in figure 11.4; note that the Y axis scales vary.

Figure 11.4.1 - Age-specific Incidence Rates of Treated Kidney Failure - Māori, Aotearoa New Zealand 2001-2020



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 2001-2020



Note the Y axis scales vary between panels

Prevalent Patients

The number of prevalent patients with treated kidney failure by treatment modality for Māori and non-Māori, non-Pasifika persons is shown in table 11.3 and figures 11.5 and 11.6.

Table 11.3 Prevalent Patients by Ethnicity and Treatment Modality New Zealand 2016-2020

Year	Modality	Māori	Non-Māori, non-Pasifika
2016	HD	667 (61%)	691 (27%)
	% HD at home*	21%	30%
	PD	232 (21%)	451 (17%)
	Tx	200 (18%)	1454 (56%)
2017	HD	667 (59%)	682 (26%)
	% HD at home*	21%	28%
	PD	254 (22%)	443 (17%)
	Tx	213 (19%)	1511 (57%)
2018	HD	659 (57%)	701 (26%)
	% HD at home*	20%	27%
	PD	266 (23%)	426 (16%)
	Tx	231 (20%)	1552 (58%)
2019	HD	675 (58%)	694 (25%)
	% HD at home*	20%	26%
	PD	246 (21%)	401 (15%)
	Tx	251 (21%)	1629 (60%)
2020	HD	715 (58%)	707 (25%)
	% HD at home*	17%	24%
	PD	253 (20%)	432 (15%)
	Tx	268 (22%)	1703 (60%)

*Includes Community House HD

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

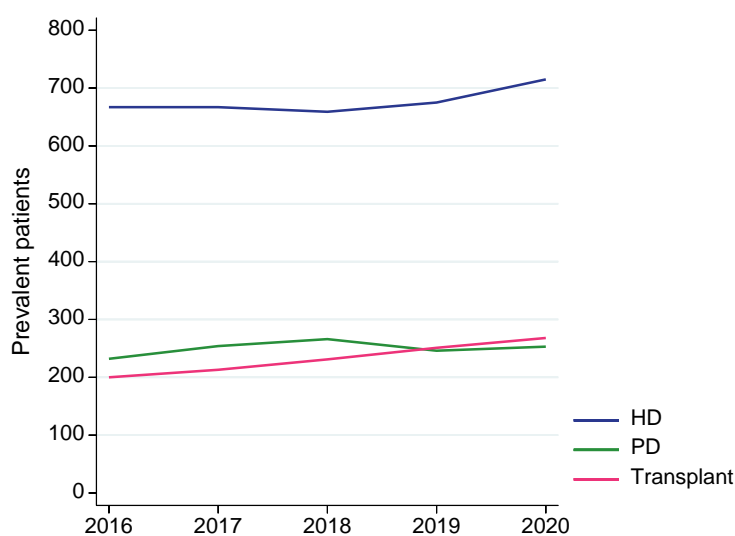


Figure 11.5.2 - Prevalent Patients by Modality - Aotearoa New Zealand - Non-Māori, non-Pasifika

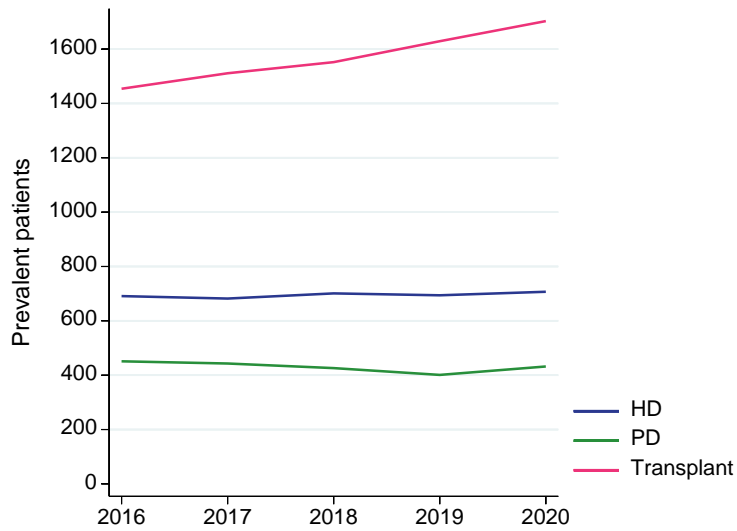
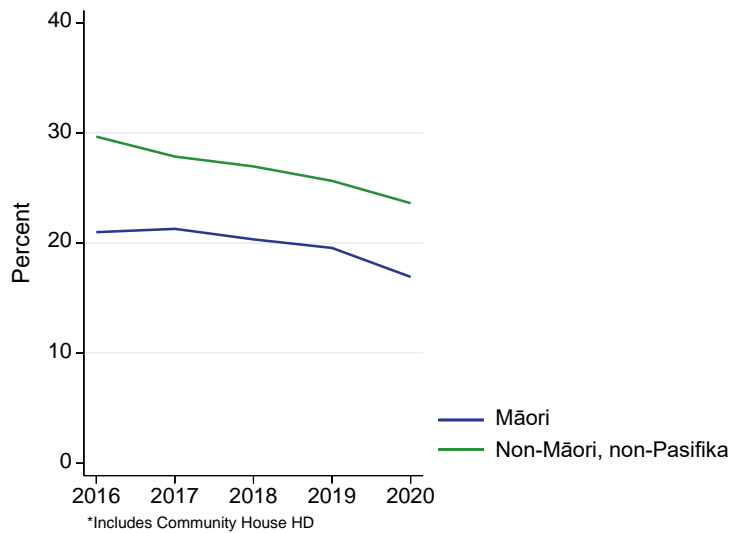


Figure 11.6 - Prevalent Haemodialysis at Home* (% of all HD) by Ethnicity - Aotearoa New Zealand



Incidence and Prevalence per Population

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

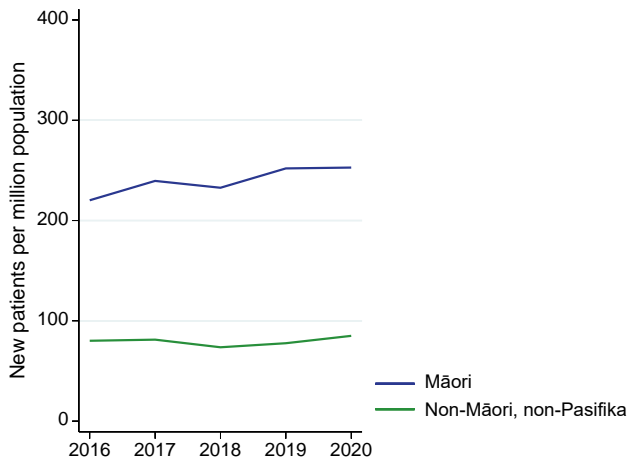


Figure 11.8 - Incidence of New Transplants - Aotearoa New Zealand

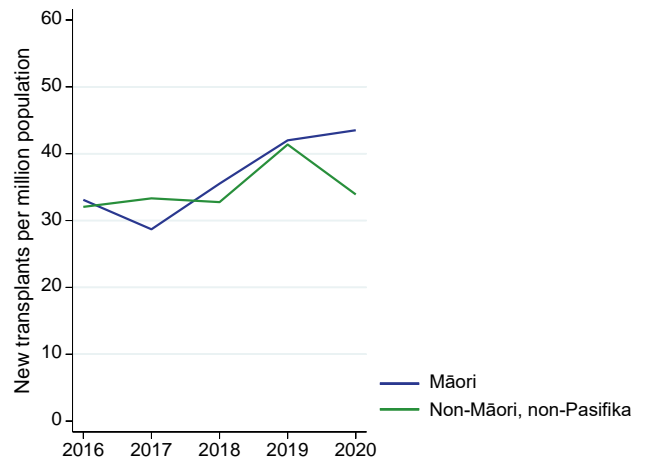


Figure 11.9 - Prevalent Haemodialysis Patients - Aotearoa New Zealand

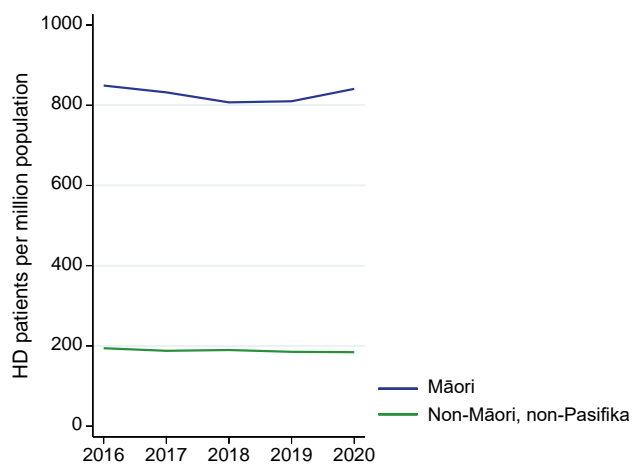


Figure 11.10 - Prevalent Peritoneal Dialysis Patients - Aotearoa New Zealand

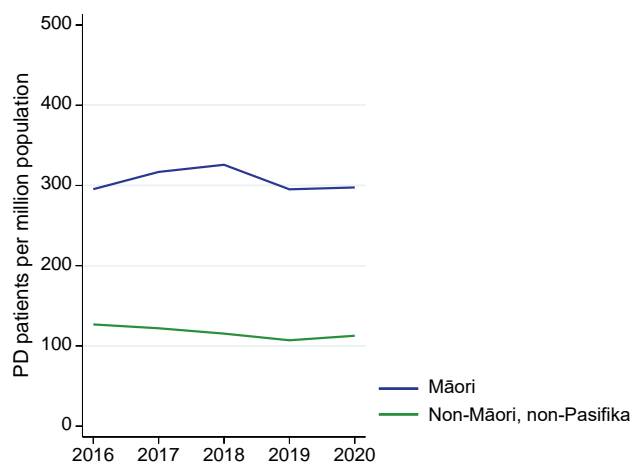


Figure 11.11 - Prevalent Transplant Patients - Aotearoa New Zealand

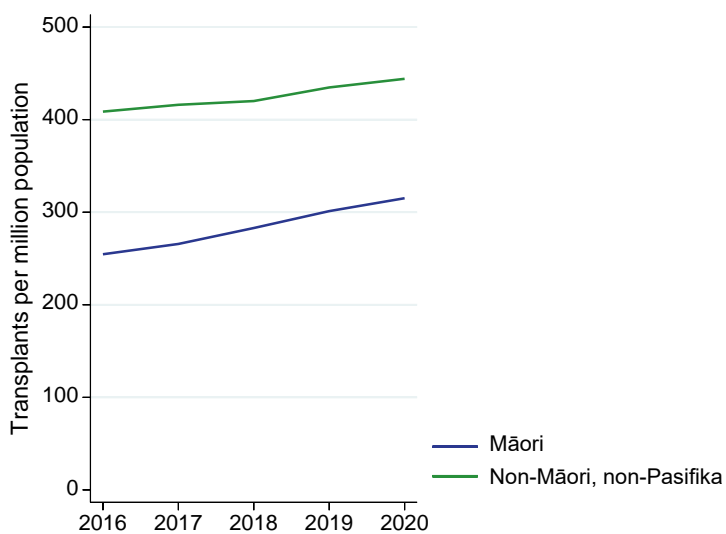
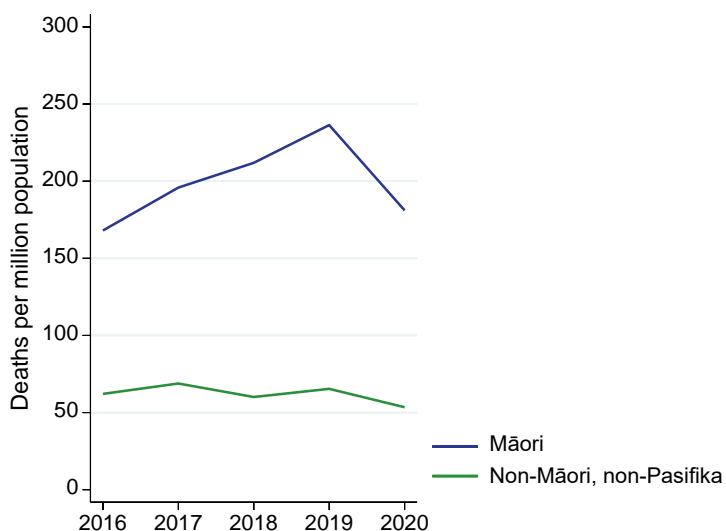


Figure 11.12 - Deaths of KRT Patients – Aotearoa New Zealand



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 receive 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.

Table 11.4 Number of Transplant Recipients (pmp) by Ethnicity New Zealand 2011-2020

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

Figure 11.13 - Transplant Rate of Dialysed Patients by Ethnicity 2011-2020 - Aotearoa New Zealand, Patients Aged 15-64

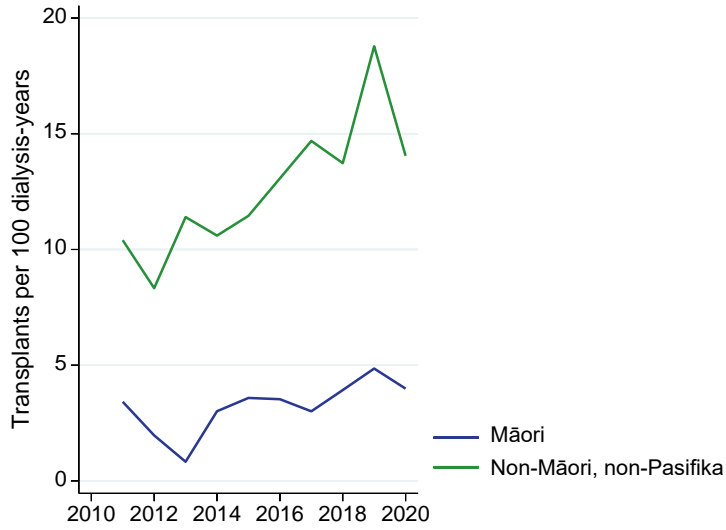


Figure 11.14 - Donor Type by Ethnicity - Aotearoa New Zealand 2011-2020

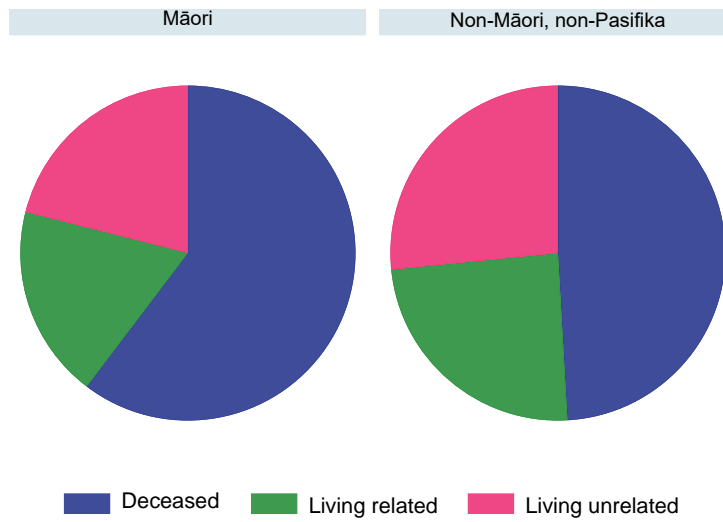


Figure 11.15 - Donor Type by Ethnicity and Year - Aotearoa New Zealand

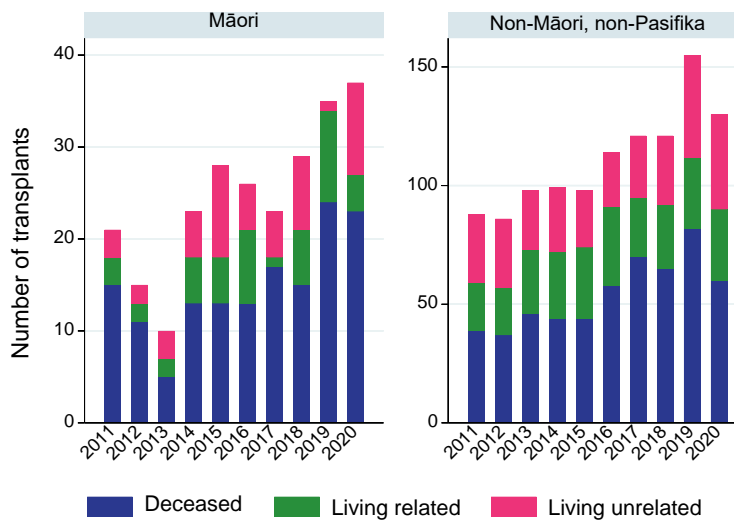
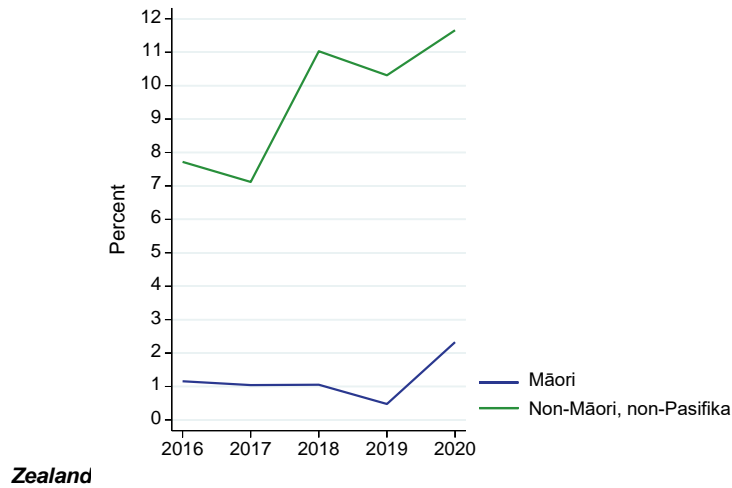


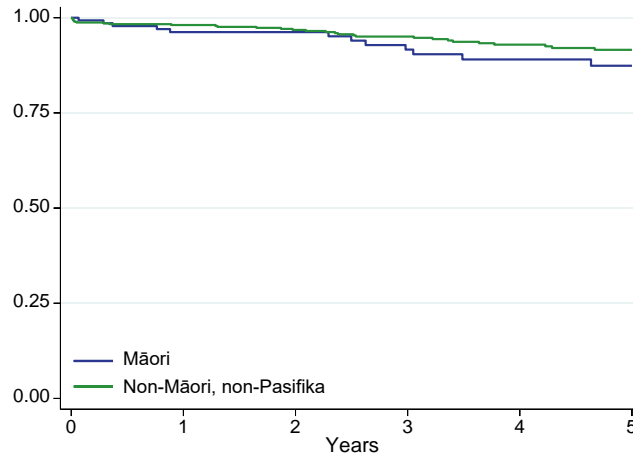
Figure 11.16 - Percentage of Patients Starting Kidney Replacement Therapy with Pre-emptive Kidney Transplant - Aotearoa New



Transplant Survival

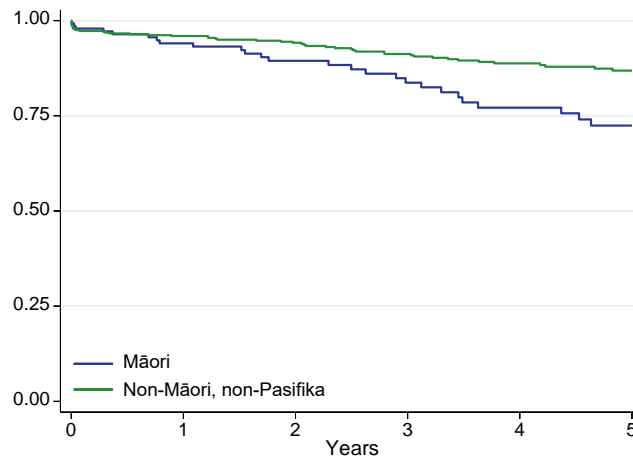
Survival after kidney transplantation from a deceased donor for Māori and non-Māori, non-Pasifika recipients is shown in figure 11.17. At 5 years after kidney transplantation from a deceased donor, 87% of Māori recipients and 92% of non-Māori, non-Pasifika recipients were alive.

Figure 11.17 - Patient Survival, Recipients of Primary Deceased Donor Kidney Transplants - Aotearoa New Zealand 2011-2020



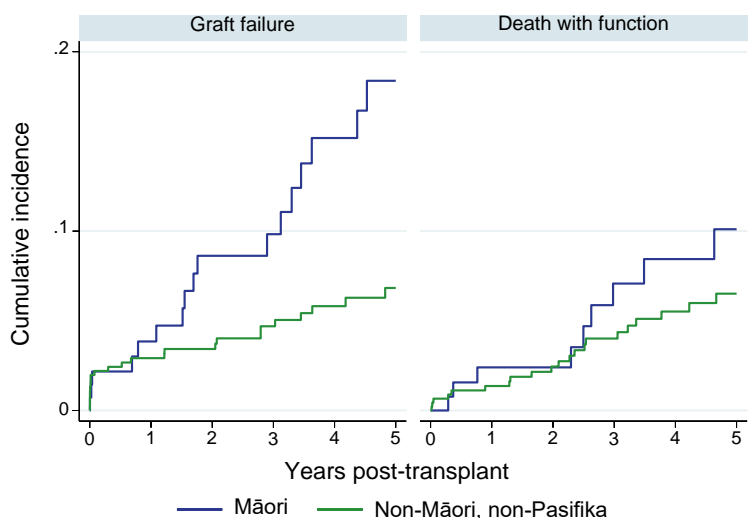
Over the first 5 years after kidney transplant from a deceased donation, some kidney transplants have been lost either through the transplant failing or the patient dying with a functioning kidney. Transplant kidney function at 5 years post-transplant was recorded in 72% of Māori recipients compared 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 2011-2020



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.

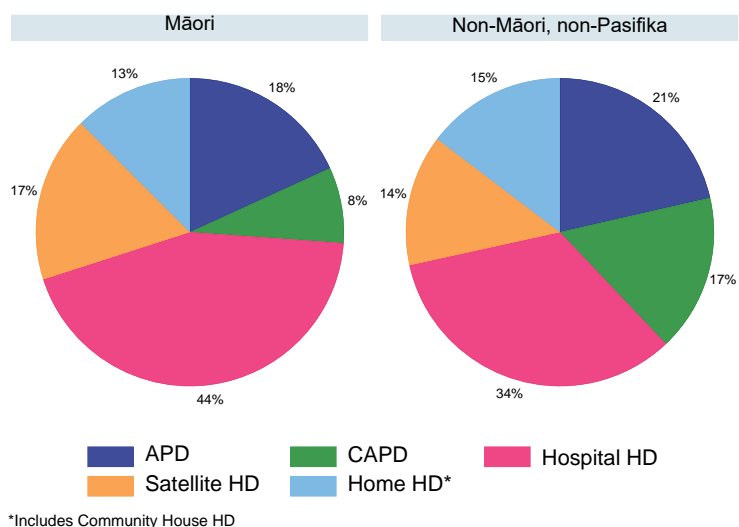
Figure 11.19 - Transplant Outcomes, Aotearoa New Zealand - Primary Deceased Donor Kidney-only Transplants 2011-2020



Dialysis

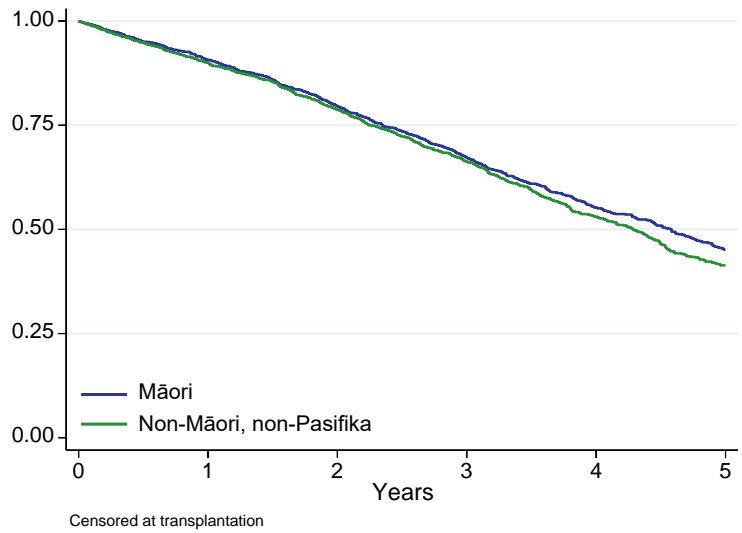
The distribution of dialysis modality is shown graphically in figure 11.20. Māori patients had a higher use of facility dialysis as the principal modality of care, and lower use of each of the home-based modalities.

Figure 11.20 - Dialysis Modality End 2020 - Aotearoa New Zealand, by Ethnicity



Patient survival after incident dialysis is shown for Māori and Non-Māori-non-Pasifika patients in 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.

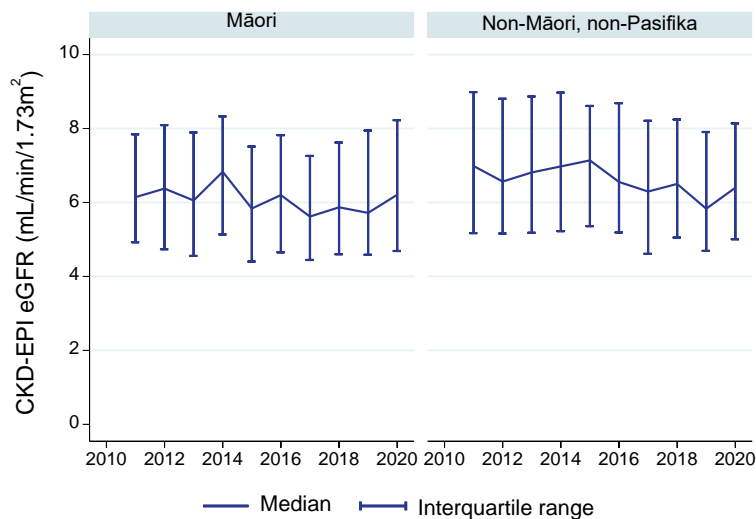
Figure 11.21 - Patient Survival, Incident Dialysis Patients - Aotearoa New Zealand 2011-2020



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 11.22 - eGFR at Dialysis Initiation - Aotearoa New Zealand



Late Referral

The proportion of patients who experienced late referral to specialist nephrology services in Aotearoa New Zealand over 2016-2020 is shown in table 11.5.

Table 11.5 Percentage of Late Referral by Ethnicity New Zealand 2016-2020

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

Vascular Access

Incident Vascular Access

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

Table 11.6 Incident Vascular Access New Zealand 2016-2020

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

Prevalent Vascular Access

Table 11.7 Prevalent Vascular Access New Zealand 2016-2020

Year	Vascular access	Māori	Non-Māori, non-Pasifika
2016	AVF	456 (68%)	438 (63%)
	AVG	27 (4%)	26 (4%)
	CVC	168 (25%)	204 (30%)
	Not reported	16 (2%)	23 (3%)
2017	AVF	452 (68%)	419 (61%)
	AVG	26 (4%)	19 (3%)
	CVC	177 (27%)	223 (33%)
	Not reported	12 (2%)	21 (3%)
2018	AVF	443 (67%)	417 (59%)
	AVG	21 (3%)	17 (2%)
	CVC	180 (27%)	247 (35%)
	Not reported	15 (2%)	20 (3%)
2019	AVF	420 (62%)	397 (57%)
	AVG	18 (3%)	15 (2%)
	CVC	212 (31%)	252 (36%)
	Not reported	25 (4%)	30 (4%)
2020	AVF	409 (57%)	385 (54%)
	AVG	17 (2%)	11 (2%)
	CVC	252 (35%)	278 (39%)
	Not reported	37 (5%)	33 (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 compared with non-Māori-non-Pasifika patients.

Table 11.8 Patient Flow (pmp) New Zealand 2016-2020

Year	Event	Māori	Non-Māori, non-Pasifika
2016	New patients	173 (220)	285 (80)
	New transplants	26 (33)	114 (32)
	Pre-emptive transplants	2 (3)	22 (6)
	Prevalent dialysis	899 (1144)	1142 (321)
	Prevalent transplants	200 (255)	1454 (409)
	Total prevalence	1099 (1399)	2596 (730)
	Deaths	132 (168)	221 (62)
2017	New patients	192 (240)	295 (81)
	New transplants	23 (29)	121 (33)
	Pre-emptive transplants	2 (2)	21 (6)
	Prevalent dialysis	921 (1149)	1125 (310)
	Prevalent transplants	213 (266)	1511 (416)
	Total prevalence	1134 (1415)	2636 (726)
	Deaths	157 (196)	250 (69)
2018	New patients	190 (233)	272 (74)
	New transplants	29 (36)	121 (33)
	Pre-emptive transplants	2 (2)	30 (8)
	Prevalent dialysis	925 (1133)	1127 (305)
	Prevalent transplants	231 (283)	1552 (420)
	Total prevalence	1156 (1416)	2679 (725)
	Deaths	173 (212)	222 (60)
2019	New patients	210 (252)	291 (78)
	New transplants	35 (42)	155 (41)
	Pre-emptive transplants	1 (1)	30 (8)
	Prevalent dialysis	921 (1105)	1095 (292)
	Prevalent transplants	251 (301)	1629 (435)
	Total prevalence	1172 (1406)	2724 (727)
	Deaths	197 (236)	245 (65)
2020	New patients	215 (253)	326 (85)
	New transplants	37 (44)	129 (34)
	Pre-emptive transplants	5 (6)	38 (10)
	Prevalent dialysis	968 (1138)	1139 (297)
	Prevalent transplants	268 (315)	1703 (444)
	Total prevalence	1236 (1453)	2842 (741)
	Deaths	154 (181)	205 (53)

Cause of Death

The causes of death in 2020 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 2020, Aotearoa New Zealand

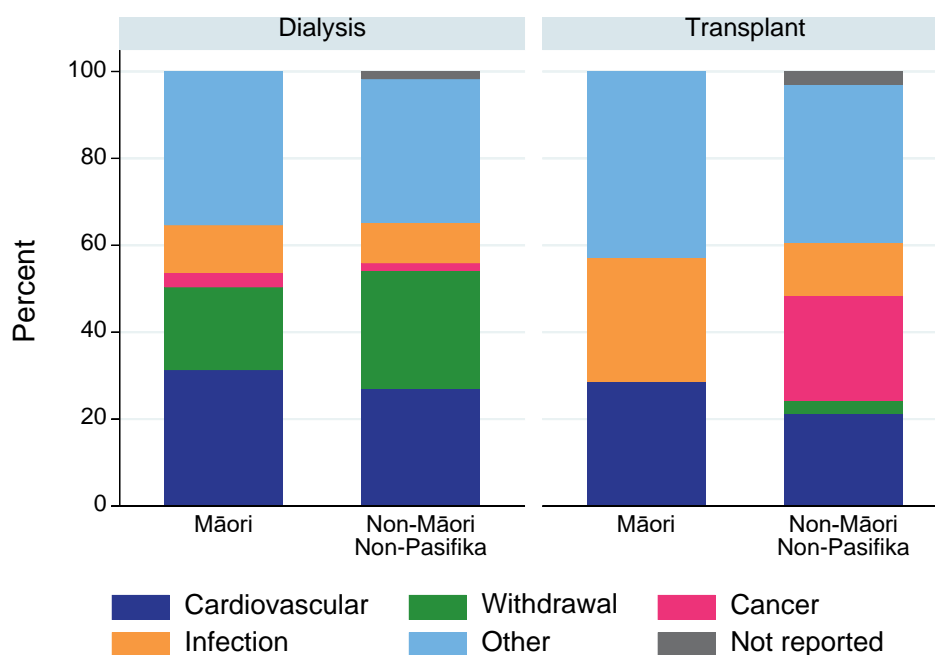


Table 11.9 Cause of Death by Modality and Ethnicity, Aotearoa New Zealand 2020

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

References

¹ 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/>

² 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>