

## **CHAPTER 12**

### **END-STAGE KIDNEY DISEASE AMONG INDIGENOUS PEOPLES OF AUSTRALIA AND NEW ZEALAND**

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## INTRODUCTION

Rates of end-stage kidney disease among the Indigenous Peoples of Australia and New Zealand are substantially increased compared with the non-indigenous comparisons.

We have extended the analyses of treated ESKD among indigenous people, and drawn together analyses from elsewhere in the report into a separate chapter.

**Figure 12.1**

New Patients 1998 - 2007 (% Dialysis Patients on Haemodialysis)						
		Australia		New Zealand		
Mode of Treatment		ATSI	Non-Indigenous	Maori	Pacific People	Non-Indigenous
1998	PD	27	370	58	23	96
	HD	110 (80%)	1044 (74%)	71 (55%)	24 (51%)	129 (57%)
1999	PD	25	386	48	23	126
	HD	133 (84%)	1156 (75%)	62 (56%)	31 (57%)	122 (49%)
2000	PD	28	396	46	17	94
	HD	122 (81%)	1140 (74%)	82 (64%)	55 (76%)	176 (65%)
2001	PD	32	447	55	15	121
	HD	142 (82%)	1227 (73%)	94 (63%)	53 (78%)	175 (59%)
2002	PD	23	466	51	9	107
	HD	150 (87%)	1175 (72%)	98 (66%)	48 (84%)	187 (64%)
2003	PD	27	459	44	13	104
	HD	146 (84%)	1264 (73%)	102 (70%)	64 (83%)	181 (64%)
2004	PD	27	411	54	12	116
	HD	166 (86%)	1274 (76%)	88 (62%)	53 (82%)	179 (61%)
2005	PD	30	446	40	20	105
	HD	187 (86%)	1526 (77%)	97 (71%)	54 (73%)	199 (66%)
2006	PD	30	545	47	17	111
	HD	188 (86%)	2117 (74%)	122 (72%)	61 (78%)	196 (64%)
2007	PD	45	512	35	13	94
	HD	173 (79%)	1497 (75%)	108 (76%)	63 (83%)	193 (67%)

## NEW PATIENTS

Figures 12.1 - 12.3

### Australia

A total of 218 Aboriginal and Torres Strait Islander People commenced dialysis during 2007. This number was stable for the third year in a row.

Although the majority (79%) are treated with haemodialysis, in 2007 the number of people commencing PD increased substantially.

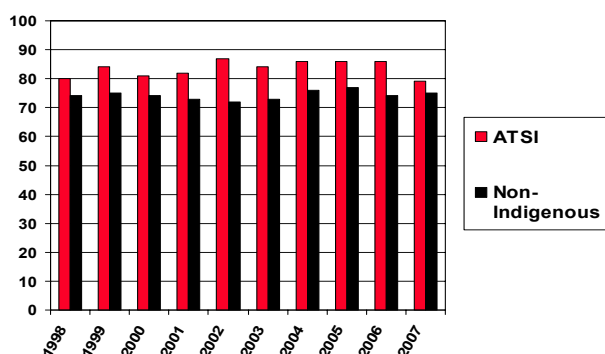
### New Zealand

The overall number of Maori and Pacific People commencing dialysis has been stable since 2001, with a slight decline from 2006.

A greater percentage of Maori commenced haemodialysis as initial treatment in 2007 than ever before, with an associated decline in use of PD.

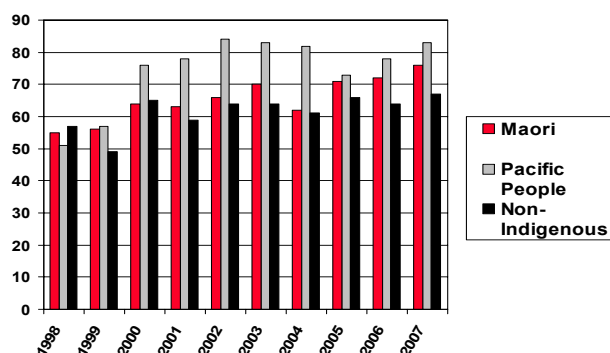
**Figure 12.2**

**Percent of New Patients - Australia Commencing on Haemodialysis**



**Figure 12.3**

**Percent of New Patients - New Zealand Commencing on Haemodialysis**



## NEW TRANSPLANTS

### Australia

Eighteen transplant operations were performed in Aboriginal and Torres Strait Islander recipients in 2007, of which four (14%) were from living donors (Figure 12.4).

Although the number of transplant operations was low and fluctuating, no overall change was evident over the ten year period to 2007.

### New Zealand

The number of Maori transplanted during 2007 has increased from 2006 with 53% from living donors. Living donors were also the predominant source of transplanted kidneys for Pacific People in 2007 (67%) although the numbers were low.

**Figure 12.4**

New Transplants 1998 - 2007 (% Transplants with Living Donor)						
		Australia		New Zealand		
Donor Source		ATSI	Non-Indigenous	Maori	Pacific People	Non-Indigenous
1998	DD	21	333	12	5	63
	LD	6 (22%)	149 (31%)	5 (29%)	2 (29%)	26 (29%)
1999	DD	20	263	12	5	57
	LD	3 (13%)	164 (38%)	5 (29%)	3 (38%)	35 (38%)
2000	DD	15	334	11	3	63
	LD	3 (17%)	174 (34%)	2 (15%)	1 (25%)	28 (31%)
2001	DD	18	304	10	5	56
	LD	3 (14%)	206 (40%)	5 (33%)	1 (17%)	37 (40%)
2002	DD	17	354	10	13	57
	LD	0 (0%)	226 (39%)	3 (23%)	2 (13%)	45 (44%)
2003	DD	10	314	8	11	58
	LD	3 (23%)	214 (41%)	8 (50%)	3 (21%)	36 (38%)
2004	DD	22	382	7	8	49
	LD	4 (15%)	240 (39%)	5 (42%)	4 (33%)	43 (47%)
2005	DD	19	358	3	2	44
	LD	3 (14%)	240 (40%)	0 (0%)	2 (50%)	45 (51%)
2006	DD	24	339	6	4	34
	LD	3 (11%)	266 (44%)	4 (40%)	3 (43%)	45 (57%)
2007	DD	14	327	8	2	57
	LD	4 (14%)	261 (44%)	9 (53%)	4 (67%)	48 (46%)

## PREVALENCE

Figure 12.5

Figure 12.5						
Prevalent Patients 2003 - 2007 (% Haemodialysis Patients on Home Therapy)						
		Australia		New Zealand		
Mode of Treatment		ATSI	Non-Indigenous	Maori	Pacific People	Non-Indigenous
2003	PD	126	1689	275	93	478
	HD	646 (5%)	5185 (14%)	313 (27%)	216 (9%)	602 (25%)
	Func TX	118	5838	107	62	1030
2004	PD	130	1642	240	98	486
	HD	706 (5%)	5450 (14%)	360 (26%)	232 (8%)	643 (26%)
	Func TX	124	6118	113	69	1075
2005	PD	145	1697	236	90	467
	HD	778 (5%)	5924 (13%)	403 (26%)	260 (10%)	721 (26%)
	Func TX	133	6372	107	70	1099
2006	PD	147	1880	247	88	503
	HD	837 (6%)	6289 (13%)	436 (24%)	282 (14%)	753 (28%)
	Func TX	147	6669	106	75	1110
2007	PD	146	1936	230	88	498
	HD	919 (5%)	6537 (13%)	458 (23%)	320 (12%)	824 (26%)
	Func TX	148	6934	108	77	1149

### Australia

The number of prevalent Aboriginal and Torres Strait Islander People with treated end-stage kidney disease increased by 7% from 2006.

The percentage of ATSI on home dialysis was unchanged over the 5-year period to 2007.

The percentage of ATSI treated with peritoneal dialysis has declined slightly, with overall numbers unchanged over the 5 years.

### New Zealand

The number of prevalent Maori with treated end-stage kidney disease increased by less than 1%, whilst Pacific People increased by 9% in 2007.

A lower percentage of Maori (23%) are now treated with home haemodialysis than in previous years, whilst in Pacific People, this percentage (12%) has increased since 2003.

The use of peritoneal dialysis in the Maori population decreased by 10% and in Pacific Islanders it decreased by 7% in the 5 years to 2007.



## PREVALENCE AND INCIDENCE BY STATE (Figures 12-6 - 12.12)

### State Incidence

The Northern Territory has the highest national incidence among indigenous people of treated end-stage kidney disease in Australia at 980 pmp, but this has decreased for the third year in a row. Incidence in other States is stable or increasing, with the next highest in Western Australia (630 pmp).

### Dialysis by Resident State

Treatment patterns for Aboriginal and Torres Strait Islander People vary by State. The use of peritoneal dialysis in Queensland remains stable at 21% over

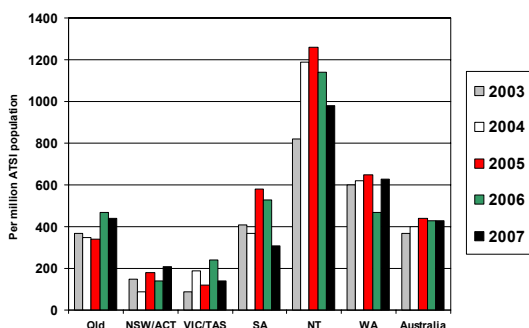
the five year period to 2007, whilst in other States the percentage of ATSI people on peritoneal dialysis has declined to 15% or less of total dialysis use. The total number of ATSI people on peritoneal dialysis has remained stable over the last three years.

### Transplant by Resident State

South Australia maintains the highest transplant rate, but overall numbers remain low. There has been a small, but steady increase in the number of functioning transplants in most States.

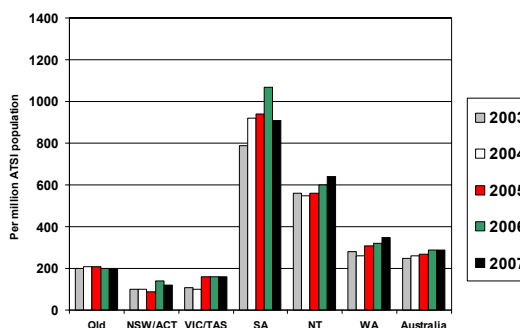
**Figure 12.6**

**Incidence of New ATSI Patients**



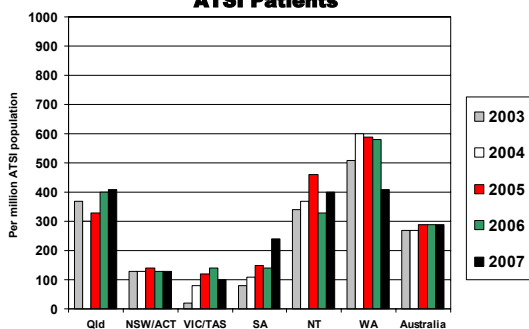
**Figure 12.7**

**Functioning Transplants ATSI Patients**



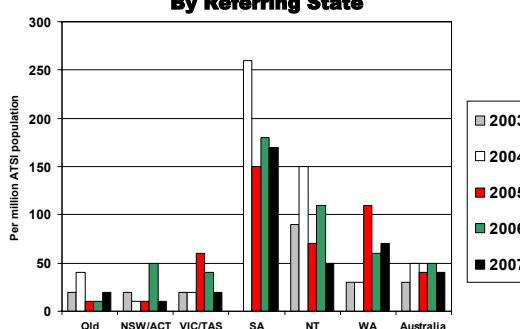
**Figure 12.8**

**Prevalence of Peritoneal Dialysis ATSI Patients**



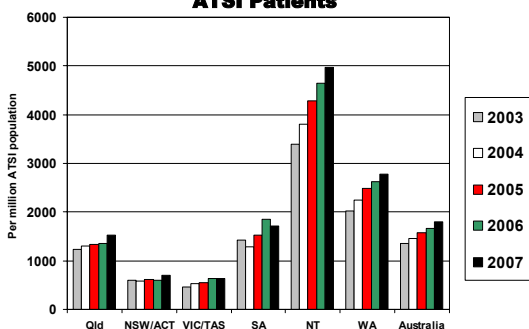
**Figure 12.9**

**Incidence of New Transplants ATSI Patients By Referring State**



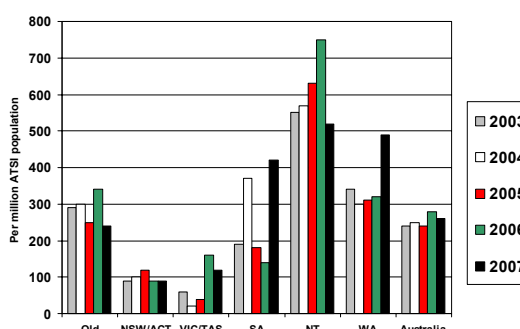
**Figure 12.10**

**Prevalence of Haemodialysis ATSI Patients**



**Figure 12.11**

**Deaths ATSI Patients**



## PREVALENCE AND INCIDENCE BY STATE

<b>Figure 12.12</b>								
<b>Prevalence and Incidence - Aboriginal And Torres Strait Islanders</b>								
<b>2003 - 2007 by resident state</b>								
<b>(Number per million ATSI population in each State)</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>2003</b>	New Patients	48+ (370)	22 (150)	4 (90)	11 (410)	48 (820)	41 (600)	<b>174 (370)</b>
	Prevalent PD	49 (370)	19 (130)	1 (20)	2 (80)	20 (340)	35 (510)	<b>126 (270)</b>
	Prevalent HD	163 (1240)	86 (600)	22 (470)	38 (1430)	199 (3390)	138 (2020)	<b>646 (1360)</b>
	Funct. Transplants	26 (200)	14 (100)	5 (110)	21 (790)	33 (560)	19 (280)	<b>118 (250)</b>
	Transplant Ops *	2 (20)	3 (20)	1 (20)	0 (0)	5 (90)	2 (30)	<b>13 (30)</b>
	Deaths	38 (290)	13 (90)	3 (60)	5 (190)	32 (550)	23 (340)	<b>114 (240)</b>
<b>2004</b>	New Patients	47 (350)	13 (90)	9 (190)	10 (370)	71 (1190)	43 (620)	<b>193 (400)</b>
	Prevalent PD	40 (300)	19 (130)	4 (80)	3 (110)	22 (370)	42 (600)	<b>130 (270)</b>
	Prevalent HD	176 (1310)	85 (580)	26 (540)	35 (1290)	227 (3810)	157 (2250)	<b>706 (1460)</b>
	Funct. Transplants	28 (210)	15 (100)	5 (100)	25 (920)	33 (550)	18 (260)	<b>124 (260)</b>
	Transplant Ops *	5 (40)	2 (10)	1 (20)	7 (260)	9 (150)	2 (30)	<b>26 (50)</b>
	Deaths	40 (300)	15 (100)	1 (20)	10 (370)	34 (570)	21 (300)	<b>121 (250)</b>
<b>2005</b>	New Patients	47 (340)	26 (180)	6 (120)	16 (580)	76 (1260)	46 (650)	<b>217 (440)</b>
	Prevalent PD	45 (330)	20 (140)	6 (120)	4 (150)	28 (460)	42 (590)	<b>145 (290)</b>
	Prevalent HD	183 (1340)	90 (610)	27 (550)	42 (1520)	259 (4290)	177 (2490)	<b>778 (1580)</b>
	Funct. Transplants	29 (210)	14 (90)	8 (160)	26 (940)	34 (560)	22 (310)	<b>133 (270)</b>
	Transplant Ops *	2 (10)	1 (10)	3 (60)	4 (150)	4 (70)	8 (110)	<b>22 (40)</b>
	Deaths	34 (250)	18 (120)	2 (40)	5 (180)	38 (630)	22 (310)	<b>119 (240)</b>
<b>2006</b>	New Patients	66 (470)	21 (140)	12 (240)	15 (530)	70 (1140)	34(470)	<b>218 (430)</b>
	Prevalent PD	56 (400)	19 (130)	6 (140)	4 (140)	20 (330)	42 (580)	<b>147 (290)</b>
	Prevalent HD	190 (1360)	90 (600)	31 (630)	52 (1850)	285 (4650)	189 (2620)	<b>837 (1670)</b>
	Funct. Transplants	28 (200)	21 (140)	8 (160)	30 (1070)	37 (600)	23 (320)	<b>147 (290)</b>
	Transplant Ops *	2 (10)	7 (50)	2 (40)	5 (180)	7 (110)	4 (60)	<b>27 (50)</b>
	Deaths	47 (340)	13 (90)	8 (160)	4 (140)	46 (750)	23 (320)	<b>141 (280)</b>
<b>2007</b>	New Patients	63 (440)	32 (210)	7 (140)	9 (310)	61 (980)	46 (630)	<b>218 (430)</b>
	Prevalent PD	59 (410)	20 (130)	5 (100)	7 (240)	25 (400)	30 (410)	<b>146 (290)</b>
	Prevalent HD	217 (1520)	108 (710)	32 (630)	49 (1710)	309 (4980)	204 (2770)	<b>919 (1800)</b>
	Funct. Transplants	29 (200)	19 (120)	8 (160)	26 (910)	40 (640)	26 (350)	<b>148 (290)</b>
	Transplant Ops *	3 (20)	1 (10)	1 (20)	5 (170)	3 (50)	5 (70)	<b>18 (40)</b>
	Deaths	34 (240)	14 (90)	6 (120)	12 (420)	32 (520)	36 (490)	<b>134 (260)</b>

+ Includes 1 pre empty graft  
\* By Referring State, not State of Transplantation

The per million population figures have been calculated from the estimated indigenous populations of each States published in the Australian Bureau of Statistics document 3238.0 Experimental Projections of the Indigenous Population 1991 to 2009 (low series).



## CAUSE OF DEATH

### Australia

Cardiac events (45%) were the most common cause of death for Aboriginal and Torres Strait Islander People on dialysis, followed by “social causes” (21%) and infection (14%). In 2007, the most common cause of death in transplanted Aboriginal and Torres Strait Islander People was equally split between infection and cardiac causes (37.5% each).

### New Zealand

Cardiac events were the most common cause of death in Maori (48%) and Pacific People (54%) treated with dialysis, followed by “social causes” and infection. In transplanted people cardiac events remains the most common cause of death,

<b>Figure 12.13</b>							
<b>Cause of Death 2006 - 2007</b>							
<b>Australia</b>				<b>New Zealand</b>			
	<b>Mode of Treatment</b>	<b>Cause of Death</b>	<b>ATSI</b>	<b>Non-Indigenous</b>	<b>Maori</b>	<b>Pacific People</b>	<b>Non-Indigenous</b>
<b>2006</b>	<b>Dialysis</b>	Cardiac	46.7%	33.4%	42.9%	48.1%	36.2%
		Vascular	8.1%	9.1%	4.2%	11.1%	13.0%
		Infection	9.6%	10.2%	16.8%	22.2%	13.5%
		Social	20.0%	35.8%	22.7%	11.1%	29.5%
		Malignancy	2.2%	7.0%	8.4%	3.7%	5.3%
		Miscellaneous	13.3%	4.5%	5.0%	3.7%	2.4%
		<b>Total</b>		<b>135</b>	<b>1179</b>	<b>119</b>	<b>54</b>
	<b>Transplant</b>	Cardiac	33.3%	30.2%	66.7%	-	25.0%
		Vascular	-	12.9%	-	-	3.6%
		Infection	-	14.4%	16.7%	-	10.7%
		Social	16.7%	14.3%	16.7%	-	-
		Malignancy	33.3%	33.1%	-	-	57.1%
		Miscellaneous	16.7%	5.0%	-	-	3.6%
		<b>Total</b>		<b>6</b>	<b>139</b>	<b>6</b>	<b>-</b>
<b>2007</b>	<b>Dialysis</b>	Cardiac	45.2%	35.6%	48.4%	54.5%	35.2%
		Vascular	11.9%	9.4%	7.0%	3.0%	6.3%
		Infection	13.5%	9.3%	17.2%	12.1%	14.5%
		Social	21.4%	37.3%	18.0%	15.2%	28.9%
		Malignancy	6.3%	4.5%	4.7%	9.1%	6.9%
		Miscellaneous	1.6%	3.9%	4.7%	6.1%	8.2%
		<b>Total</b>		<b>126</b>	<b>1317</b>	<b>128</b>	<b>33</b>
	<b>Transplant</b>	Cardiac	37.5%	32.9%	40.0%	100%	30.8%
		Vascular	12.5%	9.8%	-	-	5.1%
		Infection	37.5%	15.4%	20.0%	-	20.5%
		Social	-	5.6%	20.0%	-	2.6%
		Malignancy	12.5%	25.9%	20.0%	-	38.5%
		Miscellaneous	-	10.5%	-	-	2.6%
		<b>Total</b>		<b>8</b>	<b>143</b>	<b>5</b>	<b>1</b>

## LATE REFERRAL

### Australia

The percentage of Aboriginal and Torres Strait Islander People referred late for treatment decreased to 31% in 2007, although the total number remained stable. Most (67%) commenced haemodialysis using a catheter in 2007. Both the late referral rate and the catheter rate were higher than non-indigenous comparators.

### New Zealand

The total number of Maori and Pacific People referred late in 2007 decreased. In Maoris only 16.4% compared to 30.3% of Pacific People were referred late. The overall number of people referred late decreased in both groups.

Most Maori (76%) and Pacific People (81%) commenced haemodialysis with a catheter.

**Figure 12.14**

**Late Referral 2003 - 2007**  
**% Late Referral of (Total Number of Patients)**

Australia			New Zealand		
Year	ATSI	Non-Indigenous	Maori	Pacific People	Non-Indigenous
2003	29.9% (174)	25.5% (1779)	31.1% (148)	30.0% (80)	23.9% (293)
2004	39.4% (193)	26.3% (1740)	26.1% (142)	23.1% (65)	18.6% (307)
2005	33.6% (217)	23.2% (2053)	33.6% (137)	23.0% (74)	16.7% (317)
2006	35.8% (218)	21.8% (2188)	29.6% (169)	16.7% (78)	17.8% (320)
2007	30.7% (218)	23.0% (2074)	16.4% (146)	30.3% (76)	21.3% (310)

## VASCULAR ACCESS

**Figure 12.15**

**Vascular Access Use at First HD 2004 - 2007**  
**(% Using CVC)**

		Australia		New Zealand		
Year	Vascular Access	ATSI	Non-Indigenous	Maori	Pacific People	Non-Indigenous
2004	AVF/AVG	75	592	28	11	62
	CVC	102 (57.6%)	941 (61.4%)	94 (77.0%)	47 (81.0%)	163 (72.4%)
2005	AVF/AVG	65	693	17	16	75
	CVC	140 (68.3%)	1101 (61.4%)	105 (86.1%)	55 (77.5%)	185 (71.2%)
2006	AVF/AVG	63	731	30	15	57
	CVC	138 (68.7%)	1111 (60.3%)	121 (80.1%)	56 (78.9%)	187 (76.6%)
2007	AVF/AVG	63	714	30	14	56
	CVC	129 (67.2%)	1042 (59.3%)	97 (76.4%)	59 (80.8%)	186 (76.9%)



## PATIENT SURVIVAL FROM FIRST TREATMENT REGARDLESS OF TREATMENT CHANGES

### Australia

There was improvement in ATSI survival between 2001-2007 from 1991-2000 of 2-4 % over the five years compared to a very slight decrease in survival in non-indigenous population for same period.

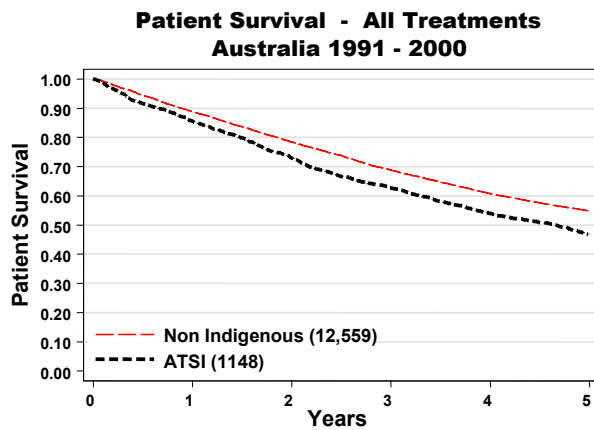
The difference between ATSI and non-indigenous survival for 2001-2007 was small in unadjusted figures, but becomes greater and significant when adjusted for age, diabetic primary renal disease (PRD), race, gender and comorbid conditions.

<b>Figure 12.16</b>			
<b>Australia</b>			
<b>Patient Survival from First Treatment Until Last Follow Up Regardless Of Treatment Changes % [95% Confidence Interval]</b>			
		<b>1991-2000</b>	<b>2001-2007</b>
<b>ATSI</b>	1 month	99 [98, 99]	99 [98, 100]
	6 months	92 [90, 93]	94 [93, 95]
	1 year	86 [83, 88]	88 [86, 90]
	2 years	73 [70, 75]	77 [75, 80]
	3 years	63 [60, 65]	67 [64, 70]
	4 years	54 [51, 57]	57 [54, 61]
	5 years	47 [44, 50]	49 [45, 52]
<b>Non-Indigenous</b>	1 month	99 [99, 100]	99 [99, 99]
	6 months	94 [94, 95]	93 [93, 94]
	1 year	89 [88, 89]	88 [87, 88]
	2 years	78 [78, 79]	77 [77, 78]
	3 years	69 [68, 70]	68 [67, 69]
	4 years	61 [60, 62]	60 [59, 61]
	5 years	55 [54, 56]	54 [52, 55]

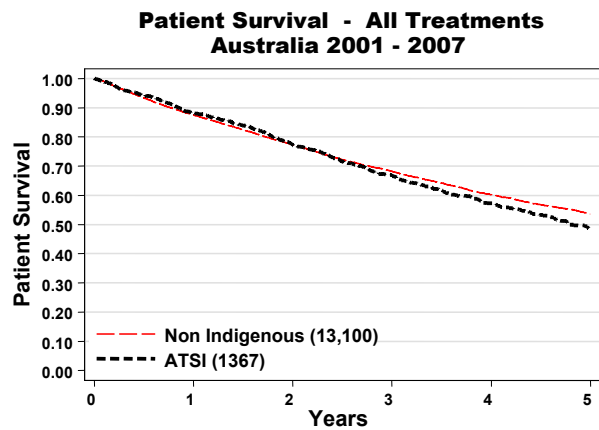


## PATIENT SURVIVAL FROM FIRST TREATMENT REGARDLESS OF TREATMENT CHANGES

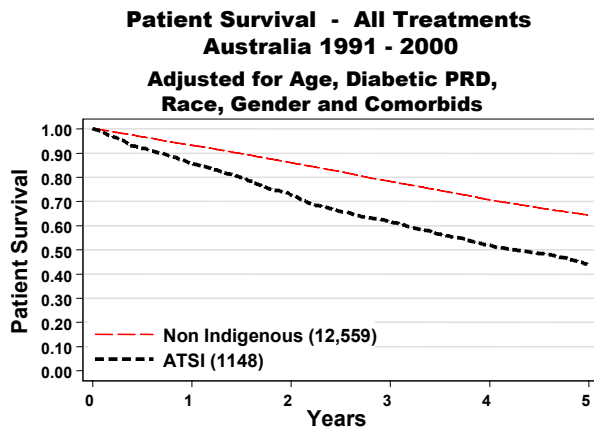
**Figure 12.17**



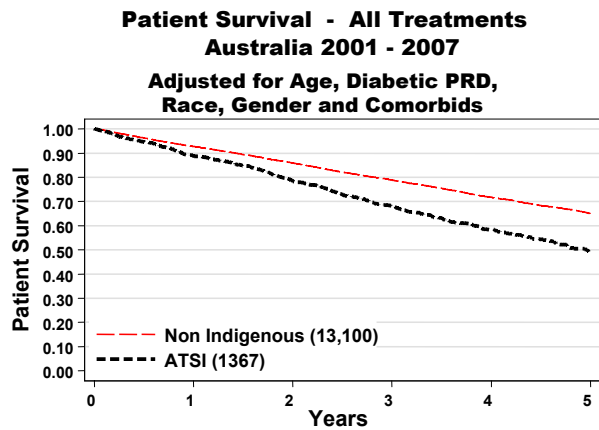
**Figure 12.18**



**Figure 12.19**



**Figure 12.20**



For the 1991-2000 unadjusted survivals, there was a significant difference ( $p < 0.01$ ) between non-indigenous vs ATSI. However, for the 2001-2007 period, in unadjusted survivals, there was no significant difference between non-indigenous vs ATSI.

Adjusted survival graphs have been adjusted to the median age of 60.51 years; to non-diabetic primary renal disease; to non-indigenous race; to female; and to no comorbid conditions, (lung disease, coronary disease, peripheral vascular disease and cerebrovascular disease). They demonstrate worse survival outcomes among ATSI than non-indigenous patients in Australia.



## PATIENT SURVIVAL FROM FIRST TREATMENT REGARDLESS OF TREATMENT CHANGES

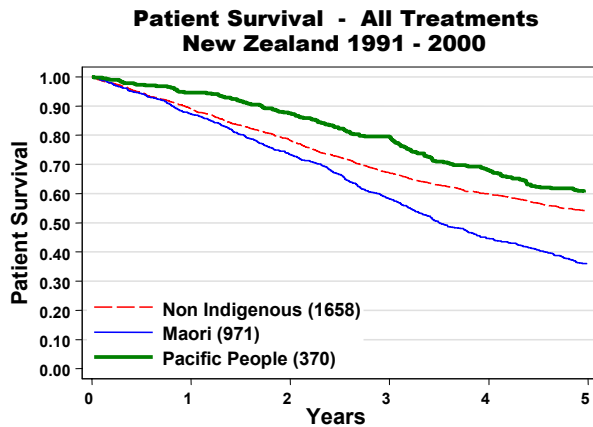
### New Zealand

A significant improvement in Maori survival was seen regardless of later treatments between 2001-2007 from 1991-2000 of 3-6% over the five years compared to decrease in survival in Pacific People of 2-7% and very slight decrease in non-indigenous population of 1% for same period. Pacific People have the best survival rates for both adjusted and un-adjusted outcomes.

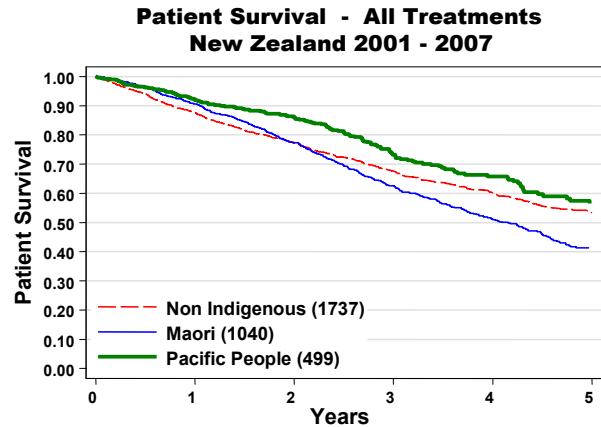
<b>Figure 12.21</b>			
<b>New Zealand</b>			
<b>Patient Survival from First Treatment</b>			
<b>Until Last Follow Up</b>			
<b>Regardless Of Treatment Changes</b>			
<b>% [95% Confidence Interval]</b>			
		<b>1991-2000</b>	<b>2001-2007</b>
<b>Maori</b>	1 month	99 [98, 99]	100 [99, 100]
	6 months	94 [93, 96]	96 [95, 97]
	1 year	87 [85, 89]	91 [89, 92]
	2 years	73 [70, 76]	77 [74, 80]
	3 years	58 [55, 61]	63 [59, 66]
	4 years	45 [42, 48]	51 [47, 55]
	5 years	36 [33, 39]	41 [37, 46]
<b>Pacific People</b>	1 month	100 [98, 100]	99 [98, 100]
	6 months	97 [95, 99]	96 [94, 98]
	1 year	95 [92, 96]	92 [89, 94]
	2 years	88 [84, 90]	86 [82, 89]
	3 years	80 [75, 83]	73 [68, 78]
	4 years	68 [63, 72]	66 [60, 71]
	5 years	60 [55, 65]	56 [50, 63]
<b>Non-Indigenous</b>	1 month	99 [98, 99]	99 [98, 99]
	6 months	95 [94, 96]	94 [93, 95]
	1 year	89 [87, 90]	88 [86, 89]
	2 years	78 [76, 80]	77 [75, 79]
	3 years	67 [65, 69]	68 [65, 70]
	4 years	60 [58, 62]	60 [57, 63]
	5 years	54 [52, 56]	53 [50, 56]

## PATIENT SURVIVAL FROM FIRST TREATMENT REGARDLESS OF TREATMENT CHANGES

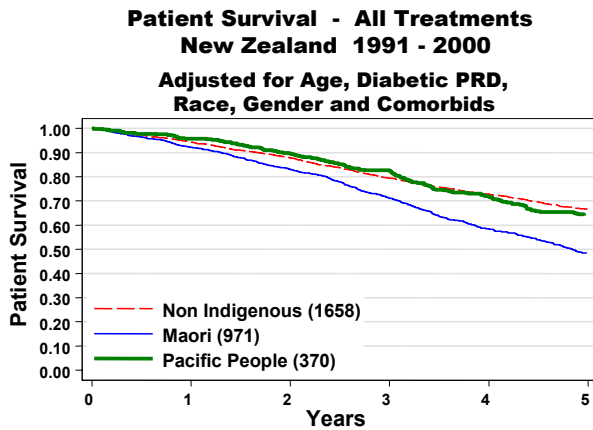
**Figure 12.22**



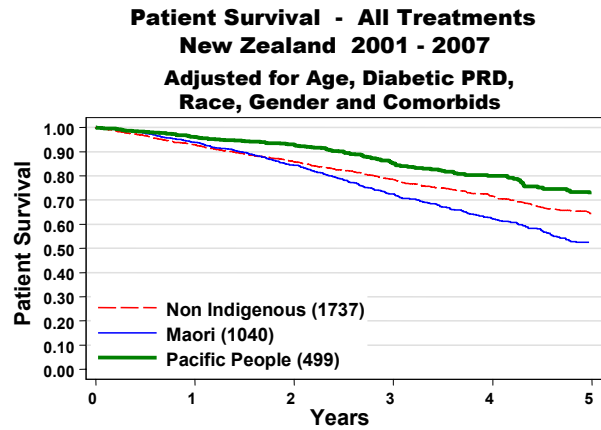
**Figure 12.23**



**Figure 12.24**



**Figure 12.25**



For the 1991-2000 unadjusted survivals, there were significant differences ( $p < 0.01$ ) between non-indigenous vs Maori and Maori vs Pacific People. For the 2001-2007 period, in unadjusted survivals, there were significant differences ( $p < 0.01$ ) between Non-Indigenous vs Maori, non-indigenous vs Pacific People and Maori vs Pacific People.

Adjusted survival graphs have been adjusted to the median age of 56.90 years; to non-diabetic primary renal disease; to non-indigenous race; to female; and to no comorbid conditions, (lung disease, coronary disease, peripheral vascular disease



## PATIENT SURVIVAL FROM FIRST TREATMENT CENSORED AT FIRST TRANSPLANT

### Australia

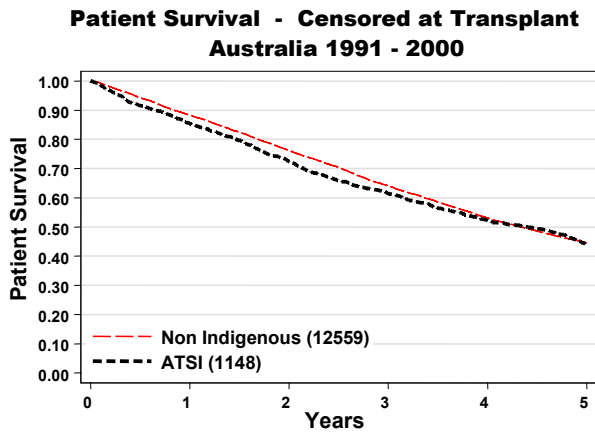
An improvement in survival for Aboriginal and Torres Strait Islander People occurred from 1991-2000 to 2001-2007 when survival analyses were censored at first transplant. The rationale for this approach is that it excludes the effect of different transplant rates, to focus on survival during dialysis treatment. This improvement was not seen in non-indigenous people.

Unadjusted survival was similar in both groups for 1991-2000. After adjustment, survival was significantly different ( $p < 0.01$ ), but an improvement in the ATSI survival rates in the 2001-2007 period was evident.

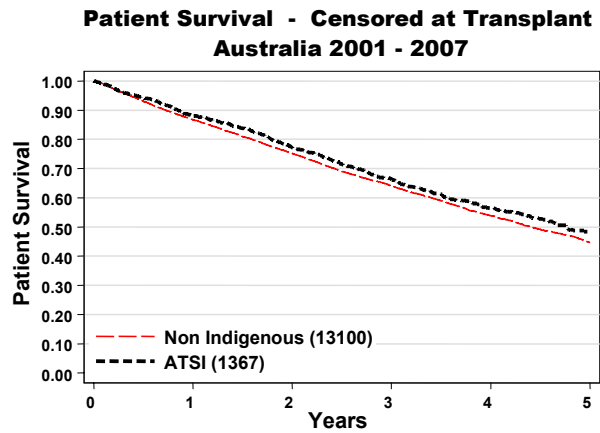
<b>Figure 12.26</b>			
<b>Australia</b>			
<b>Patient Survival From First Treatment</b>			
<b>Until Last Follow Up</b>			
<b>Censored At First Transplant</b>			
<b>% [95% Confidence Interval]</b>			
		<b>1991-2000</b>	<b>2001-2007</b>
<b>ATSI</b>	1 month	99 [98, 99]	99 [99, 100]
	6 months	92 [90, 93]	94 [93, 95]
	1 year	86 [83, 87]	88 [86, 90]
	2 years	72 [70, 75]	77 [75, 80]
	3 years	61 [58, 64]	67 [63, 69]
	4 years	52 [49, 55]	57 [53, 60]
	5 years	44 [41, 47]	48 [44, 52]
<b>Non-Indigenous</b>	1 month	99 [99, 100]	99 [99, 99]
	6 months	94 [94, 95]	93 [93, 93]
	1 year	88 [88, 89]	87 [86, 87]
	2 years	76 [75, 77]	75 [74, 76]
	3 years	64 [63, 65]	64 [63, 65]
	4 years	53 [52, 54]	54 [53, 55]
	5 years	45 [44, 46]	45 [43, 46]

## PATIENT SURVIVAL FROM FIRST TREATMENT CENSORED AT FIRST TRANSPLANT

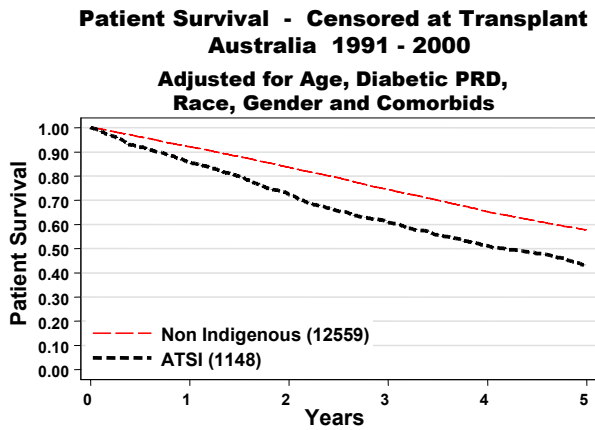
**Figure 12.27**



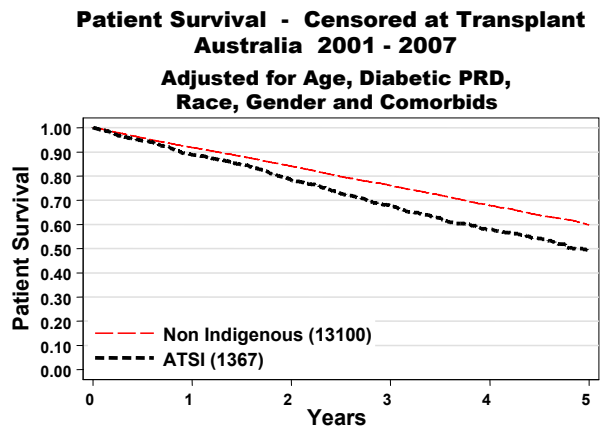
**Figure 12.28**



**Figure 12.29**



**Figure 12.30**



For the 1991-2000 unadjusted survivals, there was no significant difference between non-indigenous vs ATSI. In contrast, for the 2001-2007 period, in unadjusted survivals, there was a significant difference ( $p < 0.01$ ) between non-indigenous vs ATSI.

Adjusted survival graphs have been adjusted to the median age of 60.51 years; to non-diabetic primary renal disease; to non-indigenous race; to female; and to no comorbid conditions, (lung disease, coronary disease, peripheral vascular disease and cerebrovascular disease)



## PATIENT SURVIVAL FROM FIRST TREATMENT CENSORED AT FIRST TRANSPLANT

### New Zealand

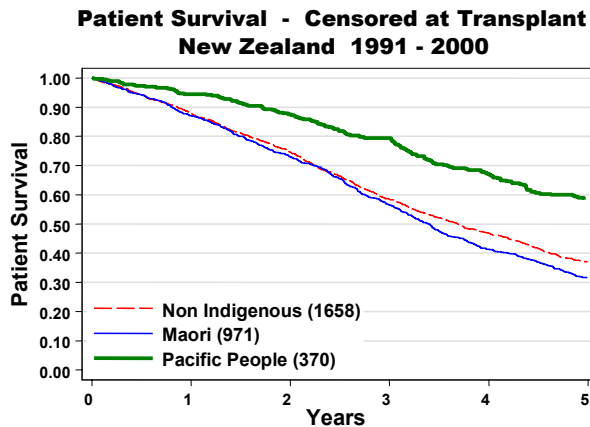
A significant improvement in survival for Maori (on dialysis, censored at first transplant) between 1991-2000 and 2001-2007, particularly after three years (6%-9%) and was similar to non-indigenous people.

Survival of Pacific People was consistently greater at all time points, both unadjusted and adjusted.

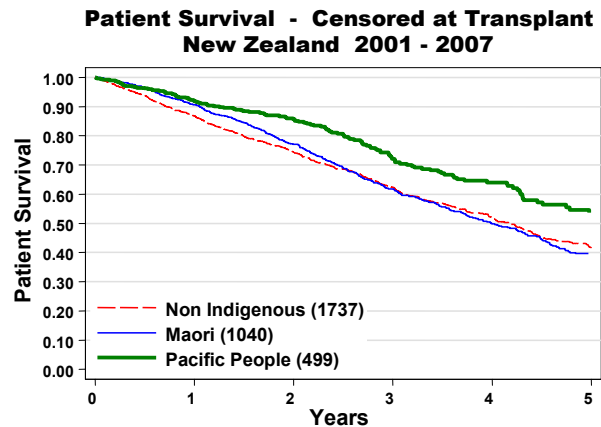
<b>Figure 12.31</b>			
<b>New Zealand</b>			
<b>Patient Survival From First Treatment</b>			
<b>Until Last Follow Up</b>			
<b>Censored At First Transplant</b>			
<b>Regardless of Treatment Changes</b>			
<b>% [95% Confidence Interval]</b>			
		<b>1991-2000</b>	<b>2001-2007</b>
<b>Maori</b>	1 month	99 [98, 99]	100 [99, 100]
	6 months	94 [93, 96]	96 [95, 97]
	1 year	87 [85, 89]	91 [89, 92]
	2 years	73 [70, 76]	77 [74, 80]
	3 years	56 [53, 60]	62 [58, 65]
	4 years	41 [38, 45]	50 [46, 54]
	5 years	31 [28, 35]	40 [35, 44]
	<b>Pacific People</b>	1 month	100 [98, 100]
6 months		97 [95, 98]	96 [94, 98]
1 year		94 [92, 96]	92 [89, 94]
2 years		88 [84, 91]	86 [82, 89]
3 years		79 [75, 83]	72 [67, 77]
4 years		67 [62, 72]	64 [58, 69]
5 years		58 [53, 63]	54 [46, 60]
<b>Non-Indigenous</b>		1 month	99 [98, 99]
	6 months	94 [93, 95]	94 [92, 95]
	1 year	88 [86, 89]	87 [85, 88]
	2 years	75 [72, 77]	74 [72, 77]
	3 years	58 [56, 61]	62 [59, 65]
	4 years	47 [44, 50]	52 [49, 55]
	5 years	37 [34, 40]	41 [37, 45]

## PATIENT SURVIVAL FROM FIRST TREATMENT CENSORED AT FIRST TRANSPLANT

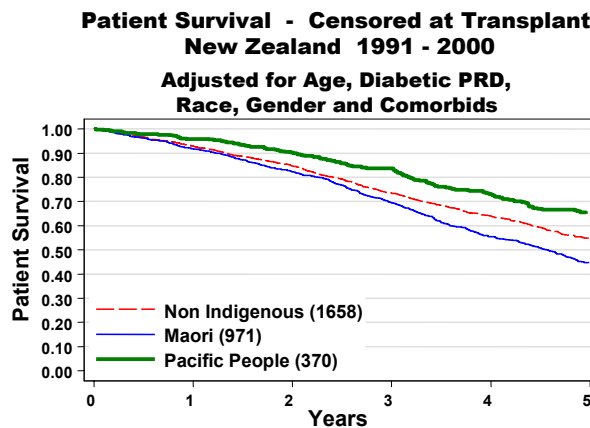
**Figure 12.32**



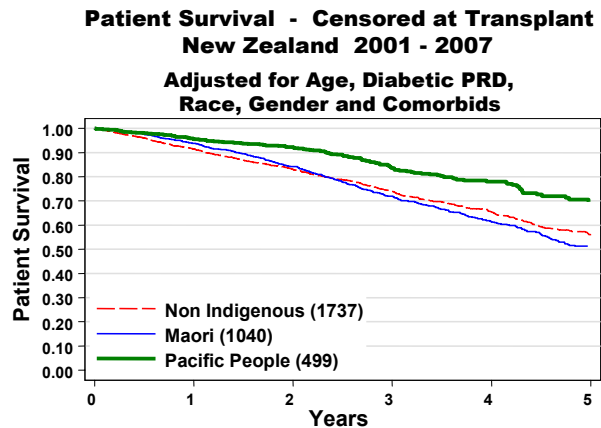
**Figure 12.33**



**Figure 12.34**



**Figure 12.35**



For the 1991-2000 unadjusted survivals, there were significant differences ( $p < 0.01$ ) between non-indigenous vs Pacific People and Maori vs Pacific People. For the 2001-2007 period, in unadjusted survivals, there were significant differences ( $p < 0.01$ ) between non-indigenous vs Pacific People and Maori vs Pacific People.

Adjusted survival graphs have been adjusted to the median age of 56.90 years; to non-diabetic primary renal disease; to non-indigenous race; to female; and to no comorbid conditions, (lung disease, coronary disease, peripheral vascular disease and cerebrovascular disease)



## PATIENT SURVIVAL FOLLOWING FIRST TRANSPLANT REGARDLESS OF LATER TREATMENTS

### Australia

Survival following first transplant for Aboriginal and Torres Strait Islander People did not improve between 1991-2000 and 2001-2007.

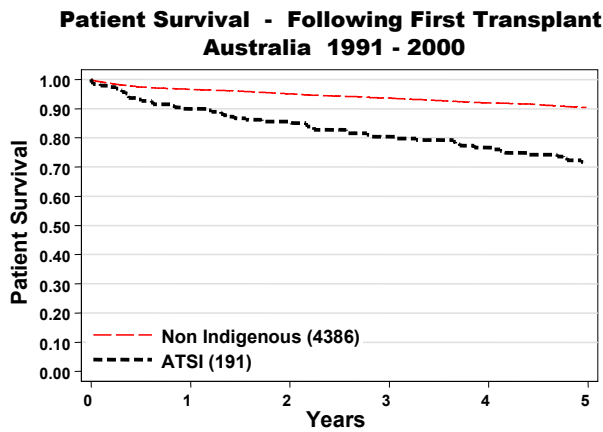
The gap between the survival rates for the indigenous vs non indigenous people widened significantly during this time period to 15% at four years post-first transplant in unadjusted figures. Once adjusted this gap became even greater.

<b>Figure 12.36</b>			
<b>Australia</b>			
<b>Patient Survival Following First Transplant</b>			
<b>Regardless of Later Treatments</b>			
<b>% [95% Confidence Interval]</b>			
		<b>1991-2000</b>	<b>2001-2007</b>
<b>ATSI</b>	1 month	98 [95, 99]	97 [87, 99]
	6 months	93 [89, 96]	93 [83, 97]
	1 year	90 [85, 93]	91 [80, 96]
	2 years	85 [79, 89]	83 [68, 91]
	3 years	80 [74, 85]	78 [60, 89]
	4 years	77 [70, 82]	78 [60, 89]
	5 years	72 [64, 78]	- [-, -]
	<b>Non-Indigenous</b>	1 month	99 [99, 100]
6 months		97 [97, 98]	99 [98, 99]
1 year		97 [96, 97]	98 [97, 98]
2 years		95 [94, 96]	97 [96, 98]
3 years		94 [93, 94]	96 [95, 97]
4 years		92 [91, 93]	95 [94, 96]
5 years		90 [89, 91]	93 [92, 95]

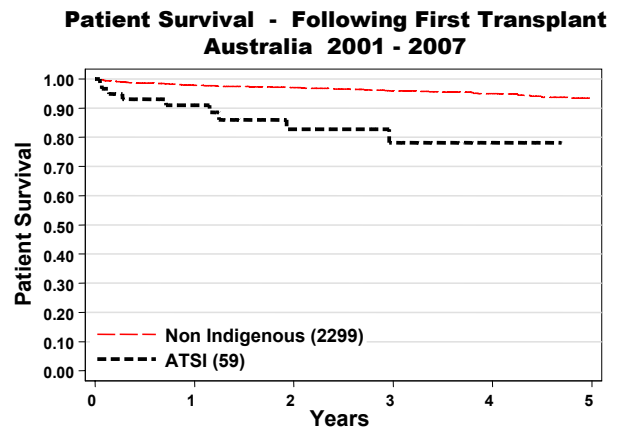


## PATIENT SURVIVAL FOLLOWING FIRST TRANSPLANT REGARDLESS OF LATER TREATMENTS

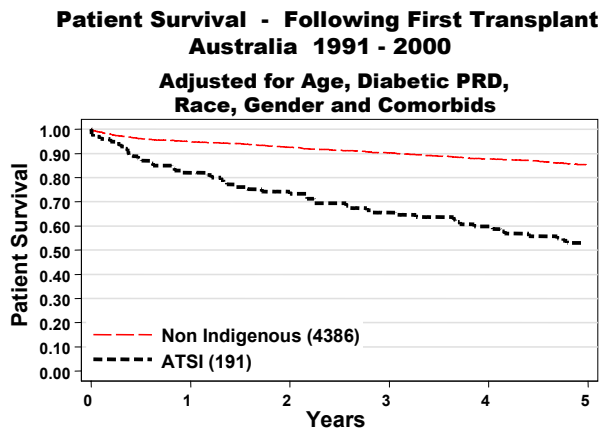
**Figure 12.37**



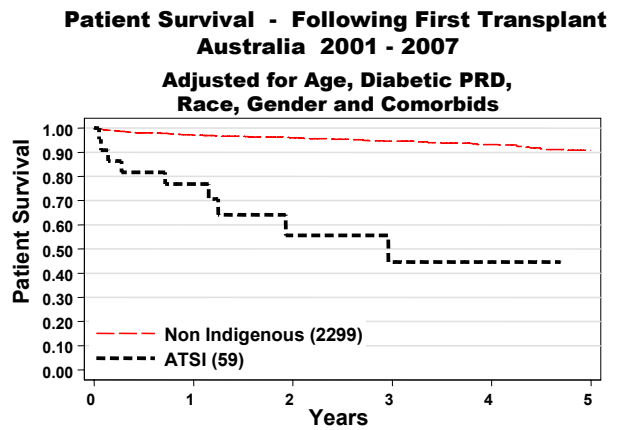
**Figure 12.38**



**Figure 12.39**



**Figure 12.40**



For the 1991-2000 unadjusted survivals, there was a significant difference ( $p < 0.01$ ) between non-indigenous vs ATSI. For the 2001-2007 period, in unadjusted survivals, there was a significant difference ( $p < 0.01$ ) between non-indigenous vs ATSI.

Adjusted survival graphs have been adjusted to the median age of 60.51 years; to non-diabetic primary renal disease; to non-indigenous race; to female; and to no comorbid conditions, (lung disease, coronary disease, peripheral vascular disease and cerebrovascular disease)



## PATIENT SURVIVAL FOLLOWING FIRST TRANSPLANT REGARDLESS OF LATER TREATMENTS

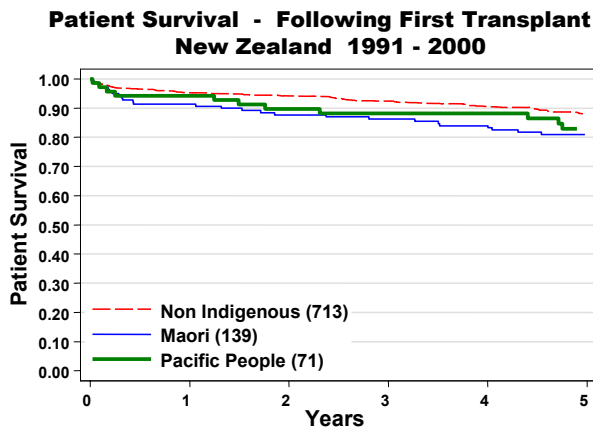
### New Zealand

There was a significant improvement in survival of Pacific People between 2001-2007 following first transplant. An improvement is also seen in Maori and non-indigenous people, but not to the same extent. Adjusted figures demonstrate a greater difference between the three groups.

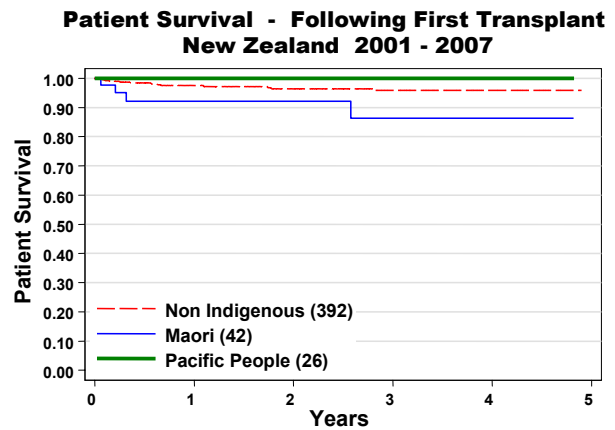
<b>Figure 12.41</b>			
<b>New Zealand</b>			
<b>Patient Survival Following First Transplant</b>			
<b>Regardless Of Later Treatments</b>			
<b>% [95% Confidence Interval]</b>			
		<b>1991-2000</b>	<b>2001-2007</b>
<b>Maori</b>	1 month	98 [93, 99]	98 [84, 100]
	6 months	91 [85, 95]	92 [78, 97]
	1 year	91 [85, 95]	92 [78, 97]
	2 years	88 [81, 92]	92 [78, 97]
	3 years	86 [79, 91]	86 [65, 95]
	4 years	84 [77, 89]	86 [65, 95]
	5 years	81 [73, 87]	86 [65, 95]
<b>Pacific People</b>	1 month	99 [90, 100]	100 [ - , - ]
	6 months	94 [85, 98]	100 [ - , - ]
	1 year	94 [85, 98]	100 [ - , - ]
	2 years	90 [80, 95]	100 [ - , - ]
	3 years	88 [78, 94]	100 [ - , - ]
	4 years	88 [78, 94]	100 [ - , - ]
	5 years	83 [71, 90]	100 [ - , - ]
<b>Non-Indigenous</b>	1 month	99 [98, 99]	99 [98, 100]
	6 months	96 [95, 98]	98 [96, 99]
	1 year	95 [93, 97]	98 [95, 99]
	2 years	94 [92, 96]	96 [94, 98]
	3 years	92 [90, 94]	96 [93, 98]
	4 years	90 [88, 92]	96 [93, 98]
	5 years	88 [85, 90]	96 [93, 98]

## PATIENT SURVIVAL FOLLOWING FIRST TRANSPLANT REGARDLESS OF LATER TREATMENTS

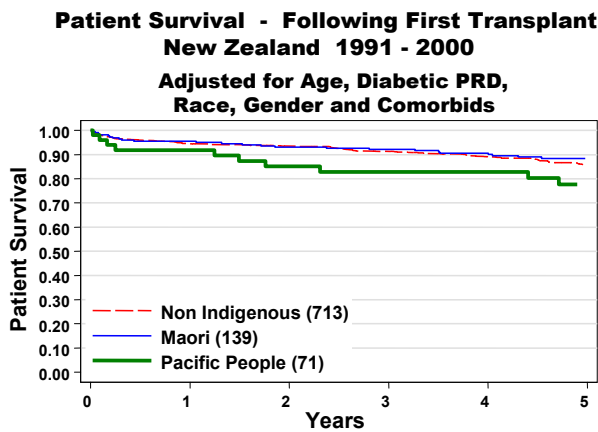
**Figure 12.42**



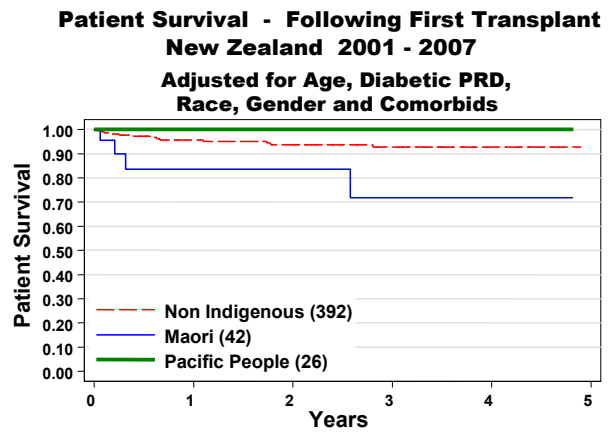
**Figure 12.43**



**Figure 12.44**



**Figure 12.45**



For the 1991-2000 unadjusted survivals, there was a significant difference ( $p < 0.01$ ) between Non-Indigenous vs Maori. For the 2001-2007 period, in unadjusted survivals, there was a significant difference ( $p < 0.05$ ) between non-indigenous vs Maori.

Adjusted survival graphs have been adjusted to the median age of 56.90 years; to non-diabetic primary renal disease; to non-indigenous race; to female; and to no comorbid conditions, (lung disease, coronary disease, peripheral vascular disease and cerebrovascular disease)