

**New Zealand**  
**Dialysis Standards and Audit**

**2007**

**Report for New Zealand Nephrology Services on behalf of the  
National Renal Advisory Board**

**Kelvin Lynn and Grant Pidgeon  
Audit and Standards Subcommittee**

**February 2009**

*Establishment of a national quality assurance framework to improve the delivery of dialysis services to the New Zealand dialysis population.*

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## *Acknowledgments*

- **Associate Professor John Collins and the staff of the New Zealand Peritoneal Dialysis Registry**
- **Professor Graeme Russ, Dr Stephen McDonald of the Australian and New Zealand Dialysis Registry**
- **Nick Polaschek, Senior Project Manager/Team Leader, New Zealand Ministry of Health**
- **Clinical Directors, data collectors and staff of the Renal Units in New Zealand**
- **Peter Dini, Department of Nephrology, Christchurch Hospital**

## **Introduction**

The National Renal Advisory (NRAB) presents its fourth annual audit report of the New Zealand dialysis care standards. In the past, these reports have incorporated data from the New Zealand Peritoneal Dialysis (NZ PD) Registry established and maintained by Assoc Prof John Collins at Auckland Hospital. Because of staffing difficulties at the NZ PD Registry we have not been able to include these data this year but hope to do so again on the future.

For the first time data from the Hawkes Bay DHB is reported separately following the appointment of Dr Drew Henderson as a nephrologist at Hawke's Bay Hospital. The Standards and Audit Subcommittee of the NRAB has not made any substantial changes in the data being reported. The collection and collation of data for this report is critically dependent on the goodwill and hard work of renal units and the staff of the Australian and New Zealand Dialysis and Transplant (ANZDATA) and NZ PD Registries.

Working together with the Service Specification Project Team for the DHB Funding and Performance Directorate of the Ministry of Health and Nick Polaschek of the Sector Capability and Innovation Directorate has resulted in an agreement for the dialysis care standards to be appended to the Tier Two Renal Service Specifications in the Ministry of Health's National Service Framework library. The standards are also available for review by health professionals and the public on the New Zealand Kidney Foundation website <http://www.kidneys.co.nz/>.

The section of the report incorporating data provided directly from renal units to the Subcommittee is again incomplete but some units are making a concerted effort to address this issue.

The Department of Nephrology at Christchurch Hospital provides support for the production of this report and I am again indebted to the help of Peter Dini, Systems Manager.

Future audit reports from the New Zealand National Renal Advisory Board will be edited by Dr Grant Pidgeon, Clinical Director, Department of Renal Medicine, Wellington Hospital and Chair of the Audit and Standards Subcommittee.

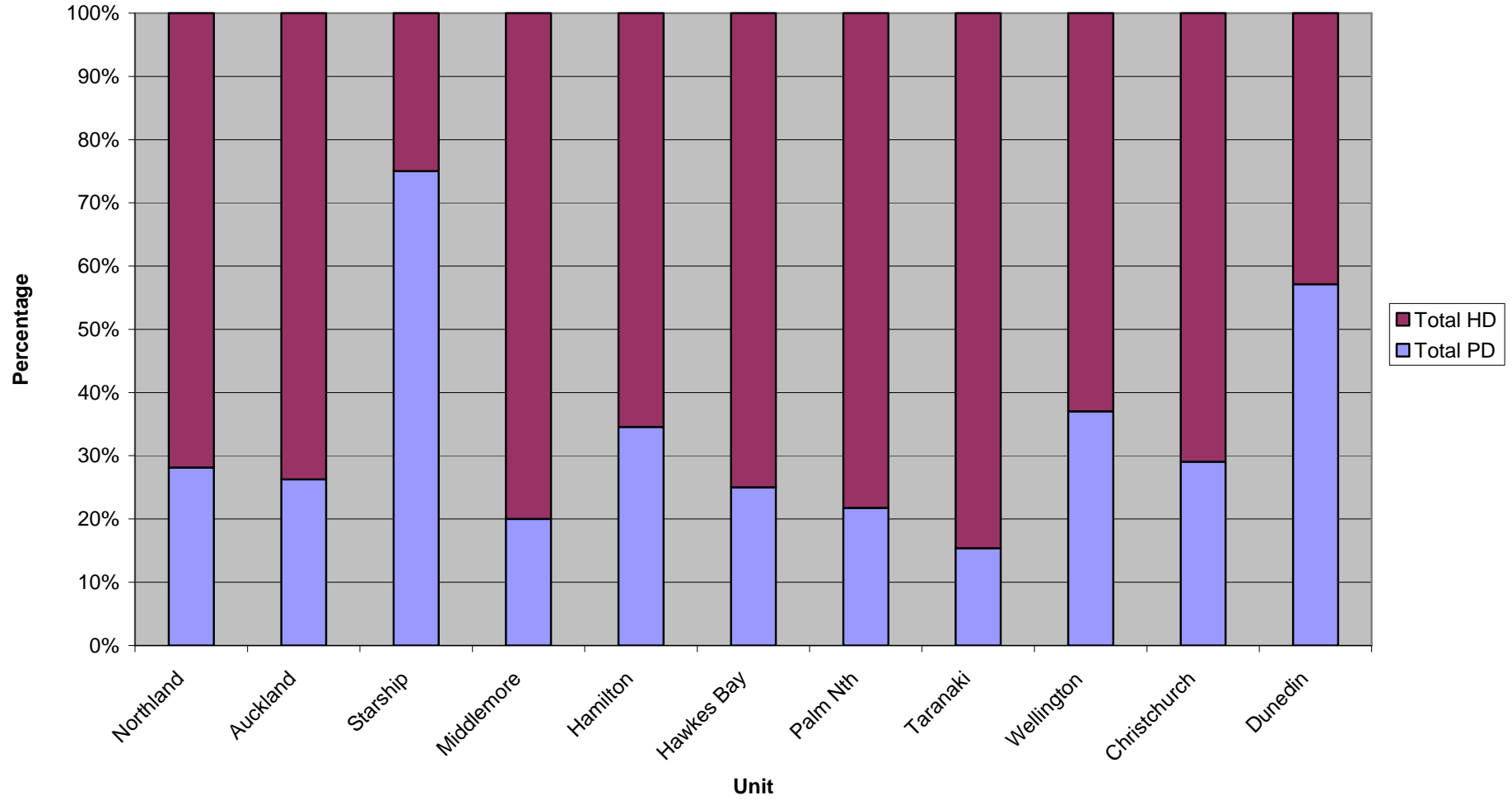
### **The process of data collection**

The 2007 Report includes data from the 2007 ANZDATA Registry Report and from some renal units' audit programmes. The timing of data collection and reporting from ANZDATA means that the New Zealand Audit Report cannot be distributed until their work is completed in the second half of the year following original data collection.

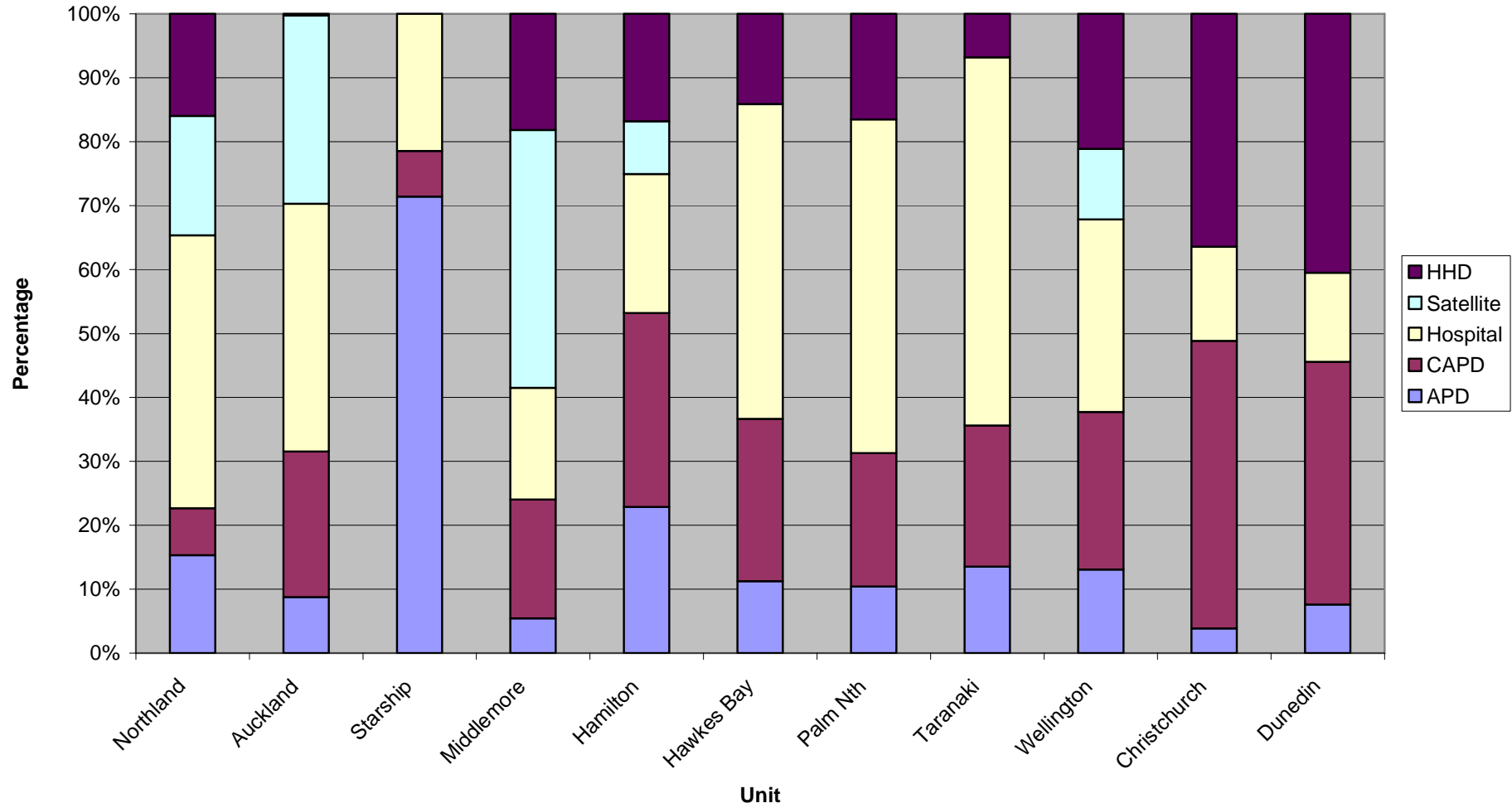
The National Renal Advisory Board would appreciate feedback on this report. Comments can be sent to Johan Rosman, Chair of NRAB, [JRosman@middlemore.co.nz](mailto:JRosman@middlemore.co.nz), Grant Pidgeon [grant.pidgeon@ccdhb.org.nz](mailto:grant.pidgeon@ccdhb.org.nz) or Kelvin Lynn, [kelvin.lynn@cdhb.govt.nz](mailto:kelvin.lynn@cdhb.govt.nz)

The audit data is shown in tabular and graphic form in the following pages. You may note minor changes in the data for previous years which result from corrections and updates to the ANZDATA and NZ PD databases.

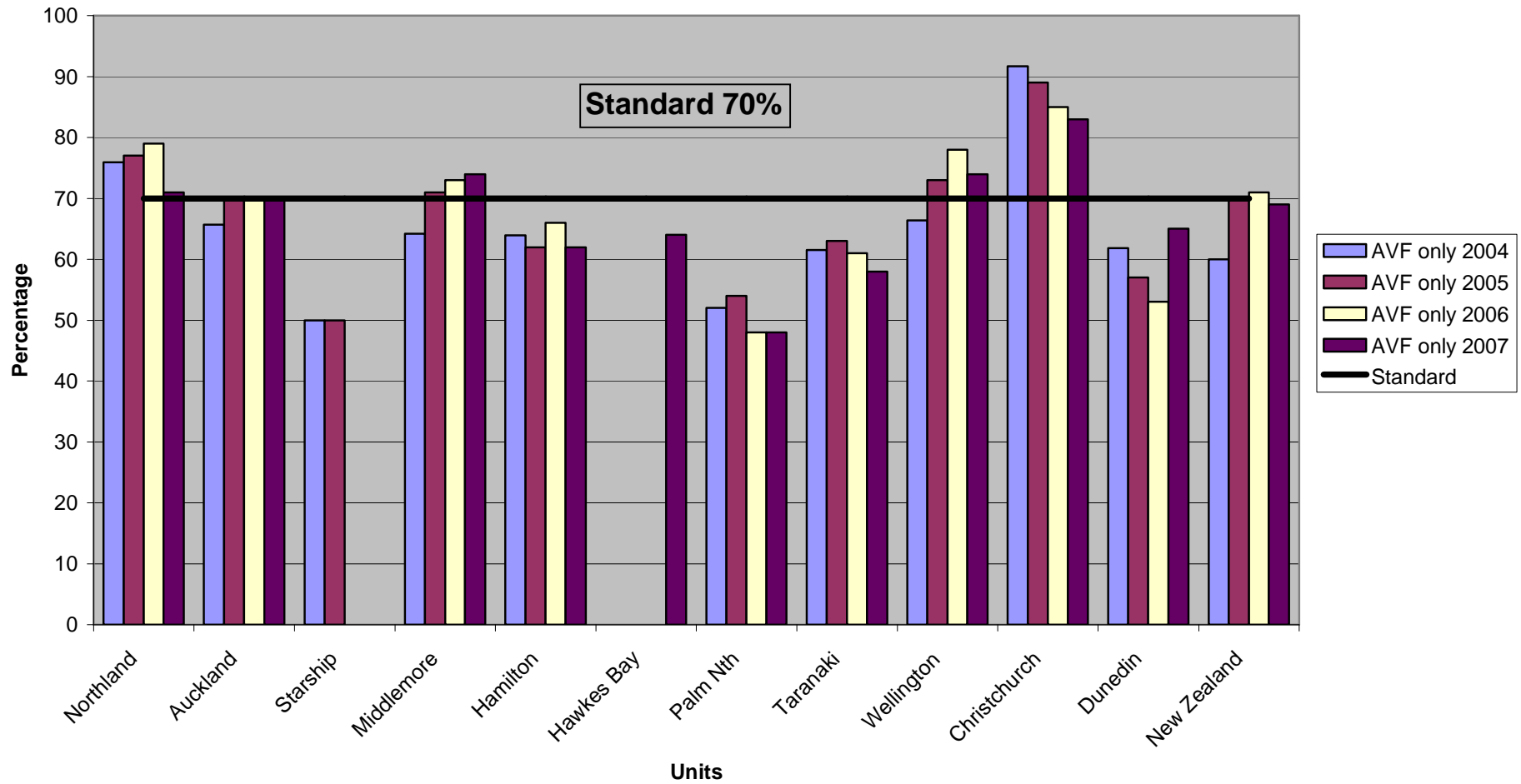
Treatment modality of incident patients in New Zealand in 2007



Treatment modality of prevalent patients in New Zealand in 2007

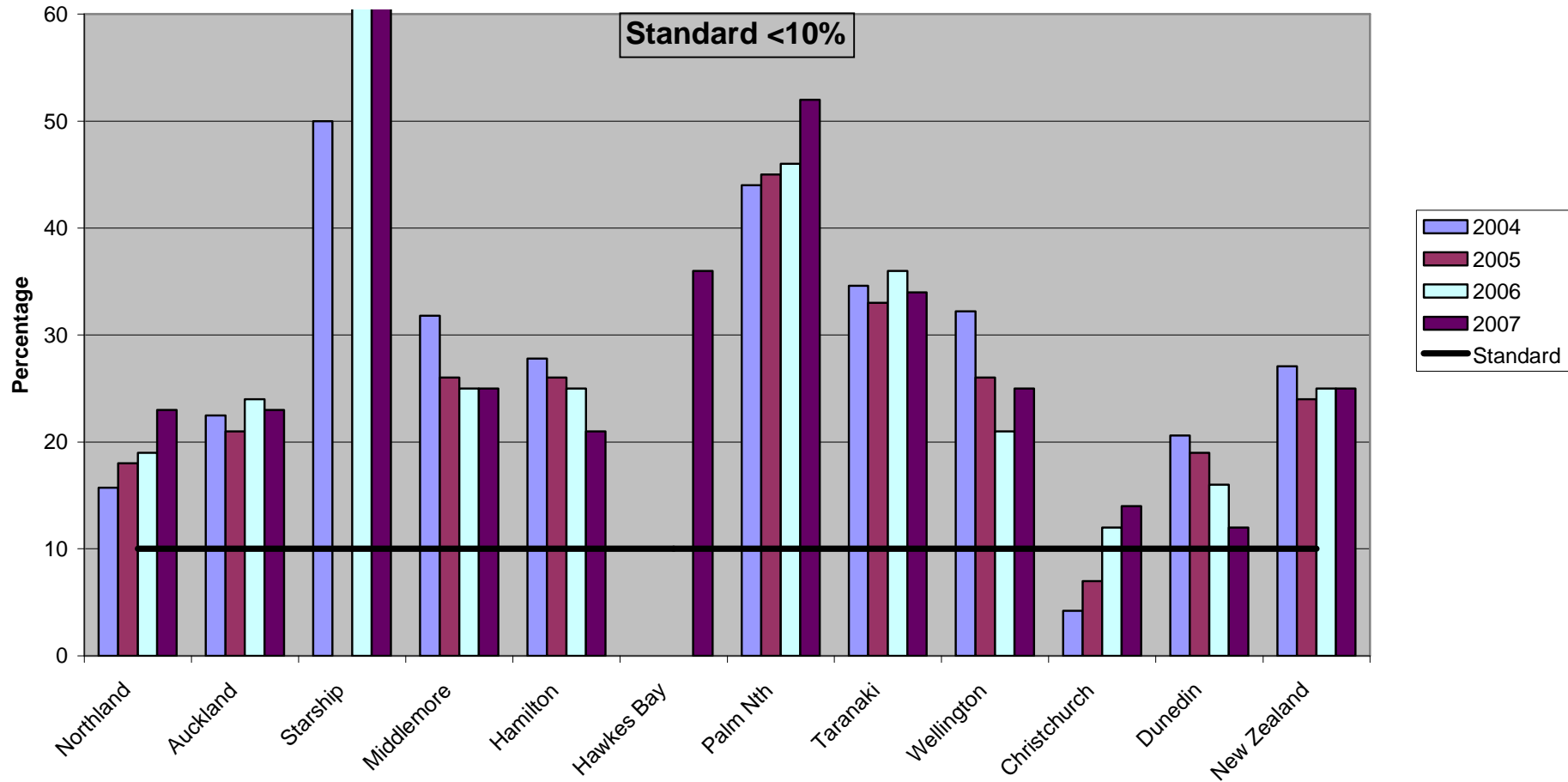


Vascular access of prevalent HD patients in New Zealand at the end of 2004 - 2007  
 - percentage of AV fistulae



Total HD	Northland	Auckland	Starship	Middlemore	Hamilton	Hawkes Bay	Palm Nth	Taranaki	Wellington	Christchurch	Dunedin	New Zealand
2004	83	213	2	296	133		50	26	143	48	34	1028
2005	100	224	2	312	152		65	30	150	61	37	1133
2006	103	257	3	324	160		83	36	148	61	32	1207
2007	116	304	3	335	170	45	79	38	124	66	43	1323

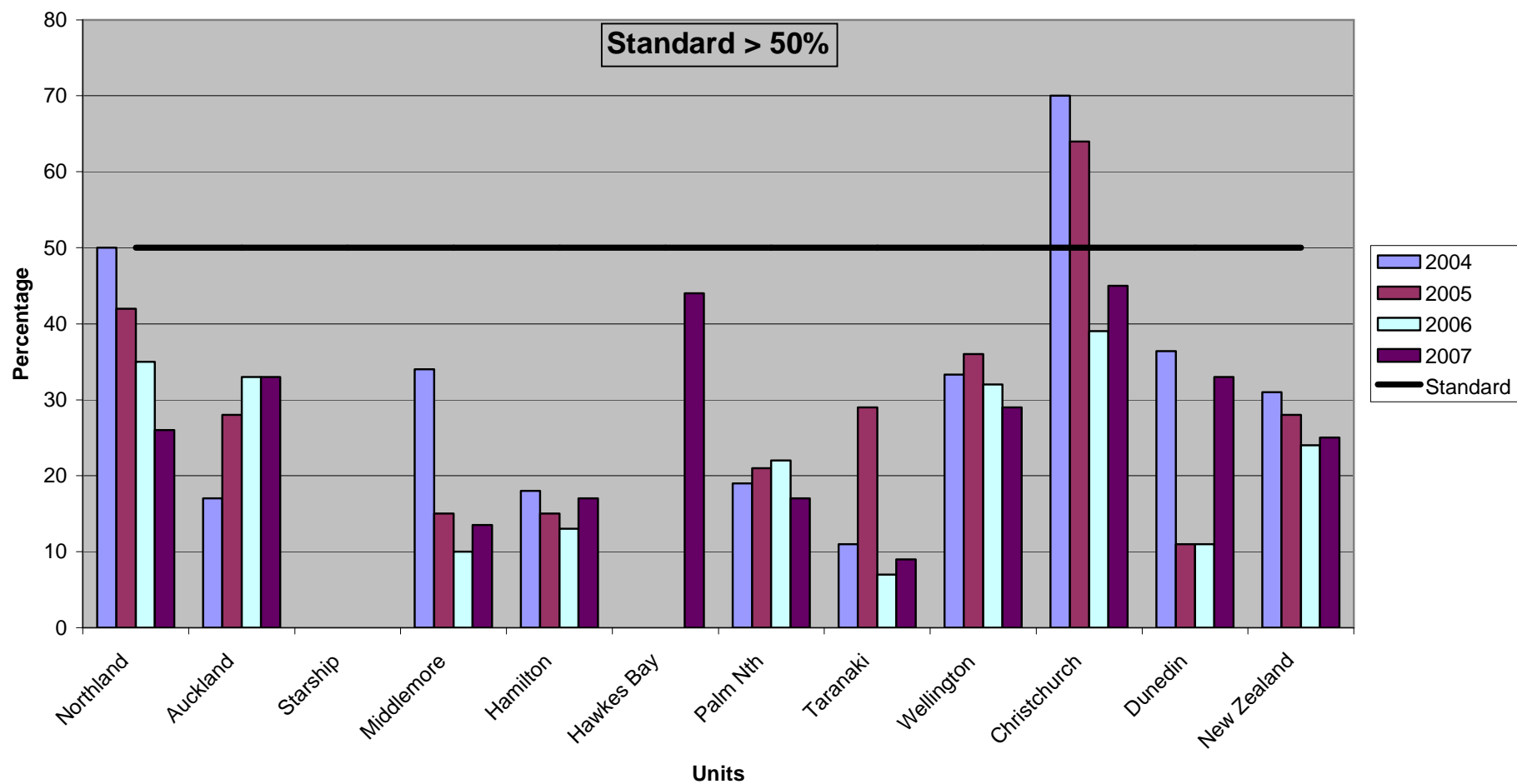
**Vascular access in prevalent New Zealand HD patients at the end of 2004 - 2007**  
**- use of catheters (Includes tunnelled and non-tunnelled catheters)**



**Units**

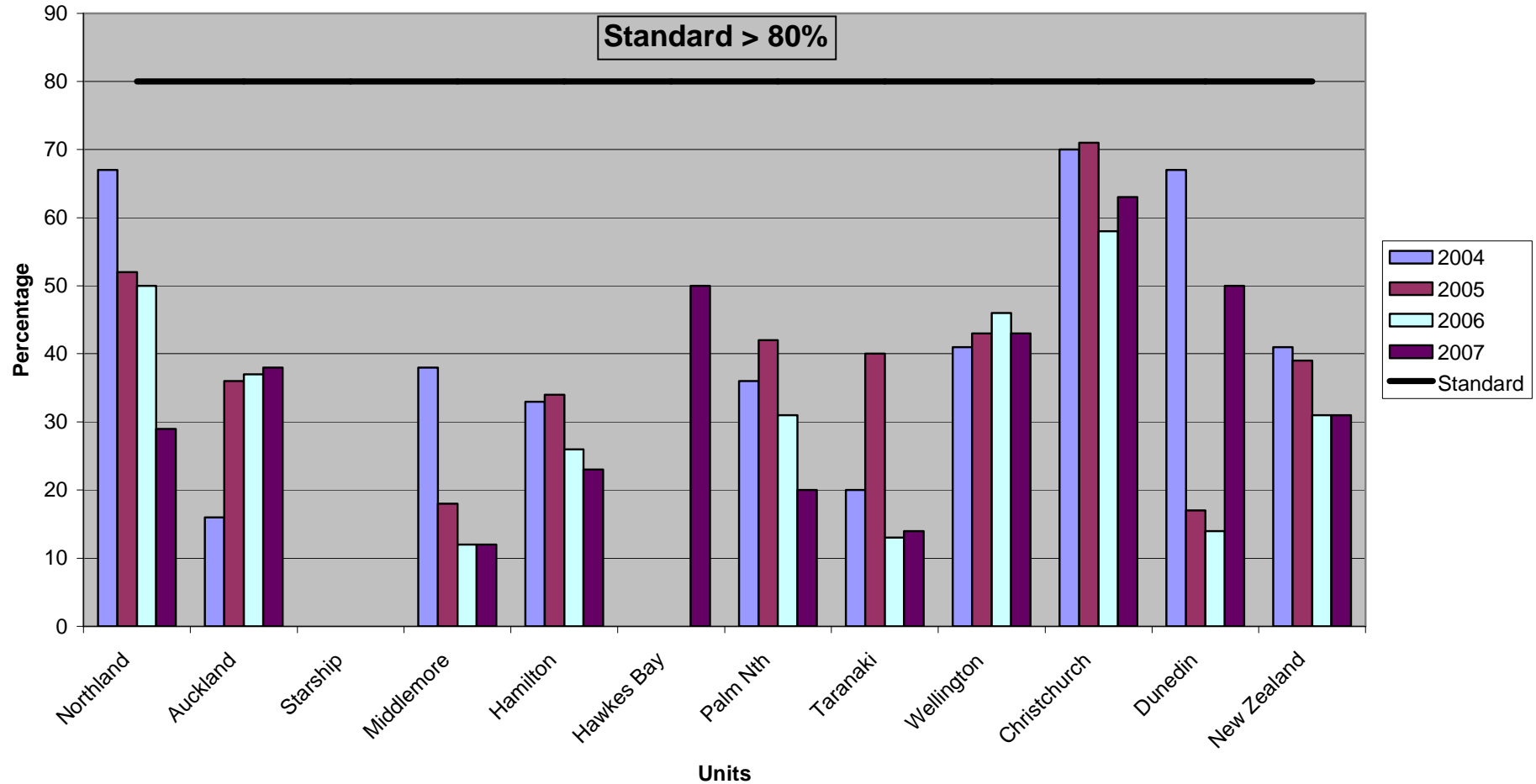
Total Catheters	Northland	Auckland	Starship	Middlemore	Hamilton	Hawkes B	Palm Nth	Taranaki	Wellington	Christchurch	Dunedin	New Zealand
2004	13	48	1	94	37		22	9	46	2	7	279
2005	18	46	0	82	40		29	10	39	4	7	275
2006	19	62	3	81	41		38	13	31	7	5	300
2007	27	71	3	84	35	16	41	13	32	9	5	336

**Percentage of incident New Zealand HD patients starting HD with permanent vascular access in  
2004 - 2007 - AV fistula or AV graft**



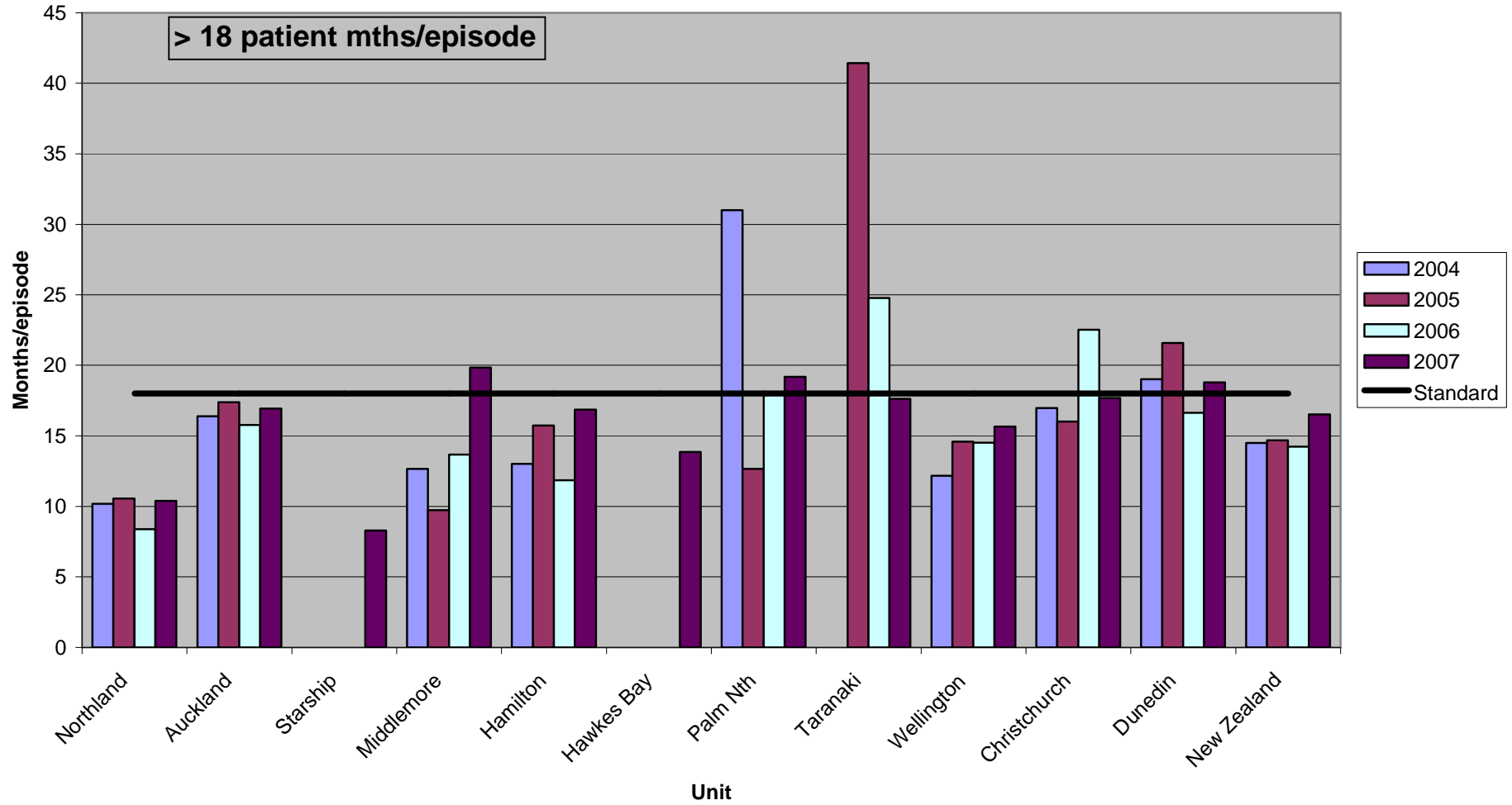
Total HD	Northland	Auckland	Starship	Middlemore	Hamilton	Hawkes B	Palm Nth	Taranaki	Wellington	Christchurch	Dunedin	New Zealand
2004	20	47	0	56	40		21	9	43	26	11	273
2005	26	50	1	48	45		24	7	44	25	9	279
2006	24	82	0	62	54		30	14	34	18	9	327
2007	23	73	1	52	53	9	18	11	34	22	9	305

**Percentage of non-late referred (<3 months) New Zealand HD patients starting HD with permanent access in 2004 - 2007 - AV fistula or AV graft**



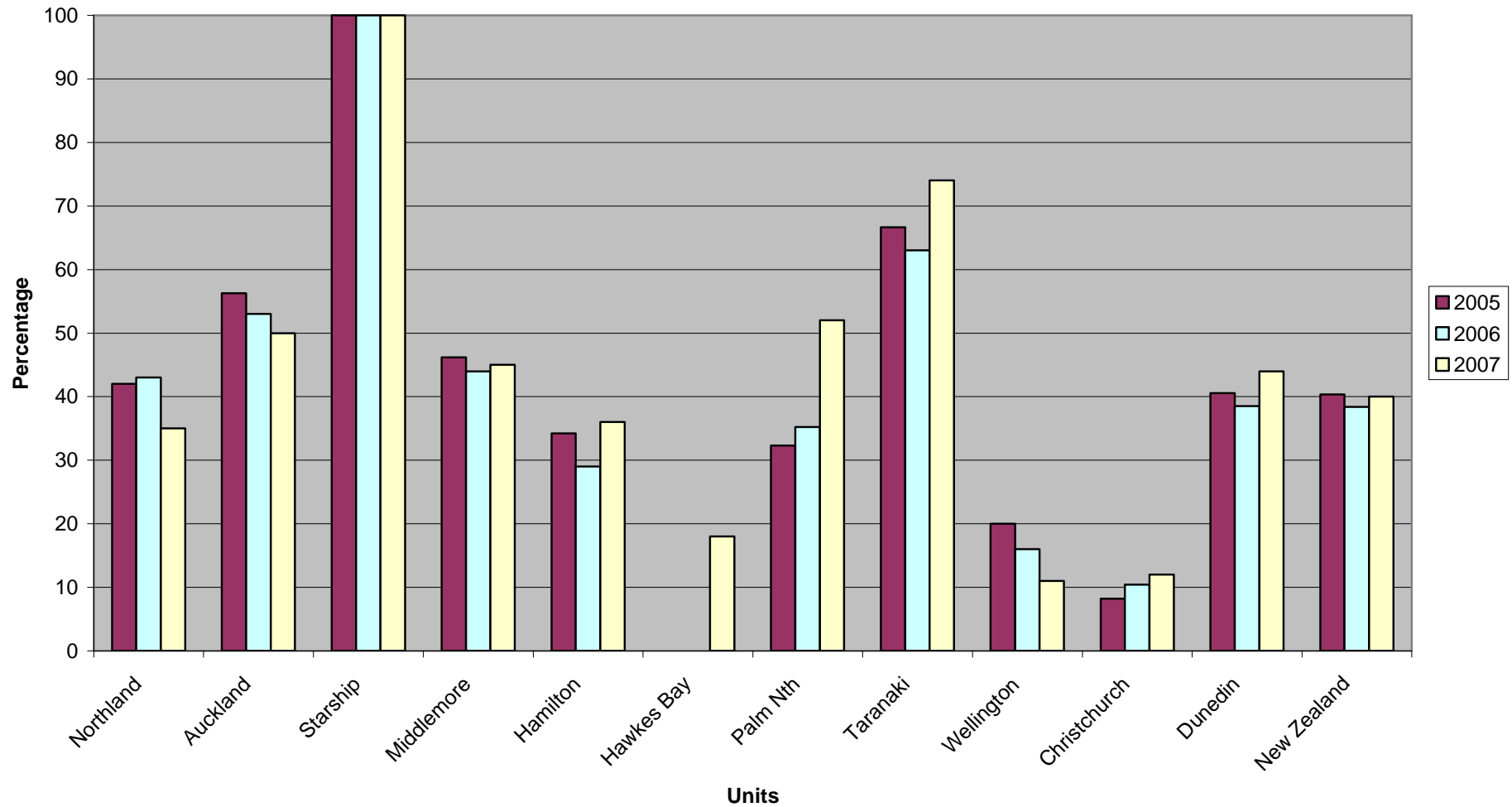
Total HD	Northland	Auckland	Starship	Middlemore	Hamilton	Hawkes B	Palm Nth	Taranaki	Wellington	Christchurch	Dunedin	New Zealand
2004	15	32	0	47	21		11	5	34	23	6	194
2005	21	39	0	40	18		12	5	37	21	6	199
2006	15	59	0	52	24		17	5	24	12	7	215
2007	21	50	1	43	35	8	10	7	23	16	6	220

Peritonitis rates in New Zealand PD patients (months/episode) for 2004 to 2007



Total Patients	Northland	Auckland	(inc Stars	Middlemore	Hamilton	Hawkes B	Palm Nth	Taranaki	Wellington	Christchurch	Dunedin	New Zealand
2004	25	140		94	193		49	23	122	61	35	742
2005	24	137		98	182		40	22	124	64	30	721
2006	37	144		110	192		37	22	118	69	35	764
2007	34	140	11	106	193	26	36	21	75	63	36	741

Percentage of HD patients - Session Length (< 4.5h/session) for 2005 - 2007

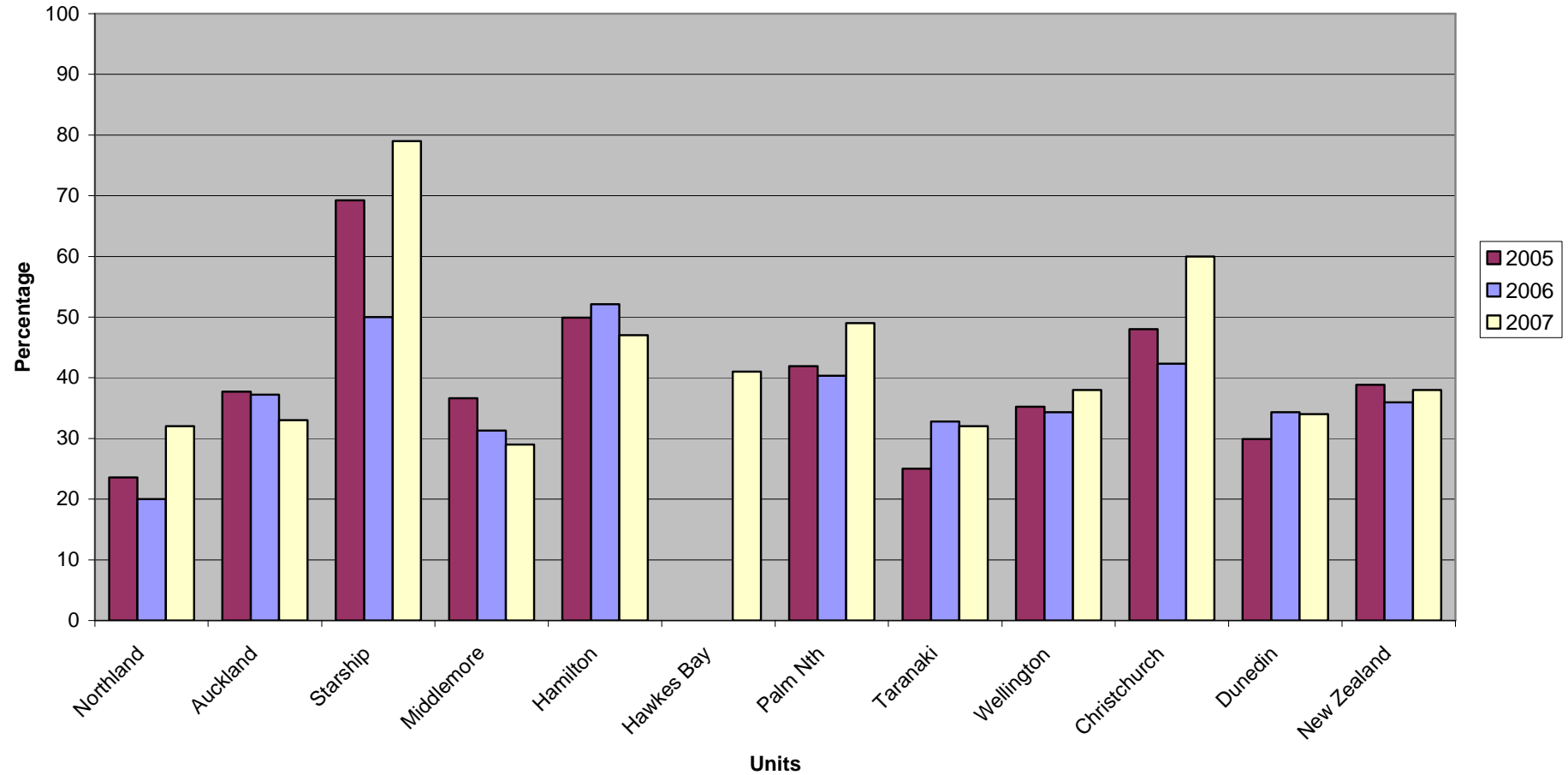


Total Patients	Northland	Auckland	Starship	Middlemore	Hamilton	Hawkes B	Palm Nth	Taranaki	Wellington	Christchurch	Dunedin	New Zealand
2005	42	126	2	144	52		21	20	30	5	15	457
2006	36	100	1	117	36		19	15	18	5	10	357
2007	41	151	3	150	61	8	41	28	14	8	19	524

**Dialysis frequency and duration of session 2005 to 2007**

	Duration of dialysis treatment								
Dialysis frequency	< 4 hours			> 4 hours			Total		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
< 3/week	3	3	7	18	14	17	21	17	24
3 x weekly	32	27	33	1,010	1,080	1,162	1,042	1,107	1,195
> 3/week	16	18	27	54	65	77	70	83	104
<b>Total</b>	51	48	67	1,082	1,159	1,256	1,133	1,207	1,323

Percentage of dialysis patients with Hb Concentration (< 110g/l) at end of 2005 to 2007



Total Patients	Northland	Auckland	Starship	Middlemore	Hamilton	Hawkes B	Palm Nth	Taranaki	Wellington	Christchurch	Dunedin	New Zealand
2005	29	132	9	150	166		44	13	96	60	20	719
2006	28	146	6	136	155		48	19	91	55	23	707
2007	48	146	11	126	172	29	56	19	76	77	27	787

## Peritonitis Frequency Tables

(Audit standard > 18 patient months/episode)

Data for 2007 from ANZDATA

(shaded box = standard not achieved)

<b>Northland</b>								
	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	30	26	37	36	18	22	34	34
Months on PD	445.10	327.05	378.00	438.20	417.93	264.09	343.19	415.70
Peritonitis episodes	31	39	39	45	41	25	41	40
Patients with peritonitis	23	26	23	21	22	17	28	
Months per episode	14.36	8.39	9.69	9.74	10.19	10.56	8.37	10.39
<b>Auckland (including Starship except for 2007)</b>								
	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	140	158	148	147	129	123	150	140
Months on PD	1539.48	1810.55	1860.55	1791.82	1818.03	1494.56	1719.7	1676.02
Peritonitis episodes	93	112	99	87	111	86	109	99
Patients with peritonitis	61	78	76	61	72	61	82	
Months per episode	16.55	16.17	18.79	20.60	16.38	17.38	15.78	16.94
<b>Starship</b>								
								2007
Patients on PD as at year end								11
Months on PD								107.85
Peritonitis episodes								13
Patients with peritonitis								
Months per episode								8.29
<b>Middlemore</b>								
	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	106	106	93	84	88	98	111	106
Months on PD	1251.74	1278.01	1198.06	1037.35	1051	1169.07	1311	1268.27
Peritonitis episodes	89	81	87	71	83	120	96	64
Patients with peritonitis	57	54	51	39	47	59	49	
Months per episode	14.06	15.78	13.77	14.61	12.66	9.74	13.66	19.84
<b>Hamilton</b>								
	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	169	183	202	214	193	200	193	193
Months on PD	2044.80	2046.45	2328.17	2467.91	2565.8	2313.42	2190.27	2273.65
Peritonitis episodes	198	198	206	207	197	147	185	135
Patients with peritonitis	114	116	114	115	114	89	104	
Months per episode	10.33	10.34	11.30	11.92	13.02	15.74	11.84	16.86

## Hawkes Bay

								2007
Patients on PD as at year end								26
Months on PD								332.72
Peritonitis episodes								24
Patients with peritonitis								
Months per episode								13.86

## Palmerston North

	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	44	31	42	48	42	45	37	36
Months on PD	544.51	417.69	408.91	526.63	619.7	506.61	448.81	421.58
Peritonitis episodes	19	23	32	23	20	40	25	22
Patients with peritonitis	15	11	26	17	15	18	18	
Months per episode	28.66	18.16	12.78	22.90	30.99	12.67	17.95	19.19

## Taranaki

	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	0	0	0	0	0	23	24	21
Months on PD	0.00	0.00	0.00	0.00	0	248.55	272.59	246.78
Peritonitis episodes	0	0	0	0	0	6	11	14
Patients with peritonitis	0	0	0	0	0	6	10	
Months per episode	0.00	0.00	0.00	0.00	0.00	41.43	24.78	17.63

## Wellington

	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	94	110	0	122	109	120	113	75
Months on PD	1154.11	1262.95	0.00	1250.16	1496.43	1372.75	1380.7	1017.90
Peritonitis episodes	53	50	0	59	123	94	95	66
Patients with peritonitis	44	37	0	43	72	61	62	
Months per episode	21.78	25.26	0.00	21.19	12.17	14.60	14.53	15.67

## Christchurch

	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	53	49	56	59	48	61	70	63
Months on PD	614.63	586.00	599.21	672.03	797.6	688.23	766.04	791.72
Peritonitis episodes	63	36	32	38	47	43	34	45
Patients with peritonitis	30	19	22	27	25	23	20	
Months per episode	9.76	16.28	18.73	17.69	16.97	16.01	22.53	17.68

## Dunedin

	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	28	34	32	31	30	28	38	36
Months on PD	254.34	334.58	355.95	427.35	399.13	388.35	349.31	432.10
Peritonitis episodes	15	16	19	16	21	18	21	23
Patients with peritonitis	13	12	15	11	12	14	16	
Months per episode	16.96	20.91	18.73	26.71	19.01	21.58	16.63	18.79

## New Zealand

	2000	2001	2002	2003	2004	2005	2006	2007
Patients on PD as at year end	664	697	610	741	657	720	770	741
Months on PD	7848.71	8063.28	7128.85	8611.45	9312	8446	8781.57	8984.30
Peritonitis episodes	571	560	518	546	643	575	617	545
Patients with peritonitis	357	353	327	334	379	348	389	
Months per episode	13.75	14.40	13.76	15.77	14.48	14.69	14.23	16.53

**Note: The 2002 result does not include Wellington**

## **Commentary**

### **Demography**

- The number of incident patients fell from 500 in 2006 to 461 in 2007. Note the 2006 figure was revised upwards by ANZDATA on review of unit returns.
- Hospital haemodialysis was the initial dialysis modality for 66% of patients and CAPD for 26%.
- There continues to be a substantial variation between units in regard to prevalent dialysis modality; particularly in the proportion of patients on centre dialysis or home haemodialysis.
- The numbers of prevalent haemodialysis patients increased (1207 to 1278) and peritoneal dialysis patients decreased (764 to 715) in 2007.

### **Haemodialysis adequacy, frequency and duration of treatment**

- There has been an increase in the number of haemodialysis patients receiving less than 4.5 hours dialysis per session from 357 (38%) to 524 (40%) when compared to 2006.
- Thirty-three patients on thrice weekly dialysis are receiving less than 4 hours dialysis for each treatment session: this represents an absolute increase from 24 in 2006 but no change in percentage of such patients – 2.8%.
- Nine New Zealand patients (range 0 to 4 patients/unit) receive grossly inadequate dialysis. For the purposes of this audit grossly inadequate dialysis was defined as “less than four hours per session or less than three times weekly nad Kt/V less than 1.2 or urea reduction ration (URR) < 75%. These data need to be interpreted with caution in the absence of any other clinical details.
- Eight percent of haemodialysis patients are dialysing for more than three times each week.

## Vascular access for haemodialysis

- **Seven of eleven units** again achieved the standard for optimal vascular access (arteriovenous (AV) fistula + graft) for prevalent patients but **none** for incident patients or the more stringent standard for non-late presenting patients.
- Although some units have improved their performance the relative ranking of units does not appear to have changed significantly.
- The proportion (25%) of prevalent haemodialysis patients using a central venous catheter (CVC) for dialysis has not changed and **no renal unit** has <10% of their patients using this form of vascular access, although two units have less than 15% of their patients using a CVC. At 31 Dec 2007, 300 haemodialysis patients (25% of all New Zealand haemodialysis patients) were using a CVC for vascular access with the range being 12 to 46% (excluding Starship) of haemodialysis patients across units.
- A significant proportion of patients who received haemodialysis for up to 90 days before starting on peritoneal dialysis used a CVC. There is no way from the Registry data to know whether there was an intention during the pre-dialysis phase of care that peritoneal dialysis would be the starting treatment modality. In 2007, there were 60 (74 in 2006) such patients who had up to 90 days haemodialysis before changing to peritoneal dialysis and **all but two** had a CVC as vascular access.
- The continuing high rates of CVC use in some units are of concern because of the evidence that patient survival is inferior with this form of access when compared with an AV fistula. Although the data are not available from all units, it appears that the rates of blood stream infections related to CVCs are well within the international recommendations.

- Even the best performing units are experiencing difficulty in meeting the vascular access standards. The relative ranking of units has changed little over the past four years.

Endeavours to establish viable regional vascular surgery services need to be encouraged.

### **Peritoneal dialysis**

- The number of first peritoneal dialysis catheters functioning at year end has not been reported because the New Zealand Peritoneal Dialysis Registry cannot provide these at present.
- Peritonitis rates vary considerably. Five units either achieve or are very close to the standard of at least 18 patient months/episode of peritonitis. Units with a large proportion of Maori and Pacific patients have inferior results (see the 2005 report for more in depth analysis)
- We report for the first time peritonitis free survival for two eras – 2002 to 2004 and 2005 to 2007 – courtesy of ANZDATA. Most units' PD patients have a shorter survival time to first peritonitis in the second era.

### **Anaemia management**

- Dialysis patients with the anaemia of chronic renal failure and a haemoglobin concentration < 100g/L are entitled to receive subsidised epoietin.
- The proportion of dialysis patients with a haemoglobin concentration < 110g/L in 2007 was 38% (787 patients).

### **Data provided by renal units**

- Waiting times for the provision of arteriovenous fistulae varies amongst the six units that provided data. This audit standard has been difficult to report on as the nature of referral to a vascular surgeon varies, the rate of progression of kidney disease may slow after referral and, in some cases, the patient has asked for a deferment of surgery.

- Four units provided data on dialysis catheter related blood stream infections and all had rates  $< 4/1000$  catheter days.

## **Appendix A: Circulation list**

**The National Renal Advisory Board**

**Standards and Audit Subcommittee**

**Heads of New Zealand Renal Units**

**Chief Executive Officers of DHBs with Renal Units**

**New Zealand Peritoneal Dialysis Registry**

**Australia and New Zealand Dialysis Registry**

**New Zealand Ministry of Health (Director General)**

**Australian and New Zealand Society of Nephrology**

**Renal Society of Australasia, New Zealand Branch**

**Kidney Health New Zealand**

**Board of Nephrology Practice New Zealand**

**Patient support groups/societies**

# **Appendix B**

## **Members of the Standards and Audit Working Party**

Kelvin Lynn, Chair

Anne de Bres (resigned Nov 2003)

Adrian Buttimore

Brenda Clune (resigned Nov 2004)

Mark Marshall

Jenny Walker

Tafale Maddren