

CHAPTER 6

PERITONEAL DIALYSIS

John Collins



Figure 6.1

Proportion (%) Peritoneal Dialysis of all Home Patients 1997 - 2001					
State	1997	1998	1999	2000	2001
Queensland	91%	94%	86%	84%	84%
New South Wales	61%	59%	58%	58%	59%
Aust.Capital Territory	72%	73%	75%	75%	67%
Victoria	68%	67%	71%	72%	73%
Tasmania	100%	94%	88%	88%	80%
South Australia	79%	81%	79%	83%	83%
Northern Territory	100%	100%	100%	100%	96%
Western Australia	86%	87%	87%	90%	88%
Australia	71%	71%	70%	70%	70%
New Zealand	75%	76%	79%	78%	78%

STOCK AND FLOW

AUSTRALIA

Of the 15,706 patients treated with peritoneal dialysis since 1978, 1,811 (12%) were still alive at 31 December 2001. Continuous ambulatory peritoneal dialysis was used to treat 19% of all dialysis patients (21% in 2000), and automated peritoneal dialysis 7% (6% in 2000). Together, these accounted for 70% of all home dialysis. Of the 15,706 patients, 549 patients (3%) had had at least five years of continuous peritoneal dialysis (fig 6.5).

Automated peritoneal dialysis had increased 28% from 390 patients in 2000 to 501 patients in 2001.

In relation to age, the proportion of all dialysis patients (65-74 years and 75-84 years) using peritoneal dialysis was 29% and 28% (30% and 27% respectively in 2000); range 23% (25-34 and 45-54 years) to 63% (0-14 years).

The annual stock and flow of patients during the period 1997-2001 is shown in Figures 6.2 and 6.3.

The proportion of peritoneal dialysis of all home dialysis patients in each State ranged from 59% (New South Wales), 67% (ACT), 73% (Victoria), 80% (Tasmania), 83% (South Australia), 84% (Queensland), 88% (Western Australia) and 96% (Northern Territory) (fig 6.1).

There were 828 new peritoneal dialysis patients in the calendar year 2001, a rise of 5% compared to the previous year; of whom 483 (58%) started dialysis with peritoneal dialysis and 345 (42%) previously had haemodialysis or a failed transplant (fig 6.2).

Figure 6.2

Stock and Flow of Peritoneal Dialysis Patients 1997 - 2001					
	1997	1998	1999	2000	2001
Australia					
Patients new to PD	684	720	751	789	828
First Dialysis Treatment	390	399	414	425	483
Previous Dialysis (HD)	277	307	327	344	334
Failed Transplant	17	14	10	20	11
Transplanted	115	122	92	122	109
Deaths	268	296	309	289	310
Never Transplanted	258	286	293	280	299
Previous Transplant	10	10	16	9	11
Permanent Transfers Out (>12 months)	291	323	320	352	364
Temporary Transfers (<12 months)	138	148	151	123	120
Patients Dialysing at 31 December	1623	1619	1678	1737	1811
Patients Dialysing at Home 31 December	1572	1570	1623	1703	1769
% of all Home Dialysis Patients	71%	71%	70%	70%	70%
New Zealand					
Patients new to PD	221	254	264	262	278
First Dialysis Treatment	129	158	177	142	178
Previous Dialysis (HD)	88	93	81	113	93
Failed Transplant	4	3	6	7	7
Transplanted	42	37	41	41	37
Deaths	96	105	98	139	135
Never Transplanted	92	100	93	138	132
Previous Transplant	4	5	5	1	3
Permanent Transfers Out (>12 months)	78	66	84	86	79
Temporary Transfers (<12 months)	46	40	55	65	35
Patients Dialysing at 31 December	578	634	671	680	711
Patients Dialysing at Home 31 December	571	627	665	676	702
% of all Home Dialysis Patients	75%	76%	79%	78%	78%

Figure 6.3

New patients over the age of 65 years increased 17%, from 321 in 2000 to 374 in 2001 in contrast to a reduction of 11% in the preceding period 1999 to 2000. There was a decrease in the 25-34 year age group of 30% (42 patients compared to 60 in 2000) and a 19% increase in the 35-44 year age group (80 compared to 67 patients in 2000).

There were 310 deaths (289 in 2000), (17.7 deaths per 100 patient years; 11.8% of patients at risk); 8% 25-44 years, 17% 45-64 years, 37% 65-84 years) (fig 3.5). For more detail see Appendix II at Website (www.anzdata.org.au).

One hundred and nine patients received a transplant in 2001 compared to 122 in 2000; 6% of all patients treated, 14% of patients <65 years treated during the year (fig 6.2).

Permanent transfer (>12 months) to haemodialysis was similar to last year, 364 (20%) and 352 (20%) in 2000. Most transfers to haemodialysis were permanent (364/484) (fig 6.2).

The primary renal disease of new patients to peritoneal dialysis was 29% for diabetic nephropathy and 26% for glomerulonephritis (fig 6.8).

Stock and Flow of Peritoneal Dialysis Patients Australia 1995 - 2001

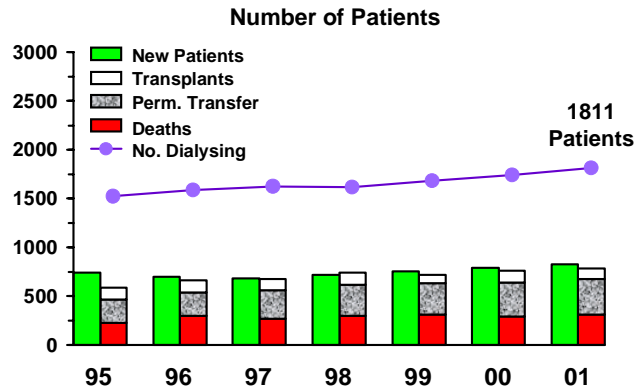


Figure 6.4

Stock and Flow of Peritoneal Dialysis Patients New Zealand 1995 - 2001

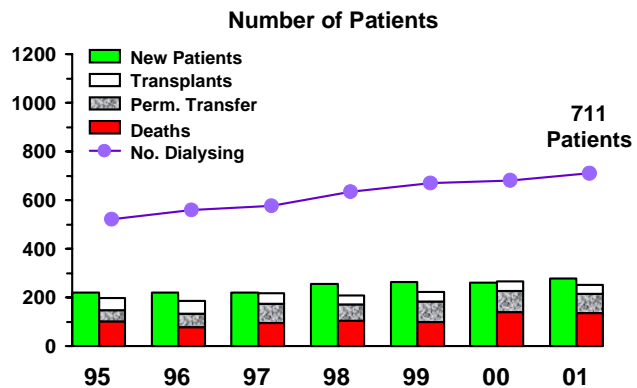


Figure 6.5

Continuous Period of Peritoneal Dialysis at 31 March 2002

	Months													
	0-6	7-12	13-18	19-24	25-30	31-36	37-42	43-48	49-60	61-72	73-84	85-96	97-108	>109
Australia														
1st Treatment 12,701 Pts	3730	2507	1756	1253	1017	660	473	383	456	256	112	52	22	24
All Treatments 15,706 Pts	4854	3130	2129	1534	1187	788	565	448	522	300	126	61	28	34
New Zealand														
1st Treatment 3,461 Pts	725	556	491	411	308	254	217	119	188	84	42	37	14	15
All Treatments 4,102 Pts	916	680	583	471	357	287	241	136	210	92	54	37	16	22



Figure 6.6

Age of New PD Patients

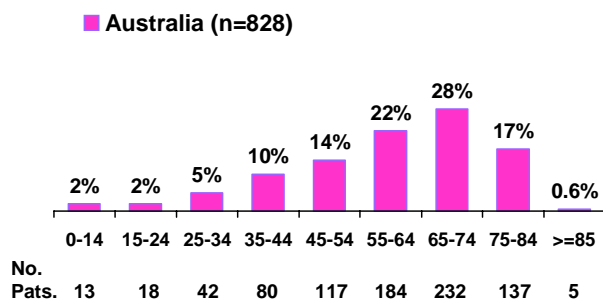


Figure 6.7

Age of Dialysing PD Patients

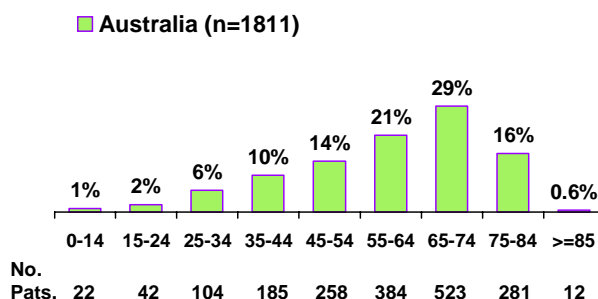


Figure 6.8

Stock and Flow of Peritoneal Dialysis 1997 - 2001

Age Groups	1997	1998	1999	2000	2001
New Patients ★					
00-14 years	19 (3%)	18 (2%)	16 (2%)	15 (2%)	13 (2%)
15-24 years	19 (3%)	19 (3%)	18 (2%)	26 (3%)	18 (2%)
25-34 years	47 (7%)	41 (6%)	39 (5%)	60 (8%)	42 (5%)
35-44 years	69 (10%)	69 (10%)	76 (10%)	67 (8%)	80 (10%)
45-54 years	101 (15%)	110 (15%)	122 (16%)	121 (15%)	117 (14%)
55-64 years	150 (22%)	151 (21%)	133 (18%)	179 (23%)	184 (22%)
65-74 years	208 (30%)	222 (31%)	244 (33%)	211 (27%)	232 (28%)
75-84 years	71 (10%)	88 (12%)	101 (13%)	104 (13%)	137 (17%)
> 85 years	0 (0%)	2 (<1%)	2 (<1%)	6 (1%)	5 (<1%)
Total	684 (100%)	720 (100%)	751 (100%)	789 (100%)	828 (100%)
Patients Dialysing					
00-14 years	22 (1%)	29 (2%)	23 (1%)	25 (1%)	22 (1%)
15-24 years	44 (3%)	39 (2%)	44 (2%)	51 (3%)	42 (2%)
25-34 years	100 (6%)	90 (6%)	96 (6%)	113 (7%)	104 (6%)
35-44 years	176 (11%)	168 (10%)	159 (10%)	151 (9%)	185 (10%)
45-54 years	266 (16%)	258 (16%)	281 (17%)	281 (16%)	258 (14%)
55-64 years	335 (21%)	334 (21%)	340 (20%)	356 (20%)	384 (21%)
65-74 years	498 (31%)	501 (31%)	500 (30%)	513 (30%)	523 (29%)
75-84 years	180 (11%)	195 (12%)	228 (14%)	235 (14%)	281 (16%)
> 85 years	2 (<1%)	5 (<1%)	7 (<1%)	12 (<1%)	12 (<1%)
Total	1623 (100%)	1619 (100%)	1678 (100%)	1737 (100%)	1811 (100%)
Primary Renal Disease ★					
Glomerulonephritis	218 (32%)	221 (31%)	221 (29%)	222 (28%)	212 (26%)
Analgesic Nephropathy	48 (7%)	52 (7%)	60 (8%)	54 (7%)	50 (6%)
Hypertension	85 (12%)	88 (12%)	72 (10%)	106 (13%)	124 (15%)
Polycystic Disease	38 (6%)	41 (5%)	34 (5%)	42 (5%)	27 (3%)
Reflux Nephropathy	37 (5%)	31 (4%)	25 (3%)	39 (5%)	24 (3%)
Diabetic Nephropathy	169 (25%)	177 (25%)	219 (29%)	204 (26%)	239 (29%)
Miscellaneous	44 (6%)	62 (9%)	69 (9%)	68 (9%)	90 (11%)
Uncertain	45 (7%)	48 (7%)	51 (7%)	54 (7%)	62 (7%)
Total	684 (100%)	720 (100%)	751 (100%)	789 (100%)	828 (100%)

★ New patients receiving first peritoneal dialysis treatment

Figure 6.9

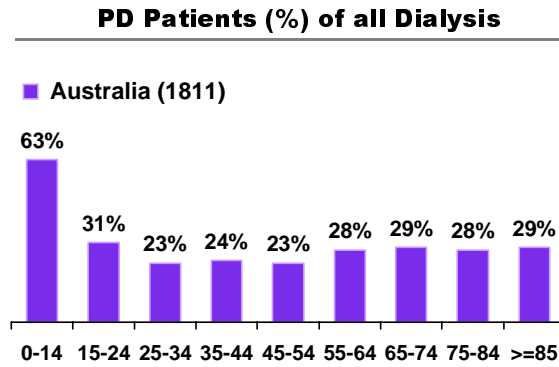


Figure 6.10

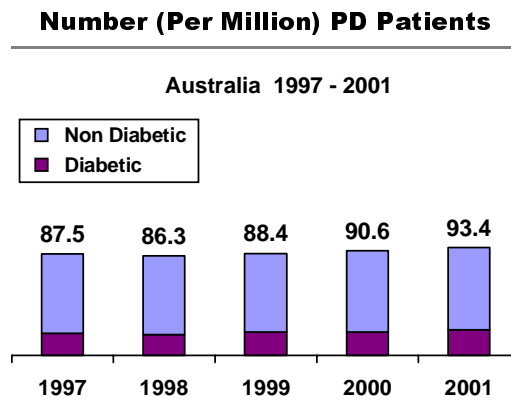


Figure 6.11

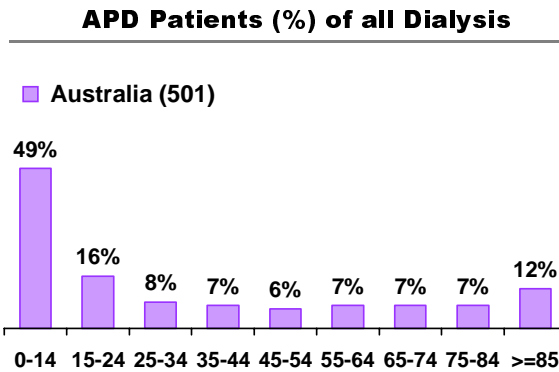


Figure 6.12

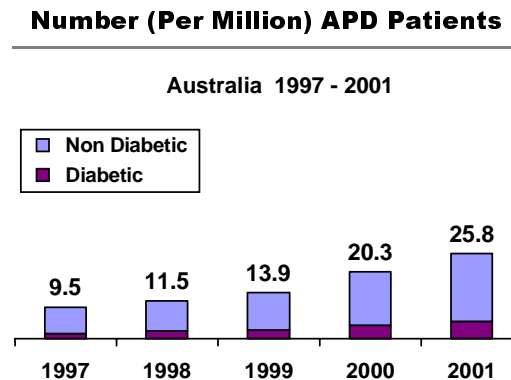




Figure 6.13

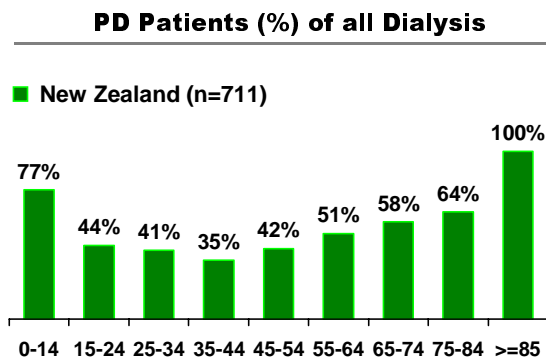


Figure 6.14

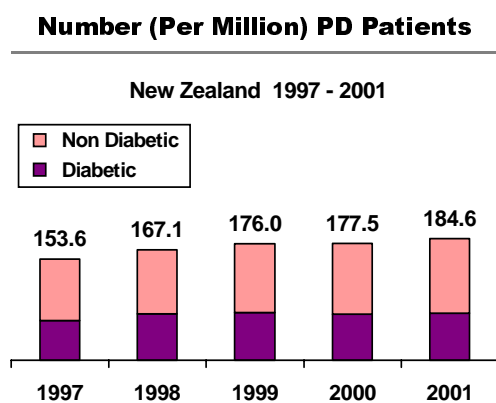


Figure 6.15

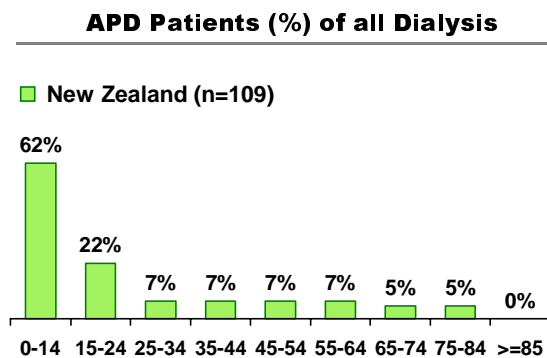
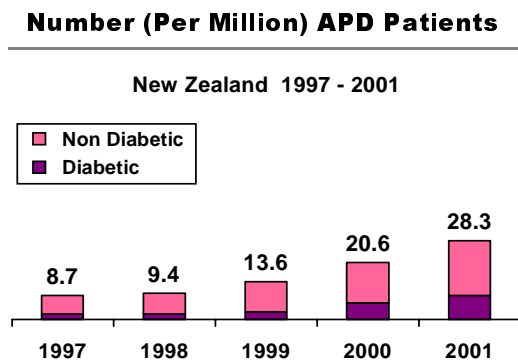


Figure 6.16



NEW ZEALAND

The annual stock and flow of patients during the period 1995 to 2001 is shown in Figures 6.2 and 6.4. Of the 4,102 treated since 1978, 711 (17%) were alive at 31 December 2001, 221 (5%) had had more than five years continuous treatment (fig 6.5).

Peritoneal dialysis accounted for 49% of all dialysis patients, and 78% of all patients dialysing at home. Automated peritoneal dialysis accounted for 15% of all peritoneal dialysis patients in 2001, compared with 12% in 2000, and 8% in 1999.

The age distribution of prevalent peritoneal dialysis patients is shown in Figures 6.18 and 6.19.

There were 278 new peritoneal dialysis patients in the calendar year 2001 (262 in 2000). For 64%, peritoneal dialysis was the initial dialysis treatment (fig 6.17 and 6.19). For more detail see Appendix III at Website (www.anzdata.org.au).

There were 135 deaths amongst prevalent peritoneal dialysis patients in 2001 (140 in 2000) 19.5 deaths per 100 patient years, (13.8% of patients at risk; 10% 25-44 years, 27% 45-64 years, 35% 65-84 years) (fig 3.5). For more detail see Appendix III at Website (www.anzdata.org.au).

Thirty seven patients were transplanted in 2001 (41 in 2000), 5% of patients dialysed (fig 6.2).

The most common primary renal disease of new patients to peritoneal dialysis was diabetic nephropathy (40%) then glomerulonephritis (27%).

The proportion of patients in each group treated with peritoneal dialysis ranged from 35% (35-44 years), 41% (25-34 years) to 77% (0-14 years) and 100% (85-94 years) (fig 6.13).

Figure 6.17

Age of New PD Patients

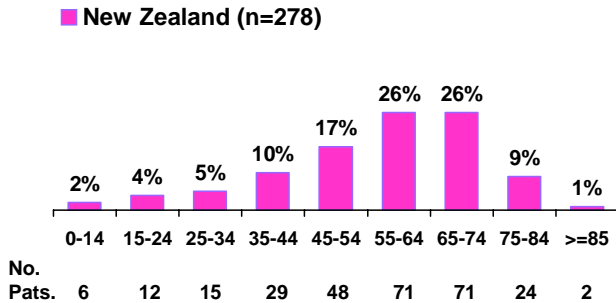


Figure 6.18

Age of Dialysing PD Patients

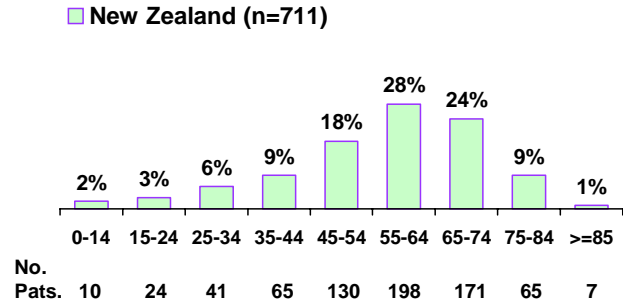


Figure 6.19

NEW ZEALAND

Stock and Flow of Peritoneal Dialysis 1997 - 2001

Age Groups	1997	1998	1999	2000	2001
New Patients ★					
00-14 years	4 (2%)	5 (2%)	5 (2%)	5 (2%)	6 (2%)
15-24 years	7 (3%)	9 (4%)	5 (2%)	4 (1%)	12 (4%)
25-34 years	10 (5%)	19 (8%)	11 (4%)	13 (5%)	15 (5%)
35-44 years	21 (9%)	21 (8%)	22 (8%)	24 (9%)	29 (10%)
45-54 years	46 (21%)	44 (17%)	56 (21%)	49 (19%)	48 (17%)
55-64 years	60 (27%)	82 (32%)	78 (30%)	80 (31%)	71 (26%)
65-74 years	63 (29%)	60 (24%)	61 (23%)	57 (22%)	71 (26%)
75-84 years	9 (4%)	13 (5%)	24 (9%)	29 (11%)	24 (9%)
> 85 years	1 (<1%)	1 (<1%)	2 (1%)	1 (<1%)	2 (1%)
Total	221 (100%)	254 (100%)	264 (100%)	262 (100%)	278 (100%)
Patients Dialysing					
00-14 years	12 (2%)	9 (2%)	8 (1%)	6 (1%)	10 (2%)
15-24 years	23 (4%)	23 (4%)	18 (3%)	17 (2%)	24 (3%)
25-34 years	41 (7%)	41 (6%)	39 (6%)	38 (6%)	41 (6%)
35-44 years	64 (11%)	71 (11%)	70 (10%)	66 (10%)	65 (9%)
45-54 years	131 (23%)	129 (20%)	136 (20%)	135 (20%)	130 (18%)
55-64 years	161 (28%)	179 (28%)	188 (28%)	202 (30%)	198 (28%)
65-74 years	121 (21%)	145 (23%)	164 (24%)	156 (23%)	171 (24%)
75-84 years	24 (4%)	34 (5%)	44 (7%)	56 (8%)	65 (9%)
> 85 years	1 (<1%)	3 (<1%)	4 (1%)	4 (<1%)	7 (1%)
Total	578 (100%)	634 (100%)	671 (100%)	680 (100%)	711 (100%)
Primary Renal Disease ★					
Glomerulonephritis	47 (21%)	45 (18%)	52 (20%)	60 (23%)	75 (27%)
Analgesic Nephropathy	0 (0%)	1 (<1%)	1 (<1%)	0 (0%)	0 (0%)
Hypertension	34 (16%)	37 (15%)	33 (13%)	39 (15%)	39 (14%)
Polycystic Disease	8 (4%)	10 (4%)	15 (6%)	5 (2%)	14 (5%)
Reflux Nephropathy	7 (3%)	9 (3%)	8 (3%)	12 (4.5%)	9 (3%)
Diabetic Nephropathy	97 (44%)	124 (49%)	114 (43%)	105 (40%)	110 (40%)
Miscellaneous	19 (9%)	15 (6%)	21 (8%)	29 (11%)	20 (7%)
Uncertain	9 (4%)	13 (5%)	20 (7%)	12 (4.5%)	11 (4%)
Total	221 (100%)	254 (100%)	264 (100%)	262 (100%)	278 (100%)

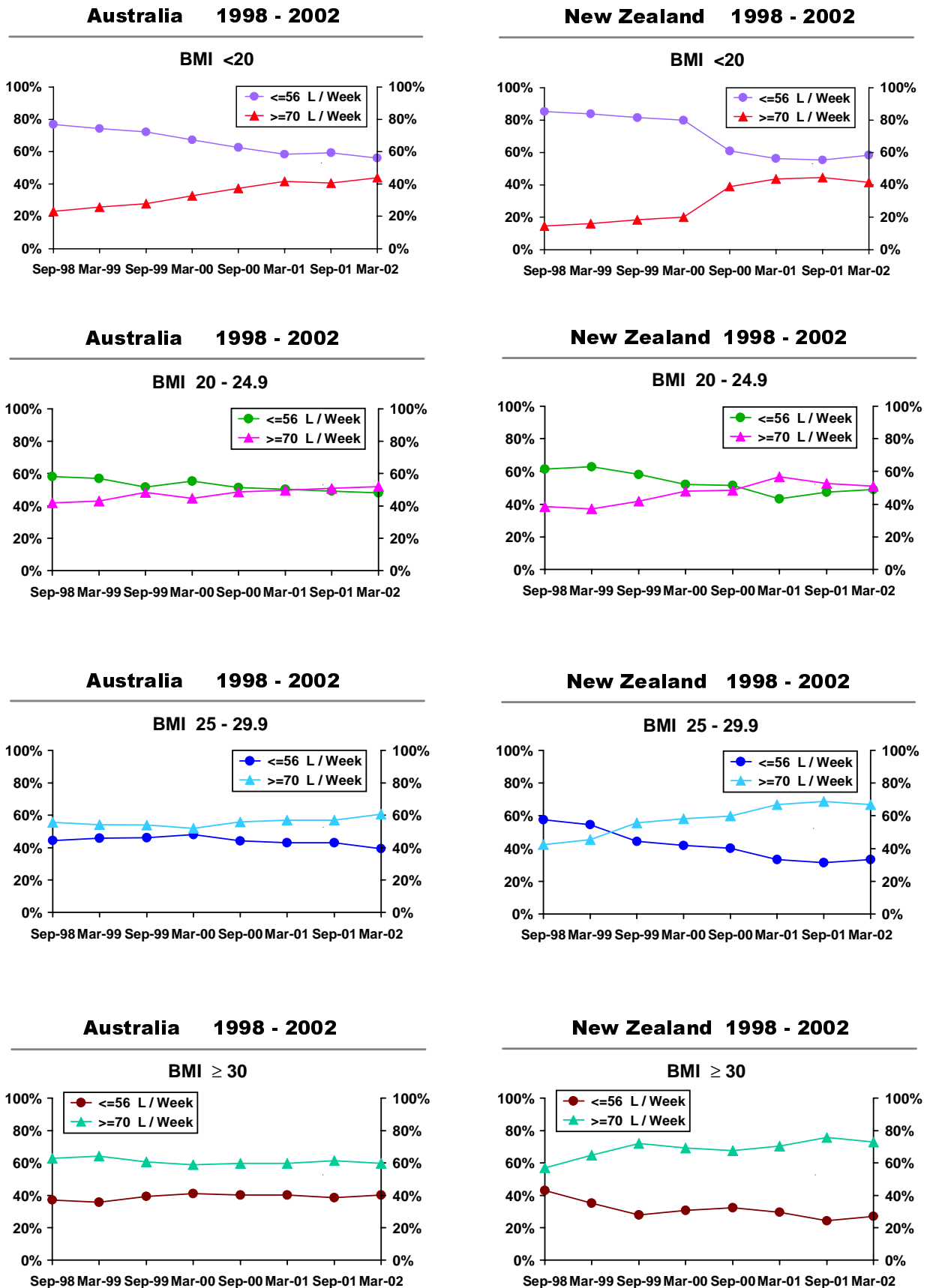
★ New patients receiving first peritoneal dialysis treatment



PD LITRES/WEEK

The trend noted in earlier reports showing an increased percentage of patients on larger weekly volumes in peritoneal dialysis appears to have reached a plateau in most BMI groups. This may represent the limits at which larger volumes can be tolerated in peritoneal dialysis patients but may also be influenced by changing views with regard to the adequacy of dialysis.

Figure 6.20 RELATIONSHIP OF BMI TO WEEKLY DIALYSATE VOLUME



PERITONITIS

Australian median survival peritonitis free has increased at 18.1 months overall, with a growing number (30%) of patients completely free of peritonitis in three years and in New Zealand it was 12.9 months (21% of patients) (fig 6.21). As noted in previous reports there is a strong association between ethnicity and peritonitis free survival (fig 6.23). In this Report, for the first time, we report on peritonitis free survival in patients on home APD (fig 6.24). The median survival peritonitis for Australian home APD patients was 19.1 months, and was 13.6 months for New Zealand home APD patients.

Figure 6.21

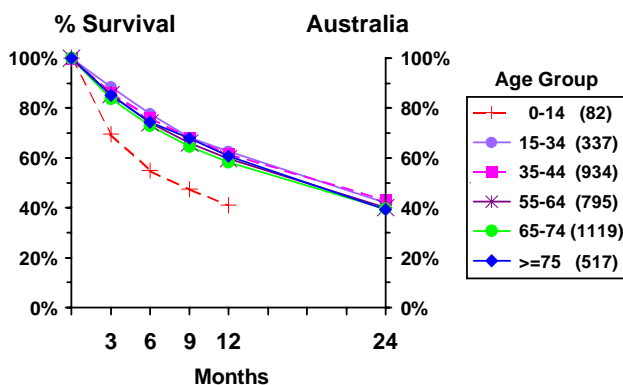
First PD Treatment to First Episode of Peritonitis Related to Age at Entry 1997 to 31-Dec-2001

Survival	Age Groups						All	
	00-14	15-34	35-54	55-64	65-74	> 75		
Australia	n=82	n=337	n=934	n=795	n=1119	n=517	n=3784	
3 months	69 ± 5.2	51 88 ± 1.8	280 86 ± 1.2	750 85 ± 1.3	626 84 ± 1.1	836 85 ± 1.6	390 85 ± 0.6	2933
6 months	55 ± 5.8	34 78 ± 2.4	214 76 ± 1.5	577 74 ± 1.6	480 73 ± 1.4	638 74 ± 2.0	283 74 ± 0.8	2226
9 months	48 ± 6.1	22 68 ± 2.8	157 68 ± 1.6	456 66 ± 1.8	377 64 ± 1.6	499 68 ± 2.3	212 66 ± 0.8	1723
1 year	41 ± 6.3	19 63 ± 3.0	121 62 ± 1.8	351 60 ± 1.9	299 58 ± 1.7	403 61 ± 2.5	164 60 ± 0.9	1357
2 years	30 ± 6.6	6 42 ± 3.6	42 43 ± 2.1	125 40 ± 2.2	111 40 ± 1.9	157 39 ± 3.0	55 41 ± 1.0	496
3 years	-	34 ± 4.1	17 31 ± 2.5	43 30 ± 2.5	44 28 ± 2.1	58 31 ± 3.4	23 30 ± 1.2	188
N. Zealand	n=23	n=104	n=358	n=374	n=313	n=106	n=1278	
3 months	64 ± 10.1	14 84 ± 3.6	85 85 ± 1.9	292 83 ± 1.9	299 85 ± 2.0	247 87 ± 3.3	84 84 ± 1.0	1021
6 months	35 ± 10.4	6 74 ± 4.5	60 70 ± 2.5	219 68 ± 2.5	225 72 ± 2.6	184 75 ± 4.5	60 70 ± 1.3	754
9 months	-	63 ± 5.2	42 60 ± 2.7	171 55 ± 2.7	162 64 ± 2.9	151 69 ± 4.9	46 60 ± 1.5	577
1 year	-	53 ± 5.7	29 51 ± 2.9	132 46 ± 2.8	118 57 ± 3.1	117 59 ± 5.7	31 52 ± 1.5	432
2 years	-	28 ± 6.1	9 32 ± 3.0	42 31 ± 2.9	39 39 ± 3.4	47 30 ± 6.4	9 32 ± 1.6	146
3 years	-	20 ± 6.3	4 21 ± 3.3	11 22 ± 3.2	13 22 ± 3.7	13 -	21 ± 1.8	41

% Survival ± S.E. and Numbers at risk

Figure 6.22

First PD Treatment to First Peritonitis Related to Age at Entry 1997 - 2001



First PD Treatment to First Peritonitis Related to Age at Entry 1997 - 2001

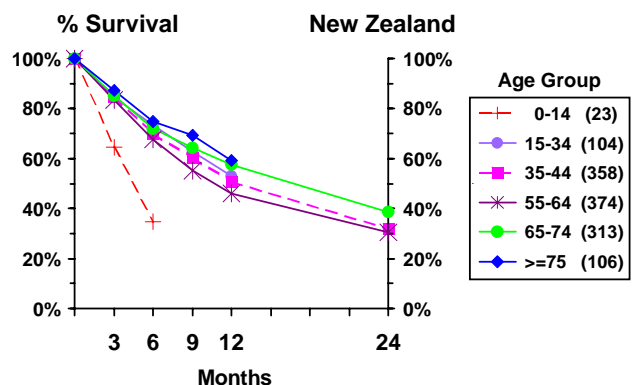




Figure 6.23

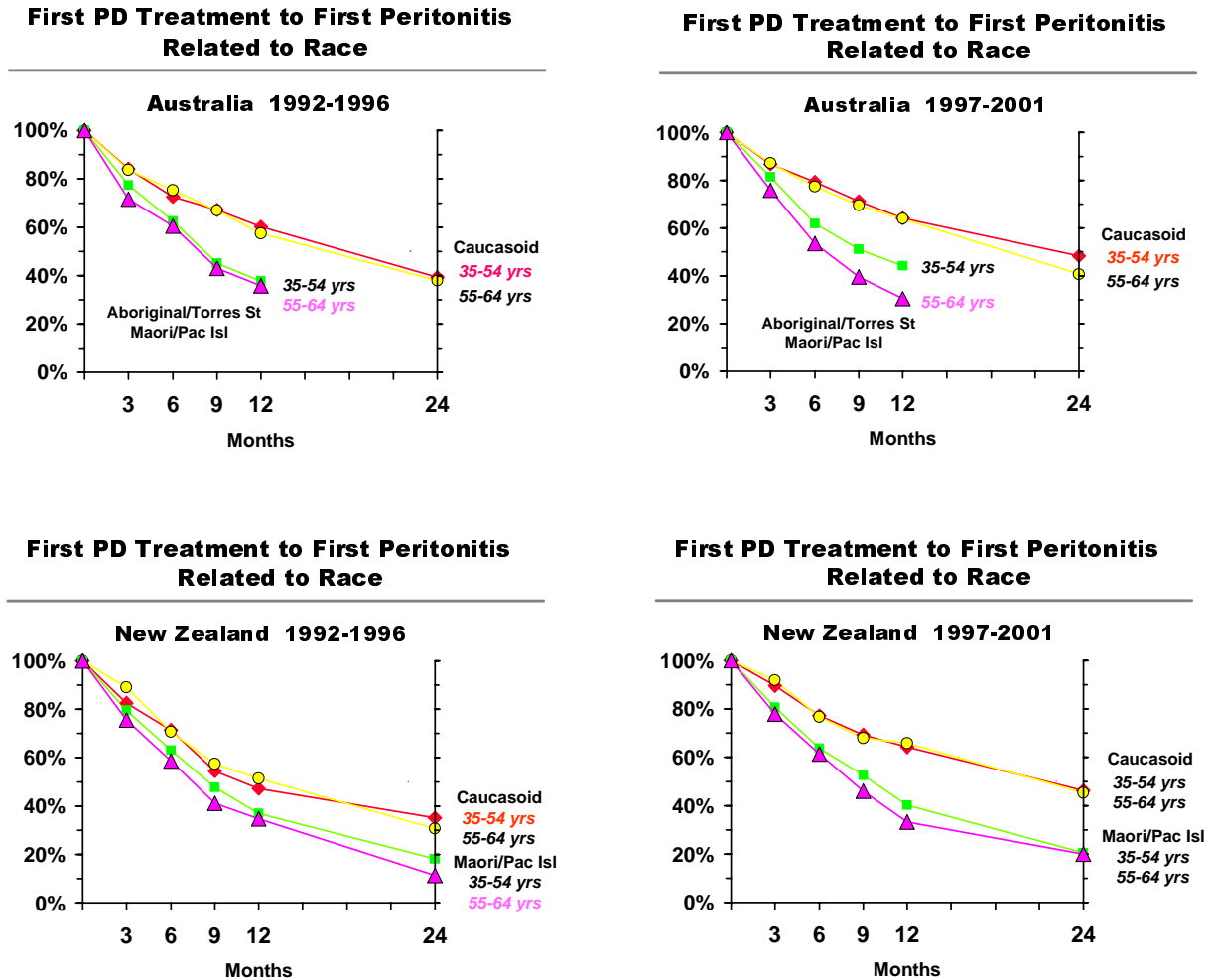


Figure 6.24

First Home APD Treatment to First Episode of Peritonitis Related to Age at Entry 1997 to 31-Dec-2001

Survival	Age Groups						All	
	00-14	15-34	35-54	55-64	65-74	> 75		
Australia	n=58	n=119	n=221	n=145	n=192	n=88	n=823	
1 month	79 ± 5.4	45 97 ± 1.7	112 97 ± 1.1	210 96 ± 1.6	134 94 ± 1.7	176 94 ± 2.5	80 95 ± 0.8	
3 months	68 ± 6.2	35 85 ± 3.3	94 86 ± 2.4	174 85 ± 3.0	113 84 ± 2.7	147 86 ± 3.8	67 84 ± 1.3	
6 months	57 ± 6.8	24 72 ± 4.3	68 74 ± 3.1	125 76 ± 3.8	77 74 ± 3.4	96 84 ± 4.1	45 74 ± 1.6	
9 months	53 ± 7.1	21 61 ± 4.9	46 64 ± 3.6	87 69 ± 4.4	57 69 ± 3.7	71 80 ± 4.9	30 66 ± 1.8	
1 year	47 ± 7.3	16 57 ± 5.2	34 57 ± 3.9	65 61 ± 4.9	35 64 ± 4.1	55 74 ± 5.9	26 60 ± 2.0	
2 years	-	-	45 ± 4.5	22 -	45 ± 5.4	16 -	-	43 ± 2.5
N. Zealand	n=21	n=26	n=39	n=25	n=16	n=11	n=138	
1 month	86 ± 7.6	18 84 ± 7.1	22 95 ± 3.6	36 83 ± 7.6	19 100 ± 0.0	16 90 ± 9.5	8 90 ± 2.6	
3 months	61 ± 10.7	12 76 ± 8.5	17 84 ± 6.0	31 83 ± 7.6	19 87 ± 8.9	12 68 ± 15.5	6 78 ± 3.6	
6 months	28 ± 10.4	4 67 ± 9.7	13 78 ± 6.9	22 70 ± 9.5	16 87 ± 8.9	9 68 ± 15.5	5 67 ± 4.2	
9 months	-	61 ± 10.4	10 62 ± 8.9	14 70 ± 9.5	9 66 ± 14.3	6 -	-	58 ± 4.7
1 year	-	54 ± 11.2	7 62 ± 8.9	12 -	-	-	-	52 ± 5.0

% Survival ± S.E. and Numbers at risk

TECHNIQUE FAILURE (CENSORED FOR DEATH OR TRANSPLANTATION)

Figure 6.25

Causes of Technique Failure April 1996 to March 1999 Excluding Death, Transplantation, Recovery of Renal Function				
Causes of Technique Failure	Australia		New Zealand	
	Primary	Secondary	Primary	Secondary
Recurrent/persistent peritonitis	332	10	98	2
Acute peritonitis	232	6	68	1
Tunnel/exit site infection	124	3	13	-
Total Infective Complications	688 (41%)	19 (23%)	179 (45%)	3 (38%)
Inadequate solute clearance	156	8	31	-
Inadequate fluid ultrafiltration	130	8	29	-
Total Dialysis Failure	286 (17%)	16 (20%)	60 (15%)	-
Dialysate leak	122	17	24	1
Catheter block	19	-	8	-
Catheter fell out	8	-	-	-
Hernia	57	5	6	-
Abdominal pain	14	2	3	-
Abdominal surgery	50	5	13	-
Multiple adhesions	4	-	3	-
Hydrothorax	3	-	2	1
Haemoperitoneum	2	1	-	-
Scrotal oedema	1	-	-	-
Total Technical Failure	280 (17%)	30 (36%)	59 (15%)	2 (25%)
Unable to manage self care	144	4	20	-
Patient preference	270	13	79	3
Total Social Reasons	414 (25%)	17 (21%)	99 (25%)	3 (37%)

The overall median time to technique failure in Australia was 38 months in the epoch April 1996 to March 1999, compared to >24 months in the epoch April 1999 to March 2002. In New Zealand the median time to technique failure was 56 months in the epoch April 1996 to March 1999, compared to >24 months in the epoch April 1999 to March 2002.

A similar change was noted in New Zealand in relationship to dialysis failure. These trends may reflect a tendency over the last three years to transfer more patients from peritoneal dialysis to haemodialysis because of concerns about inadequate dialysis.

Interestingly, in Australia, patient preference as a cause for transfer has risen dramatically from 270 (16%) in the era 1996 to 1999, to 563 (26%) in the era 1999-2002. The opposite trend occurred in New Zealand over the same period with 79 (20%) and 105 (18%) being recorded in the 2 epochs. These differences may reflect the constraints placed on availability of hospital and satellite haemodialysis in New Zealand in contrast to Australia.

Ethnicity also importantly influences the cause of technique failure. In Australia, 56% of Aborigines fail for infective reasons as opposed to 32% of Caucasians and 32% of Asians. Similarly in New Zealand, 47% of Maori and 51% of Pacific Islanders fail peritoneal dialysis for infective reasons as opposed to 33% of Caucasians and 36% of Asians. In contrast social reasons account for only 19% of failures in Australian Aborigines and 18% in New Zealand Maori and Pacific Islanders. These failure rates related to infection correlate with the tendency towards early peritonitis in the indigenous populations (fig 6.27).

Figure 6.26

Causes of Technique Failure April 1999 to March 2002 Excluding Death, Transplantation, Recovery of Renal Function				
Causes of Technique Failure	Australia		New Zealand	
	Primary	Secondary	Primary	Secondary
Recurrent/persistent peritonitis	250	8	88	4
Acute peritonitis	297	7	119	4
Tunnel/exit site infection	68	3	9	1
Total Infective Complications	615 (29%)	18 (17%)	216 (38%)	9 (31%)
Inadequate solute clearance	293	12	114	6
Inadequate fluid ultrafiltration	170	12	38	3
Total Dialysis Failure	463 (21%)	24 (22%)	152 (26%)	9 (31%)
Dialysate leak	151	21	45	8
Catheter block	33	1	4	-
Catheter fell out	11	-	1	-
Hernia	71	5	6	-
Abdominal pain	8	2	2	-
Abdominal surgery	55	3	14	1
Multiple adhesions	-	-	5	-
Hydrothorax	2	-	-	-
Total Technical Failure	331 (15%)	32 (29%)	77 (13%)	9 (31%)
Unable to manage self care	184	10	29	1
Patient preference	563	25	105	1
Total Social Reasons	747 (35%)	35 (32%)	134 (23%)	2 (7%)

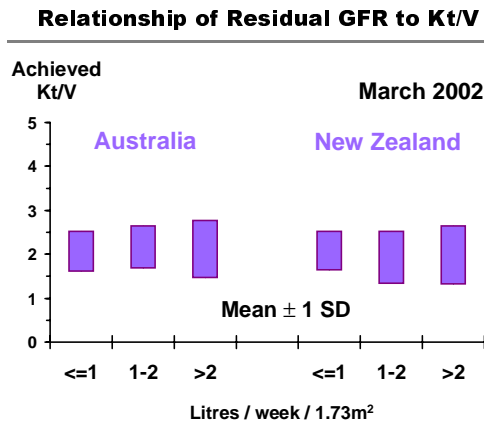


Figure 6.27

Causes of Technique Failure April 1996 to March 2002											
Causes of Technique Failure	Diab.	Non Diab.	Race						Age Group		Total
			Asian	Abor./ Torres St.Isl.	Cauc.	Maori	Pac.Is.	Other	19-54	>55	
AUSTRALIA											
Infective	329 37%	974 33%	99 32%	206 56%	965 32%	4 40%	19 35%	10 32%	485 35%	781 33%	1303 34%
Reduced Solute	83 9%	366 12%	37 12%	17 5%	384 13%	- -	6 11%	5 16%	193 14%	247 11%	449 12%
Inadequate UF	74 8%	226 8%	24 8%	25 7%	244 8%	1 10%	5 9%	1 3%	105 7%	189 8%	300 8%
Technical	100 11%	512 17%	43 14%	52 14%	507 17%	1 10%	3 6%	6 19%	218 16%	390 17%	612 16%
Social	294 33%	867 29%	109 35%	71 19%	947 31%	4 40%	21 39%	9 29%	400 29%	737 31%	1161 30%
Total	880	2945	312	371	3047	10	54	31	1401	2344	3825
NEW ZEALAND											
Infective	155 41%	240 40%	24 36%	- -	137 33%	165 47%	68 51%	1 50%	150 37%	240 45%	395 40%
Reduced Solute	55 15%	90 15%	13 19%	- -	60 14%	56 16%	16 12%	- -	74 18%	70 13%	145 15%
Inadequate UF	35 9%	32 5%	4 6%	- -	33 8%	23 6%	7 5%	- -	22 5%	43 8%	67 7%
Technical	51 14%	85 14%	10 15%	- -	61 15%	47 13%	18 14%	- -	55 14%	78 15%	136 14%
Social	81 21%	152 25%	16 24%	- -	129 31%	63 18%	24 18%	1 50%	103 25%	99 19%	233 24%
Total	377	599	67	-	420	354	133	2	404	530	976

ACHIEVED SOLUTE CLEARANCE

Figure 6.28



In Australia, 31% of patients are achieving a total Kt/V of <1.8 (compared with 23% reported in 2001). In New Zealand, 39% of patients are achieving a total Kt/V <1.8 (compared with 21% in 2001).

These changes are substantial and may reflect changing perceptions regarding the requirements for adequate dialysis.

Yet in contrast, figures 6.25-26 show that dialysis failure as a cause of technique failure has risen in Australia from 17% in the epoch 1996 to 1999 to 21% in the epoch 1999 to 2002. Similar changes have occurred in New Zealand. One hundred and fifty six (9.3%) of all technique failures were due to inadequate solute clearance in 1996 to 1999 compared with 293 (13.3%) in 1999 to 2002.

Figure 6.29

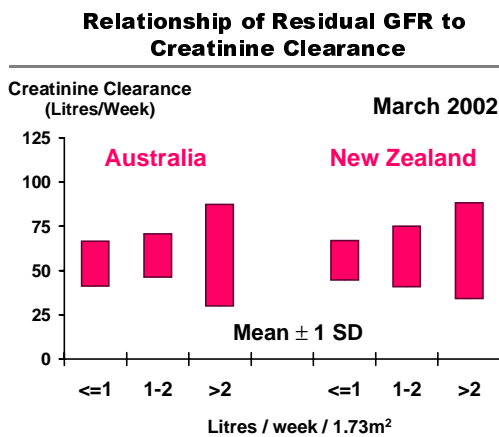


Figure 6.30

Relationship of Residual GFR to KT/V
March 2002

	Residual GFR	KT/V (Total) ± S.E
Aust	≤ 1 ml / min	2.07 ± 0.02
	> 1 ml / min	2.12 ± 0.02
NZ	≤ 1 ml / min	2.08 ± 0.03
	> 1 ml / min	1.98 ± 0.03

Figure 6.31

KT/V Related to Volume of Dialysate
Australia March 2002

Prescribed Dialysate Volume	Achieved KT/V (Total)	
	≤ 1.8	> 1.8
≤ 56 L / week	206 (37%)	345 (63%)
≥ 70 L / week	210 (27%)	575 (73%)
	416	920

Figure 6.32

KT/V Related to Volume of Dialysate
New Zealand March 2002

Prescribed Dialysate Volume	Achieved KT/V (Total)	
	≤ 1.8	> 1.8
≤ 56 L / week	91 (46%)	106 (54%)
≥ 70 L / week	130 (35%)	240 (65%)
	221	346



PERITONEAL TRANSPORT STATUS

The Registry commenced collection of this data in October 1998 in patients new to peritoneal dialysis with the aim of using these measurements as another predictor of outcome.

Only 1588 patients in Australia and 583 patients in New Zealand, had data supplied: 69% of all new patients in Australia and 73% of all new patients in New Zealand.

The mean D/P creatinine ratios tend to be higher than proposed international means (Twardowski) with 32% of Australians and an even higher number of New Zealand patients commencing peritoneal dialysis and being classified in the high transport category with only 3% of Australian patients and 3% of New Zealand patients in the low transport category.

Figure 6.33

PET D/P Creatinine at Four Hours New PD Patients from 1-Oct-98

	Australia		New Zealand	
	Diabetic	Non Diabetic	Diabetic	Non Diabetic
Mean + ISD	0.83	0.83	0.84	0.84
Mean	0.70	0.70	0.71	0.71
Mean - ISD	0.57	0.57	0.58	0.58

Figure 6.34

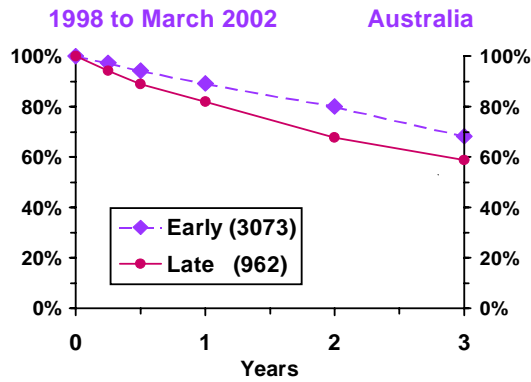
Peritoneal Transport Status New Patients 1-Oct-1998 to 31-Mar-2002

	Australia		New Zealand	
	Diabetic	Non Diabetic	Diabetic	Non Diabetic
High (≥ 0.8)	135 (33%)	377 (32%)	95 (42%)	138 (39%)
High Average (0.65-0.8)	125 (30%)	395 (34%)	73 (32%)	131 (37%)
Low Average (0.50-0.64)	143 (34%)	368 (31%)	51 (22%)	75 (21%)
Low (< 0.5)	11 (3%)	34 (3%)	9 (4%)	11 (3%)

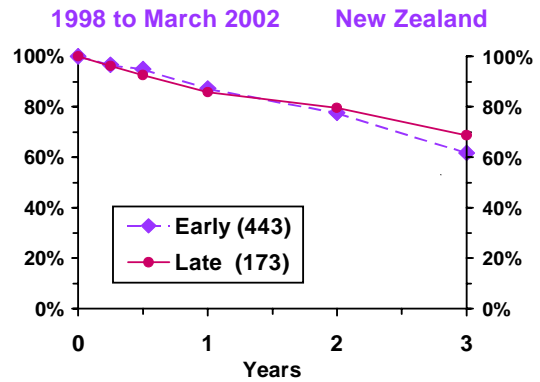
LATE REFERRAL RELATED TO TREATMENT AT 90 DAYS

Figure 6.35

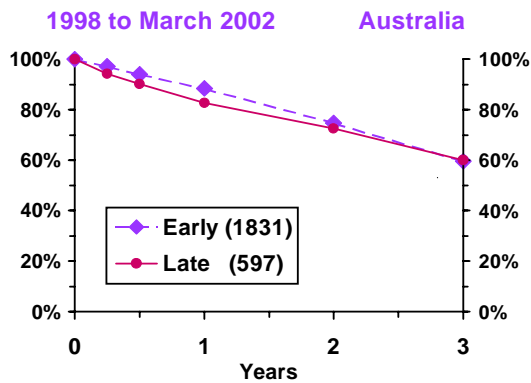
Patient Survival Related to Referral (HD Treatment at 90 days)



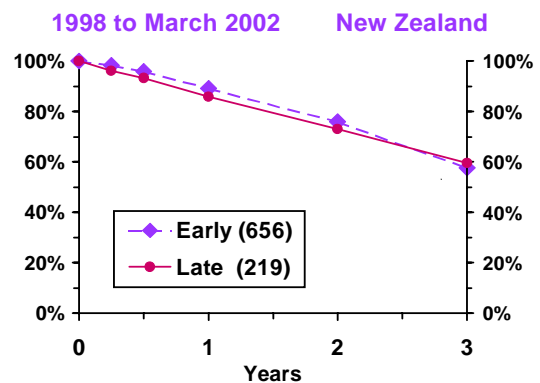
Patient Survival Related to Referral (HD Treatment at 90 days)



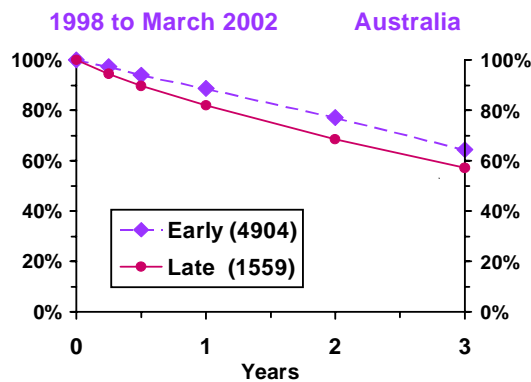
Patient Survival Related to Referral (PD Treatment at 90 days)



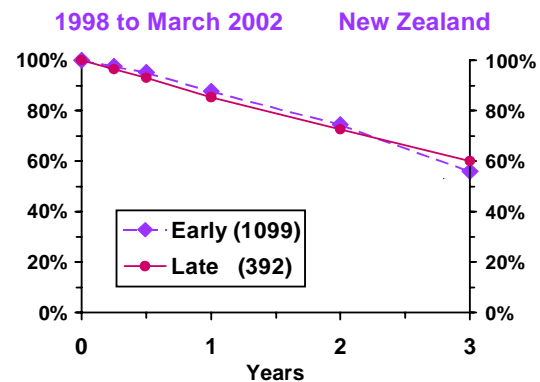
Patient Survival Related to Referral (PD Treatment at 90 days)



Patient Survival Related to Referral (All Dialysis at 90 days)



Patient Survival Related to Referral (All Dialysis at 90 days)





TRANSPLANTATION IN PD PATIENTS

In Australia in patients receiving first cadaveric grafts, those who are on haemodialysis had a higher frequency of delayed graft function (20%) than those on peritoneal dialysis (15%). (Figure 6.36)

However, this did not have an effect on overall graft survival. (Figure 6.37)

Figure 6.36

Delayed Graft Function 1992 - 2001 According to Type of Dialysis

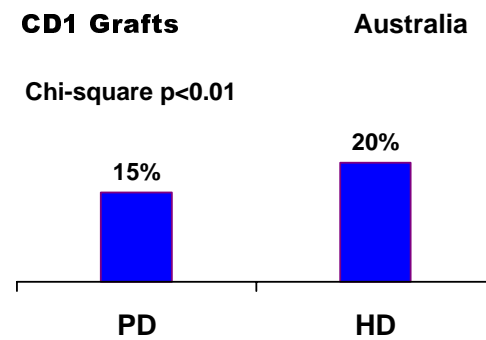


Figure 6.37

Primary Cadaver Graft Survival 1992 - 2001 According to Type of Dialysis

