METHOD AND LOCATION OF DIALYSIS

Australia

During the past year, although there has been a further increase in the total number of dialysis patients, the distribution of these patients across the modalities is slowly changing. These are depicted in Figure 144, 147 and 148.

There were 5174 patients (279 per million) receiving dialysis treatment at the completion of the year to 31st December 1997. The majority (70%) were out of hospital: 42% were dialysing at home and 28% were dialysing in satellite centres. However, over the past eight years, home haemodialysis has decreased from 20% of all dialysis patients to now being 12% of the total. In addition CAPD numbers have only increased by 6% in total over the last two years. The major growth area has been in satellite haemodialysis centres, many of these distant from the parent hospital.

As noted in the previous report, satellite centres vary considerably in the nature of patients catered for, the degree of independence of the patients, the nurse:patient ratios and the degree of training of the staff.

Twenty eight percent of all patients were using CAPD, 29% using hospital based haemodialysis, 28% satellite haemodialysis, and 12% home haemodialysis. In the modal age group 65-74 years, 34% were dialysing in hospital and 39% at home.

The number of dialysis dependent patients increased by only 6% in 1997 (8% in 1996). This was not due to a particularly large increase in the number of dialysis patients transplanted. In absolute numbers, the number of additional dialysis patients has been 438 in 1995, 358 in 1996 and 275 in 1997. Home based dialysis has declined and satellite dialysis increased by 11%. Continuous Cycling Peritoneal Dialysis (CCPD) increased in March 1998 by 55% to 161 patients, from 104 in 1997 and only 75 in March 1996. The growth in total dialysis patients since 1990 is 75%, increasing from 2959 patients (1990) to 5174 patients (1997).

Thirty seven percent of patients were 65 years and older; 14 patients were 85 years or more. See Figure 150. An increase occurred in all age groups 35 years or older, especially 65-84 years.

The effect of age on selection of dialysis method and location is shown in Figure 145. For those <15 years, peritoneal dialysis was 70% (63% in 1996), for those 25-34 years it was 24%, for those 65-84 years it was 35%, and for the 85 years and older group it was 14%.

The number of patients rose in all States except South Australia. There was a considerable population adjusted increase in Northern Territory, New South Wales/ACT and Victoria.

The number of dialysis patients in relation to population in each State is shown in Figure 146 and 149.

In relation to State population, the highest prevalence of dialysis patients was in the Northern Territory (775 per million) and New South Wales/ ACT (302 per million). The number in South Australia (214 per million) remained similar to 1996 (211 per million).

New Zealand

There was an 8.5% increase in dialysis patients (1014 patients, 271 per million), mainly in the age group 45-74 years. Home haemodialysis fell from 191 to 187 patients in 1997; 75% of patients used home dialysis (71% of these as CAPD).

Home CCPD has become more popular, the number increasing by 40% (35 patients in March 1998, 25 patients in March 1997). Peritoneal dialysis remains the dominant mode of dialysis (57% in 1997, 60% in 1996) although hospital haemodialysis has increased considerably; being 24% of all dialysis in 1997 compared to 19% in 1996.

See Figures 151 to 155.

Figure 144 — Australia

Dialysis Patients 1990 - 1997

Year	Hospital ★	Home HD	Home PD / CAPD	Sat. HD / PD	Total
1990	960	589	865	545	2959
1991	1025	587	915	614	3141
1992	1030	611	1028	721	3390
1993	1124	645	1182	757	3708
1994	1248	625	1287	943	4103
1995	1325	627	1473	1116	4541
1996	1412	641	1540	1306	4899
1997	1539	622	1566	1447	5174

★ Includes PD and CAPD

Figure 145 — Australia

Age Distribution of Dialysis Patients 31-Dec-97

Treatment		Age Groups										Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	
PD	Hospital	1	3	0	1	1	2	6	9	2	0	**25**
	Home	5	11	12	15	16	31	29	26	9	0	**154**
HD	Hospital	1	9	39	93	156	213	323	472	175	9	**1490**
	Home	0	0	20	80	135	162	136	72	17	0	**622**
	Satellite	0	0	39	144	194	258	310	377	122	3	**1447**
CAPD	Hospital	0	0	0	2	3	3	3	7	6	0	**24**
	Home	2	1	32	83	156	226	294	452	164	2	**1412**
Total		**9**	**24**	**142**	**418**	**661**	**895**	**1101**	**1415**	**495**	**14**	**5174**

Figure 146 — Australia and New Zealand

State Distribution of Dialysis Dependent Patients 1990 - 1997

Dialysis Patients

State	1990	1991	1992	1993	1994	1995	1996	1997
Queensland	470	501	511	558	610	684	734	805
New South Wales/ACT	1205	1248	1331	1473	1612	1767	1938	1986
Victoria	709	764	857	921	1050	1136	1224	1321
Tasmania	58	59	62	63	67	92	98	109
South Australia	257	285	295	308	322	329	312	316
Northern Territory	38	45	54	78	91	112	129	145
Western Australia	222	239	280	307	351	421	464	492
Australia	**2959**	**3141**	**3390**	**3708**	**4103**	**4541**	**4899**	**5174**
New Zealand	**557**	**632**	**677**	**723**	**787**	**852**	**934**	**1014**

Per Million Population of all Dialysis Patients

State	1990	1991	1992	1993	1994	1995	1996	1997
Queensland	162	168	168	179	191	209	219	237
New South Wales/ACT	197	201	212	234	254	275	298	302
Victoria	162	172	192	206	235	252	270	287
Tasmania	127	128	132	134	142	194	207	230
South Australia	179	196	202	211	219	223	211	214
Northern Territory	242	283	320	464	532	644	726	775
Western Australia	136	143	168	183	206	243	263	274
Australia	**173**	**181**	**193**	**210**	**230**	**252**	**268**	**279**
New Zealand	**162**	**183**	**194**	**205**	**220**	**234**	**250**	**271**

Figure 147

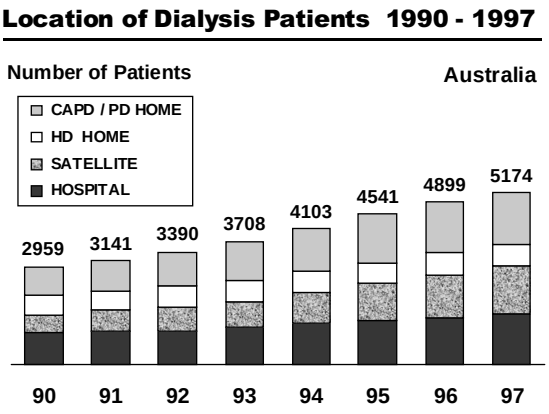


Figure 148

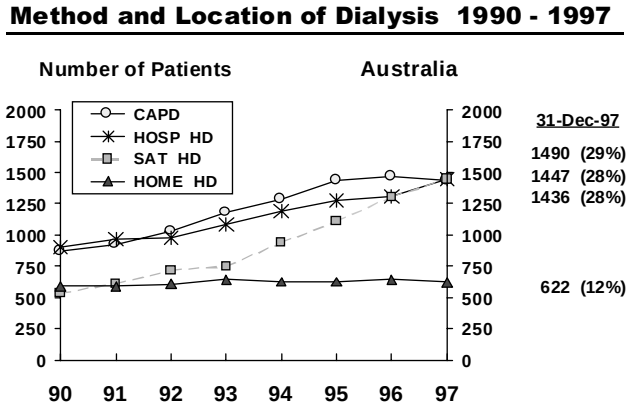


Figure 149

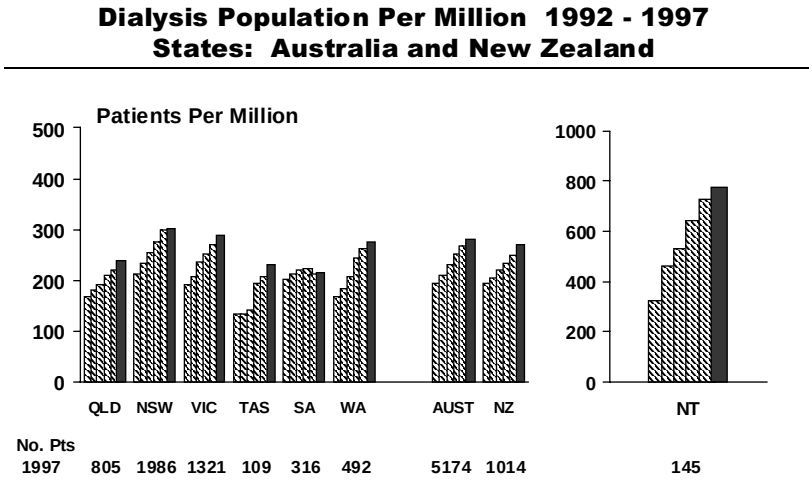


Figure 150

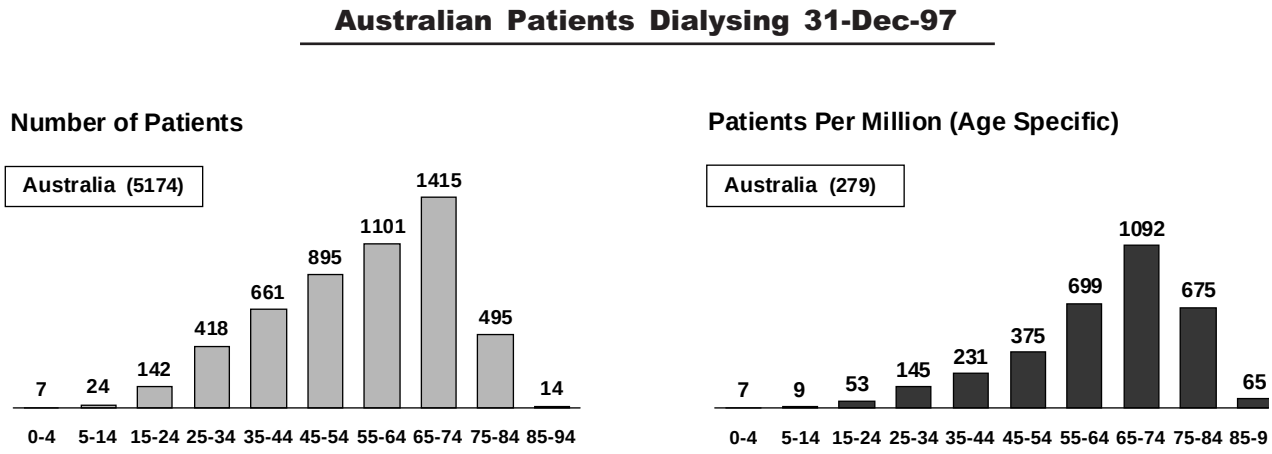


Figure 151 New Zealand

Age Distribution of Dialysis Patients 31-Dec-97

Treatment		Age Groups										Total
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	
PD	Hospital	0	1	0	0	0	0	0	0	0	0	**1**
	Home	2	8	2	6	5	5	2	2	0	0	**32**
HD	Hospital	0	2	9	22	38	54	61	45	8	0	**239**
	Home	0	0	8	29	42	52	38	17	1	0	**187**
	Satellite	0	0	2	3	3	2	2	0	0	0	**12**
CAPD	Hospital	0	0	0	0	0	3	2	1	0	0	**6**
	Home	0	1	21	34	61	123	154	117	25	1	**537**
Total		**2**	**12**	**42**	**94**	**149**	**239**	**259**	**182**	**34**	**1**	**1014**

Figure 152 New Zealand

Method and Location of Dialysis 1990 - 1997

Mode of Treatment		1990	1991	1992	1993	1994	1995	1996	1997
HD	Hospital	97	94	103	126	113	151	180	239
	Home	178	202	194	179	174	172	191	187
	Satellite	3	2	1	1	6	4	4	12
Total		**278**	**298**	**298**	**306**	**293**	**327**	**375**	**438**
PD	IPD/CCPD	1	1	3	3	8	25	28	33
	CAPD	378	333	376	414	486	500	531	543
Total		**379**	**334**	**379**	**417**	**494**	**525**	**559**	**576**

Figure 153

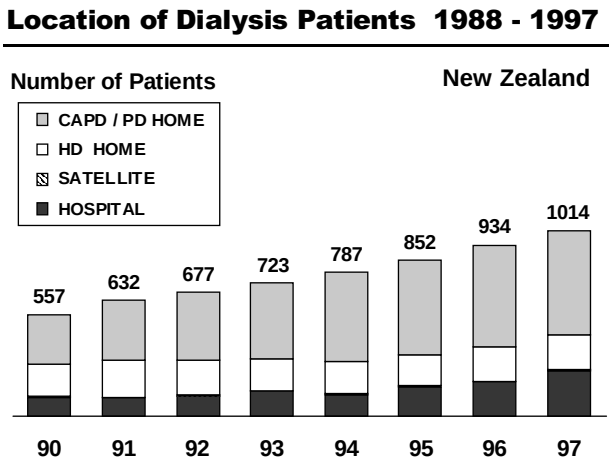


Figure 154

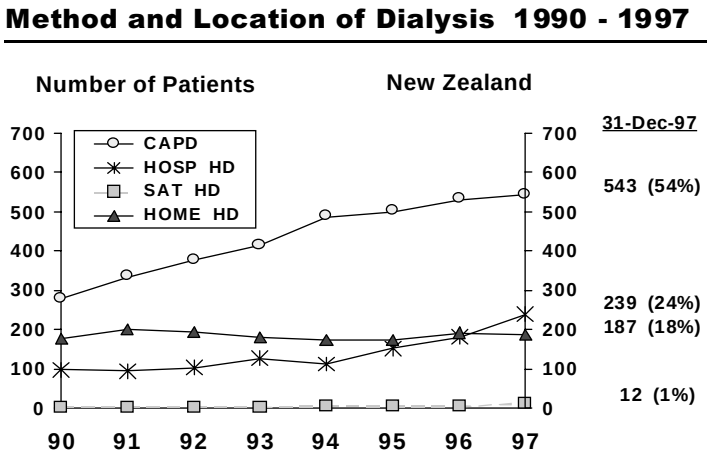
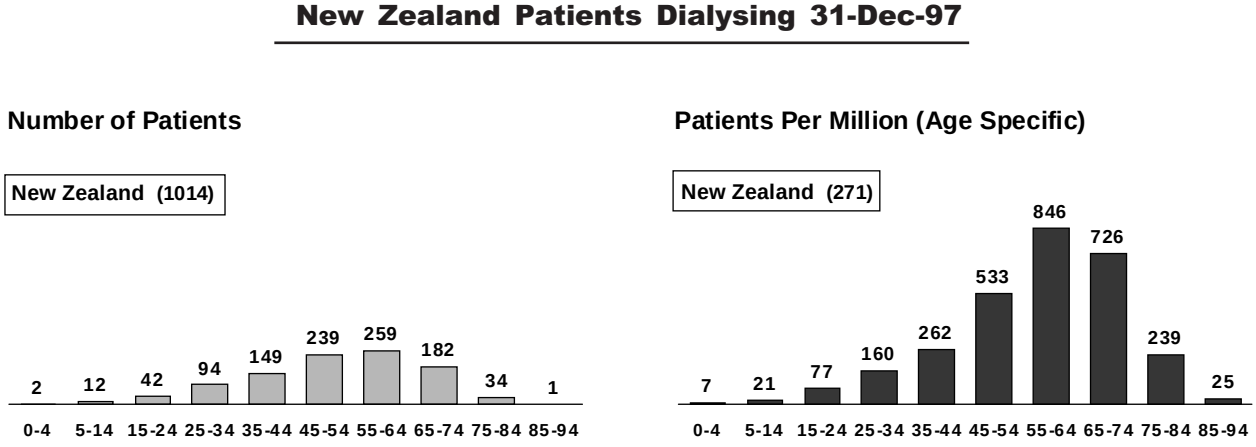


Figure 155



CONTINUOUS AMBULATORY PERITONEAL DIALYSIS

Dr John Collins
Auckland Hospital, New Zealand

Stock and Flow

Australia

Of 10,648 patients treated since 1978, 1436 (13%) were still alive on CAPD at 31st December 1997. CAPD treated 28% (30% 1996) of all dialysis patients and 65% (67% 1996) of all home dialysis patients

The annual stock and flow of patients during the period 1990-97 is shown in Figures 156 and 157.

The State prevalence of CAPD ranged from 8% (Northern Territory), 17% (South Australia), 36% (Tasmania) and 37% (Western Australia). The steady decline in relative prevalence in Victoria continued; 32% (1993) to 21% (1997). With the exception of New South Wales/ACT, relative prevalence decreased in most States at the end of 1997. See Figure 158.

Of the 10,648 patients, 286 patients (2.6%) had had at least five years of continuous CAPD treatment. See Figure 159.

CCPD has increased rapidly from 63 patients in 1996 (102 in 1997) to 161 patients in the past year, reflecting the increased use of automated cyclers.

In relation to age, the proportion of all dialysis patients (65-74 years) using CAPD was 32% (34% 1996); range 20% (25-34 years) to 34% (65-74 years). See Figures 160 and 161.

There were only 636 new CAPD patients in the calendar year 1997, a fall of 5% compared to the previous year (8% fall in 1996); of whom 278 (43%) started dialysis with CAPD, and 373 (57%) had previously had haemodialysis or peritoneal dialysis, or a failed transplant. See Figure 157. There was a reduction in new patients <65 years. There has been no change in the modal age group 65-74 years for some time. See Figure 163 and 164. For more detail see Appendix II.

There were 248 deaths (17.0 deaths per 100 patient years; 11.4% of patients at risk); range deaths per 100 patient years: 0 (15-24 years), 24.8 deaths per 100 patients years, 16.7% (65-84 years). See Figure 112 and Appendix II.

There were only 91 patients, the lowest number since 1984 (83), receiving a transplant compared to 103 in 1996: 6% of all patients treated, (11% of patients <65 years treated during the year). See Figure 157.

Permanent transfer (>12 months) to another form of dialysis, normally haemodialysis, rose from 274 patients (19% of patients dialysed) to 362 patients (25%) in 1997. Most transfers to another form of dialysis were permanent (362/486). See Figure 157.

The primary renal disease of new patients to CAPD was 32% glomerulonephritis, 25% diabetic nephropathy. See Figure 160.

New Zealand

The annual stock and flow of patients during the period 1990-97 is shown in Figures 165 and 166. Of 2715 patients treated, 543 (20%) were alive at 31st December 1997, a fall of 5% from the previous year: 54% of all dialysis patients, 71% of home dialysis.

Of 2715 patients dialysed, 130 (4.7%) had had more than five years continuous treatment. See Figure 159.

Modal age group was 55-64 years (29%), 10% <35 years (11% 1996), 27% >65 years (22% 1996). See Figures 167 and 171.

There were 217 new CAPD patients in the calendar years 1997 (222 in 1996), 52% as initial dialysis treatment; 22% were 45-54 years, 8% <35 years, 34% >65 years. See Figures 166 and 170. For more detail see Appendix III.

There were 90 deaths in 1997 (76, 1996), 16.7 deaths per 100 patients years, (11.7% of patients at risk); 7% 35-44 years, 13% 55-64 years, 19% 65-74 years. For more detail see Figures 127, 132 to 136, and Appendix III.

Thirty nine patients were transplanted in 1997 (46, 1996), 7% of patients dialysed, 9% of patients <65 years old. See Figure 166.

The proportion of patients in each age group using CAPD range from 36% (25-34 years) to 74% (75-84 years). See Figures 168 and 169.

Figure 156

Stock and Flow of CAPD Patients
Australia 1990 - 1997

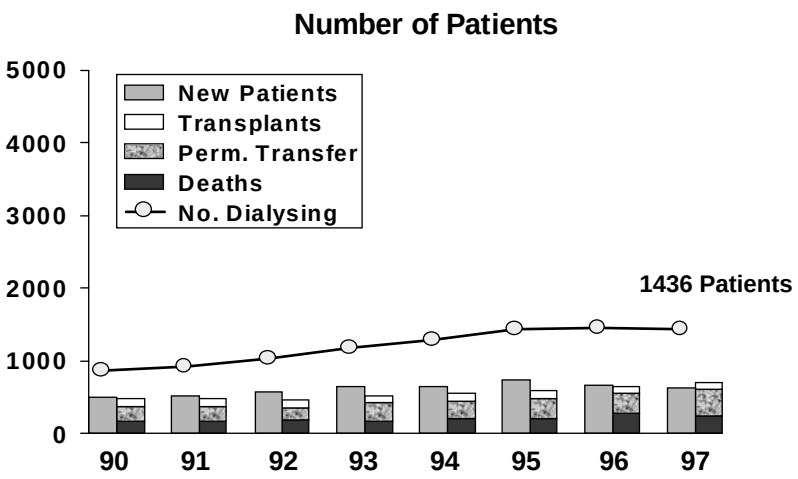


Figure 157 **Australia**

Stock and Flow of CAPD Patients 1990 - 1997

	1990	1991	1992	1993	1994	1995	1996	1997
Patients new to CAPD	498	521	569	642	652	732	670	636
First Dialysis Treatment	168	233	228	258	269	303	291	278
Previous Dialysis (HD/PD)	308	274	318	365	359	407	363	340
Failed Transplant	22	14	23	19	24	22	16	18
Transplanted	111	127	115	106	115	116	103	91
Deaths	174	174	190	176	199	215	278	248
Never Transplanted	158	157	178	166	187	204	267	240
Previous Transplant	16	17	12	10	12	11	11	8
Permanent Transfers (>12/12)	195	190	168	240	237	263	274	362
Temporary Transfers (<12/12)	77	80	117	115	132	131	165	124
Patients Dialysing at 31 December	870	926	1034	1183	1284	1432	1463	1436
Patients Dialysing at Home 31 December	846	895	1001	1156	1254	1401	1431	1412
% of all Home Dialysis Patients	58%	60%	61%	63%	66%	67%	66%	65%

Figure 158 Australia and New Zealand

Proportion (%) CAPD of all Dialysis Patients 1990 - 1997

State	1990	1991	1992	1993	1994	1995	1996	1997
Queensland	33%	34%	39%	39%	38%	39%	33%	33%
New South Wales/ACT	28%	27%	28%	30%	29%	31%	32%	30%
Victoria	31%	30%	30%	32%	30%	27%	24%	21%
Tasmania	64%	58%	53%	46%	54%	57%	47%	36%
South Australia	18%	22%	21%	21%	22%	17%	16%	17%
Northern Territory	5%	0%	2%	4%	7%	12%	13%	8%
Western Australia	33%	38%	42%	45%	46%	47%	41%	37%
Australia	**29%**	**29%**	**31%**	**32%**	**31%**	**32%**	**30%**	**28%**
New Zealand	**50%**	**53%**	**56%**	**57%**	**62%**	**59%**	**57%**	**54%**

Figure 159 Australia and New Zealand

Continuous Period of CAPD

	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 8665 Patients	2472	1821	1297	873	697	434	305	252	268	143	58	24	14	7
All Treatments 10648 Patients	3221	2219	1569	1061	817	529	354	286	306	161	71	27	16	11
New Zealand														
1st Treatment 2352 Patients	505	384	331	298	223	166	153	70	111	54	20	20	7	10
All Treatments 2715 Patients	641	450	381	322	246	184	164	74	123	60	25	20	9	16

Stock and Flow of CAPD Patients 1990 - 1997

Age Groups	1990	1991	1992	1993	1994	1995	1996	1997
New Patients ★								
00-14 years	10	11	11	14	15	11	6	3
15-24 years	20	29	21	26	24	23	16	18
25-34 years	50	37	48	45	51	43	43	46
35-44 years	64	50	72	65	55	101	79	67
45-54 years	80	74	84	80	118	132	97	95
55-64 years	122	156	168	181	149	173	154	142
65-74 years	130	145	146	194	191	195	213	194
75-84 years	22	17	19	36	47	52	58	71
85-94 years	0	2	0	1	2	2	4	0
Total	**498**	**521**	**569**	**642**	**652**	**732**	**670**	**636**
Patients Dialysing								
00-14 years	16	15	10	13	12	9	7	3
15-24 years	29	27	30	39	42	38	35	32
25-34 years	64	66	77	77	86	80	75	85
35-44 years	100	103	123	128	128	162	167	159
45-54 years	129	113	136	152	187	235	236	229
55-64 years	235	265	308	326	320	351	342	297
65-74 years	246	289	301	375	402	438	464	459
75-84 years	51	47	48	72	104	115	132	170
85-94 years	0	1	1	1	3	4	5	2
Total	870	926	1034	1183	1284	1432	1463	1436
Primary Renal Disease ★								
Glomerulonephritis	154	174	217	192	199	245	206	204
Analgesic Nephropathy	67	66	58	78	53	60	59	44
Hypertension	41	52	51	75	75	67	94	82
Polycystic Disease	26	33	33	38	43	42	32	35
Reflux Nephropathy	35	21	35	35	32	33	31	34
Diabetic Nephropathy	92	84	98	112	136	172	156	156
Miscellaneous	52	53	46	64	60	68	49	33
Uncertain	31	38	31	48	54	45	43	48
Total	498	521	569	642	652	732	670	636

★ New patients receiving first CAPD treatment

Proportion (%) Age Distribution 1990 - 1997

Age Groups	1990	1991	1992	1993	1994	1995	1996	1997
New Patients								
00-14 years	2%	2%	2%	2%	2%	2%	1%	<1%
15-24 years	4%	6%	4%	4%	4%	3%	2%	3%
25-34 years	10%	7%	8%	7%	8%	6%	6%	7%
35-44 years	13%	10%	13%	10%	8%	14%	12%	11%
45-54 years	16%	14%	15%	13%	18%	18%	14%	15%
55-64 years	25%	30%	29%	28%	23%	23%	23%	22%
65-74 years	26%	28%	26%	30%	29%	27%	32%	31%
75-84 years	4%	3%	3%	6%	7%	7%	9%	11%
85-94 years	0%	<1%	0%	<1%	1%	<1%	1%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Patients Dialysing								
00-14 years	2%	2%	1%	1%	1%	1%	<1%	<1%
15-24 years	3%	3%	3%	3%	3%	3%	2%	2%
25-34 years	7%	7%	7%	7%	7%	6%	5%	6%
35-44 years	12%	11%	12%	11%	10%	11%	11%	11%
45-54 years	15%	12%	13%	13%	15%	16%	16%	16%
55-64 years	27%	28%	30%	27%	25%	24%	23%	21%
65-74 years	28%	31%	29%	32%	31%	31%	32%	32%
75-84 years	6%	5%	5%	6%	8%	8%	9%	12%
85-94 years	0%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Australia 1997

Figure 161

CAPD Patients (%) of all Dialysis

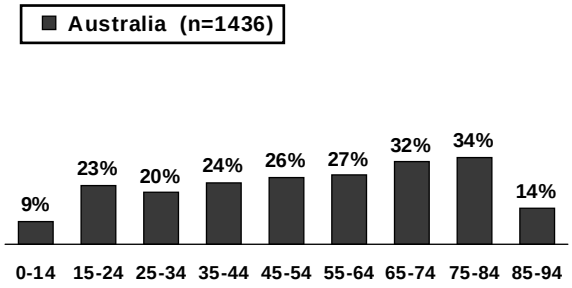


Figure 162

Number (Per Million) CAPD Patients

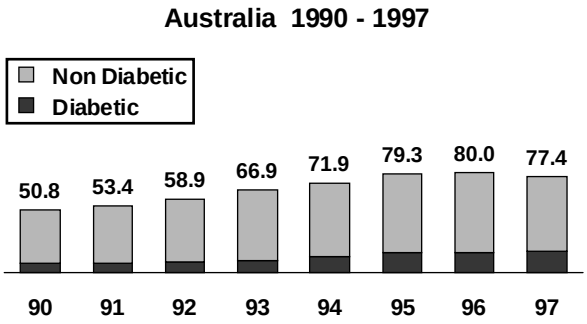


Figure 163

Age of New CAPD Patients

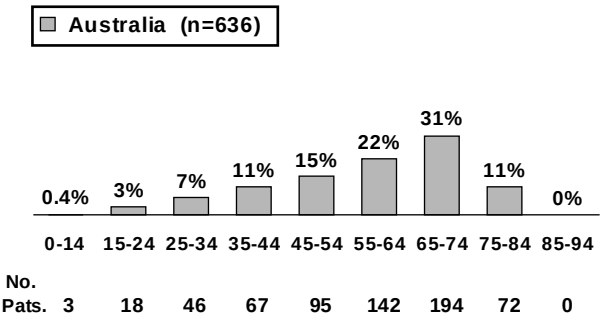


Figure 164

Age of Dialysing CAPD Patients

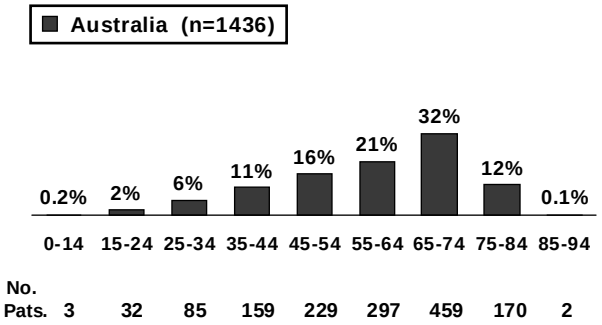


Figure 165

Stock and Flow of CAPD Patients
New Zealand 1990 - 1997

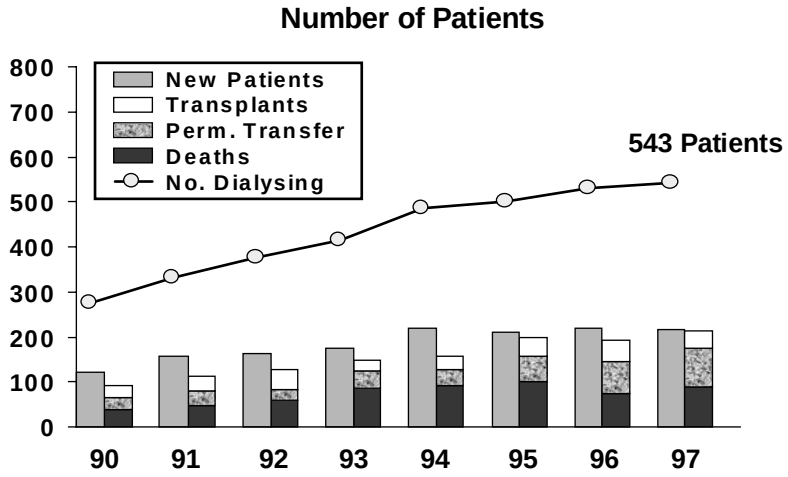


Figure 166 **New Zealand**

Stock and Flow of CAPD Patients 1990 - 1997

	1990	1991	1992	1993	1994	1995	1996	1997
Patients new to CAPD	123	158	164	176	221	212	222	217
First Dialysis Treatment	85	100	112	89	134	134	127	112
Previous Dialysis (HD/PD)	35	55	45	82	78	73	89	100
Failed Transplant	3	3	7	5	9	5	6	5
Transplanted	29	34	45	23	30	43	46	39
Deaths	39	48	61	88	92	101	76	90
Never Transplanted	33	44	57	80	83	97	70	86
Previous Transplant	6	4	4	8	9	4	6	4
Permanent Transfers (>12/12)	26	32	23	38	36	57	71	86
Temporary Transfers (<12/12)	6	4	8	22	28	8	29	48
Patients Dialysing at 31 December	278	333	376	414	486	500	531	543
Patients Dialysing at Home 31 December	272	325	369	407	481	496	527	537
% of all Home Dialysis Patients	60%	62%	65%	69%	73%	72%	71%	71%

Stock and Flow of CAPD Patients 1990 - 1997

Age Groups	1990	1991	1992	1993	1994	1995	1996	1997
New Patients ★								
00-14 years	2	5	5	6	4	5	5	1
15-24 years	4	6	7	3	7	9	12	7
25-34 years	15	11	13	21	23	16	12	10
35-44 years	22	20	26	23	33	27	28	21
45-54 years	27	37	36	36	54	55	57	47
55-64 years	34	56	47	54	67	53	62	57
65-74 years	18	19	28	31	31	40	43	64
75-84 years	1	4	2	2	2	7	3	9
85-94 years	0	0	0	0	0	0	0	1
Total	**123**	**158**	**164**	**176**	**221**	**212**	**222**	**217**
Patients Dialysing								
00-14 years	6	7	10	8	6	6	0	1
15-24 years	12	13	11	10	12	13	19	21
25-34 years	28	24	31	39	46	41	38	34
35-44 years	43	47	52	65	74	77	65	61
45-54 years	73	79	84	88	113	125	135	126
55-64 years	75	106	111	119	138	134	158	156
65-74 years	39	53	69	73	85	91	101	118
75-84 years	1	4	8	12	12	13	15	25
85-94 years	1	0	0	0	0	0	0	1
Total	**278**	**333**	**376**	**414**	**486**	**500**	**531**	**543**
Primary Renal Disease ★								
Glomerulonephritis	32	30	51	33	55	61	48	45
Analgesic Nephropathy	2	2	2	1	2	0	0	0
Hypertension	15	19	24	27	28	31	25	36
Polycystic Disease	10	9	4	10	8	6	17	8
Reflux Nephropathy	5	8	12	8	9	6	15	7
Diabetic Nephropathy	50	65	51	66	87	79	89	96
Miscellaneous	3	14	13	17	24	21	21	17
Uncertain	6	11	7	14	8	8	7	8
Total	**123**	**158**	**164**	**176**	**221**	**212**	**222**	**217**

★ New patients receiving first CAPD treatment

Proportion (%) Age Distribution 1990 - 1997

Age Groups	1990	1991	1992	1993	1994	1995	1996	1997
New Patients								
00-14 years	2%	3%	3%	3%	2%	2%	2%	<1%
15-24 years	3%	3%	4%	2%	3%	4%	5%	3%
25-34 years	12%	7%	8%	12%	10%	8%	5%	5%
35-44 years	18%	13%	16%	13%	15%	13%	13%	10%
45-54 years	22%	23%	22%	20%	25%	26%	26%	22%
55-64 years	28%	35%	29%	31%	30%	25%	28%	26%
65-74 years	15%	12%	17%	18%	14%	19%	20%	29%
75-84 years	<1%	3%	1%	1%	1%	3%	1%	4%
85-94 years	0%	0%	0%	0%	0%	0%	0%	<1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Patients Dialysing								
00-14 years	2%	2%	3%	2%	1%	1%	0%	<1%
15-24 years	4%	4%	3%	2%	2%	3%	4%	4%
25-34 years	10%	7%	8%	9%	10%	8%	7%	6%
35-44 years	16%	14%	14%	16%	15%	15%	12%	11%
45-54 years	26%	24%	22%	21%	23%	25%	25%	23%
55-64 years	27%	32%	30%	29%	29%	27%	30%	29%
65-74 years	14%	16%	18%	18%	18%	18%	19%	22%
75-84 years	<1%	1%	2%	3%	2%	3%	3%	5%
85-94 years	<1%	0%	0%	0%	0%	0%	0%	<1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

New Zealand 1997

Figure 168

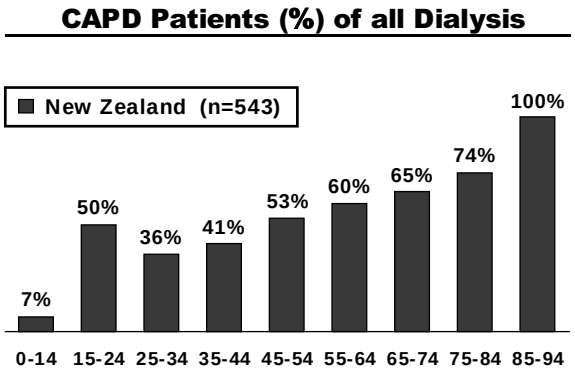


Figure 169

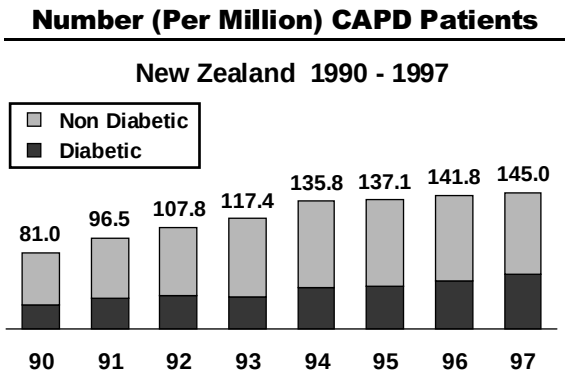


Figure 170

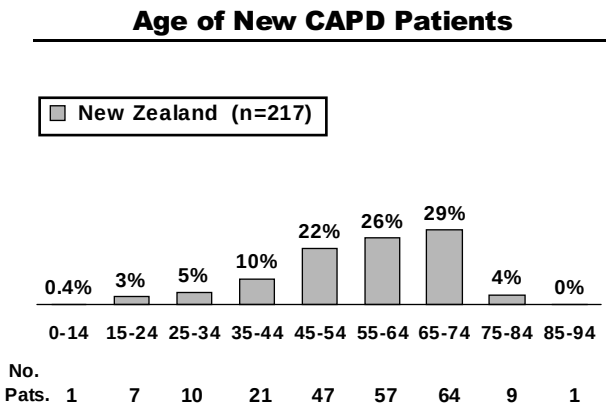
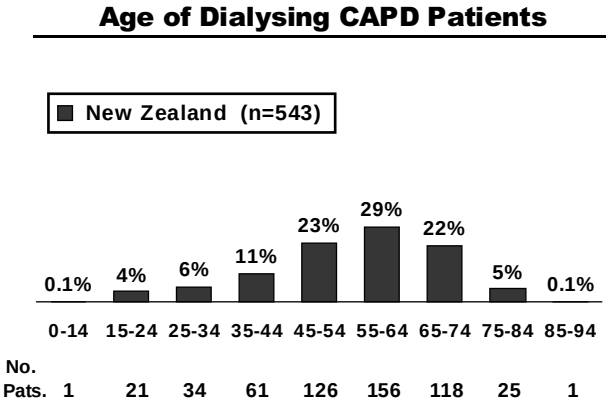


Figure 171



CAPD TREATMENT

CAPD LITRES PER WEEK

The prescribed dose of peritoneal dialysis has steadily increased since 1995 when most patients used 56 litres/week (4 x 2 litres/day) regardless of body size. See Figure172. The trend to larger daily volumes ≥70 litres/week (≥5 x 2 litres/day or ≥4 x 2.5 litres/day) is most evident in those with a body mass index (BMI) >30 or weight >80 kg, but even in some small people (BMI <20 or weights 50-59 kg) larger volumes were being utilised. The trend was present in all age groups. See Figure 173.

Figure 172

Relationship of BMI to Weekly Dialysate Volume

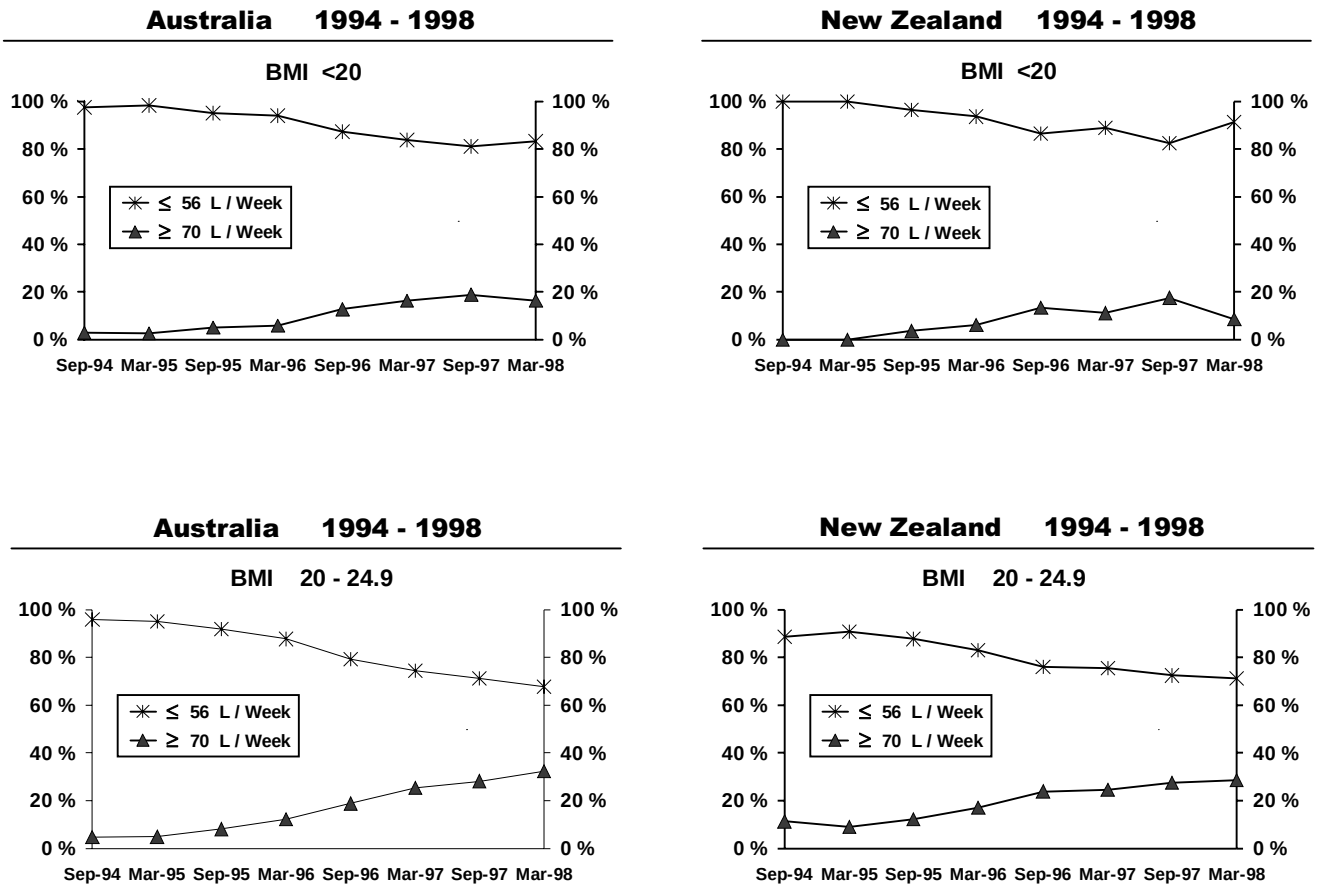


Figure 172 continued overpage

Figure 172 continued

Relationship of BMI to Weekly Dialysate Volume

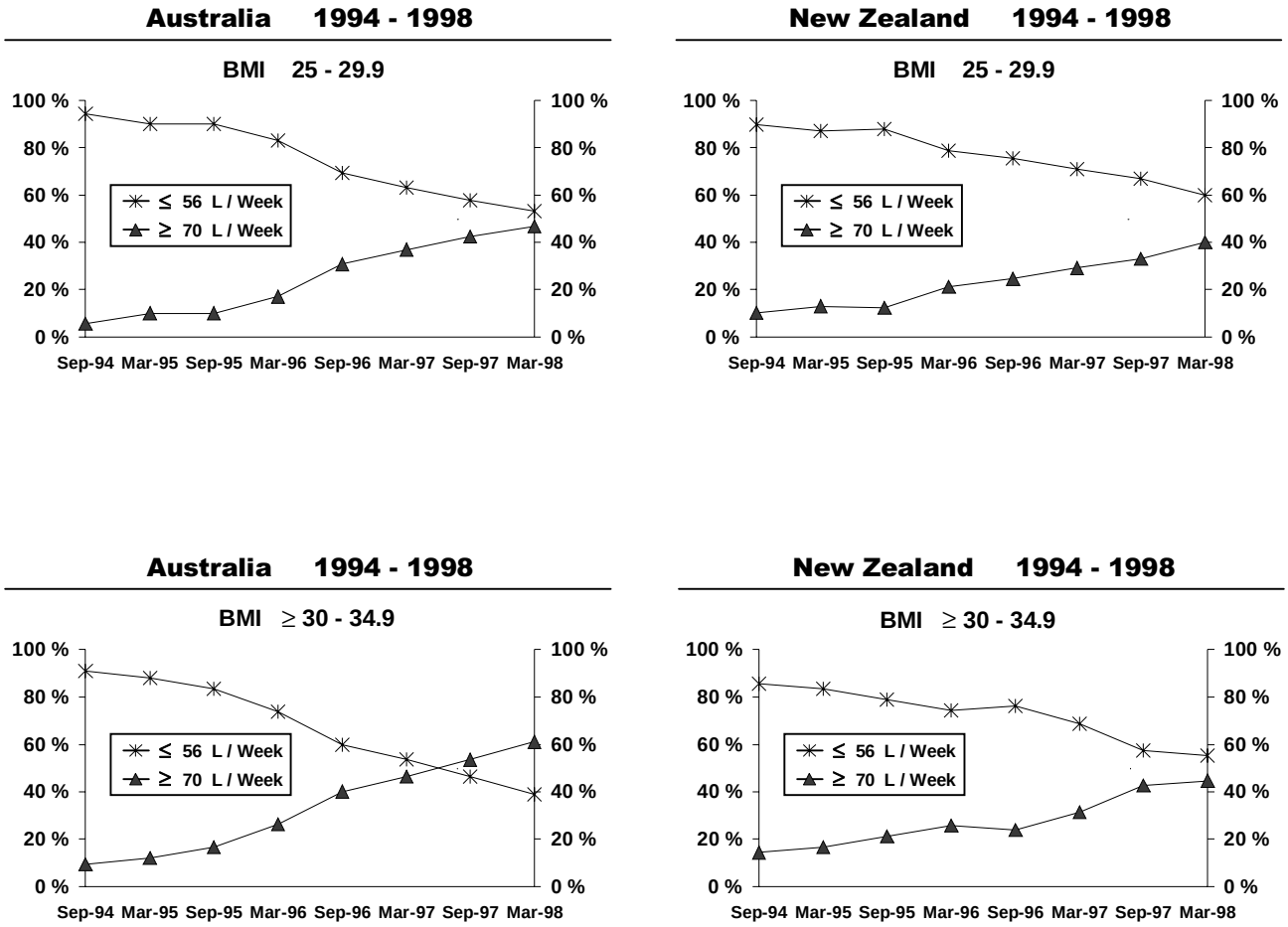


Figure 173 Australia and New Zealand

Volume of Dialysate per Week

Age Groups	March 1995					March 1998				
	No. Pts	Litres per Week				No. Pts	Litres per Week			
		42	56	70	84		42	56	70	84
Australia		per cent					per cent			
45-64	(492)	10	80	8	2	(494)	4	52	34	10
65-74	(391)	9.5	86	4	<1	(425)	5	60	30	5
75-84	(100)	14	79	3	4	(163)	7	67	23	3
New Zealand		per cent					per cent			
45-64	(230)	7	80	10	3	(272)	3	57	31	9
65-74	(88)	13	76	10	1	(124)	3	66	27	4
75-84	(12)	17	75	8	0	(26)	15	62	23	0

Peritonitis

See Figures 174 to 176.

Australia

The median survival period free of infection estimated by actuarial survival increased slightly from 14 (1993-1995) to 15 months with age related variations.Reviewing the period 1991-1997 there is a striking difference between Caucasoid, Aboriginal, Maori and Polynesian peritonitis free periods. For the age groups 35-54 years and 55-64 years, median survivals were 17 and 14 months respectively for Caucasoids, significantly different from 8-7 months respectively for patients of Aboriginal, Maori or Polynesian origin. This difference was not present in older and younger age groups.

New Zealand

The median survival was 11 months (9 months, 1993-1995). Reviewing the period 1991-1997 there is a striking difference between Caucasoid, Maori or Polynesian peritonitis free periods. For the age group 35-54 years and 55-64 years, survivals were 11 months and 16 months respectively for Caucasoids versus 8 months and 7 months respectively for patients of Maori or Polynesian origin.

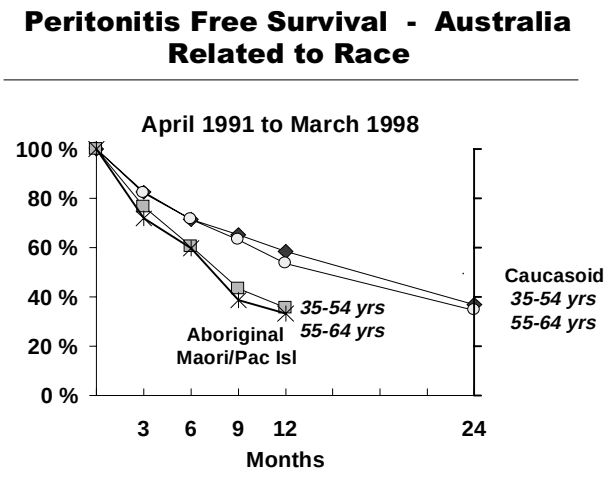
Figure 174 **Australia and New Zealand**

First CAPD Treatment to First Episode of Peritonitis Related to Age at Entry 1995 - 1997

Survival	Age Groups						All
	00-14	15-34	35-54	55-64	65-74	> 75	
Australia	**n=18**	**n=188**	**n=564**	**n=467**	**n-601**	**n=187**	**n=2025**
3 months	41 ± 12.1 6	80 ± 2.9 137	85 ± 1.5 433	83 ± 1.7 368	86 ± 1.4 463	80 ± 2.9 134	84 ± 0.8 1541
6 months	26 ± 11.3 3	66 ± 3.6 91	74 ± 1.9 323	75 ± 2.0 290	76 ± 1.8 365	71 ± 3.4 100	74 ± 1.0 1172
9 months	17 ± 10.3 2	58 ± 4.0 63	65 ± 2.2 235	66 ± 2.3 221	67 ± 2.1 266	64 ± 3.8 77	65 ± 1.1 864
1 year	17 ± 10.3 1	49 ± 4.3 43	57 ± 2.4 171	58 ± 2.5 167	57 ± 2.3 195	54 ± 4.2 53	56 ± 1.2 630
2 years	17 ± 10.3 1	33 ± 5.1 8	36 ± 2.8 51	40 ± 2.9 44	37 ± 2.7 48	31 ± 4.9 7	36 ± 1.4 159
3 years	-	21 ± 7.5 1	25 ± 3.4 6	26 ± 3.9 5	27 ± 3.5 5	19 ± 7.4 1	25 ± 1.9 18
New Zealand	**n=11**	**n=68**	**n=235**	**n=172**	**n=148**	**n=20**	**n=655**
3 months	73 ± 1.3 5	76 ± 5.2 49	86 ± 2.3 191	82 ± 2.9 138	82 ± 3.2 110	66 ± 11.3 10	82 ± 1.5 504
6 months	58 ± 1.3 4	68 ± 5.8 38	70 ± 3.0 140	68 ± 3.6 96	68 ± 4.0 73	52 ± 12.5 7	68 ± 1.9 359
9 months	44 ± 1.6 3	57 ± 6.4 29	61 ± 3.3 107	53 ± 4.1 65	58 ± 4.5 55	52 ± 12.5 7	57 ± 2.1 266
1 year	26 ± 1.7 1	46 ± 6.6 22	49 ± 3.6 76	44 ± 4.2 46	55 ± 4.7 41	44 ± 13.1 4	48 ± 2.2 190
2 years	26 ± 1.7 1	32 ± 7.0 6	31 ± 3.8 18	20 ± 4.0 10	28 ± 5.4 6	44 ± 13.1 1	28 ± 2.3 42
3 years	-	32 ± 7.0 1	-	14 ± 4.6 1	28 ± 5.4 1	-	20 ± 2.9 3

% Survival ± S.E. and Numbers at risk
n = Number of Patients

Figure 175



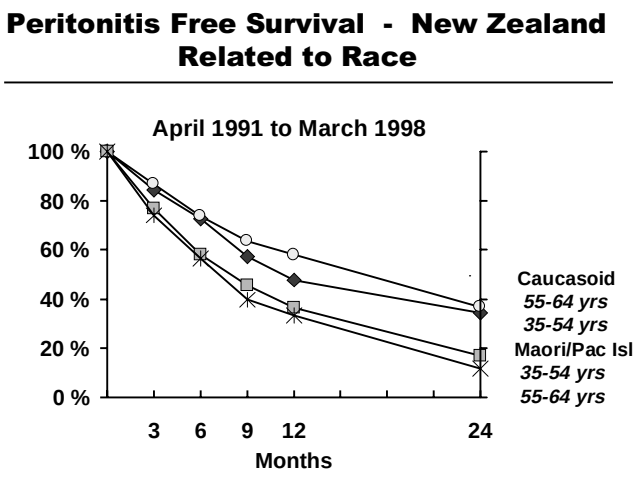
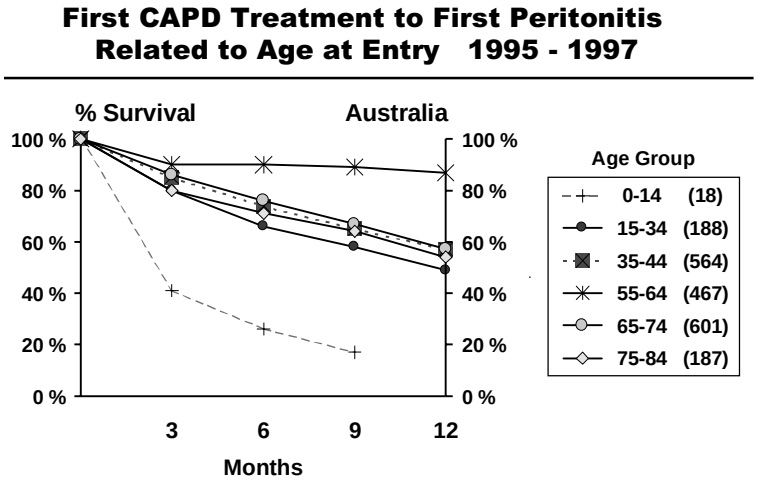
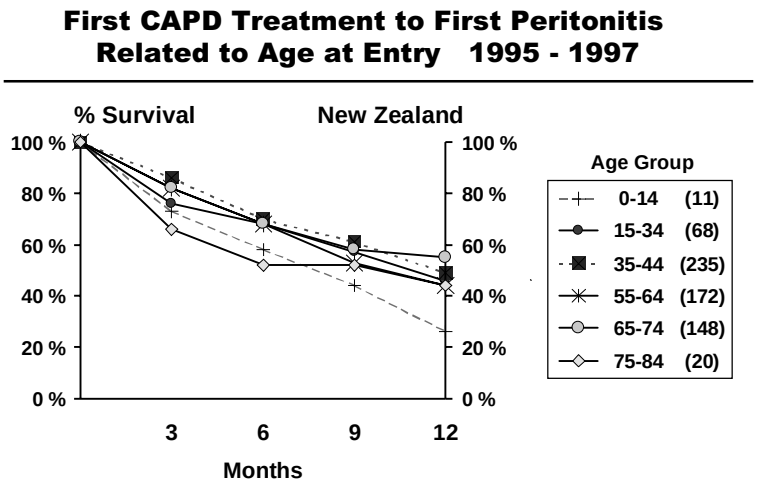


Figure 176





Long Term Survival on Peritoneal Dialysis (> 4 years)

Dialysis Unit Size: Body Mass Index

Australia

There is a significant trend towards a greater percentage of long-term survivors from units treating larger numbers (>80) as at the end of 1997, versus smaller numbers (<40). See Figure 177.

Smaller (BMI <25) Caucasoid women are twice as likely as larger (BMI >25) Caucasoid men to continue on PD longer than four years. This trend is not evident in the Aboriginal, Maori and Pacific Island populations. See Figure 178.

New Zealand

There is a significant trend towards a greater percentage of long-term survivors from units treating larger numbers (>100) versus small numbers (<80) of patients as calculated at the end of 1997. See Figure 177.

The percentage of 10.4% of Caucasoid PD patients survive longer than four years compared to 8% in Australia. There were no significant differences in PD technique survivorship associated with body mass index. However, women were significantly more likely to continue on PD, >4 years (11.8%) compared to males (9%). See Figure 178.

Figure 177 **Australia and New Zealand**

Number of Patients per Dialysis Unit **1980 - 1997**

Survival Period	Australia			New Zealand	
	Size of PD Unit			Size of PD Unit	
	<40 Patients	40-79 Patients	≥80 Patients	<80 Patients	≥100 Patients
<4 years	3781 (93.7%)	2738 (93.7%)	3523 (92.2%)	860 (92.7%)	1444 (87.9%)
≥4 years	254 (6.3%)	183 (6.3%)	309 (7.8%)	68 (7.3%)	199 (12.1%)
Total	**4035 (100%)**	**2921 (100%)**	**3832 (100%)**	**928 (100%)**	**1643 (100%)**

Figure 178 **Australia**

Gender and Body Mass Index (BMI) **1980 - 1997**

Survival Period	Female BMI		Male BMI	
	<25	≥25	<25	≥25
0-4 years	579 (98.5%)	438 (91.8%)	561 (92%)	507 (95.1%)
≥4 years	68 (10.5%)	39 (8.2%)	49 (8%)	26 (4.9%)

Technique Survival
Censored for Death or Transplantation

Peritoneal dialysis is a self-care therapy utilising a limited single dialysing space, and technique failure is related to factors which compromise this dialysing space (infection, technical factors), compromise the patient's ability to continue with the therapy (social), or the efficiency of the treatment (inadequate clearance, ultrafiltration). See Figure 179.

A comparison between technique survival of peritoneal dialysis versus haemodialysis (censored for death or transplantation) is provided for patients commencing therapy in the period 1990-1994. See Figure 180.

Factors which may influence technique survival of peritoneal dialysis include number of patients treated by dialysis unit size, patient body mass and social factors.

It is important to note that in these analyses censoring has occurred for death and transplantation.

Technique survival was compared in four year cohorts from the period 1980-1984 onwards.

Although there are some significant differences the changes are quite minor, technique survival in 1995-1997 being very similar to that from earlier years. See Figure 181.

There are significant differences in technique survival related to race. This is most evident in New Zealand when comparing Caucasoids with Pacific Islanders. In Australia there is a significant difference between Aboriginals and Caucasoids. See Figure 182.

In both countries diabetics have a reduced technique survival in comparison to non-diabetics. See Figure 183.

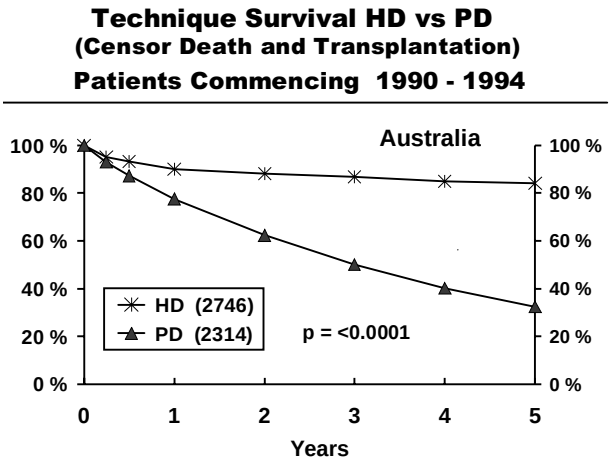
These differences were statistically significant in all age groups. In New Zealand because of the high incidence of diabetes in Maori and Pacific Island patients, the respective roles of diabetes and race in technique failure need further analysis.

Figure 179 **Australia and New Zealand**

Causes of Technique Failure 1994 - 1997
Excluding Death, Transplantation, Recovery of Renal Function

Causes of Technique Failure	Australia	New Zealand
Recurrent/persistent peritonitis	251	80
Acute peritonitis	146	36
Tunnel/exit site infection	74	4
Total Infective Complications	**471 (37.8%)**	**120 (41%)**
Inadequate solute clearance	87	21
Inadequate fluid ultrafiltration	82	21
Total Dialysis Failure	**169 (13.6%)**	**42 (14.3%)**
Dialysate leak	98	17
Catheter block	16	7
Catheter fell out	7	1
Hernia	40	3
Abdominal pain	10	4
Abdominal surgery	42	7
Multiple adhesions	3	1
Hydrothorax	3	2
Haemoperitoneum	1	0
Scrotal oedema	1	0
Total Technical Failure	**221 (17.7%)**	**42 (14.3%)**
Unable to manage self care	110	16
Patient preference	205	67
Total Social Reasons	**315 (25.3%)**	**83 (28.3%)**
Total Other Reasons	**70 (5.6%)**	**6 (2.0%)**

Figure 180



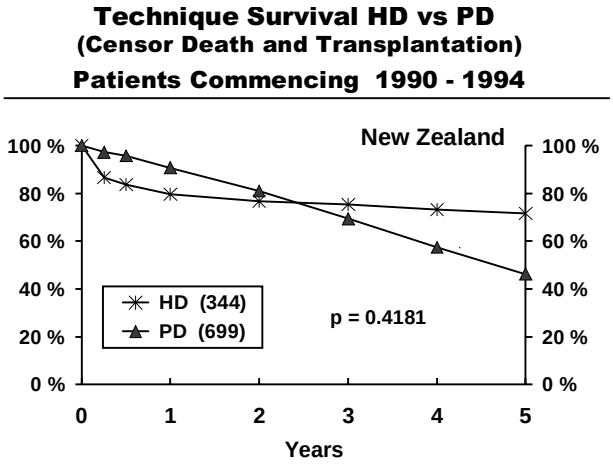
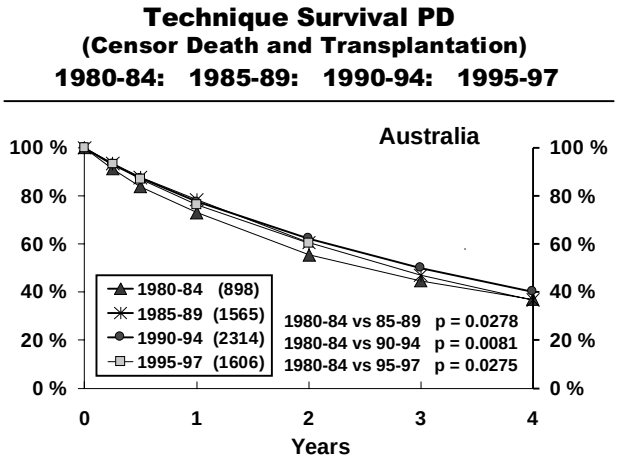


Figure 181



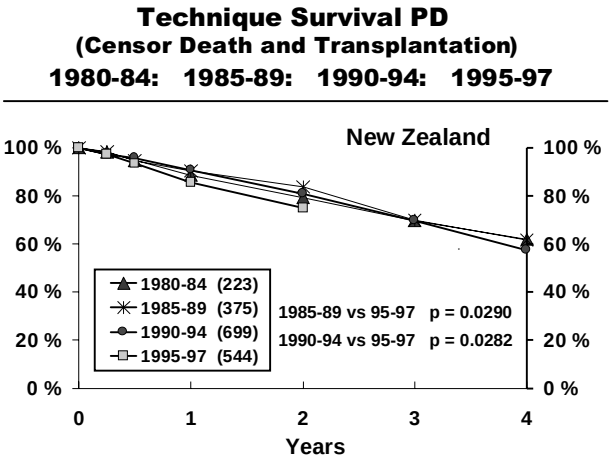
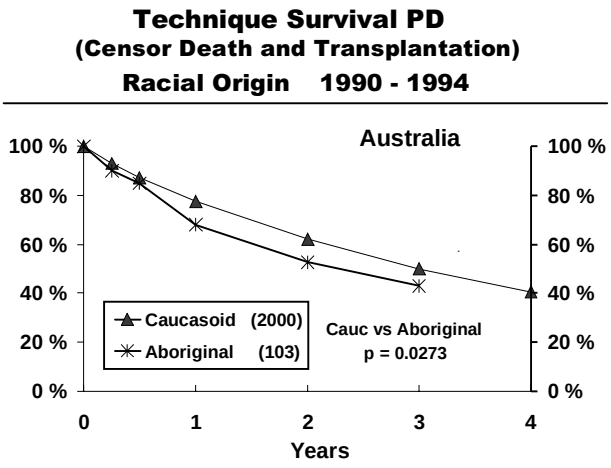


Figure 182



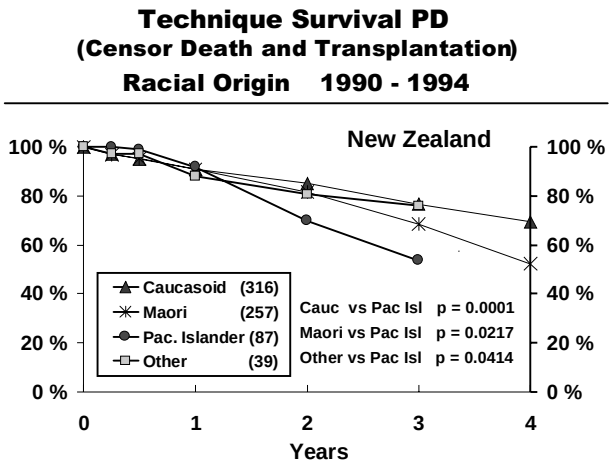
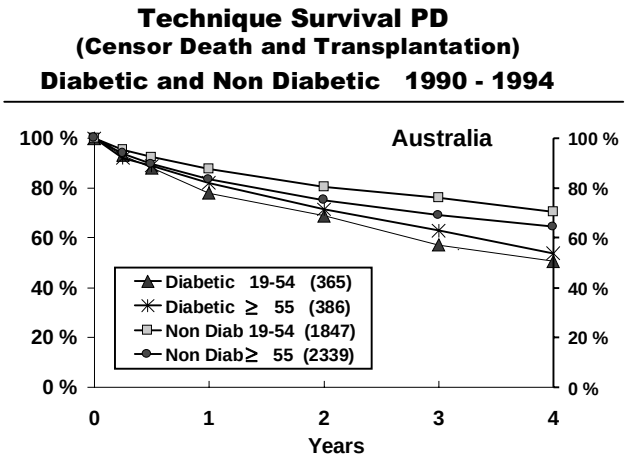
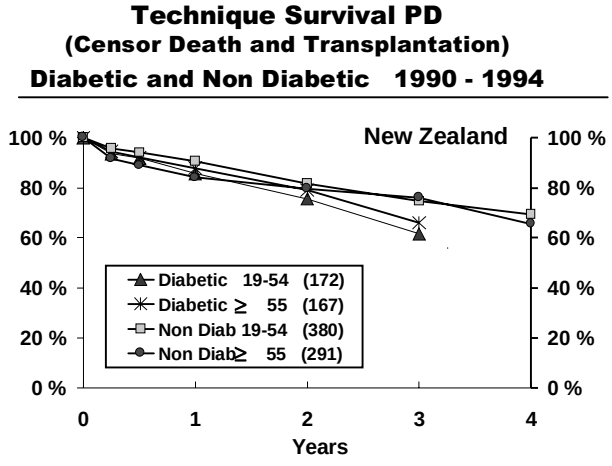


Figure 183





HAEMODIALYSIS

Dr Peter Kerr
Monash Medical Centre, Victoria

Stock and Flow

Australia

The annual stock and flow of haemodialysis patients during the period 1990-97 is shown in Figures 184, 185 and 187.

There were 3559 patients (192 per million) receiving treatment at 31st December 1997, an increase of 8% (10% in 1996); 42% hospital based (41% in 1996), 41% in satellite (limited or self care) centres (39% in 1996) and 17% at home (19% in 1996). The proportion of patients receiving satellite haemodialysis continued to grow, this year by 11%, although not by as much as the previous year (17% in 1996).

The proportion of all dialysis patients who were using home haemodialysis in each State, shown in Figure 186, was less than 10% except for New South Wales/ACT 21%. No State had a rise in the proportion of patients receiving haemodialysis at home.

A total of 1251 patients received haemodialysis for the first time during the year, a 3% increase; 84% had no previous dialysis nor a transplant. The modal age group was 65-74 years (27%). See Figure 187 and 188.

Of the 3559 patients dialysing, 35% were 65 years or over, 12% less than 35 years old. See Figure 187 and 189. The proportion of all dialysis patients in each age group who were using haemodialysis is shown in Figure 190. For more detail regarding age and mode of haemodialysis in each State see Appendix II.

There were 352 transplants, a 7% increase from 329 in 1996, and return to the previous mean level of transplantation activity.

There were 527 deaths, representing 15.3 deaths per 100 patient years (10.9% of patients at risk). See Figure 185. For more detail of cause of death see Appendix II.

There was a moderate increase (21%) in the number of permanent transfers (> 12 months). The majority (78%) of all transfers were permanent.

New Zealand

The annual stock and flow of haemodialysis patients during the period 1990-97 is shown in Figures 191 to193.

There were 438 patients (117 per million) receiving treatment at 31st December 1997, a 17% increase (15% in 1996). Hospital based haemodialysis increased to 55% of all haemodialysis (48% in 1996), and home dialysis decreased to 43% (51% in 1996). Modal age group 45-54 years (25%): 16% >65 years; 17% <35 years. See Figure 195. The proportion of all dialysis patients who were using home haemodialysis is shown in Figure 193.

There were 273 patients who received haemodialysis for the first time, a 41% increase from 1996, 68% having their initial dialysis treatment. Modal age group 45-64 years (49%), 16% <35 years, 24% >65 years. See Figure 193, 194 and Appendix III.

Sixty three haemodialysis patients received transplants in 1997 (32 in 1996), 14% of all patients dialysing, 16% of patients <65 years dialysed.

There were 61 deaths, 14.5 deaths per 100 patient years, (8.8% of patients at risk); more in the young and old groups. See Figure 192.

Permanent transfers for >12 months rose to 131 (85 in 1996). The proportion of dialysis patients in each age group using haemodialysis is shown in Figure 196. Most middle aged and elderly patients used peritoneal dialysis.

Figure 184

Stock and Flow of Haemodialysis Patients
Australia 1990 - 1997

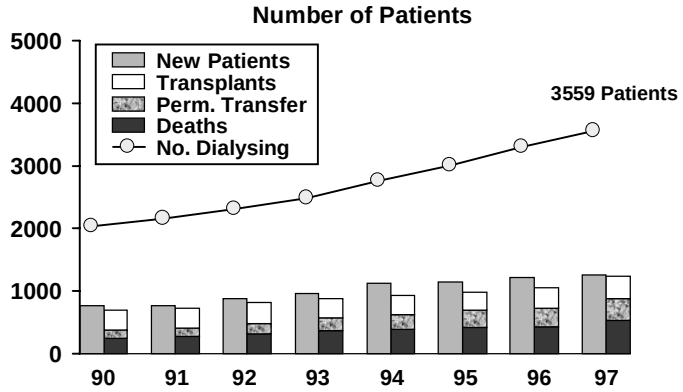


Figure 185 Australia

Stock and Flow of Haemodialysis Patients 1990 - 1997

	1990	1991	1992	1993	1994	1995	1996	1997
Patients new to Haemodialysis	770	768	888	966	1118	1146	1215	1251
First Dialysis Treatment	613	608	730	768	922	956	1016	1054
Previous Dialysis (IPD/CAPD)	135	137	134	179	178	167	175	179
Failed Transplant	22	23	24	19	18	23	24	18
Transplanted	316	319	341	322	301	297	329	352
Deaths	242	277	313	365	390	421	432	527
Never Transplanted	187	214	257	303	335	372	372	465
Previous Transplant	55	63	56	62	55	49	60	62
Permanent Transfers (>12/12)	129	133	161	199	235	264	290	351
Temporary Transfers (<12/12)	76	80	88	108	121	102	139	101
Patients Dialysing at 31 December	2036	2163	2307	2484	2756	3014	3307	3559
Patients Dialysing at Home 31 December	589	587	611	645	625	627	641	622
% of all Home Dialysis Patients	41%	39%	37%	35%	33%	30%	29%	28%

Figure 186 Australia and New Zealand

Proportion (%) Home Haemodialysis of all Dialysis Patients
1990 - 1997

State	1990	1991	1992	1993	1994	1995	1996	1997
Queensland	7%	6%	6%	6%	5%	4%	3%	3%
New South Wales/ACT	28%	27%	25%	25%	22%	21%	21%	21%
Victoria	23%	22%	21%	20%	17%	14%	13%	10%
Tasmania	3%	5%	3%	5%	3%	1%	1%	1%
South Australia	12%	11%	11%	11%	9%	8%	7%	5%
Northern Territory	0%	0%	0%	0%	0%	0%	0%	0%
Western Australia	9%	8%	10%	9%	8%	8%	7%	7%
Australia	**20%**	**19%**	**18%**	**17%**	**15%**	**14%**	**13%**	**12%**
New Zealand	**32%**	**32%**	**29%**	**25%**	**22%**	**20%**	**20%**	**18%**

Stock and Flow of Haemodialysis Patients 1990 - 1997

Age Groups	1990	1991	1992	1993	1994	1995	1996	1997
New Patients ★								
00-14 years	9	5	6	5	11	12	12	10
15-24 years	57	53	62	50	60	59	44	54
25-34 years	71	71	101	94	98	101	109	108
35-44 years	119	115	104	122	151	139	146	167
45-54 years	159	143	163	164	209	214	200	195
55-64 years	191	192	239	245	245	249	268	268
65-74 years	145	165	186	234	288	282	330	342
75-84 years	19	24	27	51	54	89	103	106
85-94 years	0	0	0	1	2	1	3	1
Total	**770**	**768**	**888**	**966**	**1118**	**1146**	**1215**	**1251**
Patients Dialysing								
00-14 years	7	8	6	4	12	14	12	10
15-24 years	102	92	102	107	109	107	105	98
25-34 years	204	221	242	263	288	298	299	317
35-44 years	294	310	315	349	387	416	463	485
45-54 years	404	417	424	456	495	548	582	633
55-64 years	502	517	543	555	615	661	717	769
65-74 years	458	508	568	631	698	771	866	921
75-84 years	65	90	107	118	150	195	259	314
85-94 years	0	0	0	1	2	4	4	12
Total	**2036**	**2163**	**2307**	**2484**	**2756**	**3014**	**3307**	**3559**
Primary Renal Disease ★								
Glomerulonephritis	305	292	347	348	401	405	425	438
Analgesic Nephropathy	80	96	74	101	81	79	78	67
Hypertension	59	59	74	80	112	93	144	151
Polycystic Disease	67	53	76	74	78	98	83	70
Reflux Nephropathy	54	47	56	54	56	51	54	61
Diabetic Nephropathy	82	92	109	137	191	214	220	255
Miscellaneous	84	67	100	108	123	134	137	132
Uncertain	39	62	52	64	76	72	74	77
Total	**770**	**768**	**888**	**966**	**1118**	**1146**	**1215**	**1251**

★ New patients receiving first haemodialysis treatment

Proportion (%) Age Distribution 1990 - 1997

Age Groups	1990	1991	1992	1993	1994	1995	1996	1997
New Patients								
00-14 years	1%	<1%	<1%	<1%	1%	1%	1%	1%
15-24 years	7%	7%	7%	5%	5%	5%	4%	4%
25-34 years	10%	9%	11%	10%	9%	9%	9%	9%
35-44 years	15%	15%	12%	13%	13%	12%	12%	13%
45-54 years	21%	19%	18%	17%	19%	19%	16%	16%
55-64 years	25%	25%	27%	25%	22%	21%	22%	21%
65-74 years	19%	22%	21%	24%	26%	25%	27%	27%
75-84 years	2%	3%	3%	5%	5%	8%	8%	8%
85-94 years	0%	0%	<1%	<1%	<1%	<1%	<1%	<1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Patients Dialysing								
00-14 years	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
15-24 years	5%	4%	4%	4%	4%	4%	3%	3%
25-34 years	10%	10%	11%	11%	10%	10%	9%	9%
35-44 years	14%	15%	14%	14%	14%	14%	14%	14%
45-54 years	20%	19%	18%	18%	18%	18%	18%	18%
55-64 years	25%	24%	23%	22%	23%	22%	22%	22%
65-74 years	23%	23%	25%	25%	25%	26%	26%	26%
75-84 years	3%	4%	5%	5%	5%	6%	8%	8%
85-94 years	0%	0%	<1%	<1%	<1%	<1%	<1%	<1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Australia 1997

Figure 188

Age of New Haemodialysis Patients

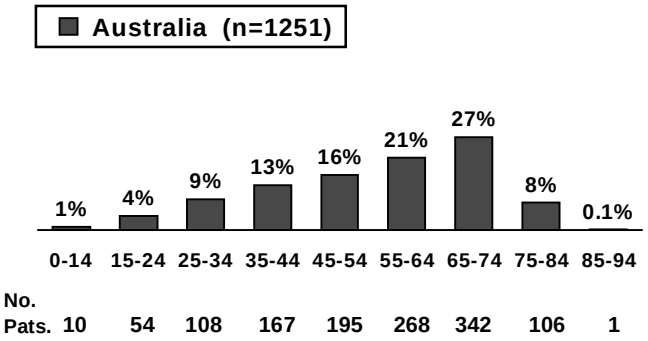


Figure 189

Age of Dialysing Haemodialysis Patients

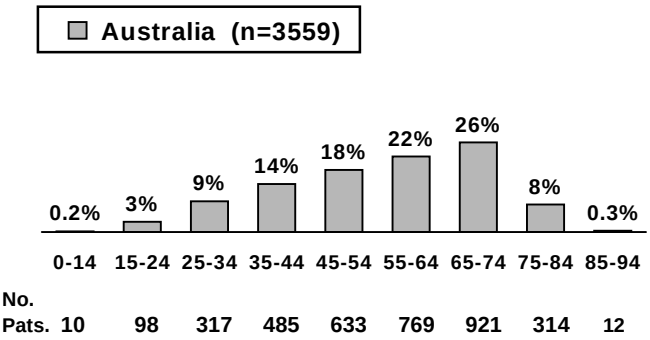


Figure 190

Haemodialysis Patients (%) of all Dialysis

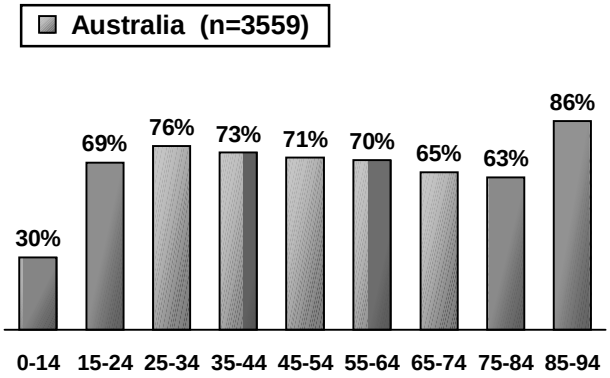


Figure 191

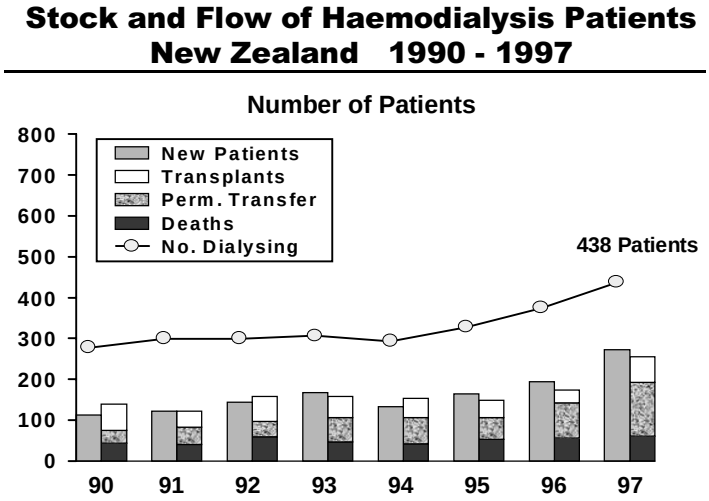


Figure 192

New Zealand

Stock and Flow of Haemodialysis Patients 1990 - 1997

	1990	1991	1992	1993	1994	1995	1996	1997
Patients new to Haemodialysis	113	122	144	168	132	164	194	273
First Dialysis Treatment	86	108	122	128	103	132	141	187
Previous Dialysis (IPD/CAPD)	23	13	19	35	23	28	47	73
Failed Transplant	4	1	3	5	6	4	6	13
Transplanted	64	39	62	51	48	41	32	63
Deaths	44	40	59	47	43	53	56	61
Never Transplanted	31	26	48	34	34	40	45	57
Previous Transplant	13	14	11	13	9	13	11	4
Permanent Transfers (>12/12)	31	43	38	60	63	54	85	131
Temporary Transfers (<12/12)	3	11	5	21	22	11	13	16
Patients Dialysing at 31 December	278	298	298	306	293	327	375	438
Patients Dialysing at Home 31 December	178	202	194	179	174	172	191	187
% of all Home Dialysis Patients	39%	38%	34%	30%	26%	25%	26%	25%

Stock and Flow of Haemodialysis Patients 1990 - 1997

Age Groups	1990	1991	1992	1993	1994	1995	1996	1997
New Patients ★								
00-14 years	3	2	0	0	2	1	0	2
15-24 years	12	7	13	13	8	5	17	13
25-34 years	12	18	18	26	20	14	10	29
35-44 years	23	15	19	29	19	22	36	31
45-54 years	24	28	29	37	34	47	44	66
55-64 years	24	36	42	40	33	48	45	67
65-74 years	14	13	21	20	15	24	37	58
75-84 years	1	3	2	3	1	3	5	7
85-94 years	0	0	0	0	0	0	0	0
Total	**113**	**122**	**144**	**168**	**132**	**164**	**194**	**273**
Patients Dialysing								
00-14 years	0	0	0	0	1	0	0	2
15-24 years	20	23	25	21	18	15	20	19
25-34 years	42	48	46	51	48	48	47	54
35-44 years	47	48	52	53	54	60	71	83
45-54 years	72	71	71	79	65	79	94	108
55-64 years	70	73	64	59	64	78	79	101
65-74 years	25	32	35	38	39	41	57	62
75-84 years	2	3	5	5	4	6	7	9
85-94 years	0	0	0	0	0	0	0	0
Total	**278**	**298**	**298**	**306**	**293**	**327**	**375**	**438**
Primary Renal Disease ★								
Glomerulonephritis	29	31	46	52	45	53	57	66
Analgesic Nephropathy	1	1	1	0	0	0	1	1
Hypertension	12	18	23	18	18	15	26	29
Polycystic Disease	12	6	12	9	4	11	11	16
Reflux Nephropathy	6	11	9	11	2	6	4	19
Diabetic Nephropathy	31	38	31	54	41	56	66	107
Miscellaneous	11	12	17	16	15	15	17	24
Uncertain	11	5	5	8	7	8	12	11
Total	**113**	**122**	**144**	**168**	**132**	**164**	**194**	**273**

★ New patients receiving first haemodialysis treatment

Proportion (%) Age Distribution 1990 - 1997

Age Groups	1990	1991	1992	1993	1994	1995	1996	1997
New Patients								
00-14 years	3%	2%	0%	0%	2%	<1%	0%	<1%
15-24 years	11%	6%	9%	8%	6%	3%	9%	5%
25-34 years	10%	14%	13%	16%	15%	9%	5%	11%
35-44 years	20%	12%	13%	17%	14%	13%	19%	11%
45-54 years	20%	23%	20%	22%	26%	29%	23%	24%
55-64 years	21%	30%	29%	24%	26%	29%	23%	25%
65-74 years	13%	11%	15%	12%	11%	15%	19%	21%
75-84 years	2%	2%	1%	1%	<1%	2%	2%	3%
85-94 years	0%	0%	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Patients Dialysing								
00-14 years	0%	0%	0%	0%	<1%	0%	0%	1%
15-24 years	7%	8%	8%	7%	6%	5%	5%	4%
25-34 years	15%	16%	16%	17%	16%	15%	13%	12%
35-44 years	17%	16%	18%	17%	19%	18%	19%	19%
45-54 years	26%	24%	24%	26%	22%	24%	25%	25%
55-64 years	25%	25%	21%	19%	22%	24%	21%	23%
65-74 years	9%	11%	12%	12%	13%	12%	15%	14%
75-84 years	<1%	<1%	1%	2%	1%	2%	2%	2%
85-94 years	0%	0%	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

New Zealand 1997

Figure 194

Age of New Haemodialysis Patients

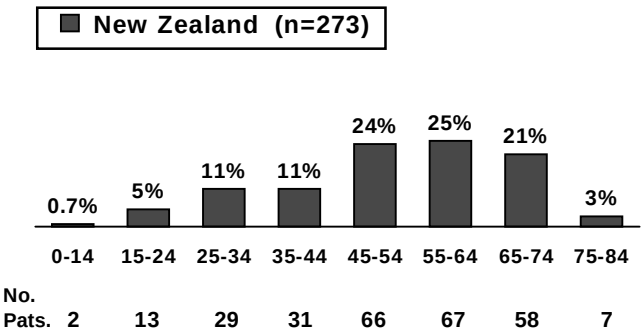


Figure 195

Age of Dialysing Haemodialysis Patients

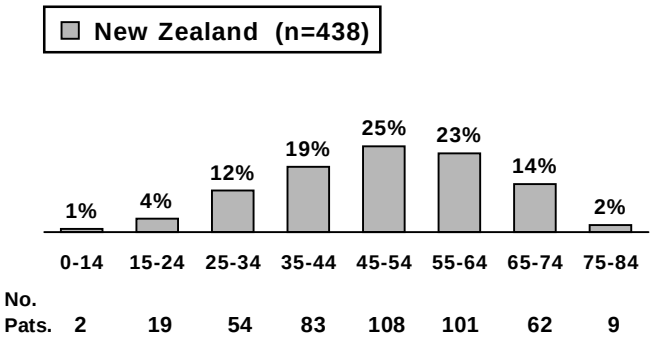
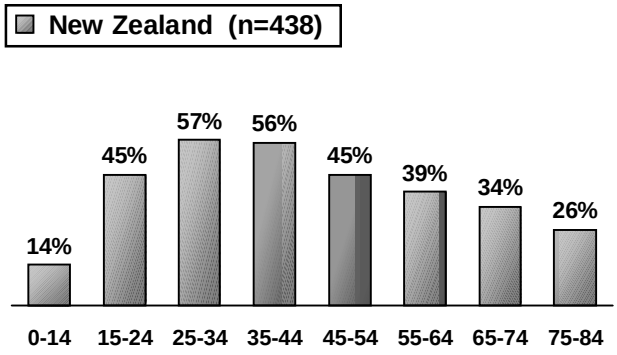


Figure 196

Haemodialysis Patients (%) of all Dialysis



Blood Flow Rates

See Figures 197 to 199

The last few years have seen a marked increase in the prescribed dose of dialysis, achieved by increased blood flow rate, hours of dialysis, and surface area of the dialyser.

Australia

The trend towards a prescribed blood flow rate of 300 mls/minute or higher has accelerated rapidly from 13% in 1994 to 49% of patients in 1998; only 11% were now prescribed less than 250 mls/minute.

New Zealand

Over the past two years the most common flow rate has increased from 200-249 to 250-299 mls/minute. In 1998 there were 124 patients (28%) using 300 ml/minute or higher compared to 6% in 1996. A considerable proportion (26%) still used <250 mls/minute.

Figure 197 **Australia and New Zealand**

Blood Flow Rates (mls/minute) 1992 - 1998

	No. Pts	Mls / Minute							
		<150	150-199	200-249	250-299	300-349	350-399	400-499	>450
Australia									
March 1998	3590	2 (<1%)	27 (<1%)	362 (10%)	1180 (33%)	1764 (49%)	222 (6%)	33 (<1%)	0
March 1997	3342	5 (<1%)	28 (<1%)	501 (15%)	1224 (37%)	1446 (43%)	132 (4%)	5 (<1%)	1 (<1%)
March 1996	3041	3 (<1%)	24 (<1%)	552 (18%)	1357 (45%)	1019 (33%)	81 (3%)	4 (<1%)	1 (<1%)
March 1995	2765	5 (<1%)	41 (1%)	668 (24%)	1383 (50%)	618 (22%)	43 (1%)	3 (<1%)	2 (<1%)
March 1994	2547	7 (<1%)	54 (2%)	994 (39%)	1118 (44%)	328 (13%)	34 (1%)	11 (<1%)	1 (<1%)
March 1993	2278	4 (<1%)	45 (2%)	945 (41%)	976 (43%)	280 (12%)	17 (<1%)	9 (<1%)	2 (<1%)
March 1992	2175	1 (<1%)	52 (2%)	1020 (47%)	923 (42%)	156 (7%)	17 (<1%)	5 (<1%)	1 (<1%)
New Zealand									
March 1998	441	2 (<1%)	3 (<1%)	111 (25%)	194 (44%)	124 (28%)	7 (2%)	0	0
March 1997	390	0	3 (<1%)	118 (30%)	184 (47%)	83 (21%)	2 (<1%)	0	0
March 1996	352	0	4 (1%)	147 (42%)	179 (51%)	19 (5%)	3 (<1%)	0	0
March 1995	297	0	2 (<1%)	128 (43%)	152 (51%)	13 (4%)	1 (<1%)	1 (<1%)	0
March 1994	296	0	1 (<1%)	151 (51%)	133 (45%)	7 (2%)	3 (1%)	1 (<1%)	0
March 1993	288	0	3 (1%)	156 (54%)	113 (39%)	11 (4%)	2 (<1%)	3 (1%)	0
March 1992	293	0	0	166 (56%)	115 (39%)	6 (2%)	1 (<1%)	5 (2%)	0

Figure 198

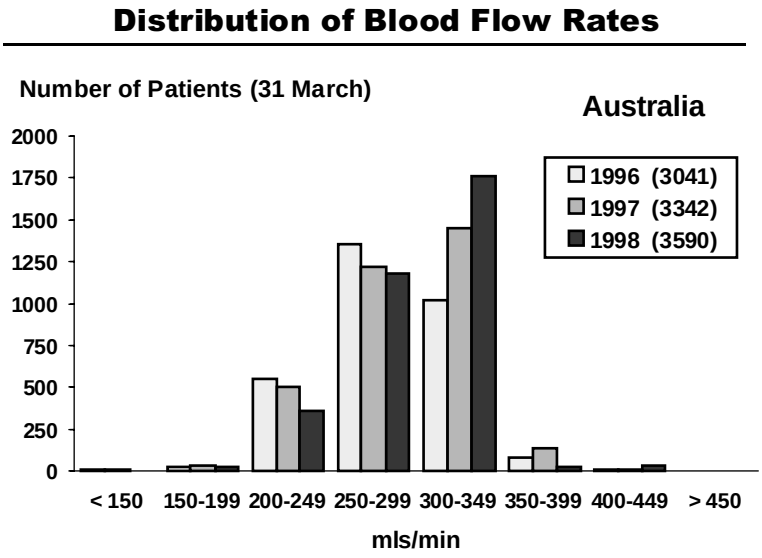
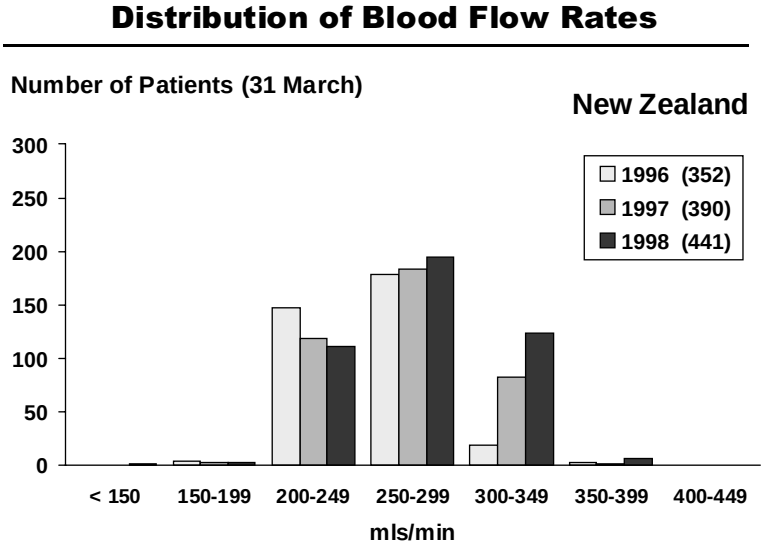


Figure 199



Frequency and Hours of Dialysis

See Figures 200 to 203.

Australia

Of the 3590 patients, there were still 84 using dialysis twice a week (2%); almost all patients (97%) dialysed three times per week. See Figure 200.

There was a continuing trend towards longer duration of each dialysis treatment. The proportion (32%) dialysing for five hours or longer had increased amongst patients dialysing three times per week; only 9% (10% in 1996) received less than four hours. Forty three percent of patients dialysed for 4-4.25 hours. Amongst patients dialysing only twice per week, 29% received less than four hours, and only 4% more than five hours each treatment.

The median weekly dialysis treatment period of all haemodialysis patients was 12 hours; range 4-24 hours. See Figure 201.

New Zealand

There were 419 patients (95%) dialysing three times per week.

The majority dialysed for five hours or more, three times a week; most of the remainder dialysed for four hours.

Only four patients (1%) dialysed less than four hours thrice weekly.

The trend was towards five hours as the standard treatment. Median weekly treatment was 15 hours. Many of these patients dialysed at home; range 8-30 hours per week.

Figure 200 **Australia and New Zealand**

Duration and Number of Treatments Per Week 31-Mar-98

Country	Sessions per week	Hours of Each Treatment										Total
		<2.5	2.5-2.9	3-3.4	3.5-3.9	4-4.4	4.5-4.9	5-5.4	5.5-5.9	6-6.4	> 6.5	
Australia	1	0	0	0	0	2	0	1	0	0	0	**3**
	2	1	1	14	8	37	8	12	2	1	0	**84**
	3	3	3	119	184	1507	564	962	86	52	7	**3487**
	4	0	1	3	4	4	0	2	1	0	0	**15**
	5	1	0	0	0	0	0	0	0	0	0	**1**
Total		**5**	**5**	**136**	**196**	**1550**	**572**	**977**	**89**	**53**	**7**	**3590**
New Zealand	1	0	0	0	0	1	0	0	0	0	0	**1**
	2	0	0	0	0	1	0	10	0	2	1	**14**
	3	0	0	5	1	107	52	179	10	28	37	**419**
	4	0	0	1	0	3	0	3	0	0	0	**7**
Total		**0**	**0**	**6**	**1**	**112**	**52**	**192**	**10**	**30**	**38**	**441**

Figure 201 **Australia and New Zealand**

Duration of Haemodialysis Per Week 31-Mar-98

Country	No. Pts	Hours of Haemodialysis Per Week							
		<9	9-11	12-14	15-17	18-20	21-23	24-26	>27
Australia	3539	2%	9%	58%	30%	1%	<1%	<1%	0
New Zealand	440	<1%	4%	37%	44%	7%	3%	5%	<1%

Excludes patients on haemofiltration and haemodiafiltration

Figure 202

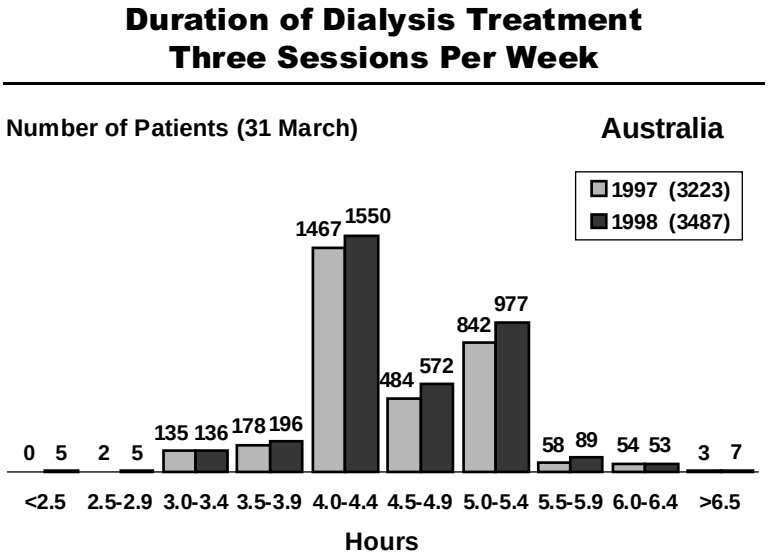
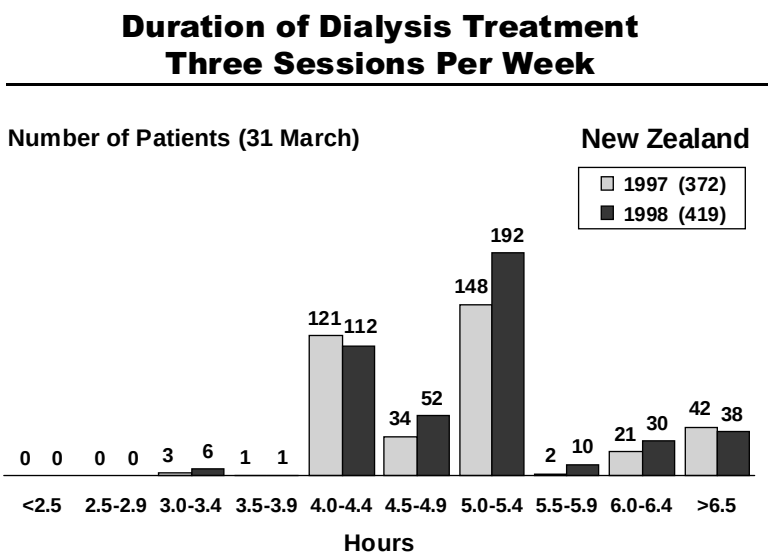


Figure 203



Membrane Type and Surface Areas

See Figures 204 to 206.

Australia

The trend away from cuprophan continues (17% of total, down from 24% in March 1997). The major change was a surge in the use of low flux polysulfone now 22%. High flux dialysis remains a relative rarity, with only cellulose triacetate gaining a small amount of ground (from 5% to 6% over the last year).

There is a trend to larger surface area dialysers, in part due to the increased use of polysulfone dialysers which require a larger surface area to achieve adequate clearances.

New Zealand

The cuprophan usage declined to 41% in 1998 (48% in 1997) while that of cellulose acetate increased. A small number of synthetic membrane dialysers were being used. High flux dialysis is almost non-existent.

Figure 204 **Australia and New Zealand**

Haemodialyser Membrane Types by Surface Area
Patients on Haemodialysis 31-Mar-98

	Dialyser Membrane Type	<1.0 sq.m	1.0-1.4 sq.m	1.5-1.7sq.m	>1.7 sq.m	Total
Australia	Cellulose Acetate	24	274	202	105	605 (17%)
	Cellulose Triacetate	0	76	43	105	224 (6%)
	Cuprophan	19	318	240	28	605 (17%)
	Diacetate	0	4	0	2	6 (<1%)
	Haemophan	133	625	449	21	1228 (34%)
	Poly/Carbonate/Ether/Co-polymer	1	34	0	0	35 (1%)
	Polyacrylonitrile	0	0	0	4	4 (<1%)
	Polyamide Haemo-diafiltration	0	1	2	2	5 (<1%)
	Polysulphone - High Flux	1	22	0	42	65 (2%)
	Polysulphone - Low Flux	19	158	225	375	777 (22%)
	Polysynthane	0	36	0	0	36 (1%)
	Total	**197**	**1548**	**1161**	**684**	**3590 (100%)**
New Zealand	Cellulose Acetate	0	21	126	0	147 (33%)
	Cuprophan	76	32	72	0	180 (41%)
	Haemophan	0	19	52	2	73 (17%)
	Poly/Carbonate/Ether/Co-polymer	0	15	0	3	18 (4%)
	Polysulphone	1	6	0	16	23 (5%)
	Total	**77**	**93**	**250**	**21**	**441 (100%)**

Figure 205

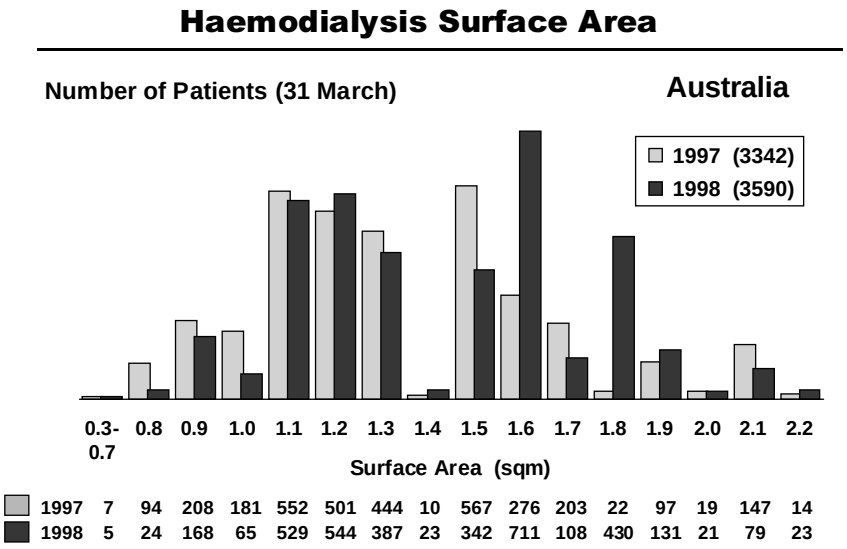
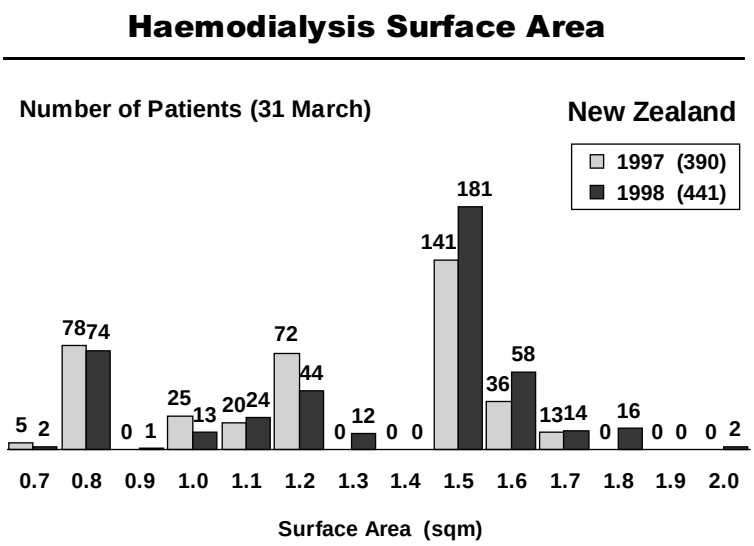


Figure 206



Urea Reduction Ratio (URR)

In the short interval we have been attempting to collect URR data from all units, there has been no real change in the core group of patients, with 68% reportedly achieving >65% URR in Australia. There are too many abstainers in New Zealand to make a valid comment.

Overall, data has not been reported on about 25% of patients in Australia and more in New Zealand. Abstaining Units are encouraged to participate in this aspect of the survey so that meaningful data can be reported.

Figure 207 **Australia and New Zealand**

Urea Reduction Ratio (URR) of Patients Alive on Haemodialysis at 30-Sep-97 and 31-Mar-98

Reported URR	Australia		New Zealand	
	30-Sep-97	31-Mar-98	30-Sep-97	31-Mar-98
00-39%	5	12	1	0
40-49%	35	40	6	7
50-59%	282	325	33	41
60-64%	427	491	32	31
65-69%	577	727	24	36
70-79%	800	1034	23	32
80-100%	93	120	0	6
Total Patients	**2219**	**2749**	**119**	**153**

Co-Morbid Condtions at Entry to Dialysis

The detail of age, race and diabetic status, related to presence of co-morbid conditions **at entry** to end stage renal failure treatment is listed in Appendix II.

Vascular disease has been more frequent in diabetics, particularly in the young type 1 insulin dependent groups Peripheral vascular disease is particularly prominant when compared to patients with non-diabetic renal disease.

Most cases of diabetes without diabetic nephropathy as the prime cause of renal failure occurred in those with type 2 diabetes - non-insulin requiring.

There was no racial difference in regard to vascular disease in the middle aged group 45-64 years.

A majority of patients 65-74 years had, or were suspected to have, coronary vascular disease and more than a third peripheal vascular disease.

Figure 209 **Australia**

Co-Morbid Conditions at Entry to Program 1-Jan-94 to 31-Dec-97

Category	Number of Patients (5602)			
	Coronary Artery Disease	Peripheral Vascular Disease	Cerebrovascular Disease	Chronic Lung Disease
Suspected	10.3% (575)	7.1% (399)	5.4% (302)	5.0% (280)
Yes	27.0% (1513)	18.8% (1054)	9.4% (526)	10.4% (582)
Total	**37.2% (2088)**	**25.9% (1453)**	**14.7% (828)**	**15.3% (862)**