

CHAPTER 6

PERITONEAL DIALYSIS

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STOCK AND FLOW

AUSTRALIA

In 2007, continuous ambulatory peritoneal dialysis was used to treat 10% of all dialysis patients (11% in 2006), and automated peritoneal dialysis 12% (11% in 2006). Together, these accounted for 69% of all home dialysis, a figure which has remained stable for the past number of years (Figure 6.1). Of the 21,405 patients who have ever received peritoneal dialysis, 4% had experienced at least five years of continuous peritoneal dialysis (Figure 6.2).

The proportion of all home dialysis patients on peritoneal dialysis in each State ranged from 60% in the (Australian Capital Territory), to 95% (South Australia) (Figure 6.1).

The prevalence of automated peritoneal dialysis increased 14% in 2007 (1126 patients) after a 21% increase in 2006 (990 patients) and a 7% increase in 2005 (816 patients).

The proportion of all dialysis patients receiving PD varied with age (Figure 6.9).

The annual stock and flow of patients during the period 2003-2007 is shown in Figures 6.3 and 6.4.

There were 860 new peritoneal dialysis patients in the calendar year 2007, a decrease of 15% from last year following increases of 21% in 2006 and 12% in 2005. There were 561 (65%) who started RRT with peritoneal dialysis, (24% of all new dialysis patients in 2007) and 299 (35%) who previously had haemodialysis or a failed transplant (Figure 6.3).

New patients over the age of 65 years decreased 19%, from 429 to 348 in 2007, following increases of 16% and 18% respectively in 2006 and 2005 (Figure 6.8).

There were decreases in all the age groups except in the 0-14 years which increased (38%). The decreases were 25-34 years (32%), 65-74 years (22%), 15-24 and 75-84 years both (15%), 55-64 years (13%), ≥ 85 years (11%), 45-54 years (10%) and 35-44 years (5%).

There were 294 deaths (290 in 2006), at a rate of 14.3 deaths per 100 person-years (Figure 3.9). For more detail see Appendix II at Website (www.anzdata.org.au/ANZDATA/AnzdataReport/download.htm).

There were 142 patients who received a transplant in 2007 compared to 136 in 2006; 7% of all patients treated, 12% of patients <65 years treated during the year (Figure 6.3). Nine patients ≥ 65 years were transplanted.

Permanent transfer (>12 months) to haemodialysis was 415 (20%) and 411 (20%) in 2006. Most transfers to haemodialysis were permanent (415/518) (Figure 6.3).

The primary renal disease of new patients to peritoneal dialysis with diabetic nephropathy decreased 17% in 2007, following an 18% increase in 2006; this group comprised 31% of all new peritoneal dialysis patients, similar to previous years.

There was a 14% decrease in 2007 in glomerulonephritis from 2006 (263 to 226 patients), following an increase of 30% from 2005 (Figure 6.8).

Figure 6.1

Proportion (%) Peritoneal Dialysis of all Home Patients 2003 - 2007

State	2003	2004	2005	2006	2007
Queensland	80%	76%	75%	72%	70%
New South Wales	60%	59%	60%	62%	63%
ACT	71%	75%	73%	65%	60%
Victoria	72%	70%	70%	69%	66%
Tasmania	87%	79%	74%	81%	87%
South Australia	90%	88%	88%	92%	95%
Northern Territory	97%	88%	86%	63%	68%
Western Australia	87%	86%	90%	90%	91%
Australia	70%	69%	69%	69%	69%
New Zealand	76%	74%	71%	71%	70%

Figure 6.2

Continuous Period of Peritoneal Dialysis 2007

	Months														
	0-<6	6-11	12-17	18-23	24-29	30-35	36-41	42-47	48-59	60-71	72-83	84-95	96-107	>=108	
Australia															
1st Treatment	17,555 pts	4758	3320	2456	1855	1396	934	713	560	730	398	206	120	55	54
All Treatments	21,405 pts	6157	4090	2955	2208	1637	1103	830	643	831	458	228	136	60	69
New Zealand															
1st Treatment	5,011 pts	938	766	657	587	468	392	313	220	321	149	85	56	26	33
All Treatments	5,934 pts	1191	926	793	687	541	449	354	214	352	170	100	60	29	41

Figure 6.3
**Stock and Flow of Peritoneal Dialysis Patients
2003 - 2007**

State	2003	2004	2005	2006	2007
Australia					
Patients new to PD	809	742	834	1007	860
First Dialysis Treatment	494	440	481	581	561
Previous Dialysis (HD)	292	287	344	408	279
Failed Transplant	23	15	9	18	20
Transplanted	112	151	124	136	142
Deaths	289	288	275	290	294
Never Transplanted	278	274	269	282	290
Previous Transplant	11	14	6	8	4
Permanent Transfers Out (>12 months)	355	365	395	411	415
Temporary Transfers (<12 months)	87	131	120	129	103
Patients Dialysing (PD) at 31 December	1845	1794	1860	2047	2106
Patients Dialysing (PD) at Home 31 December	1814	1773	1834	2015	2084
% of all Home Dialysis Patients	70%	69%	69%	69%	69%
New Zealand					
Patients new to PD	260	277	253	297	238
First Dialysis Treatment	153	173	148	160	130
Previous Dialysis (HD)	102	99	102	126	102
Failed Transplant	5	5	3	11	6
Transplanted	37	39	35	23	37
Deaths	131	153	148	152	120
Never Transplanted	125	147	143	149	113
Previous Transplant	6	6	5	3	7
Permanent Transfers Out (>12 months)	99	114	99	82	119
Temporary Transfers (<12 months)	33	37	30	53	29
Patients Dialysing (PD) at 31 December	768	745	720	767	741
Patients Dialysing (PD) at Home 31 December	765	742	715	759	737
% of all Home Dialysis Patients	76%	74%	71%	71%	70%

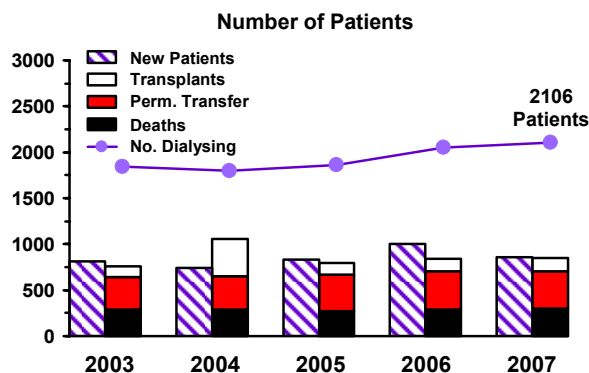
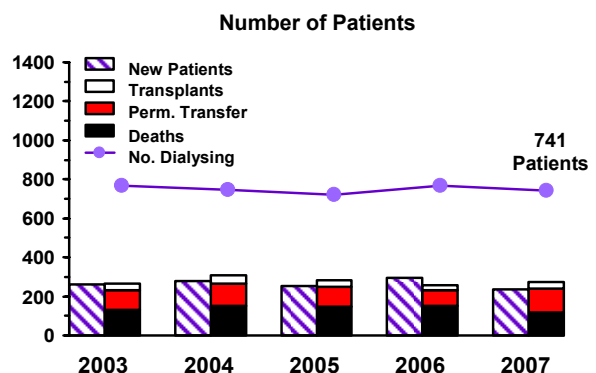
Figure 6.4
**Stock and Flow of Peritoneal Dialysis Patients
Australia 2003 - 2007**

Figure 6.5
**Stock and Flow of Peritoneal Dialysis Patients
New Zealand 2003 - 2007**




Figure 6.6

Age of New PD Patients 2007

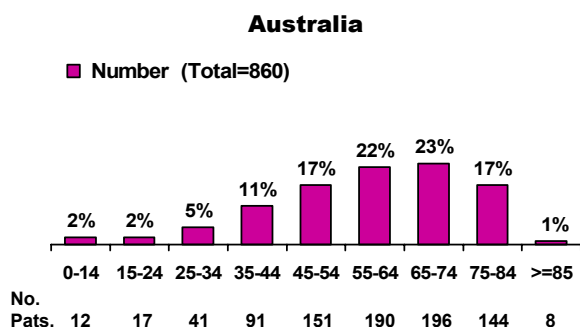


Figure 6.7

Age of Dialysing PD Patients 31-Dec-2007

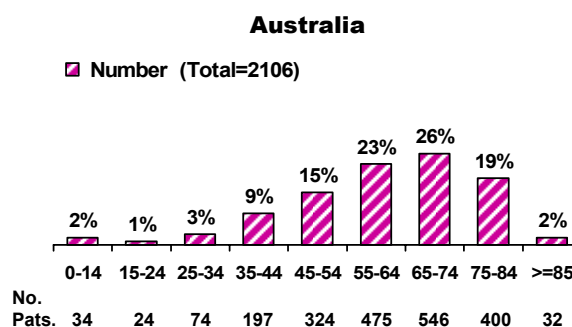


Figure 6.8

Australia

Stock and Flow of Peritoneal Dialysis by Age Groups 2003 - 2007

Age Groups	2003	2004	2005	2006	2007
New Patients *					
00-14 years	21 (2%)	16 (2%)	10 (1%)	16 (1%)	22 (2%)
15-24 years	21 (3%)	19 (3%)	20 (2%)	20 (2%)	17 (2%)
25-34 years	51 (6%)	33 (5%)	43 (5%)	60 (6%)	41 (5%)
35-44 years	89 (11%)	77 (10%)	89 (11%)	96 (10%)	91 (11%)
45-54 years	112 (14%)	127 (17%)	114 (14%)	167 (17%)	151 (17%)
55-64 years	159 (19%)	156 (21%)	189 (23%)	219 (22%)	190 (22%)
65-74 years	217 (27%)	204 (27%)	215 (26%)	250 (25%)	196 (23%)
75-84 years	134 (17%)	102 (14%)	141 (17%)	170 (17%)	144 (17%)
>=85 years	5 (1%)	8 (1%)	13 (1%)	9 (<1%)	8 (1%)
Total	809 (100%)	742 (100%)	834 (100%)	1007 (100%)	860 (100%)
Patients Dialysing					
00-14 years	27 (1%)	27 (1%)	18 (1%)	22 (1%)	34 (2%)
15-24 years	36 (2%)	29 (2%)	29 (2%)	27 (1%)	24 (1%)
25-34 years	92 (5%)	75 (4%)	67 (3%)	86 (4%)	74 (3%)
35-44 years	189 (10%)	179 (10%)	182 (10%)	191 (9%)	197 (9%)
45-54 years	268 (15%)	269 (15%)	264 (14%)	306 (15%)	324 (15%)
55-64 years	373 (20%)	375 (21%)	421 (23%)	465 (23%)	475 (23%)
65-74 years	527 (29%)	512 (29%)	499 (27%)	531 (26%)	546 (26%)
75-84 years	319 (17%)	311 (17%)	354 (19%)	386 (19%)	400 (19%)
>=85 years	14 (<1%)	17 (1%)	26 (1%)	33 (2%)	32 (2%)
Total	1845 (100%)	1799 (100%)	1860 (100%)	2047 (100%)	2106 (100%)
Primary Renal Disease *					
Glomerulonephritis	232 (29%)	204 (27%)	203 (24%)	263 (26%)	226 (26%)
Analgesic Nephropathy	35 (4%)	18 (3%)	31 (4%)	26 (3%)	17 (2%)
Hypertension	125 (15%)	105 (15%)	118 (14%)	139 (14%)	125 (15%)
Polycystic Disease	42 (5%)	46 (6%)	52 (6%)	52 (5%)	45 (5%)
Reflux Nephropathy	30 (4%)	18 (3%)	29 (4%)	42 (4%)	29 (3%)
Diabetic Nephropathy	211 (26%)	233 (31%)	274 (33%)	323 (32%)	268 (31%)
Miscellaneous	78 (10%)	80 (10%)	70 (8%)	110 (11%)	93 (11%)
Uncertain	56 (7%)	38 (5%)	57 (7%)	52 (5%)	57 (7%)
Total	809 (100%)	742 (100%)	834 (100%)	1007 (100%)	860 (100%)

* New patients receiving first peritoneal dialysis treatment

Figure 6.9

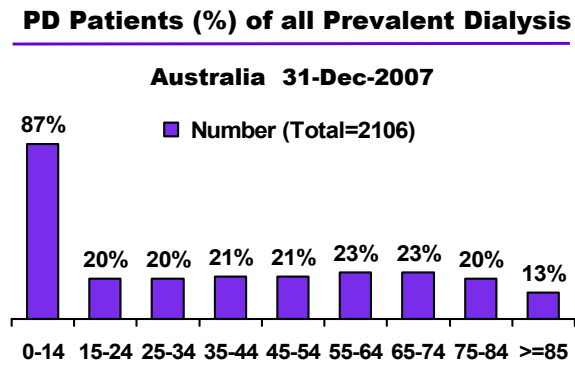


Figure 6.10

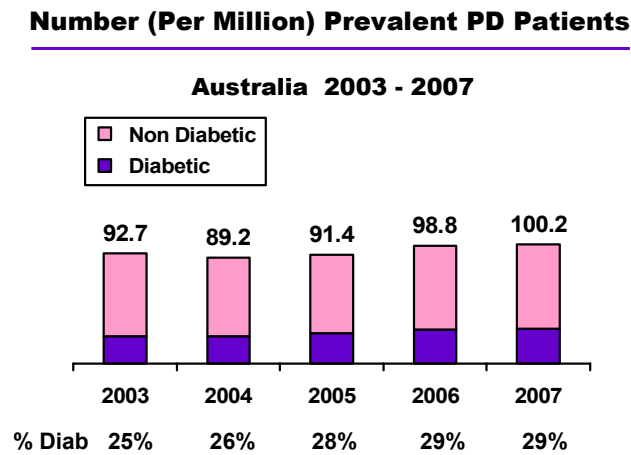


Figure 6.11

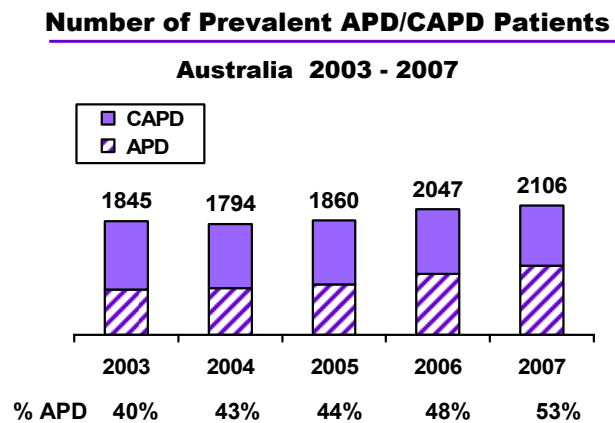




Figure 6.12

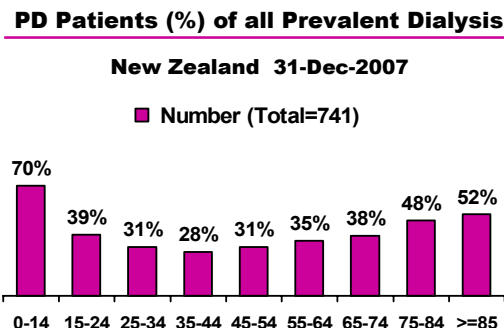


Figure 6.13

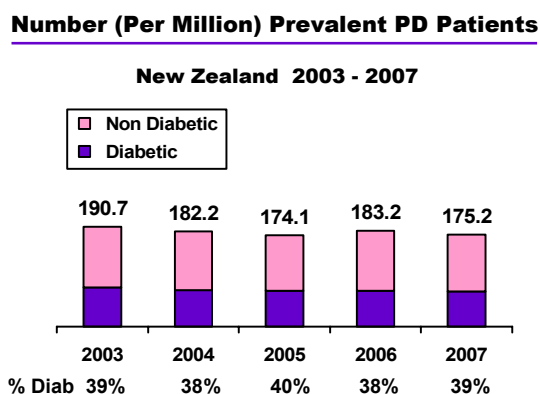
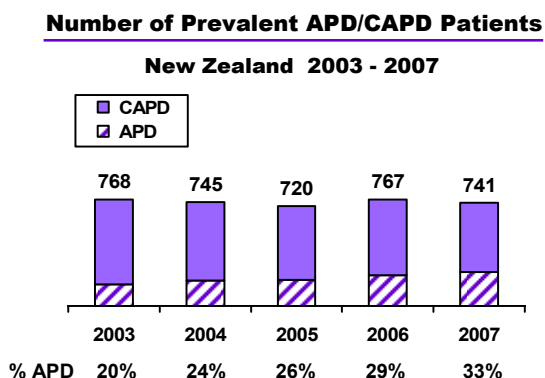


Figure 6.14



NEW ZEALAND

The annual stock and flow of patients during the period 2003 to 2007 is shown in Figures 6.3 and 6.5. Of the 5,934 patients treated since 1978, 741 (12%) were alive at 31st December, 2007; 400 (7%) had more than five years continuous treatment (Figure 6.2).

Peritoneal dialysis accounted for 36% of all dialysis patients and 70% of all patients dialysing at home. A substantially lower proportion of patients used automated PD than Australia. Thirty three percent of all peritoneal dialysis in 2007 was automated compared with 29% in 2006 and 26% in 2005.

The age distribution of prevalent peritoneal dialysis patients is shown in Figures 6.16 and 6.17.

There were 238 new peritoneal dialysis patients in calendar year 2007, a decrease of 20% from 2006 (297 patients), after an increase of 17% from 2005 (253 patients). For 55%, peritoneal dialysis was the initial dialysis treatment (Figures 6.15 and 6.17).

For more detail see Appendix III at Website (www.anzdata.org.au/ANZDATA/AnzdataReport/download.htm).

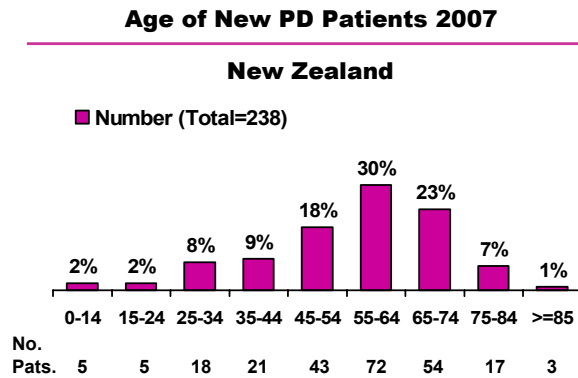
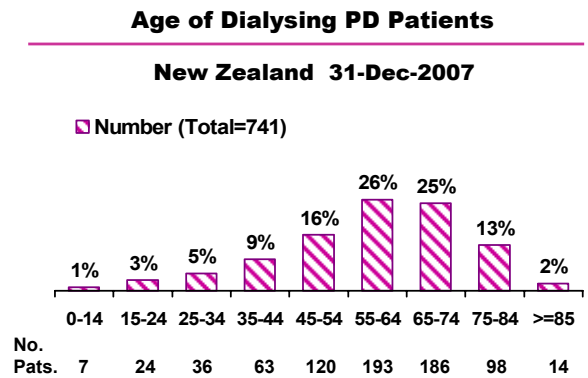
There were 120 deaths amongst prevalent peritoneal dialysis patients in 2007 (152 in 2006), at a rate of 16.0 deaths per 100 person-years (Figure 3.11).

For more detail see Appendix III at Website (www.anzdata.org.au/ANZDATA/AnzdataReport/download.htm).

There were 37 patients transplanted in 2007 (23 in 2006), 5% of patients dialysed; 8% of patients <65 years treated during the year (Figure 6.3). Three patients ≥ 65 years was transplanted.

The most common primary renal disease of new patients to peritoneal dialysis was diabetic nephropathy (44%), followed by glomerulonephritis (23%). Hypertension accounted for 11% of all new patients, a decrease of 40% in 2007 (26 patients from 43 patients in 2006).

The proportion of patients in each group treated with peritoneal dialysis ranged from 28% (35-44 years), 31% (25-34 years and 45-54 years) to 52% (≥ 85 years) and 70% (0-14 years) (Figure 6.12).

Figure 6.15

Figure 6.16

Figure 6.17
New Zealand
Stock and Flow of Peritoneal Dialysis by Age Groups 2003 - 2007

Age Groups	2003	2004	2005	2006	2007
New Patients *					
00-14 years	7 (3%)	4 (2%)	5 (2%)	4 (1%)	5 (2%)
15-24 years	11 (4%)	4 (2%)	3 (1%)	16 (6%)	5 (2%)
25-34 years	10 (4%)	15 (5%)	8 (3%)	11 (4%)	18 (8%)
35-44 years	26 (10%)	22 (8%)	17 (6%)	30 (10%)	21 (9%)
45-54 years	45 (17%)	44 (15%)	45 (18%)	60 (20%)	43 (18%)
55-64 years	68 (26%)	62 (22%)	75 (30%)	70 (24%)	72 (30%)
65-74 years	68 (26%)	80 (29%)	74 (29%)	66 (22%)	54 (23%)
75-84 years	22 (9%)	42 (15%)	24 (10%)	38 (13%)	17 (7%)
>=85 years	3 (1%)	4 (2%)	2 (1%)	2 (<1%)	3 (1%)
Total	260 (100%)	277 (100%)	253 (100%)	297 (100%)	238 (100%)
Patients Dialysing					
00-14 years	7 (1%)	7 (<1%)	9 (1%)	8 (1%)	7 (1%)
15-24 years	29 (4%)	22 (3%)	14 (2%)	21 (3%)	24 (3%)
25-34 years	46 (6%)	42 (6%)	31 (5%)	36 (5%)	36 (5%)
35-44 years	70 (9%)	72 (10%)	58 (8%)	68 (9%)	63 (9%)
45-54 years	133 (17%)	117 (16%)	115 (16%)	126 (16%)	120 (16%)
55-64 years	208 (27%)	189 (25%)	183 (25%)	186 (24%)	193 (26%)
65-74 years	185 (24%)	192 (26%)	201 (28%)	199 (26%)	186 (25%)
75-84 years	83 (11%)	96 (13%)	99 (14%)	112 (15%)	98 (13%)
>=85 years	7 (1%)	8 (1%)	9 (1%)	8 (1%)	14 (2%)
Total	768 (100%)	745 (100%)	719 (100%)	764 (100%)	741 (100%)
Primary Renal Disease *					
Glomerulonephritis	64 (25%)	56 (20%)	57 (23%)	67 (23%)	54 (23%)
Analgesic Nephropathy	0 (0%)	1 (<1%)	1 (<1%)	1 (<1%)	0 (0%)
Hypertension	30 (12%)	53 (19%)	30 (12%)	43 (14%)	26 (11%)
Polycystic Disease	9 (3%)	11 (4%)	13 (5%)	24 (8%)	11 (4%)
Reflux Nephropathy	11 (4%)	7 (3%)	7 (3%)	10 (3%)	9 (4%)
Diabetic Nephropathy	97 (37%)	105 (38%)	112 (44%)	115 (39%)	105 (44%)
Miscellaneous	27 (10%)	29 (11%)	23 (9%)	24 (8%)	26 (11%)
Uncertain	22 (9%)	15 (5%)	10 (4%)	13 (4%)	7 (3%)
Total	260 (100%)	277 (100%)	253 (100%)	297 (100%)	238 (100%)

* New patients receiving first peritoneal dialysis treatment



OUTCOMES AMONG PERITONEAL DIALYSIS PATIENTS

Figure 6.18

Peritoneal Dialysis at 90 Days Patient Survival Censored at Modality Change % [95% Confidence Interval]					
Year of Starting	No. of Patients	Survival			
		6 months	1 year	3 years	5 years
Australia					
1997-1999	1733	92 [91, 93]	86 [85, 88]	60 [57, 62]	38 [35, 40]
2000-2002	1901	93 [92, 94]	87 [85, 88]	59 [57, 61]	40 [37, 42]
2003-2005	1838	94 [93, 95]	88 [87, 90]	64 [62, 66]	-
2006-2007	1408	95 [93, 96]	90 [88, 92]	-	-
New Zealand					
1997-1999	608	96 [94, 97]	89 [86, 91]	56 [52, 60]	37 [32, 41]
2000-2002	681	93 [91, 95]	85 [82, 87]	58 [54, 62]	35 [31, 39]
2003-2005	619	93 [91, 95]	87 [84, 90]	58 [54, 63]	-
2006-2007	411	97 [94, 98]	91 [87, 94]	-	-

Patient Survival

On univariate analyses, there has been some improvement in patient survival in Australia, in three and five year patient outcomes.

Survival has been unchanged up to 2005, but has improved for the 2006-2007 cohort in New Zealand (Figures 6.18 - 6.20).

Among patients with diabetes, survival was substantially lower (Figures 6.21 - 6.23).

As expected, patient survival is closely related to age (Figures 6.24 - 6.26).

Figure 6.19

Patient Survival - Peritoneal Dialysis at 90 Days Censored at Modality Change - Australia

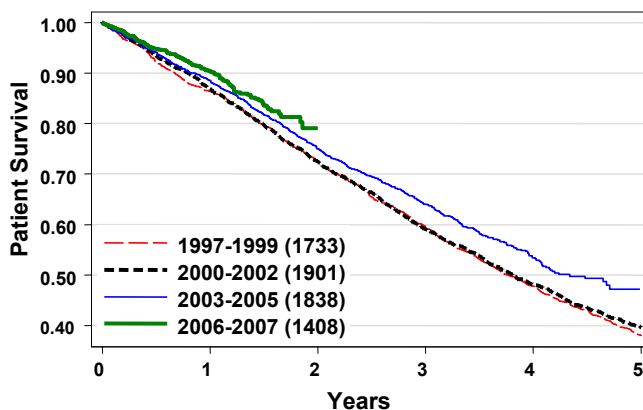


Figure 6.20

Patient Survival - Peritoneal Dialysis at 90 Days Censored at Modality Change - New Zealand

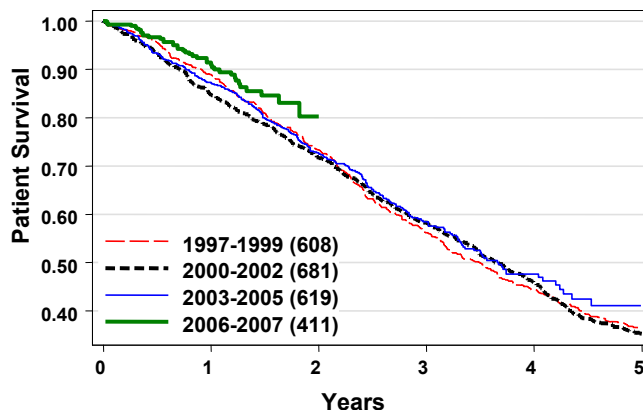


Figure 6.21

Peritoneal Dialysis at 90 Days Patient Survival - Diabetic / Non Diabetic Censored at Modality Change Commenced 1997 - 2007 % [95% Confidence Interval]					
	Survival				
	6 months	1 year	3 years	5 years	
Australia					
Non Diabetic (4903)	94 [94, 95]	89 [88, 90]	65 [63, 66]	45 [43, 47]	
Diabetic (1977)	92 [90, 93]	84 [83, 86]	53 [51, 56]	30 [28, 33]	
New Zealand					
Non Diabetic (1320)	95 [93, 96]	88 [87, 90]	63 [59, 66]	43 [39, 47]	
Diabetic (999)	94 [92, 95]	86 [84, 88]	53 [50, 57]	30 [26, 33]	

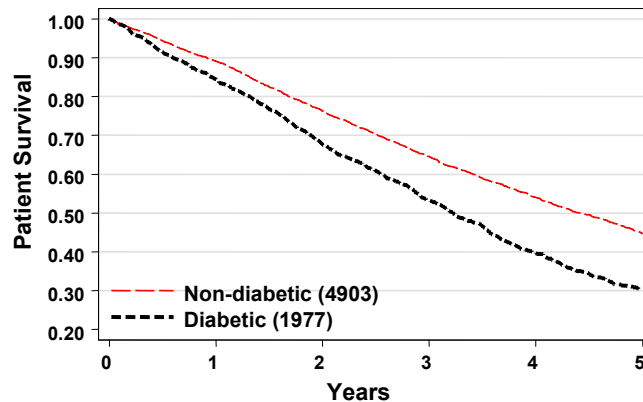
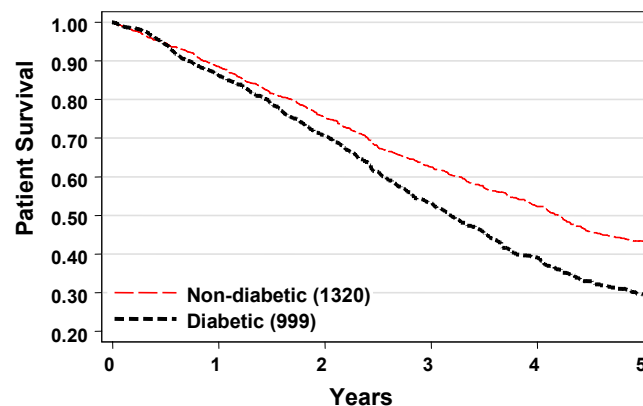
Figure 6.22
**Patient Survival - Peritoneal Dialysis at 90 Days
 Censored at Modality Change - Australia**

Figure 6.23
**Patient Survival - Peritoneal Dialysis at 90 Days
 Censored at Modality Change - New Zealand**


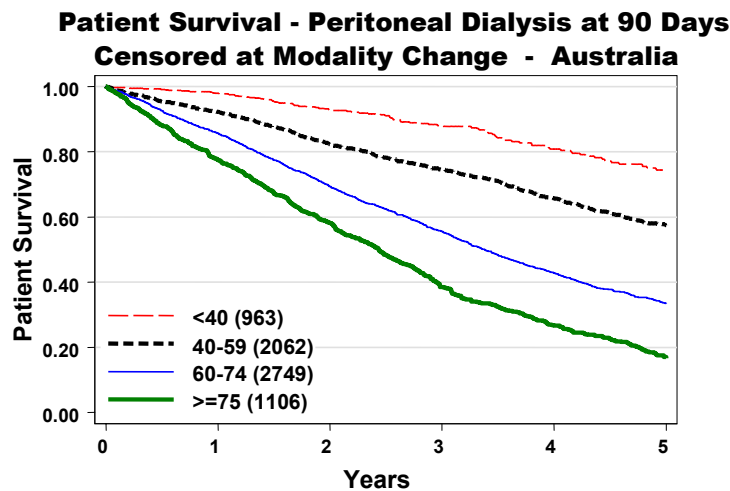


Figure 6.24

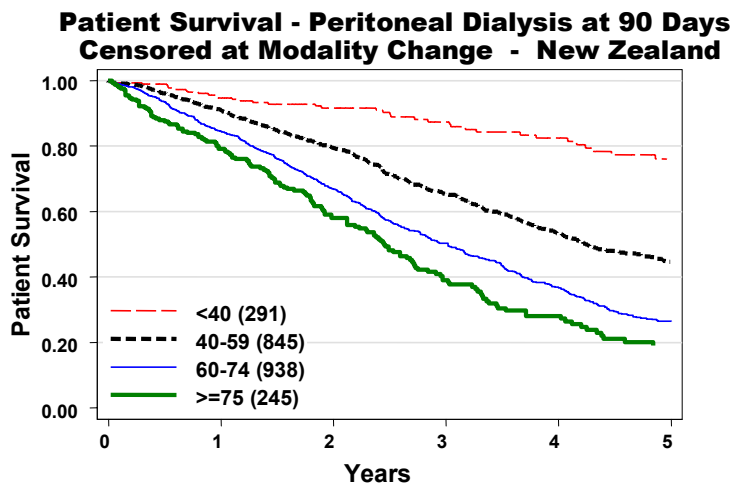
**Peritoneal Dialysis at 90 Days
Patient Survival - By Age Group
Censored at Modality Change 1997 - 2007
% [95% Confidence Interval]**

Age Groups	No. of Patients	Survival			
		6 months	1 year	3 years	5 years
Australia					
0-39 years	963	99 [98, 100]	98 [97, 99]	88 [85, 91]	74 [69, 79]
40-59 years	2062	95 [94, 96]	92 [91, 93]	75 [72, 77]	58 [54, 61]
60-74 years	2749	92 [91, 93]	86 [84, 87]	56 [53, 58]	33 [31, 36]
75 and over	1106	88 [86, 90]	77 [75, 80]	39 [35, 42]	17 [14, 20]
New Zealand					
0-39 years	291	99 [97, 100]	95 [91, 97]	87 [82, 91]	76 [68, 83]
40-59 years	845	96 [94, 97]	91 [89, 93]	65 [61, 69]	45 [40, 49]
60-74 years	938	93 [92, 95]	84 [82, 87]	50 [47, 54]	26 [23, 30]
75 and over	245	88 [83, 91]	79 [73, 84]	39 [32, 46]	19 [13, 26]

Figure 6.25



Figure



Figures 6.27 - 6.28 show adjusted patient survival for non diabetic caucasoid females with median age of each cohort and no co-morbidities (lung disease, coronary heart disease, peripheral vascular disease and cerebrovascular disease).

Improving survival rates in recent cohorts are evident in Australia and less so in New Zealand.

Figure 6.27

Patient Survival - Peritoneal Dialysis at 90 Days Censored at Modality Change - Australia Adjusted for Age, Diabetic PRD and Gender

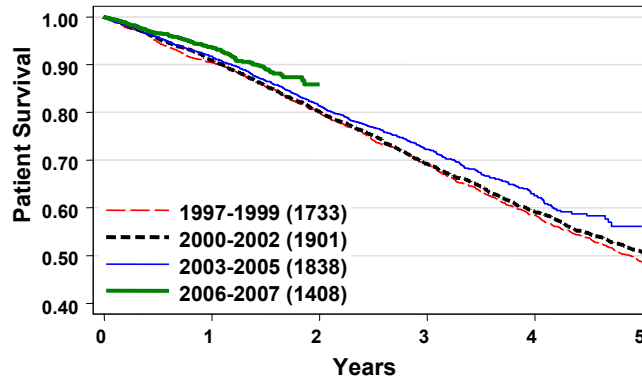
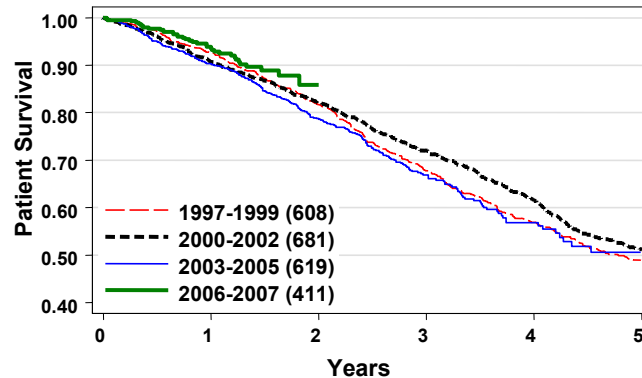


Figure 6.28

Patient Survival - Peritoneal Dialysis at 90 Days Censored at Modality Change - New Zealand Adjusted for Age, Diabetic PRD and Gender





PERITONITIS

Australian median time to first peritonitis has decreased to 19.4 months overall, with 31% of patients completely free of peritonitis at three years. In New Zealand the time was 15.0 months (21% of patients free of peritonitis at three years), (Figure 6.29). As noted in previous reports there is a strong association between ethnicity and peritonitis free survival (Figure 6.32).

The median peritonitis-free survival for home automated peritoneal dialysis patients was 20.4 months in Australia, and 13.4 months in New Zealand.

Figure 6.29

First PD Treatment to First Episode of Peritonitis Related to Age at Entry 2003 to 31-Dec-2007

Survival	Age Groups						All
	00-14	15-34	35-54	55-64	65-74	>=75	
Australia	n= 85	n= 325	n= 1113	n= 912	n= 1081	n= 735	n= 4251
3 months	88 [78, 93]	87 [83, 91]	87 [85, 89]	89 [86, 91]	87 [85, 89]	84 [81, 87]	87 [86, 88]
6 months	72 [60, 81]	76 [71, 81]	79 [76, 81]	80 [77, 83]	78 [75, 80]	74 [70, 77]	78 [76, 79]
9 months	59 [45, 70]	72 [66, 77]	70 [67, 73]	74 [70, 77]	70 [66, 72]	66 [62,69]	70 [68, 71]
1 year	54 [40, 66]	64 [58, 70]	64 [61, 67]	66 [63, 70]	62 [58, 65]	59 [55, 63]	63 [61, 65]
2 years	35 [17, 54]	42 [33, 51]	44 [40, 48]	45 [41, 49]	43 [39, 47]	39 [34, 44]	43 [41, 45]
3 years	35 [17, 54]	38 [28,47]	30 [25, 36]	31 [25, 36]	32 [28, 37]	27 [21, 33]	31 [28, 33]
New Zealand	n= 25	n= 101	n= 353	n= 347	n= 341	n= 158	n= 1325
3 months	80 [58, 91]	83 [74, 89]	87 [83, 90]	82 [78, 86]	85 [81, 88]	89 [83, 93]	85 [83, 87]
6 months	71 [48, 85]	75 [64, 82]	75 [70, 79]	71 [65, 75]	76 [71, 80]	79 [71, 85]	74 [72, 77]
9 months	43 [21, 63]	67 [55, 76]	65 [60, 70]	59 [54, 65]	66 [61, 71]	70 [61, 77]	64 [61, 67]
1 year	36 [15, 57]	59 [47, 69]	57 [51, 63]	52 [47, 58]	57 [51, 63]	62 [53, 70]	56 [53, 59]
2 years	27 [8, 50]	48 [36, 60]	37 [30, 44]	32 [25, 38]	33 [27, 39]	38 [28, 47]	35 [32, 39]
3 years	18 [3, 42]	40 [26, 54]	19 [11, 29]	18 [12, 25]	17 [11, 24]	26 [16, 37]	21 [17, 25]

% Survival [95% Confidence Interval]

Figure 6.30

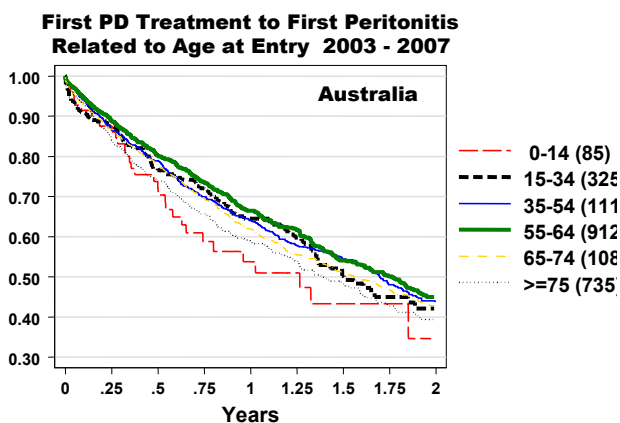


Figure 6.31

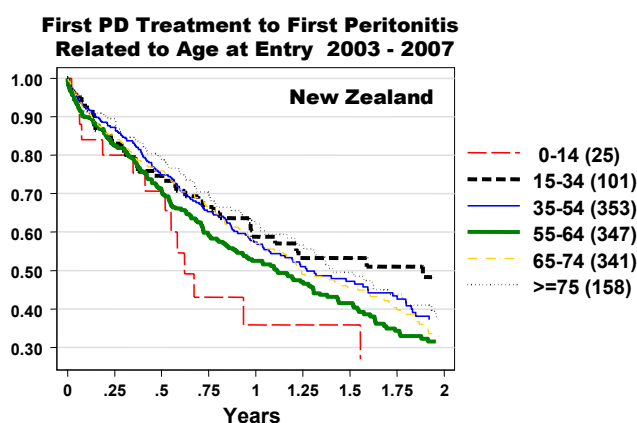


Figure 6.32

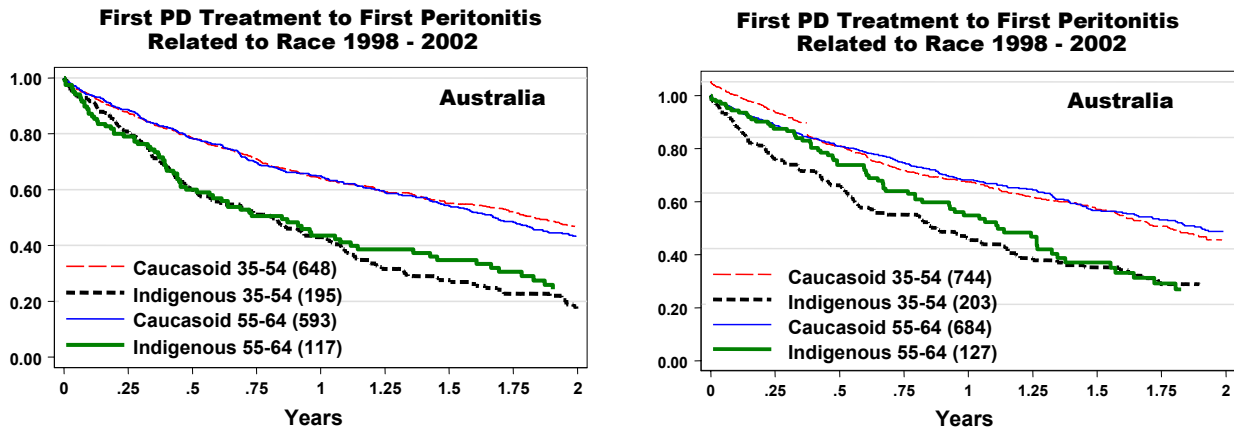


Figure 6.33

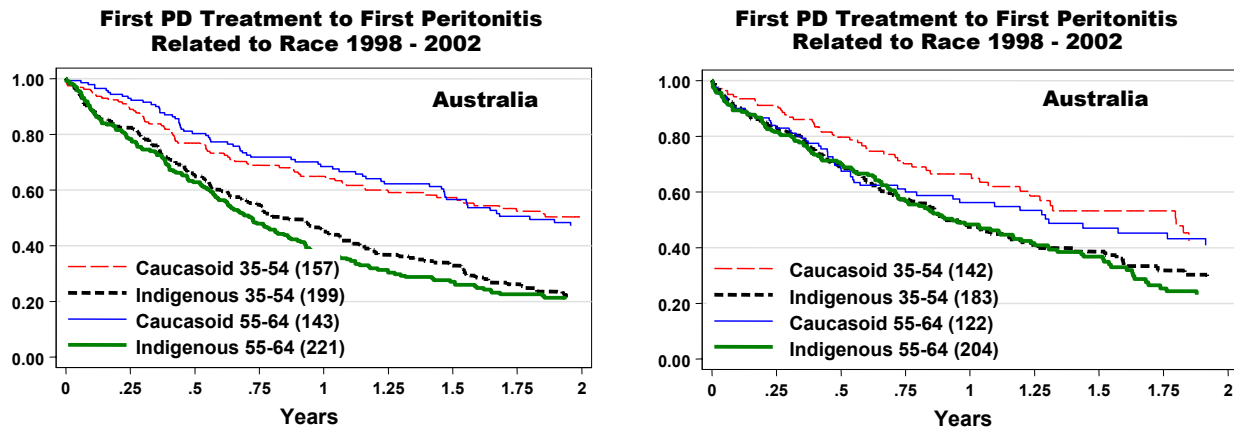


Figure 6.34

First Home APD Treatment to First Episode of Peritonitis Related to Age at Entry 2003 to 31-Dec-2007							
Survival	Age Groups						All
	00-14	15-34	35-54	55-64	65-74	>=75	
Australia	n= 71	n= 211	n= 626	n= 457	n= 488	n= 304	n= 2157
1 month	99 [90, 100]	94 [90, 97]	95 [93, 96]	97 [95, 98]	96 [94, 98]	96 [93, 97]	96 [95, 97]
3 months	87 [76, 93]	86 [81, 90]	87 [84, 89]	91 [88, 93]	89 [86, 92]	89 [85, 92]	88 [87, 90]
6 months	76 [64, 85]	82 [76, 87]	77 [73, 80]	83 [79, 87]	78 [74, 81]	80 [75, 85]	80 [78, 81]
9 months	65 [51, 76]	76 [69, 82]	70 [66, 74]	75 [70, 79]	70 [65, 74]	74 [68, 79]	72 [70, 74]
1 year	59 [44, 72]	71 [62, 78]	65 [61, 69]	68 [63, 73]	66 [61, 71]	66 [59, 72]	67 [64, 69]
2 years	41 [19, 61]	35 [23, 48]	44 [38, 50]	46 [40, 53]	49 [43, 55]	46 [38, 54]	45 [42, 48]
New Zealand	n= 22	n= 47	n= 117	n= 93	n= 76	n= 41	n= 396
1 month	86 [63, 95]	96 [84, 99]	95 [89, 98]	95 [87, 98]	95 [86, 98]	95 [82, 99]	94 [92, 96]
3 months	82 [59, 93]	86 [72, 94]	86 [78, 91]	85 [76, 91]	90 [81, 95]	77 [61, 87]	85 [81, 89]
6 months	66 [42, 82]	74 [57, 85]	71 [61, 79]	75 [64, 83]	75 [62, 84]	66 [49, 79]	72 [67, 77]
9 months	47 [23, 68]	65 [47, 78]	58 [47, 67]	61 [48, 71]	65 [52, 76]	54 [36, 68]	60 [54, 65]
1 year	39 [16, 62]	58 [37, 73]	54 [43, 64]	51 [39, 63]	56 [42, 68]	47 [30, 63]	53 [47, 58]

% Survival [95% Confidence Interval]



TECHNIQUE FAILURE (CENSORED FOR DEATH OR TRANSPLANTATION)

Figure 6.35

Causes of Technique Failure 1-Jan-2007 to 31-Dec-2007 Excluding Death, Transplantation, Recovery of Renal Function

Causes of Technique Failure	Australia	New Zealand
Recurrent/persistent peritonitis	71	32
Acute peritonitis	155	35
Tunnel/exit site infection	18	6
Total Infective Complications	244 (25%)	73 (25%)
Inadequate solute clearance	111	51
Inadequate fluid ultrafiltration	39	32
Excessive fluid ultrafiltration	1	-
Total Dialysis Failure	151 (15%)	83 (29%)
Dialysate leak	28	10
Hydrothorax	2	3
Scrotal oedema	6	-
Catheter block	10	4
Catheter fell out	2	-
Hernia	39	7
Abdominal pain	4	2
Abdominal surgery	15	5
Other surgery	15	2
Haemoperitoneum	-	1
Sclerosing Peritonitis	2	3
Miscellaneous	20	4
Multiple Adhesions	2	3
Total Technical Failure	145 (15%)	44 (15%)
Unable to manage self care	73	20
Patient preference	371	68
Transfer outside Australia/NZ	-	1
Total Social Reasons	444 (45%)	89 (31%)

For 2007, the data collection method has changed and we now collect reason for transfer from any form of PD. As a result the identification of Primary and Secondary reasons is no longer valid.

In Australia, the most common primary cause of technique failure was a social reason (generally patient preference), rather than a technical cause.

This accounted for 45% of transfers in 2007 (Figure 6.35) compared to that observed in the era 2005-2006 (37%) (Figure 6.36).

Infections (primarily peritonitis) were the second commonest cause, followed by inadequate dialysis and mechanical/technical complications.

In New Zealand, the most common primary cause of technique failure was a social reason, which accounted for 31% of transfers in 2007 and inadequate dialysis 29% (Figure 6.35).

Figure 6.36

Causes of Technique Failure 1-Jan-2005 to 31-Dec-2006 Excluding Death, Transplantation, Recovery of Renal Function

Causes of Technique Failure	Australia		New Zealand	
	Primary	Secondary	Primary	Secondary
Recurrent/persistent peritonitis	138	15	82	5
Acute peritonitis	280	21	65	1
Tunnel/exit site infection	48	4	3	1
Total Infective Complications	466 (28%)	40 (26%)	150 (32%)	7 (19%)
Inadequate solute clearance	266	15	110	7
Inadequate fluid ultrafiltration	75	13	56	5
Total Dialysis Failure	341 (21%)	28 (18%)	166 (35%)	12 (33%)
Dialysate leak	76	11	15	-
Hydrothorax	11	1	2	-
Catheter block	22	3	5	2
Catheter fell out	5	2	-	-
Hernia	40	4	7	1
Abdominal pain	9	-	3	1
Abdominal surgery	30	5	8	2
Other surgery	16	2	1	-
Sclerosing Peritonitis	1	1	1	-
Miscellaneous	27	3	5	1
Total Technical Failure	237 (14%)	32 (21%)	47 (10%)	7 (19%)
Unable to manage self care	120	8	26	2
Patient preference	494	46	84	8
Transfer outside Australia/NZ	1	-	2	-
Total Social Reasons	615 (37%)	54 (35%)	112 (24%)	10 (28%)

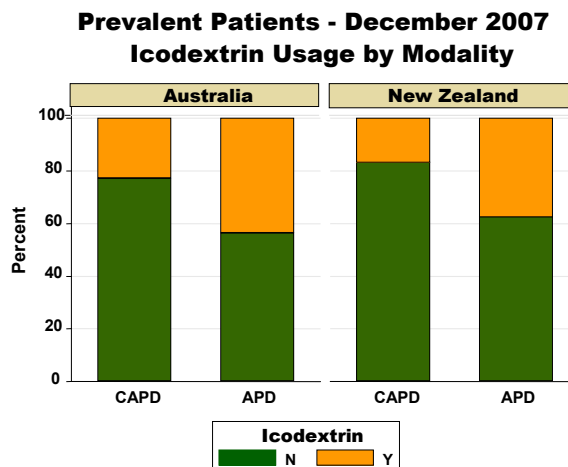
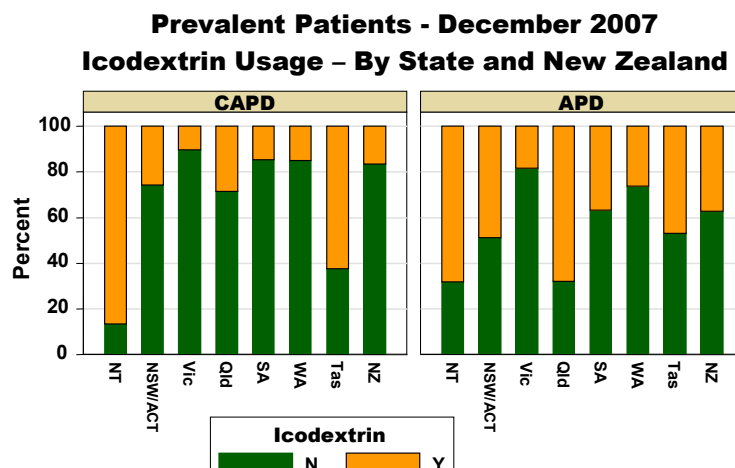
PERITONEAL DIALYSIS FLUIDS

For the first time in 2007, information was collected about the type of PD fluid used in addition to the fluid volumes. Given the differences in dwell time and cycle length between automated and continuous ambulatory peritoneal dialysis, these results are presented separately.

Overall about 21% of CAPD and 42% of APD patients were receiving Icodextrin; these proportions were a little lower in New Zealand than Australia; there was also considerable variation between States in Icodextrin usage rates. Low GDP fluids (whether lactate or bicarbonate based fluids) were used much less frequently than Icodextrin.

Figure 6.37

Icodextrin Usage by Modality Type - December 2007						
Modality Type	Australia			New Zealand		
	No	Yes	Total	No	Yes	Total
CAPD	928 (77.2%)	274 (22.8%)	1202	509 (83.31%)	102 (16.69%)	611
APD	761 (56.5%)	586 (43.5%)	1347	182 (62.54%)	109 (37.46%)	291
Total	1689 (66.26%)	860 (33.74%)	2549	691 (76.61%)	211 (23.39%)	902

Figure 6.38

Figure 6.39




PERITONEAL DIALYSIS FLUIDS

Figure 6.40

Low GDP - Lactate Usage by Modality Type - December 2007

Modality Type	Australia			New Zealand		
	No	Yes	Total	No	Yes	Total
CAPD	1076 (89.52%)	126 (10.48%)	1202	607 (99.35%)	4 (0.65%)	611
APD	1289 (95.69%)	58 (4.31%)	1347	285 (97.94%)	6 (2.06%)	291
Total	2365 (92.78%)	184 (7.22%)	2549	892 (98.89%)	10 (1.11%)	902

Figure 6.41

Low GDP - Bicarb Usage by Modality Type - December 2007

Modality Type	Australia			New Zealand		
	No	Yes	Total	No	Yes	Total
CAPD	1177 (97.92%)	25 (2.08%)	1202	599 (98.04%)	12 (1.96%)	611
APD	1334 (99.03%)	13 (0.97%)	1347	274 (94.16%)	17 (5.84%)	291
Total	2511 (98.51%)	38 (1.49%)	2549	873 (96.78%)	29 (3.22%)	902

Figure 6.42

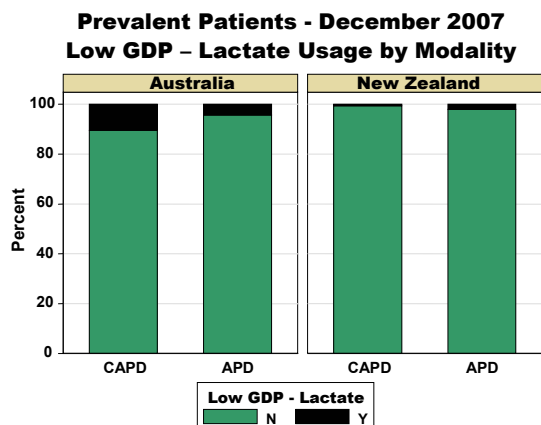
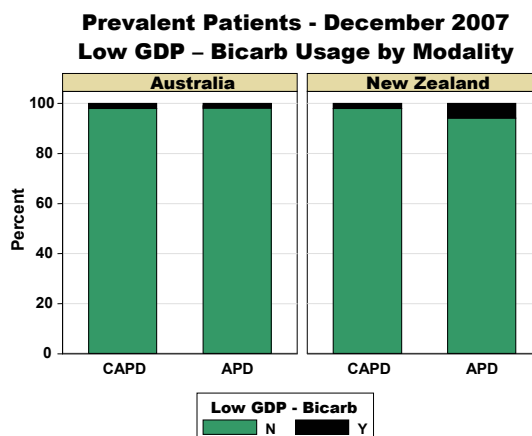


Figure 6.43



PERITONITIS REGISTRY 1-OCT-2003 TO 31-DEC-2007

STEPHEN McDONALD AND KYM BANNISTER

Details of the organism and treatment for episodes of peritonitis within Australia collected by ANZDATA. Similar information for patients in New Zealand is collected separately by the New Zealand Peritonitis Registry (reported separately).

During 2007, the number of episodes of peritonitis increased by 11% from 2006 (shown in Figure 6.44).

Figure 6.44	
Number of Peritonitis Episodes	
Year	Frequency
2003	250 (3 months data only)
2004	1,196
2005	1,072
2006	1,117
2007	1,242
Total	4,877

Rates of peritonitis vary from year to year, with no overall trend (Figure 6.45).

Figure 6.45

Number of Episodes per Patient Year and Patients Months per Episode 2003 - 2007

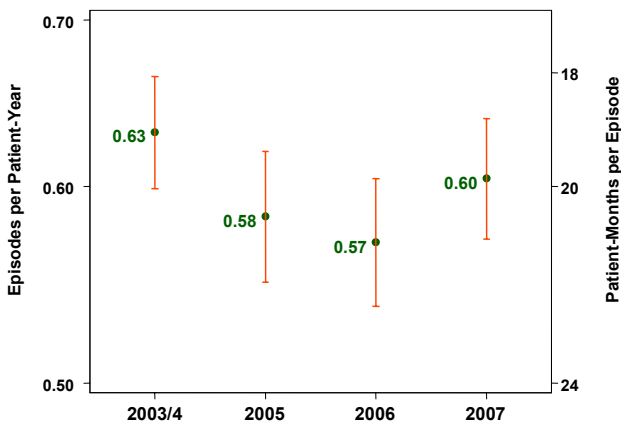
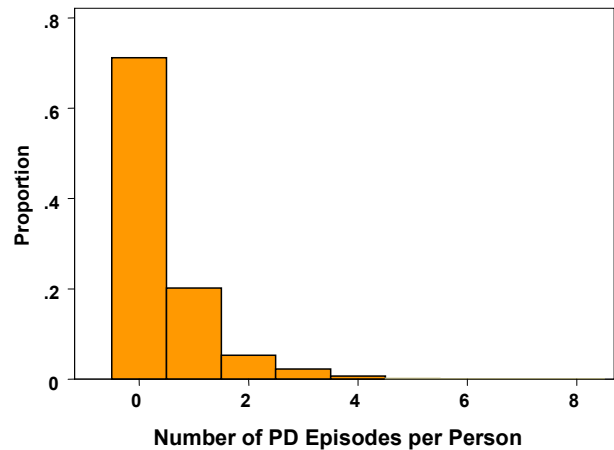


Figure 6.46

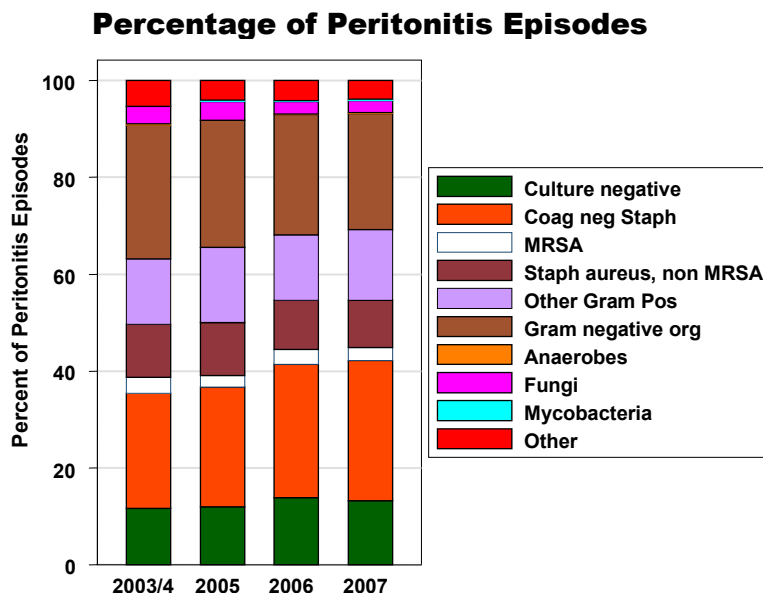
Number of PD Episodes per Person





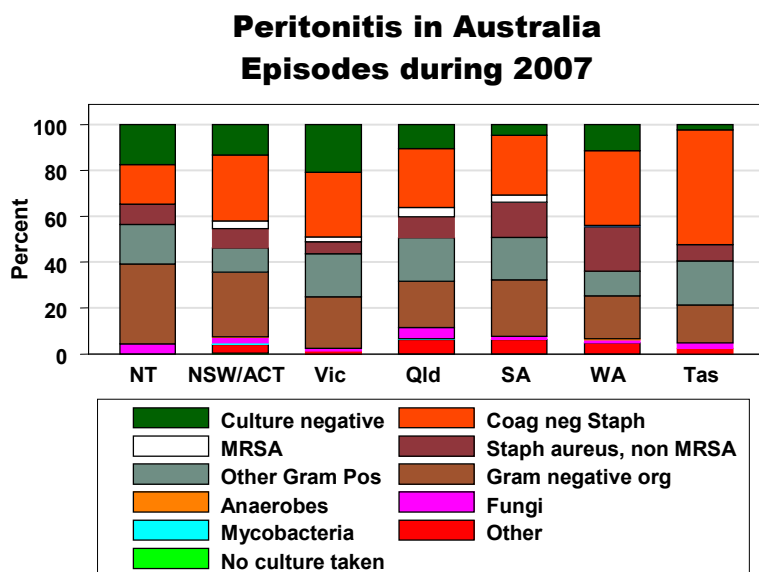
There has been a gradual trend over this time towards a lower proportion of episodes attributable to gram negative organisms and non-MRSA staph aureus, with a greater proportion of culture negative episodes and those attributed to coagulase negative staphylococci (Figure 6.47).

Figure 6.47



There remains quite widespread variation in the major organisms reported between the different states in Australia (Figure 6.48).

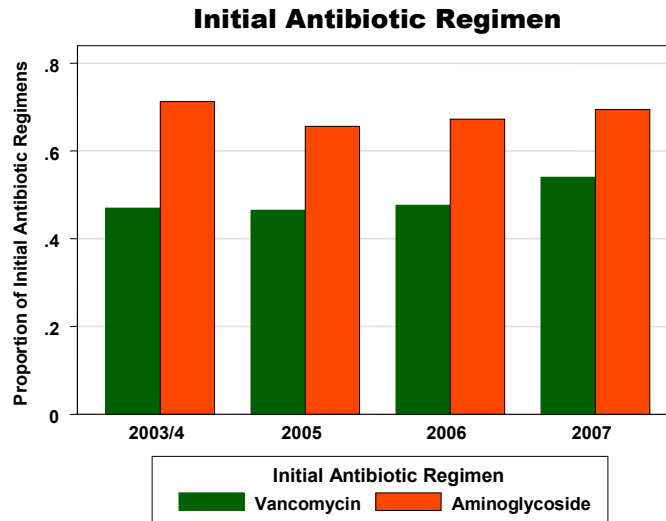
Figure 6.48



ANTIBIOTIC TREATMENT

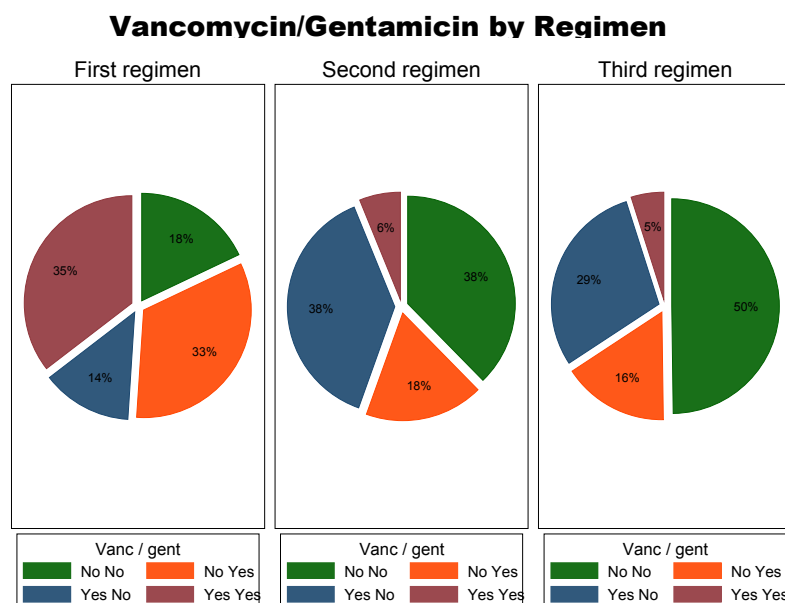
The proportion of episodes which were treated with an aminoglycoside initial regimen has remained stable since then, whereas the proportion containing vancomycin has increased somewhat in 2007 (Figure 6.49).

Figure 6.49



Among episodes of peritonitis treated during 2007, the proportion of those who received vancomycin in the initial or second antibiotic regimen is shown in Figure 6.50.

Figure 6.50

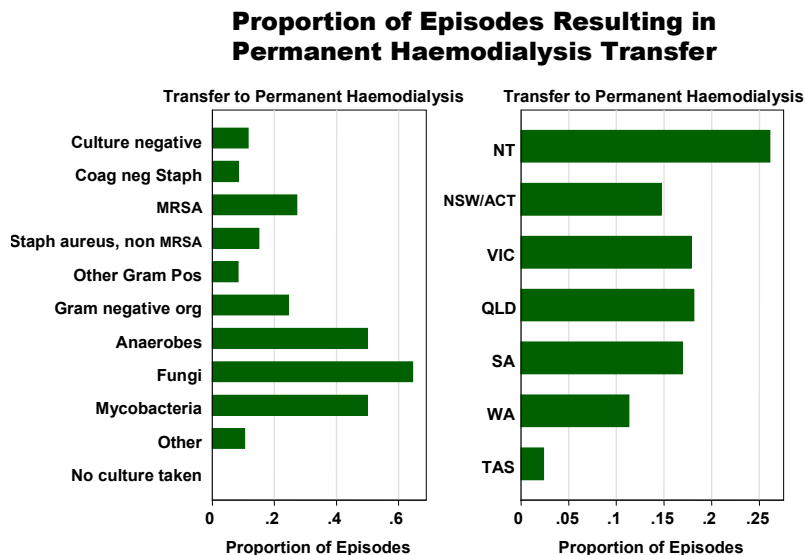




OUTCOMES

Overall, 192 of the 1241 (15%) of episodes of peritonitis in 2007 ended in a permanent transfer to haemodialysis with a period of interim haemodialysis reported in a further 42 (3%) of episodes. This proportion varied between States, and between the type of infecting organism (Figure 6.44).

Figure 6.44



RATES OF PERITONITIS ACROSS INDIVIDUAL UNITS

Figure 6.45 shows the peritonitis rates for all units in Australia over the period 1st October 2003 to 31st December 2007. Only units who averaged at least ten patient-years of peritonitis treatment per year over that period are included. There is substantial variation in the rates between units, with one “outlier” and a twofold variation among the remaining units. The extent to which this is accounted for patient characteristics is not shown, but is likely to explain only part of the variation.

Figure 6.45

