CHAPTER 3

DEATHS

A P S Disney
Graeme R Russ

Introduction

Death rate is reported as number of patients died/ total number of months of treatment of all patients treated at any time during the year. It is expressed as deaths per 100 patient years [pt yrs] at risk.

In this report, as in previous years, death is attributed to the dialysis modality at the time of death.

This report contains two forms of reporting the incidence of death:

* Rate related to number of treatment years.

* Proportion of all patients treated.

Australia

Dialysis Dependent

Death Rates per 100 patient years [pt yrs]
The number of deaths totalled 971 (15.7 deaths per 100 pt yrs at risk), represents 12% of patients treated at any time during the past year. Peritoneal dialysis (17.3 deaths per 100 pt yrs at risk) this was 11% of patients dialysed and haemodialysis (15.1 deaths per 100 pt yrs at risk) 11% of patients dialysed (fig 3.5 and 3.6).

Transplant Dependent

There were 164 deaths (3.2 deaths per 100 pt yrs at risk) of patients with a transplant; 2.9% of patients with a functioning graft during the year. The cadaver donor recipient death rate was 3.6 per 100 pt yrs, the living donor recipient rate 1.6 per 100 pt yrs. The death rate in relation to age is shown in Figures 3.5 and 3.7.

New Zealand

Dialysis Dependent

Death Rates per 100 patient years [pt yrs]
There were 246 deaths (19.2 deaths per 100 pt yrs at risk); which was 14.8% of patients dialysed during 2000; haemodialysis (17.3 deaths per 100 pt yrs at risk) represented 11 % of patients dialysed, peritoneal dialysis (21.0 deaths per 100 pt yrs at risk) 15 % of patients dialysed (fig 3.5 and 3.8). See Appendix III at Website (www.anzdata.org.au).

Transplant Dependent

There were 25 deaths (2.5 deaths per 100 pt yrs at risk) (2.3% at risk). Cadaver donor recipient death rate was 3.0 per 100 pt yrs, living donors 1.1 per 100 pt yrs (fig 3.5 and 3.9).

Figure 3.1

Death Rates by States 1995 - 2000
All Dialysis Patients

Year	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N. Z.
1995	16.8	13.8	11.4	15.4	18.6	16.2	20.2	13.1	**15.0**	**19.0**
1996	17.7	14.2	15.4	14.0	14.6	23.5	23.1	14.5	**15.6**	**14.8**
1997	16.5	16.7	12.2	12.5	15.3	20.5	18.4	17.1	**15.8**	**15.9**
1998	19.3	16.9	15.3	15.8	25.9	15.7	15.8	13.6	**16.7**	**16.6**
1999	20.7	16.0	14.7	14.1	23.9	15.2	17.6	17.3	**16.5**	**16.4**
2000	16.9	16.5	13.5	14.0	14.7	14.3	20.0	16.3	**15.7**	**19.2**

Figure 3.2

Death Rates by States
Dialysis Modality & Age Groups 2000

Age Group	Treatment	Qld	NSW	ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
45-64 yrs	All Patients	15.1	12.5	9.5	11.7	10.2	9.2	23.4	11.6	**12.7**	**16.6**
	PD	21.0	17.2	13.8	11.6	0	4.6	15.6	7.1	**14.5**	**15.4**
	HD	12.5	10.7	7.3	11.8	12.1	10.2	24.6	13.9	**12.1**	**18.0**
65-84 yrs	All Patients	24.0	24.5	25.8	20.2	26.8	24.4	33.6	29.2	**23.8**	**34.9**
	PD	25.6	25.1	18.3	26.1	0	24.3	0	22.8	**24.4**	**35.5**
	HD	23.3	24.2	30.9	18.3	39.7	24.4	39.7	31.8	**23.5**	**33.8**

Cause of Deaths

Australia

Dialysis Patients

Cardiac events (46%) were the most common cause of death followed by "social causes" (21%), infection (12%), miscellaneous (11%) and vascular (10%). Myocardial infarction (24%) and "cardiac arrest" (17%) formed the majority of the cardiac group.

The site of infection was most commonly septicaemia followed by the peritoneum and the lung. The detail of the site and identity of the organisms can be found at Website (www.anzdata.org.au).

Withdrawal of treatment was responsible for 21% of deaths, similar to last year; mostly in the older age group. Patient initiated withdrawal was more common (128 patients) compared to the caring team ceasing therapy (74 patients). Twenty three percent were diabetics. Six patients under 35 years withdrew from treatment.

The proportion of deaths from malignancy (5.5%) was similar to last year. There was one death from sclerosing peritonitis.

Transplant Patients

Cardiac causes were the most common cause of death: 29% of deaths were due to infection (mainly septicaemia and lung), 27% of transplant deaths were from malignancy.

Death of Young Adults

15-24 Years of Age

There were seven deaths in the age group **15-24 years,** the youngest being 18 years; five females and two males, five Caucasoid, one Asian and one Pacific Islander. Five were haemodialysis dependent and two transplant dependent.

Causes of death were: three cardiac (non ischaemic cardiomyopathy, presumed myocardial infarction - aortic valve stenosis and cardiac arrest), one refused further treatment, one therapy was withdrawn due to

Figure 3.3

Cause of Death Dialysis and Transplant Dependent 1-Jan-2000 to 31-Dec-2000

Cause of Death	Australia		New Zealand	
	Dialysis	Transplant	Dialysis	Transplant
Cardiac				
Cardiac Arrest	165	16	42	2
Hyperkalaemia	10	0	0	0
Hypertensive Cardiac Failure	4	1	1	0
Myocardial Infarction	146	17	35	3
Myocardial Infarction (presumed)	84	8	24	0
Other Causes of Cardiac Failure	20	4	4	1
Pulmonary Oedema	13	1	1	0
Haemorrhagic Pericarditis	2	0	0	0
Sub Total	**444 (46%)**	**47 (29%)**	**107 (43%)**	**6 (24%)**
Infection				
CNS - bacterial	0	0	1	0
CNS - other	1 (a)	1 (a)	0	0
Lung - bacterial	6	3	0	1
Lung - viral	0	1 (d)	0	1 (j)
Lung - fungal	1 (b)	3 (e,f)	0	0
Lung - protozoa	0	1 (g)	0	0
Lung - other	8 (a)	2 (a)	5 (a)	0
Urinary Tract - bacterial	1	0	2	1
Wound - bacterial	8	1	6	0
Wound - fungal	1 (c)	0	0	0
Wound - other	1 (1)	1 (a)	1 (a)	0
Shunt - bacterial	2	0	0	0
Shunt - other	0	0	2 (a)	0
Peritoneum - bacterial	21	0	10	0
Peritoneum - fungal	2 (c)	0	4 (e,i)	0
Peritoneum - other	3 (a)	0	1 (a)	0
Septicaemia - bacterial	23	7	2	0
Septicaemia - other	21 (a)	4 (a)	4 (a)	1 (a)
Other Site - bacterial	16	1	4	1
Other Site - viral	0	1 (h)	0	0
Other Site - other	2 (a)	1 (a)	0	0
SubTotal	**117 (12%)**	**27 (16%)**	**42 (17%)**	**5 (20%)**
Vascular				
Bowel Infarction	19	3	2	0
Cerebrovascular Accident	60	8	9	3
Gastrointestinal Haemorrhage	3	1	2	0
Haemorrhage Dialysis Access Site	2	0	0	0
Haemorrhage from elsewhere	4	0	0	0
Pulmonary Embolus	2	3	2	1
Ruptured Aortic Aneurysm	5	1	0	0
Haemorrhage - Transplant Artery	1	1	0	0
Sub Total	**96 (10%)**	**17 (10%)**	**15 (6%)**	**4 (16%)**
Social				
Accident	2	0	3	0
Patient refused further treatment	128	3	29	0
Suicide	1	1	0	0
Therapy ceased	74	2	21	0
Sub Total	**205 (21%)**	**6 (4%)**	**53 (22%)**	**0 (0%)**
Miscellaneous				
Bone Marrow Depression	0	1	0	0
Cachexia	15	1	3	0
Chronic Respiratory Failure	6	1	4	0
Hepatic Failure	6	3	3	0
Malignancy	53	45	12	9
Other	14	5	3	1
Pancreatitis	3	2	0	0
Perforation Abdominal Viscus	5	3	1	0
Sclerosing Peritonitis	1	0	1	0
Unknown	5	2	2	0
Uraemia - graft failure	1	4	0	0
Sub Total	**109 (11%)**	**67 (41%)**	**29 (12%)**	**10 (4%)**
Total	**971 (100%)**	**164 (100%)**	**246 (100%)**	**25 (100%)**

(a) Organism not isolated (b) Clamydia (c) Candida Albicans (d) Guillain-Barre Syndrome (e) Aspergillus (f) Mucormycosis (g) Pneumocystis Carinii (h) CMV (i)Candida (j) Adenovirus

congenital heart disease, one infection and one ascending cholangitis.

Four had been transplanted and two had received subsequent transplants.

25-34 Years of Age

There were 23 deaths in this age group; eight males and 15 females. Nineteen were Caucasoid, two Aboriginal, one Vietnamese and one Arab. Seven had glomerulonephritis, four reflux nephropathy, four lower urinary tract abnormalities, two diabetic nephropathy, two haemolytic uraemic syndrome, and one each interstitial nephritis, juvenile polycystic disease, sickle cell disease and CyA nephrotoxicity.

Eleven had been transplanted, one had received a subsequent transplant.

Six died with a functioning transplant, eleven were haemodialysis dependent (seven hospital, two satellite and two home) and six having peritoneal dialysis (five continous ambulatory peritoneal dialysis and one automated peritoneal dialysis). Causes of death were cardiac five, infection five, refusal of treatment four, malignancy three, vascular two and one each chronic respiratory failure, fits, motor vehicle accident and Caroli's disease.

Figure 3.4

Death as a Proportion of Dialysis Treated Patients 1996 - 2000

		1996	1997	1998	1999	2000
Australia	**All Dialysis**	12.1%	12.3%	12.9%	12.9%	12.3%
	PD	13%	11.4%	11.9%	12.3%	11.4%
	HD	9.7%	10.9%	11.3%	11.2%	11.3%
	All Patients 55-64 years	13%	14%	12%	12.5%	10.4%
	PD	14%	12%	9%	9%	9.9%
	HD	10%	13%	11%	12%	9.1%
	All Patients 65-74 years	18%	18%	18%	19%	16.7%
	PD	18%	16%	16%	16%	14.1%
	HD	14%	17%	16%	17%	15.6%
New Zealand	**All Dialysis**	11.5%	12.3%	12.7%	12.6%	14.8%
	PD	10.3%	11.7%	12.1%	10.6%	14.7%
	HD	10%	8.8%	9.7%	11.3%	10.9%

New Zealand

Dialysis Patients

There was a 22% increase in deaths (246 in 2000) from 191 in 1999. Cardiac causes 43%, "social" 22%, infection 17%, miscellaneous 12% and vascular 6%. Treatment withdrawal occurred in 50 patients (20%).

Transplant Patients

Malignant and cardiac conditions remained the most frequent causes of death.

Figure 3.5

Dialysis and Transplant Patient Deaths ✻ Deaths as a Proportion of All Patients Treated During the Year 2000

Mode of Treatment	No. of Pts.	Age Groups										Total Deaths
		00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	≥ 85	
Australia												
All Patients												
Peritoneal Dialysis	2520	0%	0%	0%	4%	5%	9%	10%	14%	20%	19%	**11.4% (289)**
Haemodialysis	6106	0%	0%	4%	2%	5%	9%	9%	16%	20%	18%	**11.3% (682)**
All Dialysis Pts	7841	0%	0%	3%	3%	5%	10%	10%	17%	22%	20%	**12.3% (971)**
Transplant Pts	5562	0%	<1%	<1%	<1%	1%	2%	4%	9%	11.5%	0%	**2.9% (164)**
Diabetic Patients												
Peritoneal Dialysis	580	0%	0%	0%	0%	9%	13%	12%	15%	31%	67%	**14.4% (84)**
Haemodialysis	1083	0%	0%	0%	6%	7%	14%	12%	20%	19%	0%	**14.3% (155)**
All Diabetic Dx	1475	0%	0%	0%	3%	9%	15%	14%	20%	26%	67%	**16.2% (239)**
Diabetic Tx	374	0%	0%	0%	0%	2%	3%	3%	17%	0%	0%	**2.6% (10)**
Non Diabetic Patients												
Peritoneal Dialysis	1940	0%	0%	0%	4%	4%	7%	9%	14%	19%	11%	**10.5% (205)**
Haemodialysis	5023	0%	0%	4%	2%	4%	7%	8%	15%	20%	18%	**10.4% (527)**
Non Diabetic Pts	6366	0%	0%	3%	3%	4%	8%	9%	16%	22%	17%	**11.4% (732)**
Non Diabetic Tx	5190	0%	<1%	<1%	<1%	1%	2%	4%	9%	12%	0%	**2.9% (154)**
New Zealand												
All Patients												
Peritoneal Dialysis	948	0%	0%	0%	2%	11%	7%	14%	24%	25%	33%	**14.7% (140)**
Haemodialysis	968	0%	0%	0%	1%	5%	14%	9%	21%	15%	0%	**10.9% (106)**
All Dialysis Pts	1659	0%	0%	0%	2%	8%	13%	13%	26%	24%	33%	**14.8% (246)**
Transplant Pts	1082	0%	0%	0%	0%	2.5%	1.5%	5%	3%	17%	0%	**2.3% (25)**
Diabetic Patients												
Peritoneal Dialysis	382	0%	0%	0%	17%	13%	13%	16%	36%	21%	0%	**19.6% (75)**
Haemodialysis	312	0%	0%	0%	0%	13%	23%	10%	24%	11%	0%	**15.7% (49)**
All Diabetic Dx	600	0%	0%	0%	6%	15%	21%	15%	35%	22%	0%	**20.6% (124)**
Diabetic Tx	97	0%	0%	0%	0%	3%	3.5%	4%	0%	0%	0%	**3.0% (3)**
Non Diabetic Patients												
Peritoneal Dialysis	566	0%	0%	0%	0%	11%	1%	11%	16%	25%	33%	**11.4% (65)**
Haemodialysis	656	0%	0%	0%	1%	3%	8%	8%	20%	15%	0%	**8.6% (57)**
Non Diabetic Pts	1059	0%	0%	0%	1%	6%	6%	11%	21%	25%	33%	**11.5% (122)**
Non Diabetic Tx	985	0%	0%	0%	0%	2%	1%	3.5%	3.5%	17%	0%	**2.2% (22)**

✻ Expressed as (%) of all patients, non diabetic, and diabetic patients treated by dialysis or with a functioning transplant in 2000

Note: some patients will have been treated by both PD and haemodialysis

Figure 3.6 **Australia**

Death Rates, Dialysis Patients 2000

(per 100 patient years)

★ Treatment at Death

Age Groups	00-14	15-24	25-44	45-64	65-84	≥ 85	All Ages
All Dialysis							
All Patients Death Rate	**0**	**3.7**	**5.4**	**12.7**	**23.8**	**29.2**	**15.7**
No. of Deaths	0	5	63	292	600	11	**971**
No. at Risk	44	189	1447	2903	3206	52	**7841**
Diabetic Death Rate	**0**	**0**	**9.6**	**18.8**	**28.7**	**1666.7**	**21.2**
No. of Deaths	0	0	16	102	119	2	**239**
No. at Risk	0	3	220	704	546	2	**1475**
Non Diabetic Death Rate	**0**	**3.7**	**4.7**	**10.9**	**22.8**	**24.0**	**14.5**
No. of Deaths	0	5	47	190	481	9	**732**
No. at Risk	44	186	1227	2199	2660	50	**6366**
Peritoneal Dialysis ★							
All Patients Death Rate	**0**	**0**	**7.0**	**14.5**	**24.4**	**37.6**	**17.3**
No. of Deaths	0	0	18	87	180	4	**289**
No. at Risk	36	70	387	905	1103	19	**2520**
Diabetic Death Rate	**0**	**0**	**9.9**	**19.4**	**29.9**	**1666.7**	**22.3**
No. of Deaths	0	0	5	37	40	2	**84**
No. at Risk	0	2	81	290	205	2	**580**
Non Diabetic Death Rate	**0**	**0**	**6.3**	**12.2**	**23.2**	**19.0**	**15.8**
No. of Deaths	0	0	13	50	140	2	**205**
No. at Risk	36	68	306	615	898	17	**1940**
Haemodialysis ★							
All Patients Death Rate	**0**	**5.3**	**5.0**	**12.1**	**23.5**	**26.0**	**15.1**
No. of Deaths	0	5	45	205	420	7	**682**
No. at Risk	15	139	1193	2287	2434	38	**6106**
Diabetic Death Rate	**0**	**0**	**9.4**	**18.5**	**28.1**	**0**	**207**
No. of Deaths	0	0	11	65	79	0	**155**
No. at Risk	0	1	168	510	404	0	**1083**
Non Diabetic Death Rate	**0**	**5.4**	**4.3**	**10.4**	**22.6**	**26.0**	**14.0**
No. of Deaths	0	5	34	140	341	7	**527**
No. at Risk	15	138	1025	1777	2030	38	**5023**

Figure 3.7 **Australia**

Death Rates, Transplant Patients 2000

(per 100 patient years)

Age Groups	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	All Ages
All Transplants										
All Patients Death Rate	**0**	**1.1**	**0.8**	**0.9**	**1.5**	**2.5**	**4.3**	**9.7**	**12.3**	**3.2**
No. of Deaths	0	1	2	6	16	32	47	54	6	**164**
No. at Risk	18	102	279	743	1189	1385	1191	597	52	**5556**
Diabetic Death Rate	**0**	**0**	**0**	**0**	**1.8**	**3.4**	**3.4**	**17.7**	**0**	**2.9**
No. of Deaths	0	0	0	0	2	4	2	2	0	**10**
No. at Risk	0	0	0	47	124	126	64	12	1	**374**
Non Diabetic Death Rate	**0**	**1.1**	**0.8**	**0.9**	**1.4**	**2.4**	**4.3**	**9.5**	**12.6**	**3.2**
No. of Deaths	0	1	2	6	14	28	45	52	6	**154**
No. at Risk	18	102	279	696	1065	1259	1127	585	51	**5182**
Cadaver Transplants										
All Patients Death Rate	**0**	**2.8**	**1.0**	**0.9**	**1.5**	**2.6**	**4.4**	**9.8**	**12.8**	**3.6**
No. of Deaths	0	1	1	4	12	28	43	51	6	**146**
No. at Risk	2	39	115	468	867	1156	1055	556	50	**4308**
Diabetic Death Rate	**0**	**0**	**0**	**0**	**2.3**	**3.0**	**2.0**	**19.4**	**0**	**2.8**
No. of Deaths	0	0	0	0	2	3	1	2	0	**8**
No. at Risk	0	0	0	41	97	109	53	11	1	**312**
Non Diabetic Death Rate	**0**	**2.8**	**1.0**	**1.0**	**1.4**	**2.6**	**4.5**	**9.6**	**13.1**	**3.7**
No. of Deaths	0	1	1	4	10	25	42	49	6	**138**
No. at Risk	2	39	115	427	770	1047	1002	545	49	**3996**
Living Donor Transplants										
All Patients Death Rate	**0**	**0**	**0.7**	**0.8**	**1.3**	**1.9**	**3.3**	**8.0**	**0**	**1.6**
No. of Deaths	0	0	1	2	4	4	4	3	0	**18**
No. at Risk	16	63	164	276	327	229	136	42	2	**1254**
Diabetic Death Rate	**0**	**0**	**0**	**0**	**0**	**6.3**	**11.1**	**0**	**0**	**3.5**
No. of Deaths	0	0	0	0	0	1	1	0	0	**2**
No. at Risk	0	0	0	6	27	17	11	1	0	**62**
Non Diabetic Death Rate	**0**	**0**	**0.7**	**0.8**	**1.5**	**1.6**	**2.7**	**8.2**	**0**	**1.5**
No. of Deaths	0	0	1	2	4	3	3	3	0	**16**
No. at Risk	16	63	164	270	299	212	125	41	2	**1192**

Figure 3.8 **New Zealand**

Death Rates, Dialysis Patients 2000

(per 100 patient years)

★ Treatment at Death

Age Groups	00-14	15-24	25-44	45-64	65-84	≥ 85	All Ages
All Dialysis							
All Patients Death Rate	**0**	**0**	**7.4**	**16.6**	**349**	**45.2**	**19.2**
No. of Deaths	0	0	19	103	122	2	**246**
No. at Risk	14	56	321	792	470	6	**1659**
Diabetic Death Rate	**0**	**0**	**17.0**	**22.1**	**46.7**	**0**	**27.0**
No. of Deaths	0	0	9	67	48	0	**124**
No. at Risk	0	0	69	388	143	0	**600**
Non Diabetic Death Rate	**0**	**0**	**4.9**	**11.4**	**30.0**	**45.2**	**14.9**
No. of Deaths	0	0	10	36	74	2	**122**
No. at Risk	14	56	252	404	327	6	**1059**
Peritoneal Dialysis ★							
All Patients Death Rate	**0**	**0**	**11.2**	**15.4**	**35.5**	**45.2**	**21.0**
No. of Deaths	0	0	11	50	77	2	**140**
No. at Risk	11	25	140	448	318	6	**948**
Diabetic Death Rate	**0**	**0**	**17.4**	**19.8**	**56.1**	**0**	**27.7**
No. of Deaths	0	0	5	36	34	0	**75**
No. at Risk	0	0	38	245	99	0	**382**
Non Diabetic Death Rate	**0**	**0**	**8.6**	**9.8**	**27.6**	**45.2**	**16.4**
No. of Deaths	0	0	6	14	43	2	**65**
No. at Risk	11	25	102	203	219	6	**566**
Haemodialysis ★							
All Patients Death Rate	**0**	**0**	**5.1**	**18.0**	**33.8**	**0**	**17.3**
No. of Deaths	0	0	8	53	45	0	**106**
No. at Risk	4	41	225	469	229	0	**968**
Diabetic Death Rate	**0**	**0**	**16.4**	**25.5**	**33.2**	**0**	**26.0**
No. of Deaths	0	0	4	31	14	0	**49**
No. at Risk	0	0	41	207	64	0	**312**
Non Diabetic Death Rate	**0**	**0**	**3.0**	**12.7**	**34.1**	**0**	**13.4**
No. of Deaths	0	0	4	22	31	0	**57**
No. at Risk	4	41	184	262	165	0	**656**

Figure 3.9 **New Zealand**

Death Rates, Transplant Patients 2000

(per 100 patient years)

Age Groups	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	All Ages
All Transplants										
All Patients Death Rate	**0**	**0**	**0**	**0**	**2.8**	**1.6**	**5.2**	**3.6**	**17.4**	**2.5**
No. of Deaths	0	0	0	0	7	4	9	3	2	**25**
No. at Risk	4	20	56	168	277	262	191	90	12	**1080**
Diabetic Death Rate	**0**	**0**	**0**	**0**	**3.6**	**3.8**	**4.6**	**0**	**0**	**3.5**
No. of Deaths	0	0	0	0	1	1	1	0	0	**3**
No. at Risk	0	0	0	7	32	28	25	5	0	**97**
Non Diabetic Death Rate	**0**	**0**	**0**	**0**	**2.8**	**1.4**	**5.3**	**3.8**	**17.4**	**2.4**
No. of Deaths	0	0	0	0	6	3	8	3	2	**22**
No. at Risk	4	20	56	161	245	234	166	85	12	**983**
Cadaver Transplants										
All Patients Death Rate	**0**	**0**	**0**	**0**	**4.0**	**1.0**	**5.8**	**2.7**	**19.0**	**3.0**
No. of Deaths	0	0	0	0	7	2	9	2	2	**22**
No. at Risk	1	9	17	91	200	208	169	81	11	**787**
Diabetic Death Rate	**0**	**0**	**0**	**0**	**4.3**	**0**	**4.9**	**0**	**0**	**2.7**
No. of Deaths	0	0	0	0	1	0	1	0	0	**2**
No. at Risk	0	0	0	7	27	22	23	5	0	**84**
Non Diabetic Death Rate	**0**	**0**	**0**	**0**	**3.9**	**1.1**	**6.0**	**2.8**	**19.0**	**3.1**
No. of Deaths	0	0	0	0	6	2	8	2	2	**20**
No. at Risk	1	9	17	84	173	186	146	76	11	**703**
Living Donor Transplants										
All Patients Death Rate	**0**	**0**	**0**	**0**	**0**	**4.2**	**0**	**11.7**	**0**	**1.1**
No. of Deaths	0	0	0	0	0	2	0	1	0	**3**
No. at Risk	3	11	39	77	77	54	22	9	1	**293**
Diabetic Death Rate	**0**	**0**	**0**	**0**	**0**	**18.6**	**0**	**0**	**0**	**8.9**
No. of Deaths	0	0	0	0	0	1	0	0	0	**1**
No. at Risk	0	0	0	0	5	6	2	0	0	**13**
Non Diabetic Death Rate	**0**	**0**	**0**	**0**	**0**	**2.3**	**0**	**11.7**	**0**	**0.8**
No. of Deaths	0	0	0	0	0	1	0	1	0	**2**
No. at Risk	3	11	39	77	72	48	20	9	1	**280**

Figure 3.10

Deaths from Malignancy 2000
Dialysis and Transplant Dependent

	Dx	Tx	Total
Australia			
Adenocarcinoma			
Abdomen	2 (#1)	0	**2**
Adrenal	1 (#1)	0	**1**
Breast	1 (#1)	2	**3**
Caecum	1	2	**3**
Colon	3 (#1)	6	**9**
Kidney	8 (*1)(#7)	1	**9**
Lung	4	0	**4**
Ovary	0	1	**1**
Pancreas	2	0	**2**
Rectum	0	1	**1**
Unknown Site	2 (#1)	0	**2**
Lymphoproliferative Disease			
Multiple sites	0	1	**1**
Skin	0	1	**1**
Stomach	0	1	**1**
Lymphoma			
Liver	0	1	**1**
Lung	0	1	**1**
Neck node	0	1	**1**
Sigmoid Colon	0	1	**1**
Skin	0	1	**1**
Melanoma			
Chest	0	1	**1**
Clavicle	0	1	**1**
Knee	1 (*1)	0	**1**
Nose	1	0	**1**
Scalp	1	0	**1**
Merkel Cell	0	2	**2**
Myeloma	8 (#8)	1	**9**
Squamous Cell Carcinoma			
Anal Canal	0	1	**1**
Cervix	0	1	**1**
Lung	1 (*1)	2	**3**
Skin	0	4	**4**
Tongue	0	1	**1**
Transitional Cell Carcinoma			
Bladder	0	2	**2**
Kidney	3 (#3)	1	**4**
Ureter	1	0	**1**
Other			
Cholangiocarcinoma-liver	1	0	**1**
Fibroxanthoma-skin	1	0	**1**
Hepatoma-liver	3	0	**3**
Large Cell-lung	0	1	**1**
Liposarcoma-abdomen	0	1	**1**
Mesothelioma-lung	1	-	**1**
Neuro-endocrine-pelvis	0	1	**1**
Poorly differentiated-unkown site	0	1	**1**
Small Cell-lung	1 (#1)	2	**3**
Spindle Cell-skin	0	1	**1**
Unknown-head of pancreas	1	0	**1**
Unkown-lung	1	0	**1**
Unknown-unknown site	4	0	**4**
Total Deaths from Malignancy	**53**	**45**	**98**
* (3 patients) previous transplants			
# (24 patients) diagnosed pre dialysis/within days of commencing			
New Zealand			
Adenocarcinoma			
Breast	1 (#1)	0	**1**
Bronchus	1	0	**1**
Cervix	1 (#1)	0	**1**
Colon	0	1	**1**
Gastro-oesophageal	1	0	**1**
Prostate	1	0	**1**
Rectum	0	1	**1**
Unknown site	0	1	**1**
Melanoma			
Upper back	1 (#1)	0	**1**
Scalp	0	1	**1**
Skin	0	1	**1**
Myeloma	2 (#1)	0	**2**
Squamous Cell Carcinoma			
Cervix-vaginal vault	1 (#1)	0	**1**
Maxillary sinus	0	1	**1**
Skin	0	3	**3**
Transitional Cell Carcinoma			
Bladder	1 (#1)	0	**1**
Other			
Unkown-pancreas	1	0	**1**
Unkown-unkown site	1	0	**1**
Total Deaths from Malignancy	**12**	**9**	**21**
# (6 patients) diagnosed pre dialysis or within days of commencing			

Deaths From Malignancy

Australia

During 2000 there were 98 fatal malignancies in patients (53 among dialysis dependent and 45 among transplant dependent).

Dialysis Dependent

Twenty four of the 53 patients had cancer diagnosed before or within days of their first dialysis. A further five tumours were identified in less than nine months after the first dialysis. Four patients had dialysed for more than five years. Three patients had a previous renal transplant.

There were twelve tumours of the urinary tract, eight cases with myeloma, seven tumours of the lung, three hepatoma and one cholangiocarcinoma of the liver.

The myeloma patients had a median survival from diagnosis of 17.5 months (range 2-46 months).

Transplant Dependent

There were 45 deaths (28 in 1999) in this group of patients. Nine died from skin cancer: two melanoma, two Merkel Cell, four squamous cell carcinoma and one spindle cell.

Thirty six died from non-skin cancer: thirteen adenocarcinoma, five lymphoma, five squamous cell carcinoma, three lymphoproliferative disease, three transitional cell carcinoma and seven from other types (two small cell of the lung and one each liposarcoma of the abdomen, neuro-endocrine of the pelvis, large cell of the lung, multiple myeloma and poorly differentiated from an unknown site.

New Zealand

There were twelve deaths due to malignancy; six diagnosed before dialysis or within days of commencement; none had a previous transplant.

Transplant Dependent

There were nine deaths; five were skin cancers (three squamous cell carcinoma and two melanoma). Four died with non-skin cancer; three adenocarcinoma and one squamous cell carcinoma.

Withdrawal from Dialysis Treatment

Australia

The number of deaths due to withdrawal from treatment was similar to last year; 202 in 2000 and 204 in 1999. The majority (128, 63%) to patient refusal of further treatment. Forty seven of the 202 patients were diabetics. The majority of all deaths were amongst the age group 65-84 years (74%).

Twenty percent of all deaths 65-74 years and 32% of those 75-84 years were due to withdrawal of treatment: 65% in the age group 65-74 years and 68% in the older group refused further treatment.

Most peritoneal dialysis cases were female and haemodialysis were male. The median duration of dialysis in those in the 75-84 year age group was 22 months. The age range was from 20 to 87 years.

Six patients were <35 years; five females and one male; five after refusing further treatment which was 27% of all deaths in this age group. One was a diabetic.

New Zealand

There were 50 deaths in 2000 (38 in 1999 and 19 in 1998): 23% of all deaths of patients 65-74 years and 34% of those 75-84 years were due to treatment withdrawal. Eighteen of the 50 patients had diabetic nephropathy. The age range was from 38 to 85 years.

Figure 3.11

Age Group Related Treatment Withdrawal 2000
(Diabetics)

	Mode of Treatment	Gender	Age Groups								Total
			00-24	25-34	35-44	45-54	55-64	65-74	75-84	≥ 85	
Aust.	PD	Female	0	1	0	0	2	1	3	0	**7**
		Male	0	0	0	0	0	2	0	0	**2**
	CAPD	Female	0	0	0	2 (1)	1	4 (1)	9 (2)	0	**16 (4)**
		Male	0	0	0	2	2 (1)	7 (4)	11 (1)	0	**22 (6)**
	HD	Female	1	3 (1)	2 (1)	5 (1)	11 (4)	29 (6)	20 (1)	3	**74 (14)**
		Male	1	0	0	7 (5)	10 (5)	25 (8)	38 (6)	0	**81 (24)**
	Total		**2**	**4 (1)**	**2 (1)**	**16 (7)**	**26 (10)**	**68 (19)**	**81 (10)**	**3**	**202 (48)**
N.Z.	CAPD	Female	0	0	2 (1)	2 (2)	3	6 (3)	3 (1)	0	**16 (7)**
		Male	0	0	1 (1)	0	1 (1)	5 (2)	5	1	**13 (4)**
	HD	Female	0	0	1 (1)	1	2	5 (2)	0	0	**9 (3)**
		Male	0	0	0	2 (1)	2 (2)	5 (1)	3	0	**12 (4)**
	Total		**0**	**0**	**4 (3)**	**5 (3)**	**8 (3)**	**21 (8)**	**11 (1)**	**1**	**50 (18)**

Figure 3.12

Treatment Withdrawal 1998 - 2000
(Diabetics)

	Year	Mode of Treatment	Age Groups								Total
			00-24	25-34	35-44	45-54	55-64	65-74	75-84	≥ 85	
Aust.	1998	PD	1	1 (1)	4 (1)	4 (1)	4 (1)	22 (6)	23 (3)	0	**59 (13)**
		HD	0	4 (1)	4 (1)	6	21 (6)	37 (6)	29 (1)	1	**102 (15)**
	1999	PD	0	1	1 (1)	3 (1)	7 (5)	27 (8)	21 (4)	1	**61 (19)**
		HD	0	4	3	9 (4)	25 (7)	60 (18)	39 (6)	3	**143 (35)**
	2000	PD	0	1	0	4 (1)	5 (1)	14 (5)	23 (3)	0	**47 (10)**
		HD	2	3 (1)	2 (1)	12 (6)	21 (9)	54 (14)	58 (7)	3	**155 (38)**
N.Z.	1998	PD	0	0	0	1 (1)	2 (2)	7 (2)	2	0	**12 (5)**
		HD	0	0	0	1 (1)	2 (1)	1	3	0	**7 (2)**
	1999	PD	0	0	1	3 (2)	4 (4)	5 (2)	3 (1)	0	**16 (9)**
		HD	0	1	0	3 (2)	3 (1)	11 (2)	4	0	**22 (5)**
	2000	PD	0	0	3 (2)	2 (2)	4 (1)	11 (5)	8 (1)	1	**29 (11)**
		HD	0	0	1 (1)	3 (1)	4 (2)	10 (3)	3	0	**21 (7)**