PRIMARY RENAL DISEASE

Australia

Glomerulonephritis (34%) remained the most common cause of renal failure (of these GN cases 26% were diagnosed without biopsy). Diabetic nephropathy (excludes diabetics with renal failure due to other causes) was the second most common condition (21%) followed by "hypertension" (12%) and polycystic kidney disease and reflux (6%). See Figure 64.

The fall in incidence of **analgesic nephropathy** continued (5% in 1997), reaching the lowest proportion of new patients in the past 20 years. The population incidence was 4.1 per million. New South Wales, after a rise in 1996, fell to 8% of new patients (6.2 per million) in 1997. See Figures 70 to 73.

IgA mesangial proliferative glomerulonephritis (24%) was the most common histologically proven form of glomerulonephritis (32% of biopsy proven glomerulonephritis), followed by focal sclerosing glomerulonephritis. As recorded in previous years, the label "glomerulonephritis" has been recorded for many elderly patients, without biopsy confirmation. See Figure 65.

The frequency of cases attributed to **"hypertension"** continued the steady increase of recent years, reflecting the increasing age of many new patients (in which it was the most common cause of renal failure). The modal age for hypertension was 65-74 years.

"Hypertension" is a diagnosis frequently without clear definition or proof. It represents a varied group with hypertension as a concomitant observation, but not necessarily the prime causative factor. Vascular disease or atherosclerotic renal disease may be more suitable terms to employ. Certainly no meaningful comment can be based on changes in the reported incidence of hypertensive renal failure amongst the middle aged and elderly patients.

Amongst the miscellaneous diseases, obstructive nephropathy, multiple myeloma, haemolytic uraemia, medullary cystic disease, interstitial nephritis, lead nephropathy, congenital lower urinary tract abnormalities, renal calculi, amyloid, and renal malignancy are prominent. There were five cases of lithium toxicity reported in the past year (one in 1996). See Figure 66.

Diabetic nephropathy has increased over the past five years, increasing from 16% in 1993, to 21% as a proportion of all new patients. The majority of cases (46%) were reported to be type II, 143 of 314, with 57 of 114 insulin requiring. There was a much higher racial incidence of diabetic nephropathy amongst non-Caucasoid patients, particularly Aboriginals, Maoris and Pacific Islanders, many of whom had type II diabetes.

For detail of age and primary renal disease see Appendix II.

New Zealand

Diabetic nephropathy (40%) was again the most common cause of renal failure; **glomerulonephritis** (25%) and **hypertension** (13%) were common. Diabetes type II represented 51% of diabetic nephropathy. See Figure 67.

Biopsy proof was lacking for 23% of glomerulonephritis cases. Focal sclerosing type (26%) represented 33% of biopsy proven glomerulonephritis. See Figure 68. Miscellaneous causes of primary renal disease are shown in Figure 69.

IgA Associated Mesangial Proliferative Glomerulonephritis

The incidence of cases of IgA GN with end stage renal failure (ESRF) may have been influenced over the past 5-10 years by the increasing number of Asian patients in whom the condition is reportedly quite common. Review of the figures for the last five years (1993-1997) shows some interesting variations in regard to age, gender and race. As expected, the majority were Caucasoid (80%), followed by Asian (15%), Aboriginal (2%) and Other (1%). See Figure 58.

IgA GN was the most common form of GN in Caucasoid patients (24%), and in Asian patients (38%).

While IgA is considered to be a predominantly male condition, this gender distribution shows some variation between the Caucasoid and Asian group. The preponderance of males amongst patients with the condition varied from Caucasoid (81%) to Asian (61%) to Aboriginal (50%). The modal age group tended to be younger in the Asian and Aboriginal racial groups (35-44 years) than in the Caucasoid group (45-54 years).

The racial variation may reflect a bias caused by the age and gender of Asians in Australia compared to Caucasoids. It may be due to the rather broad definition of Asian, which encompasses Chinese, Indians, Filipinos, Vietnamese and other Asian countries.

The condition seems most uncommon in the Maori and Pacific Islander groups.

Mesangio Capillary Glomerulonephritis (MCGN)

This form of GN, especially type II (dense intramembranous deposit) as a cause of ESRF appears to have declined in the last decade or more.

Over the last 20 years, the majority of both types (I and II) occurred in the first decade 1977-1986, despite the increased incident number of patients over the last decade. The median age has increased steadily which reflects the general shift in the age of the incident renal failure population. See Figure 59.

It has been suggested that persistent infection might favour the development of MCGN type I in the Aboriginal population. The real incidence may be concealed because many patients present end stage and do not have a renal biopsy performed.

There was a striking difference in the incidence of MCGN type II in the Caucasoid population in the ten years 1977-1986, compared to the last ten years, which remains to be explained.

Figure 58 — Australia and New Zealand

New Patients with IgA Positive Nephropathy 1-Jan-93 to 31-Dec-97

Gender and Race	Age Groups										Total
	00-04	05-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	
Australia											
Male											
Aboriginal	0	0	0	3	1	1	0	0	0	0	**5**
Asian	0	0	4	12	17	12	2	3	1	0	**51**
Caucasoid	0	0	12	57	77	92	69	50	7	0	**364**
Other	0	0	0	2	1	0	1	1	0	0	**5**
Total Male	**0**	**0**	**16**	**74**	**96**	**05**	**72**	**54**	**8**	**0**	**425**
Female											
Aboriginal	0	0	0	1	3	0	2	0	0	0	**6**
Asian	0	0	1	7	11	5	5	4	0	0	**33**
Caucasoid	0	0	9	12	21	21	16	4	1	0	**84**
Other	0	0	0	1	0	0	0	0	0	0	**1**
Total Female	**0**	**0**	**10**	**21**	**35**	**26**	**23**	**8**	**1**	**0**	**124**
Total	**0**	**0**	**26**	**95**	**131**	**131**	**95**	**62**	**9**	**0**	**549**
New Zealand											
Male											
Asian	0	0	0	1	1	0	0	0	0	0	**2**
Caucasoid	0	1	2	10	6	6	3	3	0	0	**31**
Maori	0	0	0	1	1	0	0	0	0	0	**2**
Other	0	0	0	0	1	0	0	0	0	0	**1**
Pacific Is.	0	0	0	0	0	1	1	0	0	0	**2**
Total Male	**0**	**1**	**2**	**12**	**9**	**7**	**4**	**3**	**0**	**0**	**38**
Female											
Asian	0	0	0	0	1	0	0	0	0	0	**1**
Caucasoid	0	0	2	2	3	2	2	0	0	0	**11**
Maori	0	0	0	1	0	1	0	0	0	0	**2**
Total Female	**0**	**0**	**2**	**3**	**4**	**3**	**2**	**0**	**0**	**0**	**14**
Total	**0**	**1**	**4**	**15**	**13**	**10**	**6**	**3**	**0**	**0**	**52**

Figure 59 — Australia

Aboriginal and Non Aboriginal New Patients Primary Renal Disease MCGN (Type 1 and 2)

Race	Type 1 or Type 2	Age Groups								Total
		00-04	05-14	15-19	20-54	55-64	65-74	75-84	85-94	
1-Jan-77 to 31-Dec-81										
Aboriginal	Type 2	0	0	0	1	0	0	0	0	**1**
Non Aboriginal	Type 1	0	2	2	40	7	0	1	0	**52**
	Type 2	0	3	4	7	1	0	0	0	**15**
Total		**0**	**5**	**6**	**48**	**8**	**0**	**1**	**0**	**68**
1-Jan-82 to 31-Dec-86										
Non Aboriginal	Type 1	0	1	2	39	10	2	0	0	**54**
	Type 2	0	3	4	16	1	0	0	0	**24**
Total		**0**	**4**	**6**	**55**	**11**	**2**	**0**	**0**	**78**
1-Jan-87 to 31-Dec-91										
Aboriginal	Type 1	0	0	0	9	0	0	0	0	**9**
Non Aboriginal	Type 2	1	1	4	46	13	8	0	0	**73**
	Type 2	0	0	0	8	1	0	0	0	**9**
Total		**1**	**1**	**4**	**63**	**14**	**8**	**0**	**0**	**91**
1-Jan-92 to 31-Dec-97										
Aboriginal	Type 1	0	1	1	6	0	0	0	0	**8**
	Type 2	0	0	0	0	1	0	0	0	**1**
Non Aboriginal	Type 1	0	0	4	40	14	12	2	0	**72**
	Type 2	0	0	0	10	0	2	0	0	**12**
Total		**0**	**1**	**5**	**56**	**15**	**14**	**2**	**0**	**93**

Diabetic Nephropathy (Type I)

There has been a decline in the relative proportion of diabetic patients with type I disease receiving dialysis treatment. Is this due to reduced incidence of type I or increased type II? Is type I decreasing? Review of the last 20 years shows a steady increase in the number of type I patients compared to the age group population which may be a reflection of the change in attitude to the provision of supportive treatment to those with type I diabetes.

However, this notion is not supported by the observation that the incidence increased markedly in the last five years, whereas the changes in attitude to diabetes were seen more than 10 years ago. See Figure 60.

For the purposes of this discussion, type I has been limited to the age group 20-54 years, and to Caucasoid patients. See Figure 61.

It should be stated that most cases of type I diabetic nephropathy have not been diagnosed by renal biopsy, which obviously reduces the integrity of the data and the conclusions. See Figure 62.

Figure 60 **Australia**

Caucasoid New Patients
Primary Renal Disease Type 1 Diabetic Nephropathy

Diabetes Type 1	Age Groups								Total
	00-04	05-14	15-19	20-54	55-64	65-74	75-84	85-94	
1-Jan-77 to 31-Dec-81	0	0	0	95	0	0	0	0	**95**
1-Jan-82 to 31-Dec-86	0	0	0	146	18	0	0	0	**164**
1-Jan-87 to 31-Dec-91	0	0	0	176	55	16	0	0	**247**
1-Jan-92 to 31-Dec-97	0	0	0	299	42	19	1	0	**361**

Figure 61 **Australia**

Caucasoid New Patients Age Group 20-54 years
Incidence of Diabetic Type 1 Nephropathy

	1-Jan-77 to 31-Dec-81	1-Jan-82 to 31-Dec-86	1-Jan-87 to 31-Dec-91	1-Jan-92 to 31-FDec-97
Per Million age group	13	20	20	33
Median age	35	38	44	41

Figure 62 **Australia and New Zealand**

Biopsy of New Patients with Diabetic Nephropathy 1-Apr-97 to 31-Mar-98

Biopsy	Qld	NSW/ACT	Vic.	Tas.	SA	NT	WA	Aust.	N.Z.
Diabetes Type 1									
No	6	18	11	0	5	2	5	**47**	**18**
Yes	2	4	5	0	2	1	0	**14**	**2**
Total	**8**	**22**	**16**	**0**	**7**	**3**	**5**	**61**	**20**
Diabetes Type 2 Insulin Requiring									
No	16	28	22	3	4	1	8	**82**	**44**
Yes	0		7	13	2	2	0	**24**	**1**
Total	**16**	**35**	**35**	**5**	**6**	**1**	**8**	**106**	**45**
Diabetes Type 2 Non Insulin Requ.									
No	16	23	16	1	8	11	30	**105**	**62**
Yes	6	7	6	1	2	5	8	**35**	**3**
Total	**22**	**30**	**22**	**2**	**10**	**16**	**38**	**140**	**65**

Integrated Survival (age 20-54 years)

Integrated treatment survival assessment of type I diabetic nephropathy patients in the last 20 years shows a marked (statistically significant) improvement in the last five year period (1992-1996). The median survival expectation was four years until the last five years when it rose to more than six years. Careful review is required of causes such as any change in treatment practices or the condition of type I patients in the last five years compared to the previous 15 years which might explain the improvement in survival. See Figure 63.

Dialysis Treatment Method

The method of dialysis treatment of type I diabetic nephropathy patients alive 90 days from initial treatment has changed compared to 10 years ago when a large majority were receiving peritoneal dialysis treatment. In the last two years, slightly more than half were receiving peritoneal dialysis treatment. Does this reflect a change in preferred management? Is it a lack of access to peritoneal dialysis? Is it a change in the patient's systemic disease pattern?

Figure 63 **Australia**

Integrated Survival of Caucasoid New Patients Type 1 Diabetic Nephropathy Age 20-54 years

Diabetes Type 1	No. of Pts	3 Years(%)	Median(Yrs)	P Value
1-Jan-77 to 31-Dec-81	95	55%	3.90	.007
1-Jan-82 to 31-Dec-86	164	62%	3.95	.0542
1-Jan-87 to 31-Dec-91	247	53%	3.37	.0003
1-Jan-92 to 31-Dec-97	361	70%	>6.0	-

P values shown, are the statistical significance of this range of years compared to the 1992-1997 group.

Figure 64 Australia

Primary Renal Disease 1993 - 1997

Primary Renal Disease	1993	1994	1995	1996	1997
Glomerulonephritis	33% (380)	35% (458)	35% (482)	34% (480)	34% (496)
Analgesic Nephropathy	11% (124)	7% (96)	7% (95)	7% (96)	5% (76)
Polycystic Kidney Disease	7% (89)	7% (89)	8% (117)	7% (97)	6% (86)
Reflux Nephropathy	6% (69)	6% (76)	4% (62)	4% (63)	6% (82)
Hypertension	9% (105)	10% (137)	9% (118)	12% (177)	12% (173)
Diabetic Nephropathy	16% (181)	17% (230)	20% (277)	19% (275)	21% (314)
Miscellaneous	11% (130)	10% (132)	11% (155)	11% (151)	10% (147)
Uncertain Diagnosis	7% (82)	8% (98)	6% (81)	6% (92)	6% (94)
Total	**100% (1160)**	**100% (1316)**	**100% (1387)**	**100% (1431)**	**100% (1468)**

( ) Number of Patients

Figure 65 Australia

Types of Glomerulonephritis 1-Jan-97 to 31-Dec-97 (496 patients)

No Biopsy	26% (128)	Goodpasture's Syndrome	1% (7)
Focal Sclerosing	14% (68)	Anti GBM (no haemoptysis)	<1% (1)
MCGN - Type I	3% (14)	Systemic Lupus	4% (22)
Membranous GN	3% (17)	Henoch-Schonlein Purpura	1% (7)
Rapidly Progressive GN	3% (14)	Wegener's Granulomatosis	1% (7)
Mesangioproliferative IgA +	24% (119)	Microscopic Polyarteritis	2% (8)
Mesangioproliferative IgA -	2% (11)	Scleroderma	2% (8)
Mesangioproliferative No I.F.	1% (3)	GN Other	1% (6)
Focal and Segmental Proliferative GN	3% (16)	Familial GN (including Alports)	2% (12)
Advanced GN (end-stage type)	6% (28)		

Figure 66 Australia

Miscellaneous Causes of Primary Renal Disease 1-Jan-97 to 31-Dec-97 (147 patients)

Interstitial Nephritis	19	Calculi	8
Lithium Toxicity	5	Medullary Cystic Disease	8
Lead Nephropathy	4	Cystinosis	3
Renal Tuberculosis	2	Gout	3
Cyclosporin Nephrotoxicity	1	Nephrocalcinosis	1
Fabry's Disease	1		
Hepato-Renal Syndrome	1	Amyloid	12
Hyperkalaemia (Bartters Syndrome)	1	Congeniital Renal Hypoplasia and Dysplasia	4
Methyl Malonic Acidaemia	1	Congenital Finnish Nephrosis	1
Nail-Patella Syndrome	1	Drash Syndrome	1
Oxalosis	1	Juvenile Nephronophthisis	1
Glomerulonephritis (No Biopsy)	1	Light Chain Nephropathy - Benign	1
Obstructive Nephropathy	13		
Lower Urinary Tract Abnormalities	4	Multiple Myeloma	16
(1) Paraplegia-Ileal Conduit		Transitional Cell Carcinoma	7
(1) Pelvic Trauma - Urostomy		Renal Cell Carcinoma	4
(1) Prune Belly Syndrome			
(1) Urethral Stricture		Radiation Nephritis	1
Posterior Urethral Valves	3	Haemolytic Uraemic Syndrome	7
Spina Bifida or Myelomeningocoele	3	Cortical Necrosis	5
Neuropathic Bladder	2	Post Partum Nephropathy	1

Figure 67 **New Zealand**

Primary Renal Disease 1993 - 1997

Primary Renal Disease	1993	1994	1995	1996	1997
Glomerulonephritis	27% (62)	26% (64)	29% (82)	25% (72)	25% (78)
Analgesic Nephropathy	1% (1)	1% (3)	0 (0)	1% (1)	0 (0)
Polycystic Kidney Disease	7% (16)	4% (10)	7% (19)	7% (20)	5% (17)
Reflux Nephropathy	6% (15)	3% (7)	3% (9)	5% (15)	5% (15)
Hypertension	12% (28)	13% (32)	13% (36)	12% (35)	13% (40)
Diabetic Nephropathy	31% (72)	38% (94)	37% (107)	36% (103)	40% (126)
Miscellaneous	11% (26)	11% (27)	8% (24)	9% (27)	9% (30)
Uncertain Diagnosis	5% (12)	4% (11)	3% (10)	5% (14)	3% (12)
Total	**100% (232)**	**100% (248)**	**100% (287)**	**100% (287)**	**100% (318)**

( ) Number of Patients

Figure 68 **New Zealand**

Types of Glomerulonephritis 1-Jan-97 to 31-Dec-97 (78 patients)

No Biopsy	23% (18)	Focal and Segmental Proliferative GN	1% (1)
Focal Sclerosing	26% (20)	Advanced GN (end-stage type)	3% (2)
MCGN - Type I	5% (4)	Goodpasture's Syndrome	1% (1)
Membranous GN	15% (12)	Anti GBM (no haemoptysis)	3% (2)
Rapidly Progressive	4% (3)	Systemic Lupus	5% (4)
Mesangioproliferative IgA +	12% (9)	Wegener's Granulomatosis	1% (1)
Mesangioproliferative No I.F.	1% (1)		

Figure 69 **New Zealand**

Miscellaneous Causes of Primary Renal Disease 1-Jan-97 to 31-Dec-97 (30 patients)

Calculi	4
Cortical Necrosis	3
Amyloid	2
Cyclosporin Nephrotoxicity	2
Posterior Urethral Valves	2
Renal Cell Carcinoma	2
Spina Bifida or Myelomeningocoele	2
Ureteric Obstructive Nephropathy	2
Bardet-Biedl Syndrome	1
Cystinosis	1
Interstitial Nephritis	1
Lithium Toxicity	1
Loss Single Kidney (Trauma, Surgery)	1
Myeloma	1
Neuropathic Bladder	1
Non-Obstructed Dilated Bladder and Ureters (Megacystitis-Megaureter)	1
Obstructive Nephropathy	1
Oxalosis	1
Post Partum Nephropathy	1

Figure 70 **Australia**

Analgesic Nephropathy 1990 - 1997

Number of New Patients

State	1990	1991	1992	1993	1994	1995	1996	1997
Queensland	21	25	22	34	20	24	17	23
New South Wales/ACT	54	71	61	71	65	56	68	41
Victoria	8	8	6	10	5	4	5	6
Tasmania	4	0	0	0	1	0	0	0
South Australia	10	11	7	5	4	3	0	1
Northern Territory	1	0	0	0	0	1	2	0
Western Australia	6	4	4	4	1	7	4	5
Australia	**104**	**119**	**100**	**124**	**96**	**95**	**96**	**76**

Percentage of New Patients

State	1990	1991	1992	1993	1994	1995	1996	1997
Queensland	13%	16%	12%	17%	9%	10%	7%	9%
New South Wales/ACT	16%	19%	14%	16%	14%	11%	12%	8%
Victoria	3%	3%	2%	4%	2%	1%	1%	2%
Tasmania	15%	0%	0%	0%	4%	0%	0%	0%
South Australia	10%	12%	8%	7%	4%	3%	0%	1%
Northern Territory	5%	0%	0%	0%	0%	3%	4%	0%
Western Australia	8%	5%	4%	4%	1%	5%	3%	4%
Australia	**11%**	**12%**	**9%**	**11%**	**7%**	**7%**	**7%**	**5%**

Patients per million Population

State	1990	1991	1992	1993	1994	1995	1996	1997
Queensland	7.2	8.4	7.2	10.9	6.2	7.3	5.0	6.7
New South Wales/ACT	8.8	11.4	9.7	11.2	10.2	8.7	10.4	6.2
Victoria	1.8	1.8	1.3	2.2	1.1	0.8	1.1	1.3
Tasmania	8.7	0	0	0	2.1	0	0	0
South Australia	6.9	7.5	4.7	3.4	2.7	2.0	0	0.6
Northern Territory	6.3	0	0	0	0	5.7	11.2	0
Western Australia	3.6	2.4	2.4	2.3	0.5	4.0	2.2	2.7
Australia	**6.0**	**6.8**	**5.7**	**7.0**	**5.3**	**5.2**	**5.2**	**4.1**

Figure 71 **Australia**

Analgesic Nephropathy 1991 - 1997

	1991	1992	1993	1994	1995	1996	1997
Analgesic	119 (7)	100 (6)	124 (7)	96 (5)	95 (5)	96 (5)	76 (4)
Non-Analgesic	862 (50)	986 (56)	1036 (59)	1220 (69)	1292 (72)	1335 (73)	1392 (75)
Total	**981 (57)**	**1086 (62)**	**1160 (66)**	**1316 (74)**	**1387 (77)**	**1431 (78)**	**1468 (79)**

Australian States 1997

	Qld	NSW/ACT	Vic.	Tas.	SA	NT	WA
Analgesic	23 (7)	41 (6)	6 (1)	0 (0)	1 (<1)	0 (0)	5 (3)
Non-Analgesic	245 (72)	479 (73)	351 (77)	30 (63)	95 (64)	56 (299)	136 (75)
Total	**268 (79)**	**520 (79)**	**357 (78)**	**30 (63)**	**96 (65)**	**56 (299)**	**141 (78)**

( ) Per million population in each State

Figure 72

Australia

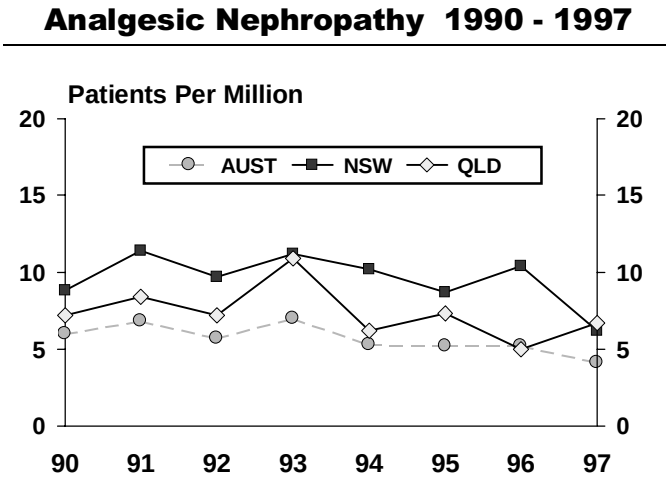

Figure 73