CHAPTER 11

PAEDIATRIC REPORT

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This year the paediatric report has a focus on:

Dialysis adequacy,
Technique survivals,
Peritonitis and
Anaemia management, as well as an overview of frequency, causes and treatment for children and adolescents with ESKD.

Transplantation among paediatric patients was described in the 2005 Report.

INCIDENCE AND PREVALENCE OF ESKD IN CHILDREN AND ADOLESCENTS 1980-2006

GENERAL OVERVIEW

As shown in Figure 11.1, there is no long term trend in the incidence of children and adolescents developing ESKD and being treated with renal replacement therapy, although there are fluctuations from year-to-year.

Prevalent numbers of treated ESKD have gradually increased across all age groups reflecting improved survival through increased duration of ESKD (Figure 11.2).

Figure 11.1

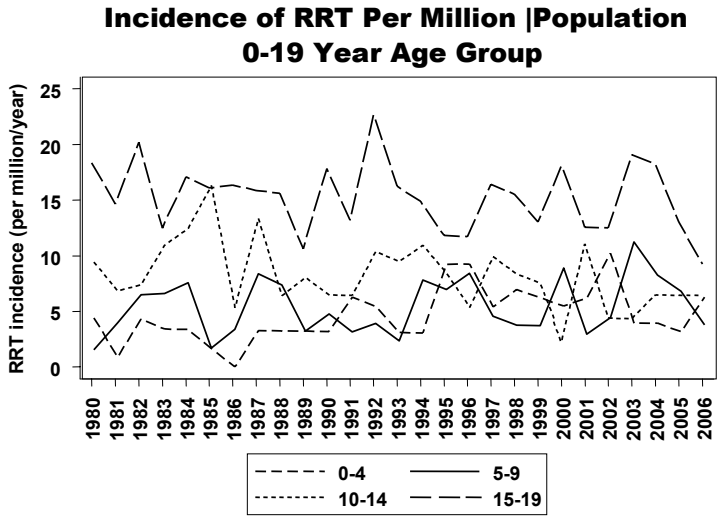
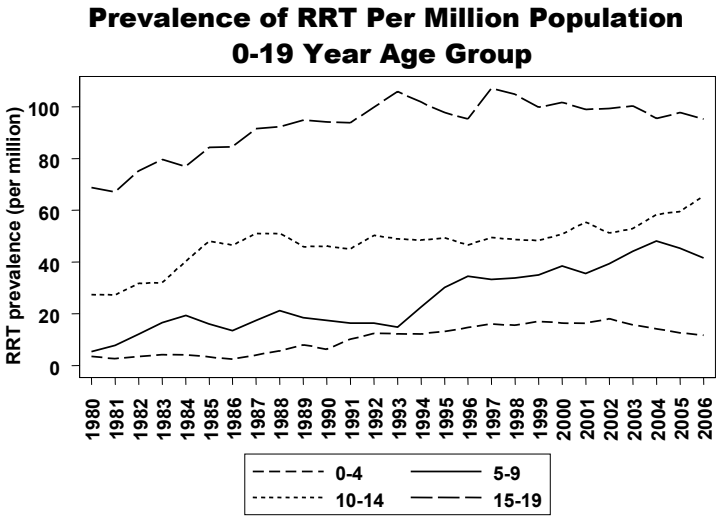


Figure 11.2



CAUSES OF ESKD IN CHILDREN AND ADOLESCENTS 2001 - 2006

Overall, glomerulonephritis remains the most common cause of ESKD among children and adolescents (32%) but causes vary significantly with age. In young children, hypoplasia/dysplasia is the most common cause, while reflux nephropathy is a common cause of ESKD in adolescents.

Figure 11.3

Causes of End Stage Kidney Disease
In Children and Adolescents 2001 - 2006

Primary Renal Disease	Age Groups (Years)				Total
	0-4	5-9	10-14	15-19	
Glomerulonephritis	4 (8%)	14 (23%)	21 (29%)	69 (42%)	**108 (31%)**
Familial Glomerulonephritis	-	-	2 (3%)	8 (5%)	**10 (3%)**
Reflux Nephropathy	1 (2%)	2 (3%)	3 (4%)	32 (19%)	**38 (11%)**
Polycystic Kidney Disease	1 (2%)	3 (5%)	3 (4%)	-	**7 (2%)**
Medullary Cystic Disease	1 (2%)	3 (5%)	5 (7%)	8 (5%)	**17 (5%)**
Posterior Urethral Valve	12 (23%)	7 (11%)	6 (8%)	8 (5%)	**33 (9%)**
Haemolytic Uraemic Syndrome	1 (2%)	2 (3%)	1 (1%)	2 (1%)	**6 (2%)**
Hypoplasia/ Dysplasia	16 (30%)	12 (19%)	13 (18%)	2 (1%)	**43 (12%)**
Diabetes	-	-	-	1 (>1%)	**1 (>1%)**
Cortical Necrosis	2 (4%)	2 (3%)	3 (4%)	3 (2%)	**10 (3%)**
Interstitial Nephritis	-	1 (2%)	-	6 (4%)	**7 (2%)**
Cystinosis	-	3 (5%)	3 (4%)	-	**6 (2%)**
Uncertain	-	1 (2%)	3 (4%)	6 (4%)	**10 (3%)**
Miscellaneous/Other	15 (28%)	12 (19%)	10 (14%)	20 (12%)	**57 (16%)**
Total	**53 (100%)**	**62 (100%)**	**73 (100%)**	**165**	**353 (100%)**

MODALITY OF TREATMENT 2001 - 2006

The modality of the first renal replacement treatment is shown in Figure 11.4. Over time, the proportion with a pre-emptive transplant has increased. There remains an excess of haemodialysis compared to peritoneal dialysis among the remainder.

Figure 11.4

Modality of Initial Renal Replacement Therapy
By Year of First Treatment, all Australia and New Zealand

Current Treatment	Year						
	2001	2002	2003	2004	2005	2006	Total
Haemodialysis	27 (47%)	24 (38%)	28 (41%)	31 (54%)	24 (44%)	22 (44%)	**156 (44%)**
Peritoneal Dialysis	23 (40%)	34 (53%)	29 (43%)	22 (38%)	18 (33%)	18 (36%)	**144 (41%)**
Transplant	8 (14%)	6 (9%)	11 (16%)	5 (9%)	13 (24%)	10 (20%)	**53 (15%)**
Total	**58 (100%)**	**64 (100%)**	**68 (100%)**	**58 (100%)**	**55 (100%)**	**50 (100%)**	**353 (100%)**

For prevalent patients a very different pattern is seen, with the great majority of children and adolescents with a functioning transplant. This reflects the relatively high rate of transplantation among children shown in Figure 11.5.

Figure 11.5

Modality of Treatment for all Patients in Australia and New Zealand < 20 Years of Age at 31-December

Current Treatment	Year						
	2001	2002	2003	2004	2005	2006	Total
Haemodialysis	56 (16%)	51 (14%)	43 (12%)	55 (15%)	42 (11%)	42 (11%)	**294 (13%)**
Peritoneal Dialysis	59 (17%)	71 (20%)	69 (19%)	52 (14%)	45 (12%)	45 (12%)	**340 (15%)**
Transplant	231 (67%)	238 (66%)	258 (70%)	260 (71%)	291 (77%)	291 (77%)	**1561 (71%)**
Total	**346 (100%)**	**360 (100%)**	**370 (100%)**	**367 (100%)**	**378 (100%)**	**378 (100%)**	**2195 (100%)**

DIALYSIS ADEQUACY DATA, TECHNIQUE SURVIVAL AND PERITONITIS

DATA PROVISION FOR DIALYSIS ADEQUACY

For haemodialysis patients, treating centres providing complete data on dialysis delivery (100% completion and almost complete data regarding dialysis adequacy (85%) completion in 2005-2006). This is a slight improvement on adequacy data provided in 2000-2004 (Figures 11.6 and 11.7).

The provision of data is poorer for peritoneal dialysis patients where active testing procedures are required. Overall, PET results were only reported for 40% of paediatric patients who received peritoneal dialysis in 2005-2006 (compared with 36% in 2000-2004), with similar proportions for residual renal function and for peritoneal Kt/V.

Reporting was greater for older than younger patients (in whom testing presents some logistic challenges). There are also country differences with reporting rates for PD data higher in New Zealand than Australia. This has not changed much since 2000-2004.

This situation contrasts with adequacy data for adults, which has good reporting rates in both countries.

Analyses of PD adequacy data for paediatric patients are therefore not presented. The paediatric working group continues to actively investigate this issue.

Figure 11.6

Percentage of Survey Questions Completed - Australia January 2000 - December 2004

	Age (Years)	% of HD Related Questions Answered			% of PD Related Questions Answered				
		HD Frequency	Hours	URR +	Weekly	PET	Clearance	KtV	Residual
Australia	**Total**	**100%**	**100%**	**79%**	**99%**	**23%**	**30%**	**33%**	**30%**
	0-9	100%	100%	82%	100%	9%	15%	18%	18%
	10-19	100%	100%	79%	99%	35%	42%	45%	40%
New Zealand	**Total**	**100%**	**100%**	**79%**	**100%**	**65%**	**63%**	**63%**	**58%**
	0-9	100%	100%	56%	100%	57%	57%	57%	51%
	10-19	100%	100%	80%	100%	68%	64%	64%	60%
Total		**100%**	**100%**	**79%**	**100%**	**36%**	**40%**	**42%**	**39%**

Figure 11.7

Percentage of Survey Questions Completed - Australia
January 2005 - December 2006

	Age (Years)	% of HD Related Questions Answered			% of PD Related Questions Answered				
		HD Frequency	Hours	URR	Weekly	PET	Clearance	KtV	Residual
Australia	**Total**	**100%**	**100%**	**85%**	**100%**	**22%**	**25%**	**29%**	**21%**
	0-9	100%	100%	67%	100%	6%	19%	19%	6%
	10-19	100%	100%	89%	100%	30%	28%	33%	28%
New Zealand	**Total**	**100%**	**100%**	**87%**	**100%**	**82%**	**66%**	**68%**	**61%**
	0-9	100%	100%	75%	100%	73%	64%	64%	45%
	10-19	100%	100%	88%	100%	85%	67%	70%	67%
Total		**100%**	**100%**	**85%**	**100%**	**40%**	**37%**	**40%**	**33%**

PERITONEAL DIALYSIS TECHNIQUE SURVIVAL

PD technique survival, censored for death, transplantation, loss to follow-up and recovery of renal function is presented in Figure 11.8 and Figure 11.9.

The numbers available for analysis after the first year fall significantly in each age group in both countries. Of the 176 patients, 57 (32%) were transplanted within one year of commencement of RRT. By two years a total of 85 (48%) of patients had received transplants.

Figure 11.8

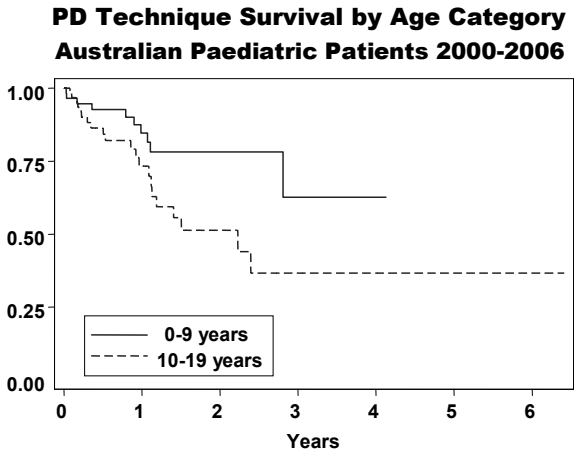
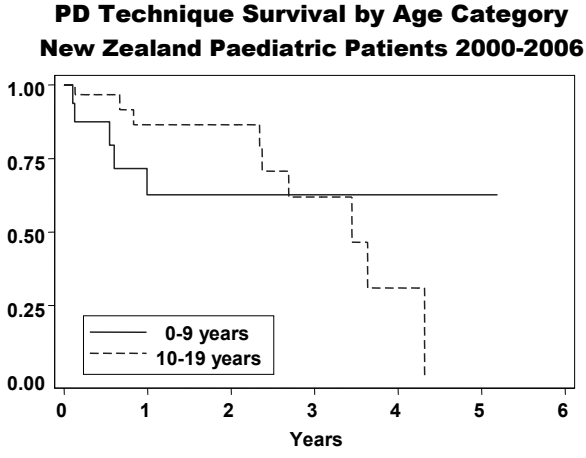


Figure 11.9



PERITONITIS

Although the number of cases is relatively small, the data for the recent five year period show that for children and adolescents on peritoneal dialysis, peritonitis is a common experience (29% in Australia and 51% in New Zealand).

As expected, it is more prevalent in the pre-school age group but still remarkably common in both countries amongst most age groups.

First peritonitis occurs sooner after commencing peritoneal dialysis among children aged 0-9 than for older children aged 10-19. In Australia, median time to first peritonitis is 9.6 months for children aged 0-9 and 22.2 months for children aged 10-19.

In New Zealand, median times are 4.2 and 29.6 months, respectively.

Figure 11.10

Patients Experiencing One or More Episodes of Peritonitis January 2002 - December 2006

Age Groups	Peritonitis		
	Yes	No	Total
Australia			
0-4 years	16	16	**32**
5-9 years	23	12	**35**
10-14 years	37	9	**46**
15-19 years	45	12	**57**
Total	**121**	**49**	**170**
New Zealand			
0-4 years	5	2	**7**
5-9 years	3	8	**11**
10-14 years	9	10	**19**
15-19 years	18	16	**34**
Total	**35**	**36**	**71**

PAEDIATRIC ANAEMIA MANAGEMENT

A cross-sectional survey of anaemia management was undertaken on all patients treated within Australian and New Zealand Paediatric Units at the ANZDATA census date of 31st December, 2006.

On that date, 227 patients were receiving care in Paediatric Units, with 44 (19%) being treated with either peritoneal dialysis or haemodialysis and 183 (81%) with functioning transplants.

Data on anaemia management in the transplant population are not included in this report.

The distribution of haemoglobin according to dialysis modality is shown in Figure 11.11.

Fifty seven percent of haemodialysis patients and 43% of peritoneal dialysis patients were below the currently recommended target haemoglobin concentration of 110 g/dl (p=0.39).

There was no significant relationship between age and haemoglobin level (Figure 11.12).

All of the dialysis patients were currently being treated with some form of Erythropoietin stimulating agent.

Figure 11.11

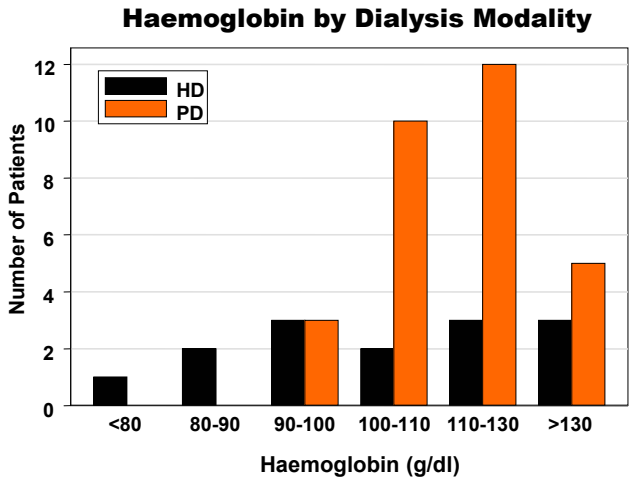


Figure 11.12