

CHAPTER 11

PAEDIATRIC REPORT

Steven McTaggart

Sean Kennedy

Stephen McDonald

Paul Henning

Hannah Dent



This year, as well as providing a summary of current trends in the frequency and causes of ESKD, the paediatric report will focus on dialysis delivery and adequacy, technique survival and biochemical outcomes, as well as an overview of frequency, causes and treatment for children and adolescents with ESKD.

INCIDENCE AND PREVALENCE OF ESKD IN CHILDREN AND ADOLESCENTS 1980 - 2008

GENERAL OVERVIEW

As shown in Figure 11.1, there is no clear 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

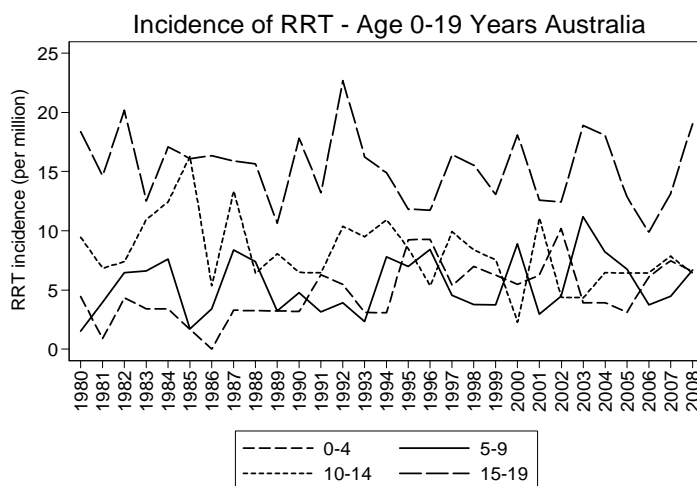
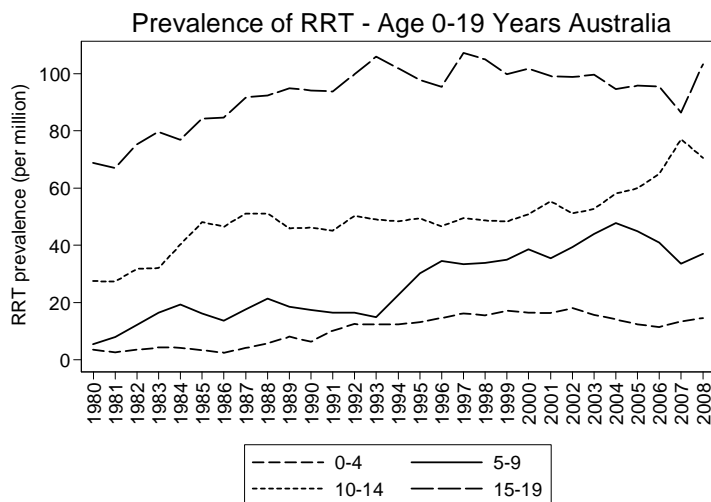


Figure 11.2



CAUSES OF ESKD IN CHILDREN AND ADOLESCENTS 2003 - 2008

Overall, glomerulonephritis remains the most common cause of ESKD in children and adolescents (29%) but causes vary significantly with age. In young children renal 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 2003 - 2008

Primary Renal Disease	Age Groups (Years)				Total
	0-4	5-9	10-14	15-19	
Glomerulonephritis	3 (5.5%)	13 (20%)	21 (29.5%)	71 (39.6%)	108 (29.2%)
Familial Glomerulonephritis	-	-	1 (1.4%)	6 (3.3%)	7 (1.9%)
Reflux Nephropathy	1 (1.8%)	2 (3%)	5 (7%)	33 (18.4%)	41 (11.22%)
Polycystic Kidney Disease	5 (9.2%)	3 (4.6%)	2 (2.8%)	-	10 (2.7%)
Medullary Cystic Disease	1 (1.8%)	2 (3%)	3 (4.2%)	9 (5%)	15 (4%)
Posterior Urethral Valve	9 (16.6%)	7 (10.7%)	8 (11.2%)	8 (4.4%)	32 (8.6%)
Haemolytic Uraemic Syndrome	4 (7.4%)	1 (1.5%)	2 (2.8%)	2 (1.1%)	9 (2.4%)
Hypoplasia / Dysplasia	13 (24%)	17 (26.1%)	12 (16.9%)	12 (6.7%)	54 (14.6%)
Diabetes	-	-	-	-	-
Cortical Necrosis	1 (1.8%)	2 (3%)	1(1.4%)	4 (2.2%)	8 (2.1%)
Interstitial Nephritis	-	1 (1.5%)	-	3 (1.6%)	4 (1.1%)
Cystinosis	-	3 (4.6%)	1 (1.4%)	-	4 (1.1%)
Uncertain	1 (1.8%)	1 (1.5%)	3 (4.2%)	11 (6.1%)	16 (4.3%)
Miscellaneous / Other	16 (29.6)	13 (20%)	12 (16.9%)	20 (11.1%)	61 (16.5%)
Total	54 (100%)	65 (100%)	71 (100%)	179 (100%)	369 (100%)

MODALITY OF TREATMENT 2003 - 2008

The modality of the first renal replacement treatment is shown in Figure 11.4. Although numbers are small and therefore fluctuate from year to year, around 16% of children and adolescents receive pre-emptive kidney transplants. Of the remainder, 45% commence renal replacement therapy with haemodialysis compared with 38% starting with peritoneal dialysis.

Figure 11.4

Modality of Initial Renal Replacement Therapy
By Year of First Treatment - Australia and New Zealand
< 20 Years of Age at First Treatment

Current Treatment	Year						Total
	2003	2004	2005	2006	2007	2008	
Haemodialysis	28 (41%)	31 (54%)	23 (43%)	23 (45%)	26 (43%)	35 (45%)	166 (45%)
Peritoneal Dialysis	29 (43%)	22 (38%)	18 (33%)	18 (35%)	26 (43%)	30 (39%)	143 (39%)
Transplant	11 (16%)	5 (9%)	13 (24%)	10 (20%)	9 (15%)	12 (16%)	60 (16%)
Total	68 (100%)	58 (100%)	54 (100%)	51 (100%)	61 (100%)	77 (100%)	355 (100%)



For prevalent patients (Figure 11.5), 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.

Figure 11.5

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

Current Treatment	Year						Total
	2003	2004	2005	2006	2007	2008	
Haemodialysis	43 (12%)	55 (15%)	46 (12%)	43 (11%)	44 (12%)	49 (12%)	280 (12%)
Peritoneal Dialysis	69 (19%)	52 (14%)	44 (12%)	45 (12%)	61 (16%)	71 (17%)	342 (15%)
Transplant	258 (70%)	260 (71%)	283 (76%)	291 (77%)	276 (72%)	289 (71%)	1647 (73%)
Total	370 (100%)	367 (100%)	373 (100%)	379 (100%)	381 (100%)	409 (100%)	2224 (100%)

DIALYSIS DELIVERY AND ADEQUACY

Figure 11.6

Mean Sessions per Week Among Haemodialysis Patients By Survey Period

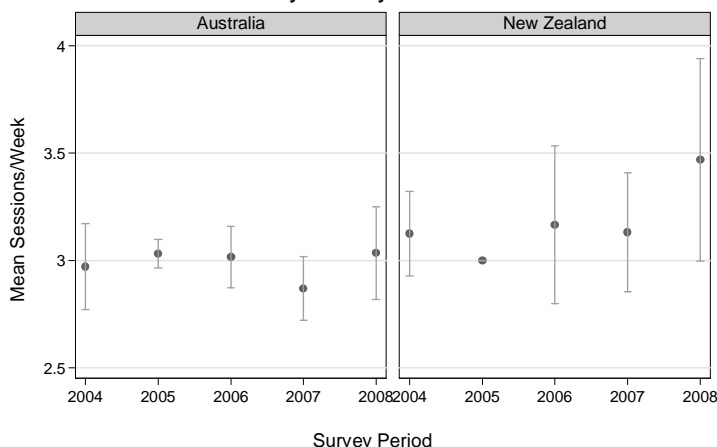
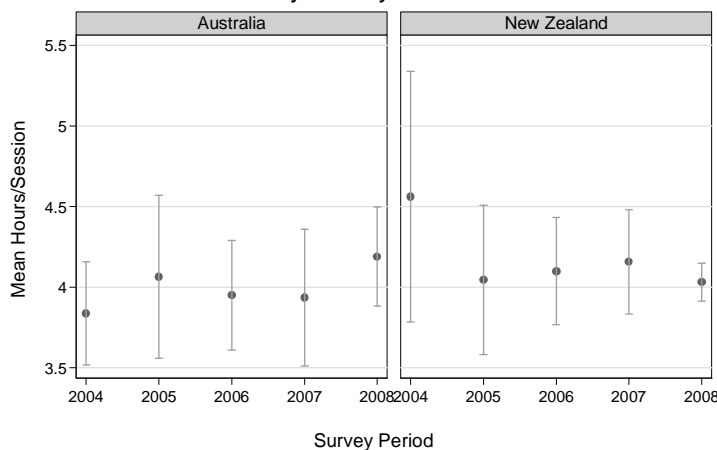


Figure 11.7

Mean Hours per Session Among Haemodialysis Patients By Survey Period



DIALYSIS DELIVERY AND ADEQUACY

HAEMOGLOBIN

Figure 11.8

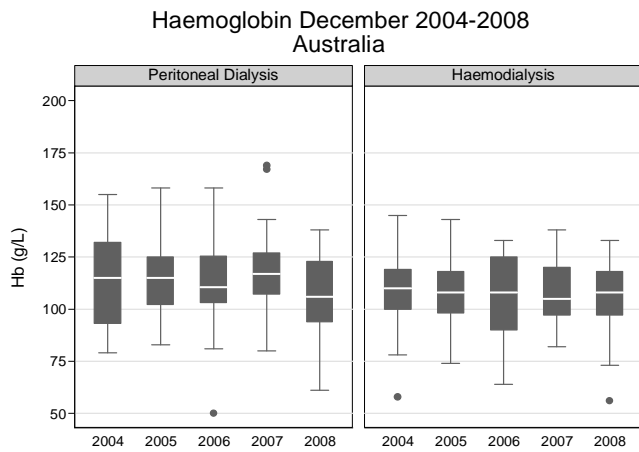
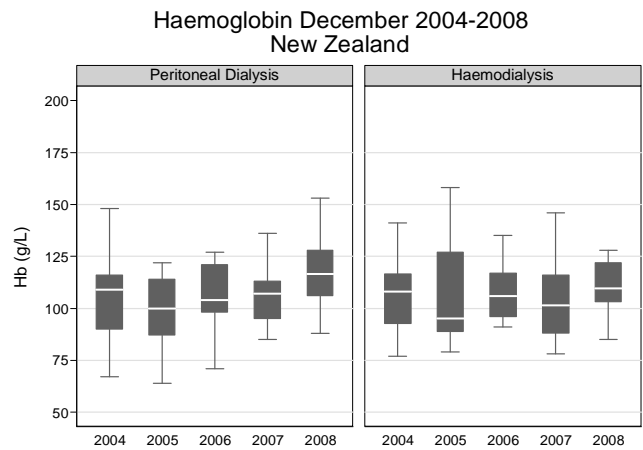


Figure 11.9



UREA REDUCTION RATIO (HD PATIENTS) KT/V (PD PATIENTS)

Figure 11.10

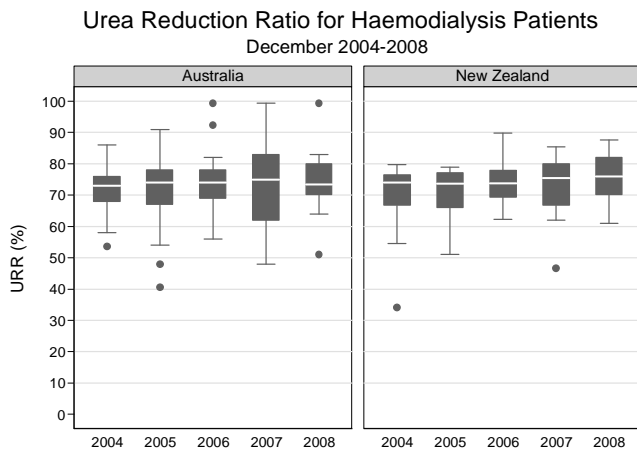
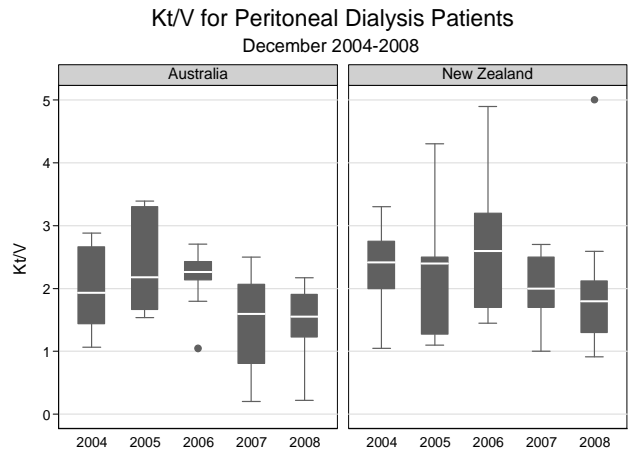


Figure 11.11





BIOCHEMICAL OUTCOMES

SERUM CALCIUM

Figure 11.12

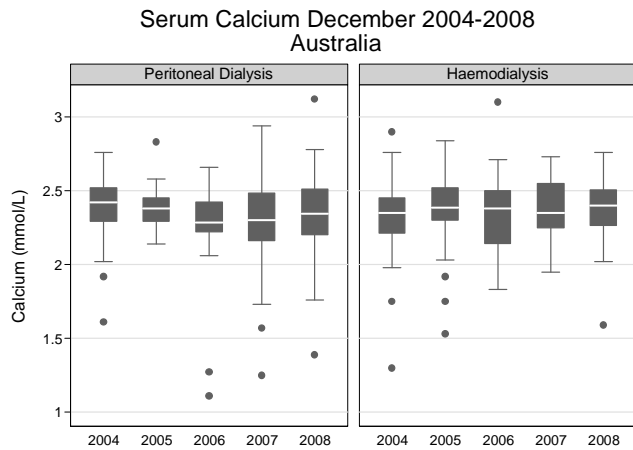
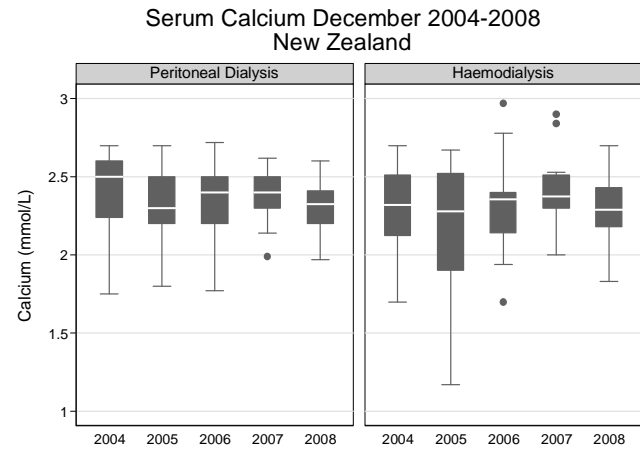


Figure 11.13



SERUM PHOSPHATE

Figure 11.14

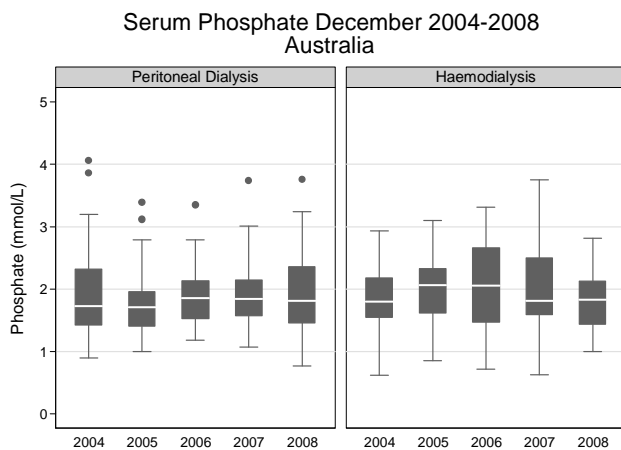
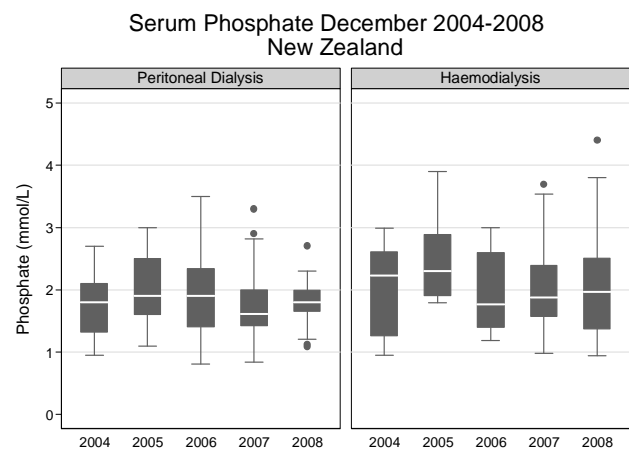


Figure 11.15



VASCULAR ACCESS

AT FIRST TREATMENT

Figure 11.16

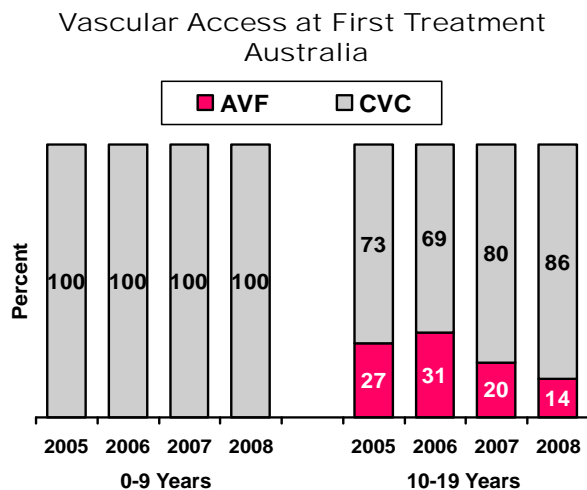
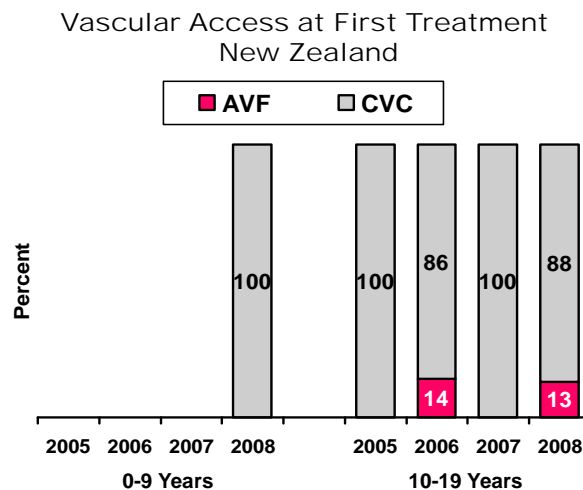


Figure 11.17



PREVALENT HAEMODIALYSIS ACCESS

Figure 11.18

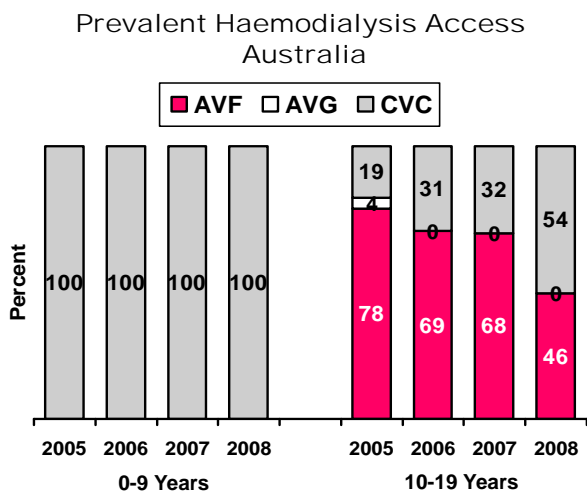
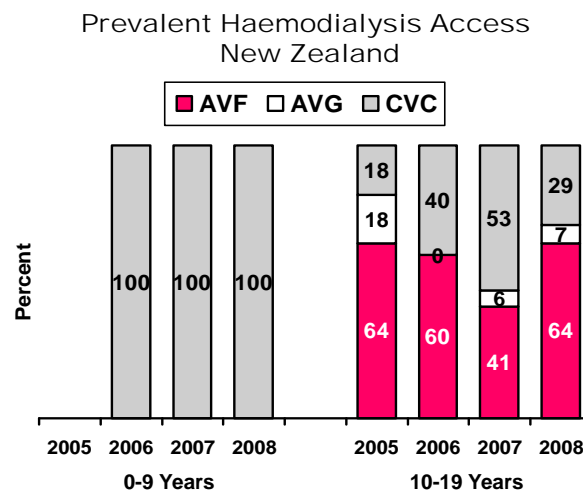


Figure 11.19





PD TECHNIQUE SURVIVAL BY AGE CATEGORY

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

The numbers available for analysis after the first year drop significantly in each age group in both countries, probably due to early transplantation. Of the 194 patients, 63 (32%) received a transplant within one year of commencement of RRT. By two years a total of 88 (45%) of patients had received transplants.

Figure 11.20

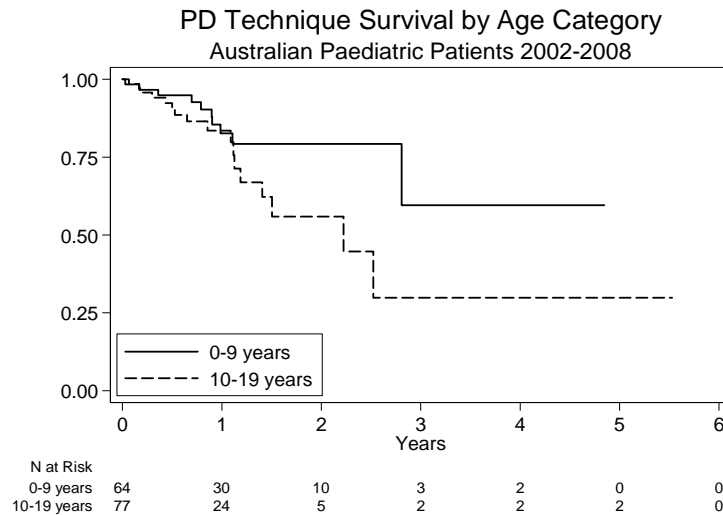


Figure 11.21

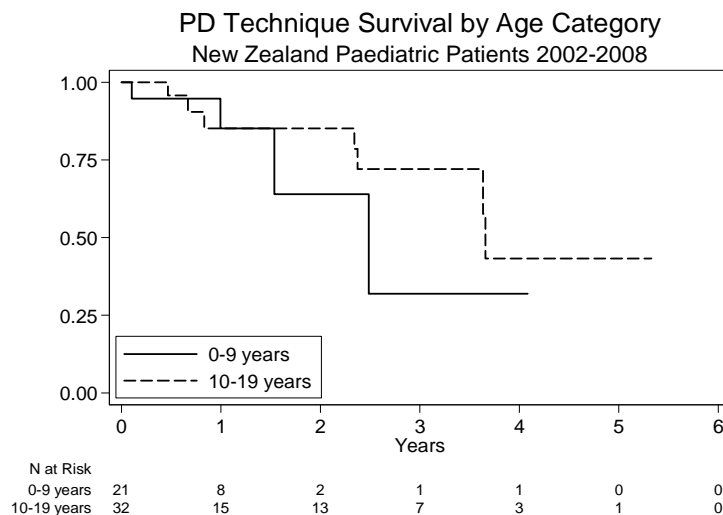


Figure 11.22

Use of PD Solutions 2007 - 2008				
Solutions	Australia		New Zealand	
	2007	2008	2007	2008
	(n = 43)	(n = 51)	(n = 17)	(n = 20)
Glucose	42 (98%)	48 (94%)	16 (94%)	19 (95%)
Iodextrin	8 (19%)	6 (12%)	1 (6%)	3 (15%)
Low GDP Lactate	4 (9%)	1 (2%)	5 (29%)	15 (75%)
Low GDP Bicarbonate	0 (0%)	2 (4%)	6 (35%)	2 (10%)