

KIDNEY DIALYSIS FOUNDATION

ANNUAL REPORT

PERITONEAL DIALYSIS PROGRAMME

2008

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EXECUTIVE SUMMARY

The Peritoneal Dialysis Centre of the Kidney Dialysis Foundation is located at the Ghim Moh Centre and the programme started on 1 July 2003. The dialysis service is contracted out to a dialysis provider and the current provider is Baxter Healthcare Pte Ltd.

This report covers medical data collated at the end of 2008.

Demographics: There were 102 patients on the PD programme as of 31 Dec 2008. Fourteen patients joined the programme during the year and one re-entered the programme. All the new patients were from the Singapore General Hospital.

The mean age of the prevalent 102 patients was 54 ± 11 years; 46 (45.1%) were male, 56 (54.9%) female; Chinese-77, Malay-18, Indian-7. Sixty-nine were on CAPD and 33 on APD. The major cause of end-stage renal failure was diabetic nephropathy making up 60.0% of the new patients and 39.2% of the existing patients. The mean age of entry into the programme was 57 ± 11.7 years.

Deaths and Withdrawals: There were 23 deaths and 7 withdrawals; 6 were transferred to haemodialysis and 1 received a transplant. The commonest cause was a myocardial infarction (39.1%) with infections (27.1%) being the second most common cause of death. The main cause of transfer to haemodialysis was peritonitis.

The death rate was 17.4% based on total number of patients in the year and the mean age at death was 63 ± 11 years. The overall 1-year patient survival was 91.4% and 3-year survival was 62.9%.

Hospitalisations: 53.8% of the patients were admitted in the year. The admission rate was 0.98 episodes per patient year or 13.75 days per patient year. The diabetic patients were more likely to be admitted (63.2% vs 41.1%) and had a higher rate of admission days per patient year (20.46 vs 5.14 in non-diabetic patients). PD related admissions accounted for 31% of all admissions.

Dialysis Parameters

Dialysis Adequacy: The total KT/V was 2.09 ± 0.41 with 74.6% of the patients meeting the minimum target of 1.7.

Peritonitis Rate: The peritonitis rate was 1 in 63.2 patient months.

Anaemia: The mean haemoglobin was 10.6 ± 1.9 g/dl with 53% on erythropoietin.

Serum Albumin: The patients tended to have a low serum albumin level with a mean of 30.9 ± 4.3 g/L. More than half (52.4%) of the patients could not meet the lower limit of normal which is 37 g/L.

Lipid profiles: The mean LDL cholesterol was 2.9 ± 0.8 mmol/L and triglyceride of 2.3 ± 2.0 mmol/L. The mean HDL cholesterol level was 1.0 ± 0.4 mmol/L. 82.4% of the patients were on lipid-lowering agents.

Transplant Waiting List: 18.6% of the patients were on the National Transplant waiting list while another 62.7% were not medically eligible for transplantation.

PERITONEAL DIALYSIS PROGRAMME

STAFFING

Medical

The Medical Director (Peritoneal Dialysis) continues to review patients once in 6 months following their routine blood investigations. The patients also go for follow-up with their referring physicians in restructured hospitals every 6 months or less. Urgent medical cover has been arranged with family physicians working in the vicinity using the same clinics as those arranged for the hemodialysis patients.

Nursing

The PD programme is supervised by the Senior Executive, Patient Services, Ms Lay Kwee Chin, and assisted by Ms Theresa Soh, Patient Services Coordinator and Ms Joyce Lim, Nurse Clinician (resigned in May 2008). The centre is managed by a dialysis provider, Baxter Healthcare Pte Ltd and Nurse Manager Sheron Tan is the charge nurse assisted by Nurse Clinician Lim Kah Bee on doctor's clinic days.

DIETETICS

KDF provides a dietitian, Ms Lai Yi Shan, Lyvia, from Food and Nutrition Specialists Pte Ltd, to counsel patients. The patients were seen once every six months at the same time as their follow-up with the Medical Director.

PATIENT WELFARE

Patients continued to receive subsidies for their dialysis and erythropoietin on a case by case basis and were managed by Welfare Officer, Ms Rena Lee.

PATIENT POPULATION

There were 102 patients on the PD programme as of 31 December 2008. Fourteen new cases from the Singapore General Hospital (SGH) were accepted into the PD programme during the period of 1 Jan – 31 Dec 2008 and one re-entered the PD programme.

During the same period of 1 Jan – 31 Dec 2008, 30 patients exited the programme; there were 6 transfers to hemodialysis, 1 withdrawal (to China for transplant) and 23 deaths.

Fig 1: Patient Stock and Flow

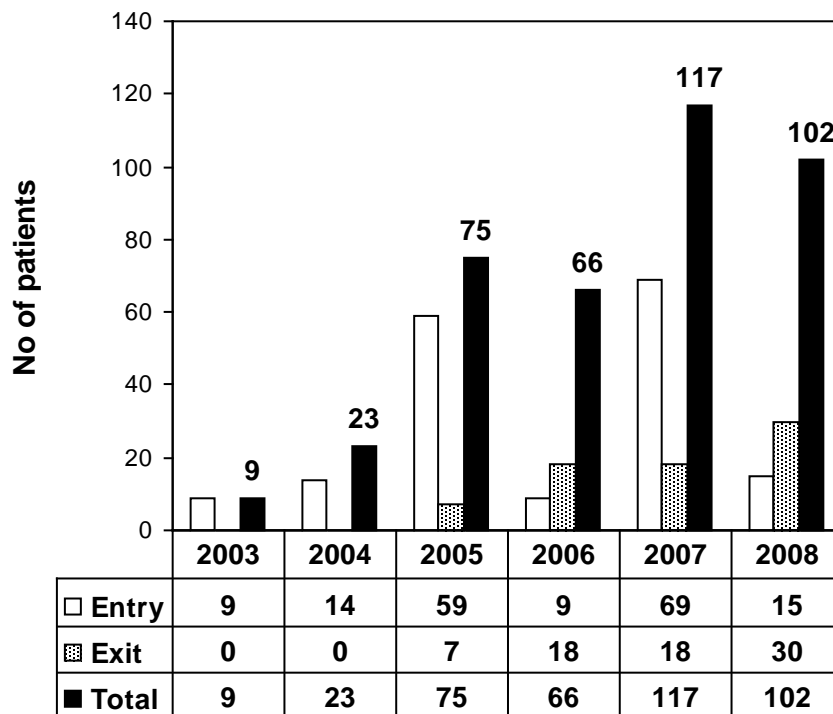


Table 1: Source of Referral

	2003	2004	2005	2006	2007	2008
SGH	7	12	22	2	68	15
NUH	2	2	35	6	0	0
Private / TTSH	0	0	2	1	1	0
Total Entries	9	14	59	9	69	15

Patient characteristics

The mean age of the existing 102 patients was 54 ± 10.7 years, with a predominance of females [Male: 46 (45.1%), Female: 56 (54.9%)]. This female predominance has been present through the years but the proportion has decreased. The ethnic distribution was similar to the general population. Sixty-nine patients were on CAPD and 33 on APD. The proportion of patients on APD has increased over the years and currently makes up 32.4% of the PD population. The main cause of end-stage renal failure in the PD programme remained diabetic nephropathy making up 60.0% of the new patients and 39.2% of the existing patients. The mean age of entry into the programme was 57 ± 11.7 years and this has remained fairly stable since 2005.

Figure 2: Modality of PD

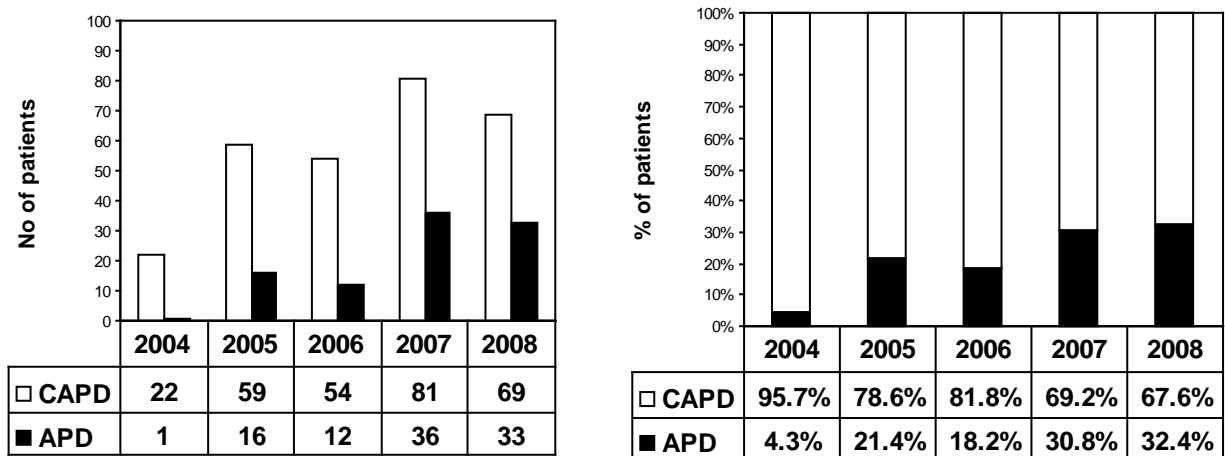


Table 2: Gender of new patients

	2003		2004		2005		2006		2007		2008	
	N	%	n	%	n	%	n	%	n	%	n	%
Male	1	11.1	3	21.4	31	52.5	6	66.7	40	58	5	33.3
Female	8	88.9	11	78.6	28	47.5	3	33.3	29	42	10	66.7
Total	9	100.0	14	100.0	59	100.0	9	100.0	69	100.0	15	100.0

Table 3: Gender of prevalent patients

	2003		2004		2005		2006		2007		2008	
	N	%	N	%	N	%	n	%	n	%	n	%
Male	1	11.1	4	17.4	27	36.0	27	40.9	57	48.7	46	45.1
Female	8	88.9	19	82.6	48	64.0	39	59.1	60	51.3	56	54.9
Total	9	100.0	23	100.0	75	100.0	66	100.0	117	100.0	102	100

Table 4: Ethnic distribution of new patients

	2003		2004		2005		2006		2007		2008	
	N	%	N	%	N	%	n	%	n	%	n	%
Chinese	5	56.0	8	57.0	41	69.5	7	77.8	59	85.5	12	80
Malay	2	22.0	6	43.0	17	28.8	1	11.1	7	10.1	1	6.7
Indian	2	22.0	0	0	1	1.7	1	11.1	2	2.9	2	13.3
Others	0	0	0	0	0	0	0	0	1	1.4	0	0
Total	9	100.0	14	100.0	59	100.0	9	100.0	69	100.0	15	100

Table 5: Ethnic distribution of prevalent patients

	2003		2004		2005		2006		2007		2008	
	N	%	N	%	N	%	n	%	n	%	n	%
Chinese	5	56.0	13	56.5	47	62.7	44	66.7	90	76.9	77	75.5
Malay	2	22.0	8	34.8	24	32.0	18	27.2	22	18.8	18	17.6
Indian	2	22.0	2	8.7	4	5.3	4	6.1	4	3.4	7	6.9
Others	0	0	0	0	0	0	0	0	1	0.9	0	0
Total	9	100.0	23	100.0	75	100.0	66	100.0	117	100.0	102	100

Table 6: Mean age of entry into programme

Year	2003	2004	2005	2006	2007	2008
Mean age (years)	46	49	59	59	56	57
SD	9.3	7.3	10.8	13.9	11.6	11.7

Table 7: Mean age of existing patients

Year	2003	2004	2005	2006	2007	2008
Mean age (years)	49	48	50	54	55	54
SD	9.0	8.1	9.5	11.3	11	10.7

Table 8: Etiology of end-stage renal disease in new patients

Etiology	2003		2004		2005		2006		2007		2008	
	N	%	n	%	N	%	N	%	n	%	n	%
Chronic glomerulonephritis (no biopsy)	2	22.0	2	14.3	10	17.0	1	11.0	19	27.5	4	30.8
IgA nephropathy	2	22.0	2	14.3	1	1.7	-	-	4	5.8	-	-
SLE	-	-	-	-	-	-	-	-	2	2.9	-	-
Focal sclerosing GN	-	-	1	7.1	-	-	-	-	1	1.4	-	-
Drug induced GN	-	-	-	-	1	1.7	-	-	-	-	-	-
Membranous GN	-	-	-	-	1	1.7	-	-	-	-	-	-
Diabetic nephropathy	2	22.0	6	42.9	34	57.6	7	78.0	33	47.8	9	60.0
PCKD	3	34.0	-	-	1	1.7	-	-	3	4.3	-	-
Renal calculi	-	-	1	7.1	-	-	-	-	-	-	-	-
Renovascular disease	-	-	-	-	2	3.4	-	-	-	-	-	-
TB Kidney	-	-	-	-	-	-	-	-	-	-	-	-
Others									5	7.2	2	13.13
Unknown	-	-	2	14.3	9	15.2	1	11.0	2	2.9	-	-
Total	9	100.0	14	100.0	59	100.0	9	100.0	69	100	15	100

Table 9: Etiology of end-stage renal disease in existing patients

Etiology	2003		2004		2005		2006		2007		2008	
	N	%	n	%	n	%	n	%	n	%	n	%
Chronic glomerulonephritis (no biopsy)	2	22.0	4	17.4	14	18.7	14	21.2	30	25.6	30	29.4
IgA nephropathy	2	22.0	4	17.4	5	6.7	5	7.5	9	7.7	8	7.8
SLE							1	1.5	2	1.7	2	2.0
Focal sclerosing GN	-	-	1	4.3	1	1.3	-	-	2	1.7	2	2.0
Drug induced GN	-	-	-	-	1	1.3	1	1.5	1	0.9	1	1.0
Diabetic nephropathy	2	22.0	8	34.8	37	49.4	37	56.3	53	45.3	40	39.2
PCKD	3	34.0	3	13.0	4	5.3	3	4.5	5	4.3	4	3.9
Renal calculi	-	-	1	4.3	1	1.3	1	1.5	1	0.9	1	1.0
Renovascular disease	-	-	-	-	2	2.7	2	3.0	-	-	-	-
TB Kidney							1	1.5	-	-	-	-
Others									5	4.3	6	5.9
Unknown	-	-	2	8.8	10	13.3	1	1.5	9	7.7	8	7.8
Total	9	100.0	23	100.0	75	100.0	66	100.0	117	100.0	102	100

COMORBIDITY

There were 51 (50.0%) patients with diabetes in the prevalent population in 2008.

DEATHS / TRANSFERS AND SURVIVAL ANALYSIS

There were 23 deaths and 7 withdrawals (transfer to hemodialysis or transplanted) in 2008. The causes of death are shown in Table 10 and the commonest cause was a cardiac death (either acute myocardial infarction (9) or other cardiac cause (2)). Infections were the second most common cause of death. When compared to previous years, it appears that there were more cardiac deaths in 2008 and the reason is not clear.

The reasons for withdrawal from PD are shown in Table 11. As in previous years, the main cause of transfer to hemodialysis was peritonitis. One patient received a renal transplant in China.

The death rate was 17.4% based on total number of patients in the year as compared to 9.6% in 2007 and 14.3% in 2006. The mean age at death in 2008 was 63 ± 11 years.

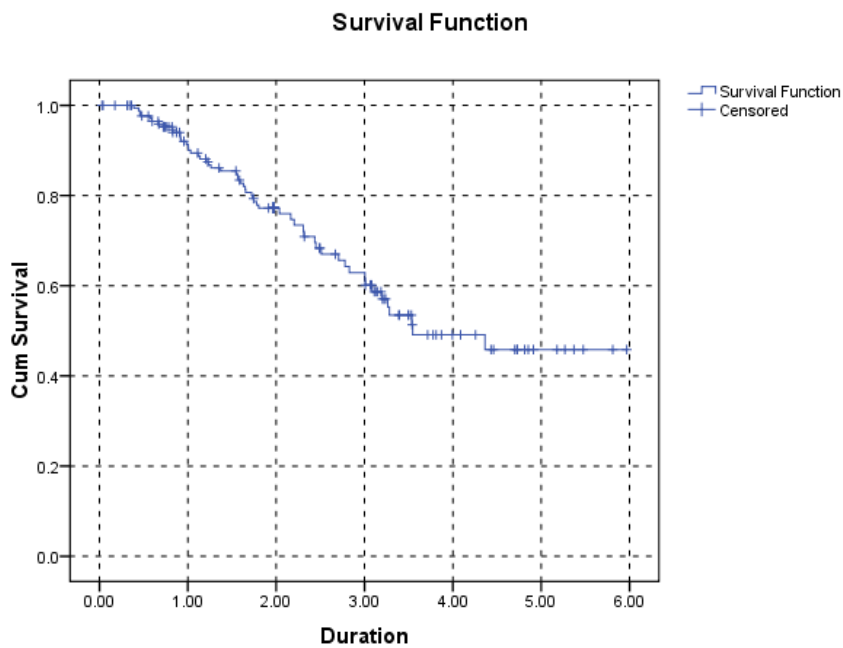
Table 10: Cause of Death

Cause of Death	2005		2006		2007		2008	
	n	%	n	%	N	%	n	%
Acute Myocardial Infarction	1	25.0	1	8.3	1	7.6	9	39.1
Other Cardiac	-	-	-	-	-	-	2	8.9
Cerebrovascular Accident	-	-	2	16.8	-	-	-	-
Infections	1	25.0	5	41.7	4	30.7	5	21.7
Liver Failure	-	-	1	8.3	-	-	-	-
Malignancy	1	25.0	1	8.3	-	-	1	4.3
Accidental	-	-	1	8.3	-	-	-	-
Bleeding from Gastro-intestinal Tract	-	-	-	-	1	7.6	-	-
Died at Home	1	25.0	1	8.3	3	23.4	5	21.7
Others	-	-	-	-	4	30.7	1	4.3
Total	4	100.0	12	100.0	13	100.0	23	100
Death Rate	4.8%		14.3%		9.6%		17.4%	

Table 11: Reason of Withdrawal

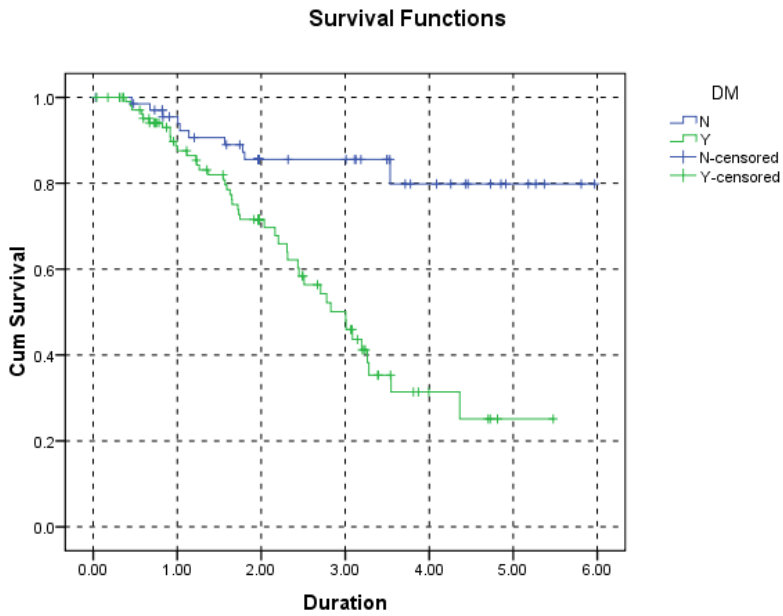
Reason of Withdrawal	2005		2006		2007		2008	
	n	%	n	%	n	%	n	%
PD related Infection	1	33.3	1	16.6	5	100.0	5	71.4
Technical Reason	2	66.7	2	33.4	-	-	-	-
Elective transfer to HD	-	-	-	-	-	-	1	14.3
Transplant	-	-	2	33.4	-	-	1	14.3
Unknown	-	-	1	16.6	-	-	-	-
Total	3	100.0	6	100.0	5	100.0	7	100

Fig 3: Kaplan-Meier Survival Curves for PD patients (2003-2008)



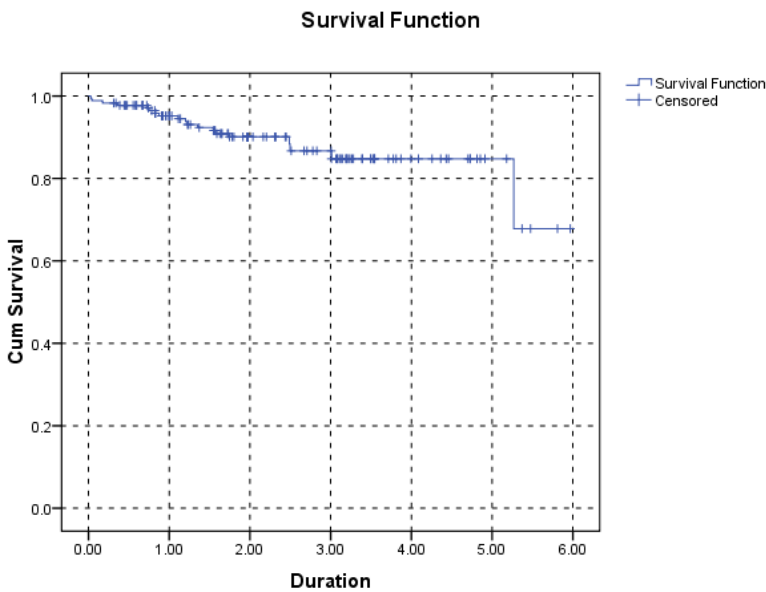
The 1 year survival was 91.4% and the 3 year survival was 62.9%.

Fig 4: Kaplan-Meier Survival Curves for PD patients with and without Diabetes (2003-2008)



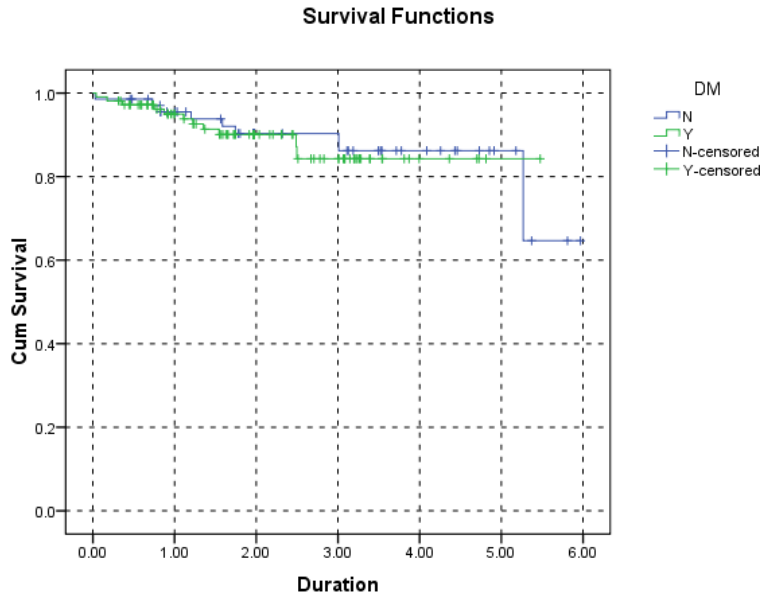
The 1 year and 3 year survivals in non-diabetic patients was better than those who were diabetic (1 year survival: Diabetes 88.7% versus Non-Diabetes 95.5%, 3 year survival: Diabetes 50.1% versus Non-Diabetes 85.5%).

Fig 5: Kaplan-Meier Technique Survival Curves for PD patients (2003-2008)



The 1 year technique survival was 95.2% and the 3 year survival was 86.7%.

Fig 6: Kaplan-Meier Technique Survival Curves for PD patients with and without Diabetes (2003-2008)



The 1 year and 3 year technique survivals were similar in both diabetics and non-diabetics. (1 year survival: Diabetes 95.0% versus Non-Diabetes 95.5%, 3 year survival: Diabetes 84.3% versus Non-Diabetes 90.3%).

HOSPITALISATIONS

There were 117 admissions in 71 patients and 53.8% of the patients were admitted in the year. Thirty (42.2%) of the 71 patients admitted had at least two admissions with 12 patients (16.9%) having 3 or more admissions in the year and accounting for 536 admission days (32.8% of total admission days). The admission rate was 0.98 episodes per patient year or 13.75 days per patient year. The diabetic patients were more likely to be admitted (63.2% vs 41.1%) and had a higher rate of admission days per patient year (20.46 vs 5.14 in non-diabetic patients). The rates (as reflected by days per patient year) for all forms of admissions were higher in the diabetic compared to the non-diabetic patients. PD related admissions accounted for 31% of all admissions.

When compared to the previous year (2007), the rates of hospitalization were not different although there appeared to be a reduction in the percentage of patients admitted for PD related infections in the diabetic patients (13.9% vs 30%).

Table 12: Hospitalisations

HOSPITALISATION	ALL		DM		NON-DM	
	2007	2008	2007	2008	2007	2008
Number of patients ever in prog	68	132	41	76	27	56
Total patient years	58.3	118.8	34.7	66.7	23.6	52.1
Number of patients ever admitted	39	71	27	48	12	23
Admission episodes	62	117	46	86	16	31
Admission days	922	1633	794	1365	128	268
Days hospitalized						
PD related – technical	24	78	9	78	15	0
- infection	322	244	271	180	51	64
Other Infections	145	377	143	348	2	29
Others	431	934	371	759	60	175
% patients ever admitted						
	57.4	53.8	65.9	63.2	44.4	41.1
Episodes per patient year						
	1.06	0.98	1.32	1.29	0.68	0.59
Days per patient year						
	15.81	13.75	22.9	20.46	5.42	5.14
Days per patient year						
PD related – technical	0.41	0.66	0.25	1.17	0.64	0.0
- infection	5.52	2.05	7.81	2.69	2.16	1.23
Other Infections	2.49	3.17	4.12	5.22	0.08	0.56
Others	7.39	7.86	10.69	11.38	2.54	3.36
% of admissions						
PD related - technical	4.4	4.3	4.0	5.8	5.6	0.0
- infections	26.6	15.4	30.0	13.9	16.6	19.4
Other Infections	14.6	23.1	18.0	26.7	5.6	12.9
Others	54.4	57.2	48.0	53.6	72.2	67.7

Hospitalisations during the period Jan-Dec 2008 were analysed and expressed as days hospitalized per patient year of dialysis programme.

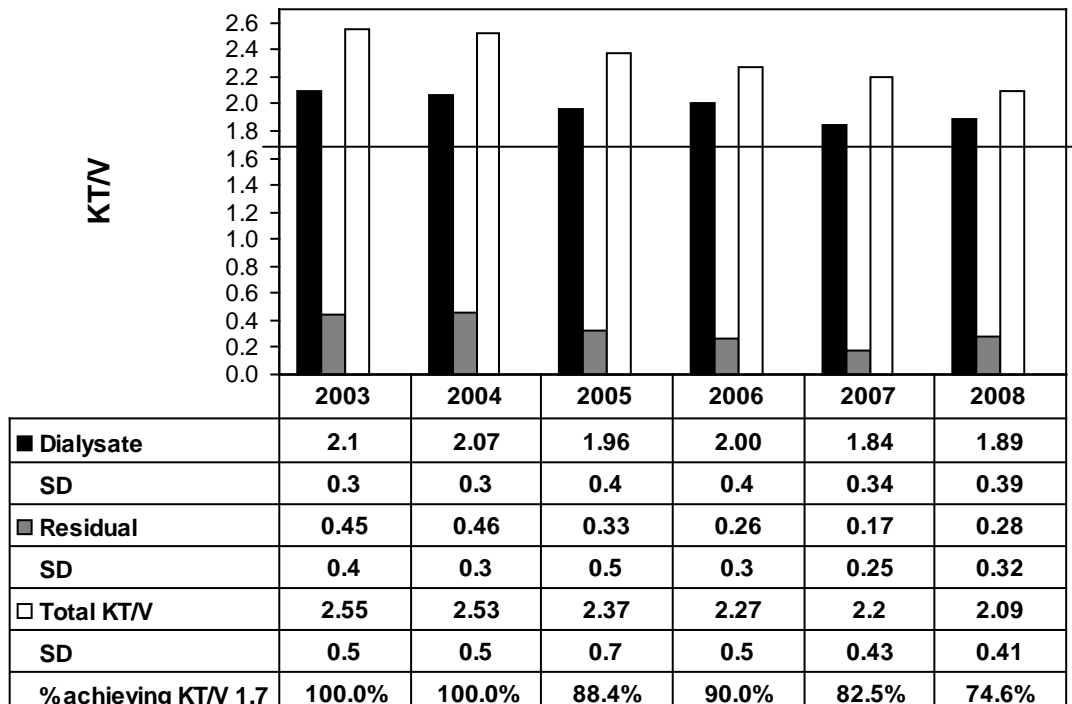
DIALYSIS PARAMETERS

Dialysis Adequacy

Dialysis adequacy is assessed using the total KT/V and is measured 6 monthly. The minimum target total KT/V is 1.7. The total KT/V (which is the sum of the dialysate and residual KT/V) of the cohort was 2.09 ± 0.41 . Although the mean KT/V was above the minimum requirement, 18 patients (25.4 %) did not meet the required minimum of 1.7.

As observed in past years, the 18 patients who did not meet the minimum target had virtually no residual renal function compared to the group with $KT/V > 1.7$ (0.09 ± 0.10 vs 0.23 ± 0.34 , $p < 0.05$) and had a larger body surface area (BSA) (1.75 ± 0.19 vs 1.57 ± 0.14 , $p < 0.05$).

Fig 7: KT/V



Peritonitis Rate

There were a total of 25 episodes of peritonitis during the period of 1 Jan 2008 to 31 Dec 2008 making the peritonitis rate 1 episode in 63.2 patient months. There were three patients who had 2 episodes of peritonitis each. Seventeen (68%) of the 25 episodes of peritonitis required admission to hospital. Four patients (4/22, 18.2%) discontinued PD and were transferred to hemodialysis. This is an improvement over 2007 when five patients (5/15, 33.3%) transferred to haemodialysis. There was no difference in peritonitis rate between diabetic and non-diabetic patients (DM:12/64 vs non-DM:10/46) and also no difference with modality of dialysis (CAPD:16/71 vs APD:7/38) The peritonitis rate seems to have improved in 2008, however, this could be due to under-reporting of the episodes of peritonitis.

Table 13: Peritonitis rate

System	Total Patient Months	No of episodes	Infection Rate (Episodes/ Patient month)
APD (Home choice)			
2005	91.8	2	45.6
2006	133.1	3	44.4
2007	147.2	3	49.1
2008	420.1	6	70.0
CAPD (Ultrabag)			
2005	626.0	9	69.6
2006	701.3	12	53.9
2007	552.1	13	42.5
2008	907.6	19	47.8
All Systems			
2005	717.8	11	65.2
2006	834.4	15	52.2
2007	699.3	16	43.7
2008	1327.7	25	53.1

Anaemia

The mean haemoglobin was 10.6 ± 1.9 g/dl with 53% of the patients receiving erythropoietin. The mean dose of erythropoietin was 4608 ± 2167 U/week (range 2000 – 12000 U/week). Although the mean haemoglobin is higher than the previous two years (2006 and 2007) and there is a reduction in the percentage of patients using erythropoietin, a disturbing trend is the increased percentage of patients with a haemoglobin of less than 10 g/dl who are not on erythropoietin (63.6%). A combination of factors prevent adequate dosing of erythropoietin in PD patients and these include non compliance (as the injections are self-administered), uncontrolled hypertension leading to omission of the erythropoietin and financial constraints.

Fig 8: Mean Haemoglobin Level

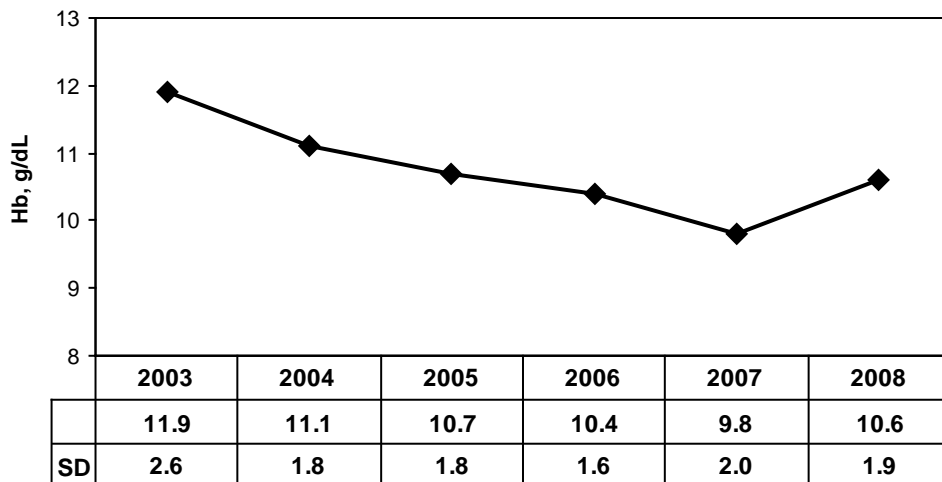
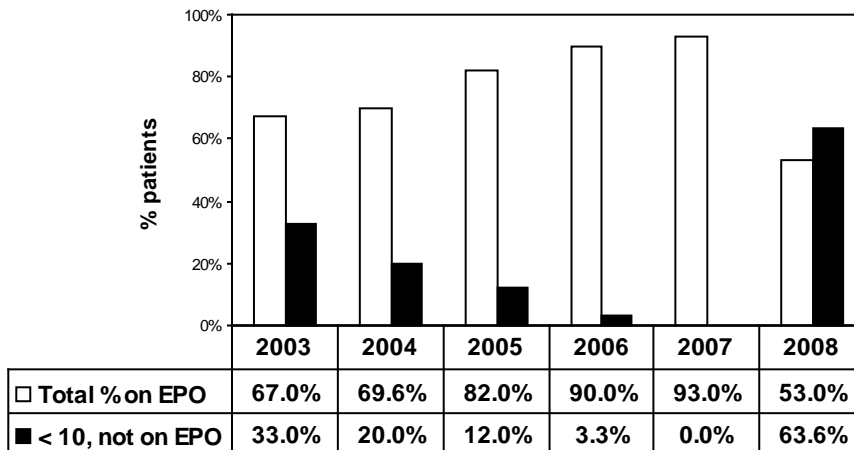


Fig 9: Percentage of patients on EPO



Serum Albumin

The patients continue to have a low serum albumin level with a mean of 30.9 ± 4.3 g/L. More than half the patients (52.4%) did not achieve a normal albumin level of 37 g/L and 40.2% were below 30 g/L. This occurs as a result of protein loss in the dialysate in patients on peritoneal dialysis. This is a perennial problem in patients on PD and is best addressed through nutritional supplementation.

Table 14: Serum albumin

Albumin (g/L)	2003	2004	2005	2006	2007	2008
N	9	21	71	66	46	82*
Mean \pm SD	28.7 ± 4.6	30.7 ± 5.9	31.5 ± 4.7	31.0 ± 5.2	30.3 ± 3.9	30.9 ± 4.3
% < 37 g/L	88.8	95.2	52.1	45.5	58.7	52.4
% < 30 g/L	66.7	33.3	39.4	40.9	39.1	40.2

* No results in 20 patients

Hyperlipidaemia

The mean LDL cholesterol level was 2.9 ± 0.8 mmol/L with 43.2% of the patients achieving the recommended MOH guidelines for LDL cholesterol of < 2.6 mmol/L. The mean HDL cholesterol level (1.0 ± 0.4 mmol/L) is lower than previous years and the reason for this is unclear. A large proportion of the patients (84/102, 82.4%) are on lipid-lowering agents.

Fig 10: Lipid profile

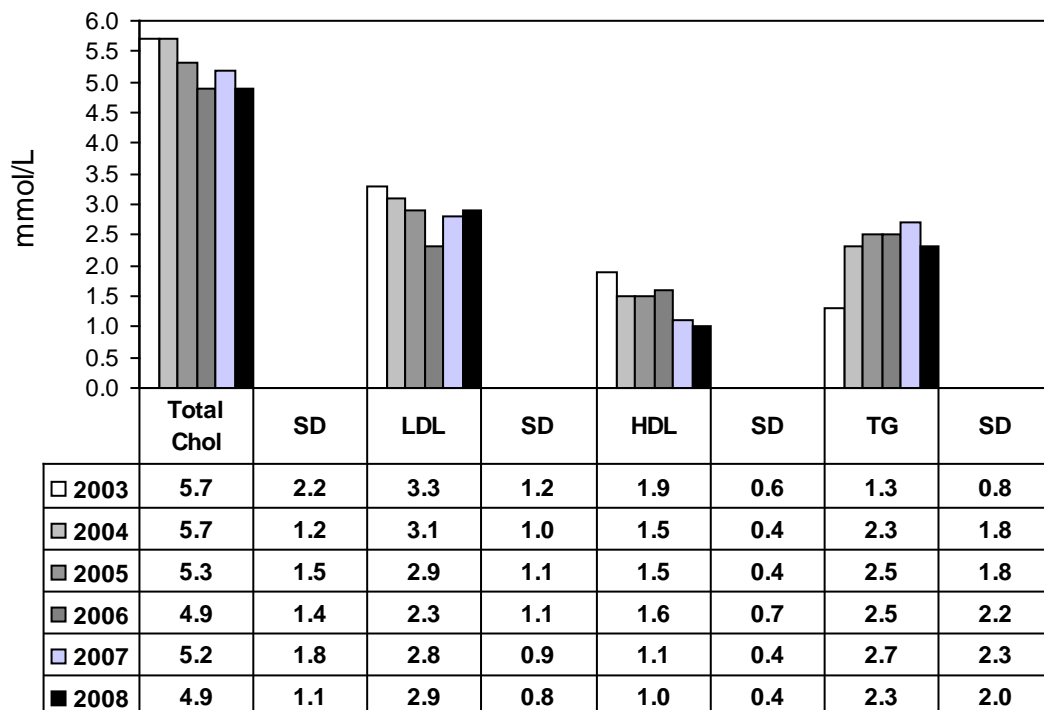
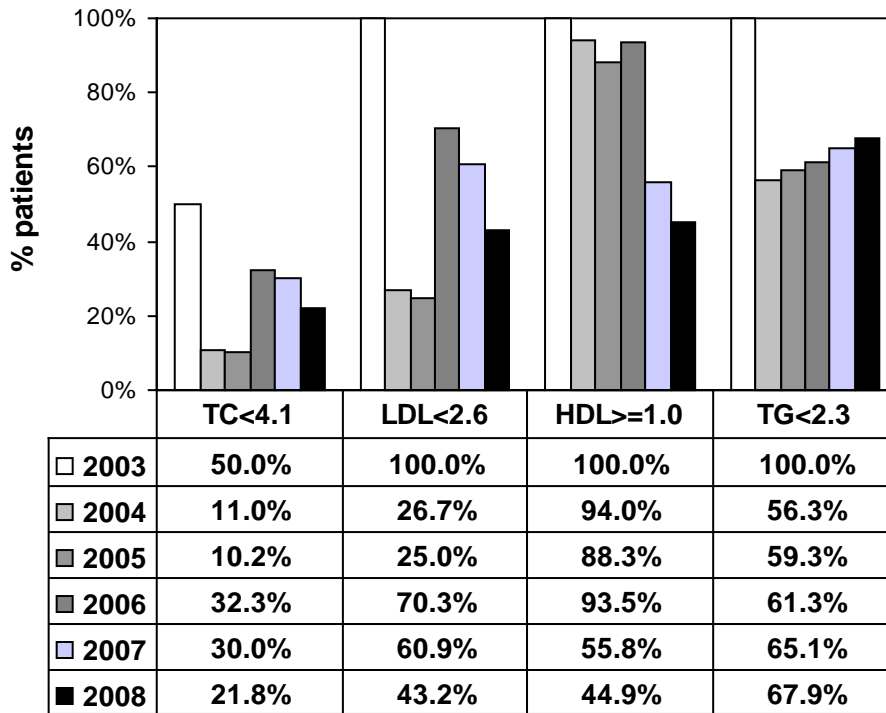


Fig 11: Lipid profile – Percentage achieving MOH target levels



TRANSPLANT WAITING LIST

Nineteen (18.6%) patients were registered on the transplant register and 17 (16.6%) were pending registration. This is an improvement over the previous years when a larger proportion of patients were pending registration. A large number of patients (64 patients, 62.7%) were not eligible for transplant as a result of exceeding the age limit of 60 years (28 patients, 27.5%); another four had ischemic heart disease and three were seropositive for Hepatitis B or C.

Table 15: Transplant status

	2003		2004		2005		2006		2007		2008	
N	9		23		75		66		117		102	
Registered	1	11.0%	6	26.0%	8	10.6%	13	19.7%	28	23.9%	19	18.6%
Not eligible	1	11.0%	4	17.4%	31	41.3%	21	31.8%	52	44.4%	64	62.7%
Opted out	0	0	4	17.4%	13	17.3%	11	16.7%	2	1.7%	2	2%
Pending	7	78.0%	9	39.0%	23	30.6%	21	31.8%	35	29.9%	17	16.6%

INTERIM HEMODIALYSIS

Five patients required interim hemodialysis (due to peritonitis) and all were subsequently converted to permanent hemodialysis. Four of the patients admitted to the KDF HD Programme and one went to a private dialysis centre as she required high dependency care and KDF helped with a portable subsidy for her dialysis.

ACTIVITIES OF THE PD CENTRE

Patient Activities

The PD patients participated in the following activities:

1. a Patient Education Seminar on “Care of Vascular Access” on 20 April 2008,
2. a patient outing to Desaru/Pelangi/Kota Tinggi on 15 June 2008, and
3. a Patient Education Seminar on “Know Your Fluid and Salt Intake” and a patient’s party on 23 November 2008.

Provider Contract Expiry

The provider’s existing contract revised in April 2008 was extended to 31 March 2010.

Patient Review

The Medical Director will review about 12 patients monthly at the PD centre. The PD nurse will schedule all patients’ 6 monthly review in KDF accordingly.

Automated Wearable Artificial Kidney (AWAK) Survey for Vest (Jul 08)

20 PD patients participated in the questionnaire survey on the response of wearing the vest conducted by a group of students from Temasek Polytechnic.

Darbepoetin Alfa trial (Oct 08 – Jan 09)

Five PD patients were selected to participate in a short trial on use of Darbepoetin Alfa conducted by Kirin and Steward Cross.

CONCLUSION

The PD programme continues to remain a challenge in providing affordable, high quality dialysis and meeting dialysis targets in patients with multiple co-morbidities. However, the programme also remains highly satisfying as it provides a home-based dialysis to many patients who require high dependency care.

We would like to thank all who have contributed to the smooth running of the programme.

Dr Grace Lee Siew Luan
Medical Director (Peritoneal Dialysis)

ANNEXE

Table 16: KT/V

	2003	2004	2005	2006	2007	2008
N	9	23	69 (6 not done)	60 (6 not done)	40 (11 not done)	71 (31 not done)
Total KT/V	2.55 ± 0.5	2.53 ± 0.5	2.37 ± 0.7	2.27 ± 0.5	2.20 ± 0.43	2.09 ± 0.41
Dialysate KT/V	2.10 ± 0.3	2.07 ± 0.3	1.96 ± 0.4	2.00 ± 0.4	1.84 ± 0.34	1.89 ± 0.39
Residual KT/V	0.45 ± 0.4	0.46 ± 0.3	0.33 ± 0.5	0.26 ± 0.3	0.17 ± 0.25	0.28 ± 0.32
% patients with KT/V ≥ 1.7	100.0	100.0	88.4 (8 out of 69 <1.7)	90.0 (6 out of 60 <1.7)	82.5 (7 out of 40 <1.7)	74.6 (18 out of 71 <1.7)

Table 17: Haemoglobin and Use of EPO

Hb (g/dl)	2003		2004		2005		2006		2007		2008	
N	9		23		75		66		43		83*	
Mean ± SD	11.9 ± 2.6		11.1 ± 1.8		10.7 ± 1.8		10.4 ± 1.6		9.8 ± 2.0		10.6 ± 1.9	
< 10 not on EPO	1	11.0%	1	4.3%	3	4%	1	1.5%	0	0	14	16.9
< 10 on EPO	2	22.0%	4	17.4%	22	29%	29	43.9%	22	51%	18	21.7
> 10 not on EPO	1	11.0%	6	26.0%	10	13%	5	7.6%	3	7%	25	30.1
> 10 on EPO	5	56.0%	12	52.2%	40	53%	31	47.0%	18	42%	26	31.3

* 19 patients with no data