

KIDNEY DIALYSIS FOUNDATION

ANNUAL REPORT

PERITONEAL DIALYSIS PROGRAMME

2010

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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY
2. STAFFING
3. PATIENT POPULATION
 - Stock and Flow
 - Demographics
 - Etiology of Renal Failure
 - Deaths / Transfers and Survival Analysis
 - Hospitalisations
 - Dialysis Parameters
 - Dialysis Adequacy
 - Anaemia and Use of Erythropoietin
 - Serum Albumin
 - Mineral Metabolism
 - Lipid Profiles
 - Transplant Waiting List
4. ACTIVITIES OF THE PD CENTRE
5. CONCLUSION
6. ANNEXE

1. 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 2010.

Demographics: There were 70 patients on the PD programme as of 31 Dec 2010. Only two patients joined the programme during the year; one from the Singapore General Hospital and the other from the National University Hospital.

The mean age of the prevalent 70 patients was 56 ± 10.9 years; 28 (40.0%) were male, 42 (60.0%) female; Chinese-52, Malay-15, Indian-3. Forty-nine were on CAPD and 21 on APD. The major cause of end-stage renal failure was diabetic nephropathy making up 100.0% of the new patients and 34.3% of the existing patients. Chronic glomerulonephritis (no biopsy) also accounted for 34.3% of the cases. The mean age of entry into the programme was 62.4 ± 8.1 years.

Deaths and Withdrawals: There were 11 deaths and 7 withdrawals. All the 7 withdrawals transferred to haemodialysis following peritonitis. The two commonest causes of death were cardiac-related events (27.3%) and infections (27.2%).

The death rate was 12.5% based on total number of patients in the year and the mean age at death was 60 ± 7 years. The overall 1-year patient survival was 91.5% and 5-year survival was 42.8%.

Hospitalisations: 51.7% of the patients were admitted in the year. The admission rate was 1.15 episodes per patient year or 10.5 days per patient year. The diabetic patients were more likely to be admitted (58.5% vs 44.6% in non-diabetic patients). PD related admissions accounted for 20.0% of all admissions.

Dialysis Parameters

Dialysis Adequacy: The total KT/V was 2.21 ± 0.44 with 92.2% of the patients meeting the minimum target of 1.7.

Anaemia: The mean haemoglobin was 10.97 ± 1.78 g/dl with 87.1% on erythropoietin.

Serum Albumin: The patients had a low serum albumin level with a mean of 30.9 ± 4.23 g/L. The majority (88.6%) of the patients could not meet the lower limit of normal which is 37 g/L.

Mineral Metabolism: The mean corrected serum calcium was 2.42 ± 0.41 mmol/L, serum phosphate 1.75 ± 0.49 mmol/L and iPTH 65.52 ± 63.71 pmol/L. All the patients were on calcium-based phosphate binders and 8 were on Lanthanum carbonate.

Lipid profiles: The mean LDL cholesterol was 2.64 ± 1.06 mmol/L and triglyceride of 2.02 ± 1.44 mmol/L. The mean HDL cholesterol level was 1.08 ± 0.34 mmol/L. 84.3% of the patients were on lipid-lowering agents.

Transplant Waiting List: 24.3% of the patients were on the National Transplant waiting list while another 50.0% were medically not eligible for transplantation.

PERITONEAL DIALYSIS PROGRAMME

2. STAFFING

Medical

The Medical Director (Peritoneal Dialysis) and volunteer doctor, Dr Tan Seng Hoe (on alternate months) continues to review patients monthly. Patients are reviewed once in 6 months following their routine blood investigations. The patients also go for follow-up with their primary 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 managed by PD Clinical Nurse Fan Fung Yin, Florence with assistance from Patient Services Senior Executive Ms Lay Kwee Chin and Clinical Coordinator Ms Theresa Soh. Baxter Healthcare provides service in doing home visits.

DIETETICS

KDF provides a dietitian, Mr Nelson Chin from Food and Nutrition Specialists Pte Ltd, to counsel patients. The patients are seen once every six months at the same time as their follow-up with the Medical Director/Visiting Doctor.

PATIENT WELFARE

Patients continued to receive subsidies for their dialysis and erythropoietin on a case to case basis and were managed by Welfare Officer, Ms Sandy Lim who replaced Ms Rena Lee on October 2010.

3. PATIENT POPULATION

There were 70 patients on the PD programme as of 31 December 2010. One case from the Singapore General Hospital (SGH) and one from the National University Hospital (NUH) were accepted into the PD programme during the period of 1 Jan – 31 Dec 2010.

During the same period of 1 Jan – 31 Dec 2010, 18 patients exited the programme; there were 7 transfers to hemodialysis and 11 deaths.

Fig 1: Patient Stock and Flow

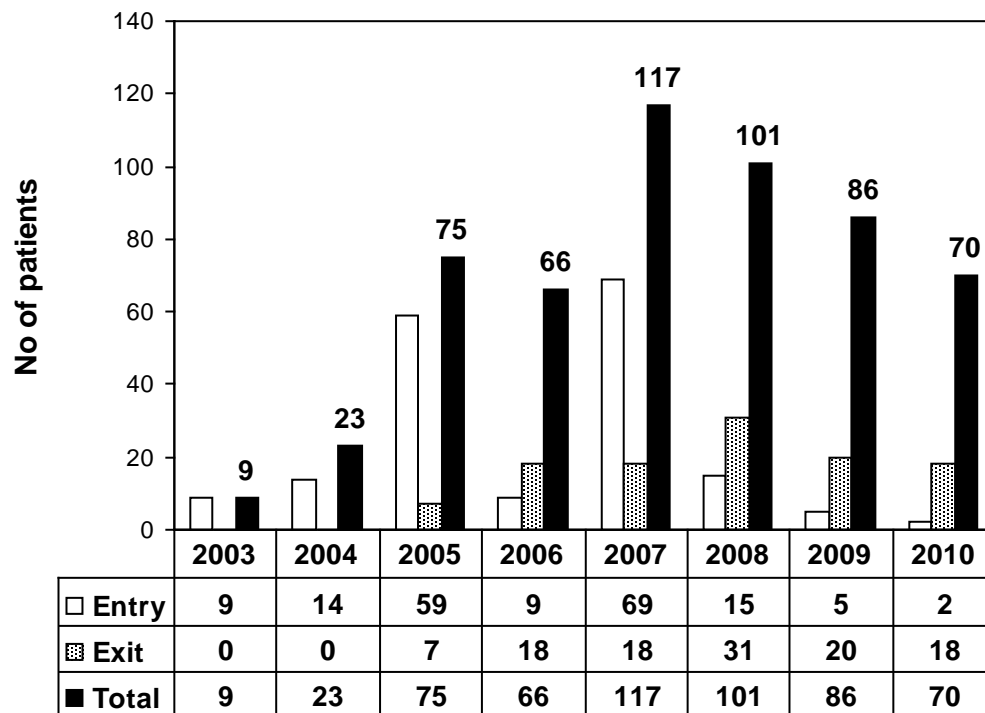


Table 1: Source of Referral

	2003	2004	2005	2006	2007	2008	2009	2010
SGH	7	12	22	2	68	15	5	1
NUH	2	2	35	6	0	0	0	1
Private / TTSH	0	0	2	1	1	0	0	0
Total Entries	9	14	59	9	69	15	5	2

Patient characteristics

The mean age of the existing 70 patients was 56 ± 10.9 years, with a slight predominance of females [Male: 28 (40%), Female: 42 (60%)]. This female predominance has been present through the years but the proportion has decreased. The ethnic distribution was similar to the general population. Forty-nine patients were on CAPD and 21 on APD. The proportion of patients on APD has decreased and currently makes up 30% of the PD population. The main cause of end-stage renal failure in the PD programme remained diabetic nephropathy making up 100% of the new patients and 34.3% of the existing patients. The mean age of entry into the programme was 62.4 ± 8.1 years.

Figure 2: Modality of PD

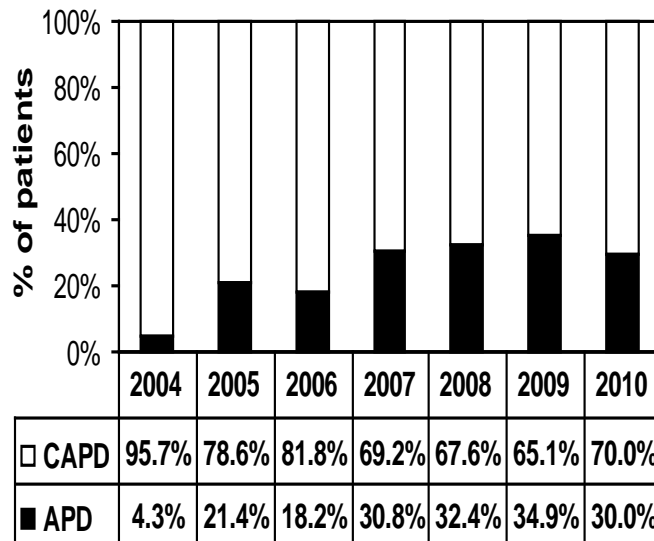


Table 2: Gender of new patients

	2006		2007		2008		2009		2010	
	n	%	n	%	n	%	n	%	n	%
Male	6	66.7	40	58.0	5	33.3	3	60.0	1	50.0
Female	3	33.3	29	42.0	10	66.7	2	40.0	1	50.0
Total	9	100.0	69	100.0	15	100.0	5	100.0	2	100.0

Table 3: Gender of prevalent patients

	2006		2007		2008		2009		2010	
	n	%	n	%	n	%	n	%	n	%
Male	27	40.9	57	48.7	45	44.6	41	47.7	28	40.0
Female	39	59.1	60	51.3	56	55.4	45	52.3	42	60.0
Total	66	100.0	117	100.0	101	100.0	86	100.0	70	100.0

Table 4: Ethnic distribution of new patients

	2006		2007		2008		2009		2010	
	n	%	n	%	n	%	n	%	n	%
Chinese	7	77.8	59	85.5	12	80.0	4	80.0	1	50
Malay	1	11.1	7	10.1	1	6.7	1	20.0	1	50
Indian	1	11.1	2	2.9	2	13.3	0	0	0	0
Others	0	0	1	1.4	0	0	0	0	0	0
Total	9	100.0	69	100.0	15	100.0	5	100.0	2	100

Table 5: Ethnic distribution of prevalent patients

	2006		2007		2008		2009		2010	
	n	%	n	%	n	%	n	%	n	%
Chinese	44	66.7	90	76.9	76	75.2	64	74.4	52	74.3
Malay	18	27.2	22	18.8	18	17.8	16	18.6	15	21.4
Indian	4	6.1	4	3.4	7	6.9	6	7.0	3	4.3
Others	0	0	1	0.9	0	0	0	0	0	0
Total	66	100.0	117	100.0	101	100.0	86	100.0	70	100.0

Table 6: Mean age at entry into programme

Year	2006	2007	2008	2009	2010
Mean age (years)	59	56	57	44	62.4
SD	13.9	11.6	11.7	11.9	8.1

Table 7: Mean age of existing patients

Year	2006	2007	2008	2009	2010
Mean age (years)	54	55	54	54	56
SD	11.3	11	10.7	10	10.9

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

Etiology	2006		2007		2008		2009		2010	
	n	%	n	%	n	%	n	%	n	%
Chronic GN (no biopsy)	1	11.0	19	27.5	4	30.8	1	20	-	-
IgA nephropathy	-	-	4	5.8	-	-	-	-	-	-
SLE	-	-	2	2.9	-	-	-	-	-	-
Focal sclerosing GN	-	-	1	1.4	-	-	-	-	-	-
Drug induced GN	-	-	-	-	-	-	-	-	-	-
Membranous GN	-	-	-	-	-	-	-	-	-	-
Diabetic nephropathy	7	78.0	33	47.8	9	60.0	3	60	2	100.0
PCKD	-	-	3	4.3	-	-	-	-	-	-
Renal calculi	-	-	-	-	-	-	-	-	-	-
Renovascular disease	-	-	-	-	-	-	-	-	-	-
TB Kidney	-	-	-	-	-	-	-	-	-	-
Others			5	7.2	2	13.13	1	20	-	-
Unknown	1	11.0	2	2.9	-	-	-	-	-	-
Total	9	100.0	69	100.0	15	100.0	5	100.0	2	100.0

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

Etiology	2006		2007		2008		2009		2010	
	n	%	n	%	n	%	n	%	n	%
Chronic GN (no biopsy)	14	21.2	30	25.6	30	29.7	28	32.6	24	34.3
IgA nephropathy	5	7.5	9	7.7	8	7.9	6	7	5	7.1
SLE	1	1.5	2	1.7	2	2.0	2	2.3	2	3.0
Focal sclerosing GN	-		2	1.7	2	2.0	2	2.3	1	1.4
Drug induced GN	1	1.5	1	0.9	1	1.0	1	1.2	-	-
Diabetic nephropathy	37	56.3	53	45.3	39	38.6	30	34.9	24	34.3
PCKD	3	4.5	5	4.3	4	3.9	4	4.7	4	5.7
Renal calculi	1	1.5	1	0.9	1	1.0	1	1.2	1	1.4
Renovascular disease	2	3.0	-	-	-	-	-	-	-	-
TB Kidney	1	1.5	-	-	-	-	-	-	-	-
Others			5	4.3	6	5.9	5	5.8	4	5.7
Unknown	1	1.5	9	7.7	8	7.9	7	8.1	5	7.1
Total	66	100.0	117	100.0	101	100.0	86	100.0	70	100.0

COMORBIDITY

There were 30 (42.9%) patients with diabetes in the prevalent population in 2010.

DEATHS / TRANSFERS AND SURVIVAL ANALYSIS

There were 11 deaths and 7 withdrawals (transfer to hemodialysis) in 2010. The causes of death are shown in Table 10 and the commonest causes were cardiac deaths (either acute myocardial infarction or other cardiac cause) and infections.

The reasons for withdrawal from PD are shown in Table 11. Seven patients were transferred to hemodialysis; five were due to peritonitis and the other two were due to technical problems.

The death rate was 12.5% based on total number of patients in the year. The mean age at death in 2010 was 60 ± 7 years.

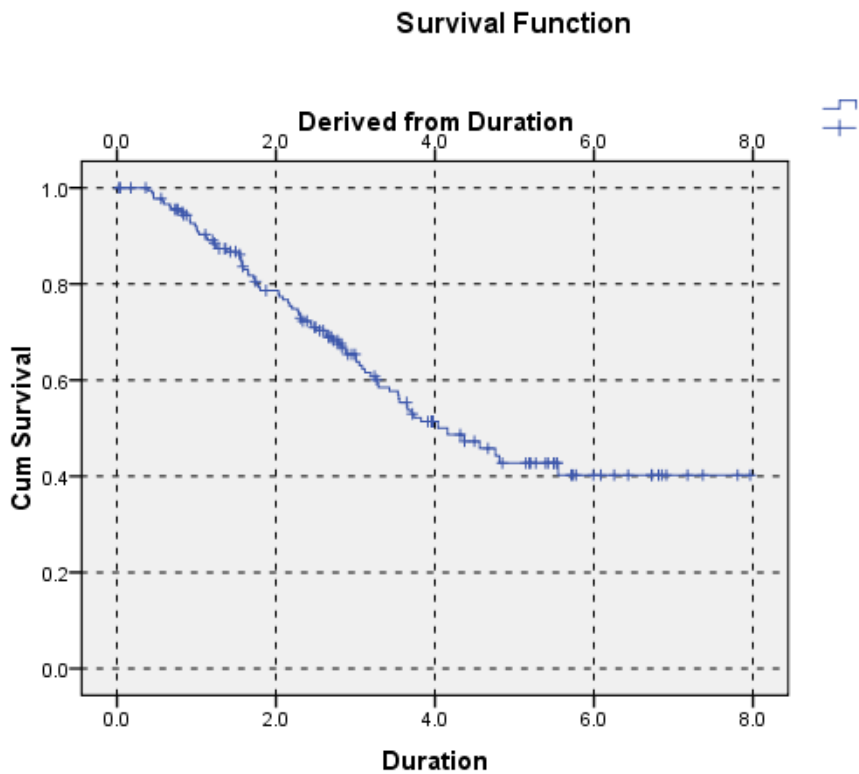
Table 10: Cause of Death

Cause of Death	2006		2007		2008		2009		2010	
	n	%	n	%	n	%	n	%	n	%
Acute Myocardial Infarction	1	8.3	1	7.6	10	41.7	1	7.2	1	9.1
Other Cardiac	-	-	-	-	2	8.3	5	35.7	2	18.2
Cerebrovascular Accident	2	16.8	-	-	-	-	-	-	-	-
Infections	5	41.7	4	30.7	5	20.8	3	21.4	3	27.2
Liver Failure	1	8.3	-	-	-	-	-	-	-	-
Malignancy	1	8.3	-	-	1	4.2	-	-	1	9.1
Accidental	1	8.3	-	-	-	-	-	-	-	-
Bleeding from Gastro-intestinal Tract	-	-	1	7.6	-	-	-	-	-	-
Died at Home	1	8.3	3	23.4	5	20.8	3	21.4	2	18.2
Others	-	-	4	30.7	1	4.2	2	14.3	2	18.2
Total	12	100.0	13	100.0	24	100.0	14	100.0	11	100.0
Death Rate	14.3%		9.6%		17.4%		13.2%		12.5%	

Table 11: Reason of Withdrawal

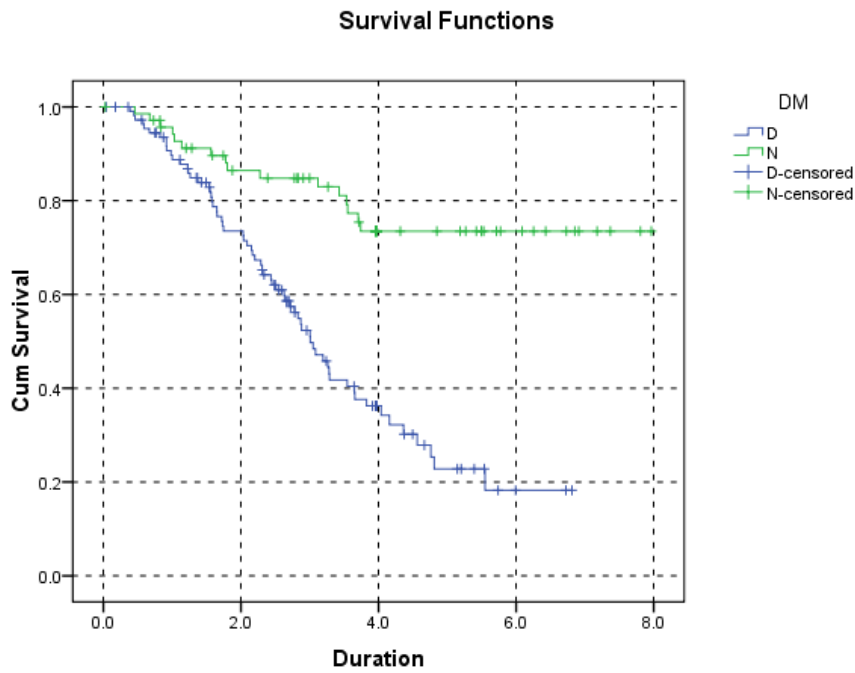
Reason of Withdrawal	2006		2007		2008		2009		2010	
	n	%	n	%	n	%	n	%	n	%
PD related Infection	1	16.6	5	100.0	5	71.4	3	50.0	5	71.4
Technical Reason	2	33.4	-	-	-	-	-	-	2	28.6
Elective transfer to HD	-	-	-	-	1	14.3	-	-	-	-
Transplant	2	33.4	-	-	1	14.3	3	50.0	-	-
Unknown	1	16.6	-	-	-	-	-	-	-	-
Total	6	100.0	5	100.0	7	100.0	6	100.0	7	100.0

Fig 3: Kaplan-Meier Survival Curves for PD patients (2003-2010)



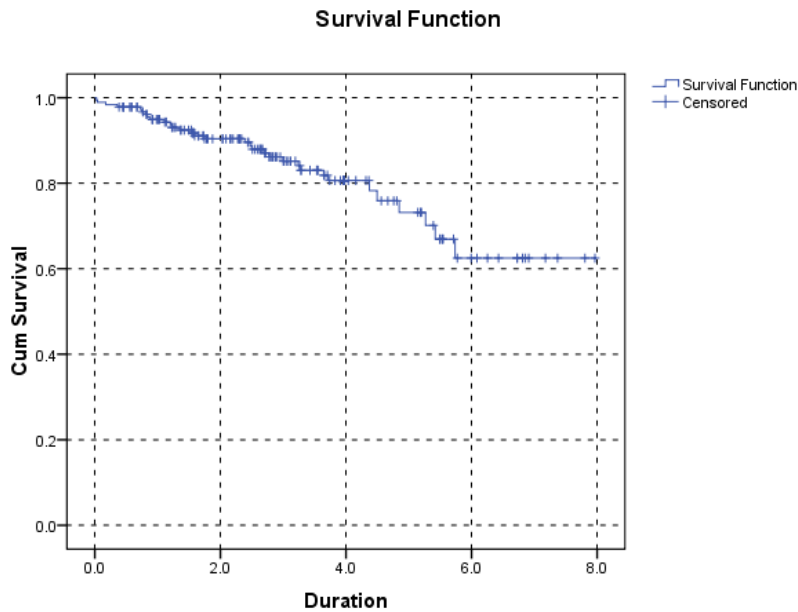
The 1 year patient survival was 91.5%, 3 year survival was 64.6% and 5 year survival was 42.8%. There was no change in the patient survival from the previous year.

Fig 4: Kaplan-Meier Survival Curves for PD patients with and without Diabetes (2003-2010)



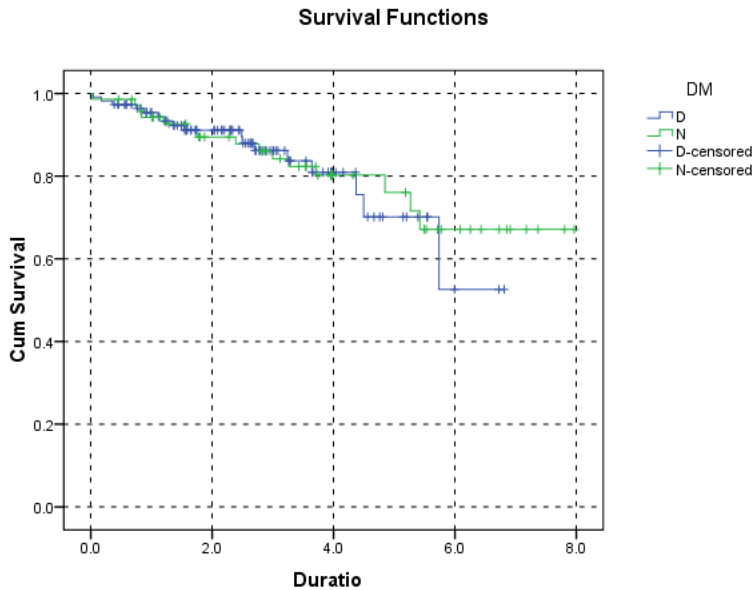
The 1 year and 3 year survivals in non-diabetic patients was better than those who were diabetic (1 year survival: Diabetes 88.8% versus Non-Diabetes 94.2%, 3 year survival: Diabetes 51.0% versus Non-Diabetes 83.0%). This, again, remains essentially unchanged from the previous year.

Fig 5: Kaplan-Meier Technique Survival Curves for PD patients (2003-2010)



The 1 year technique survival was 94.3%, the 3 year survival was 85.2% and 5 year survival was 70.1%.

Fig 6: Kaplan-Meier Technique Survival Curves for PD patients with and without Diabetes (2003-2010)



The 1 year and 3 year technique survivals were similar in both diabetics and non-diabetics. (1 year survival: Diabetes 94.4% versus Non-Diabetes 92.7%, 3 year survival: Diabetes 83.7% versus Non-Diabetes 84.2%).

HOSPITALISATIONS

There were 90 admissions in 45 patients and 51.7% of the patients in the PD programme were admitted in the year. Twenty (44.4%) of the 45 patients admitted had at least two admissions with 8 patients (17.7%) having 3 or more admissions in the year and accounting for 345 admission days (42.0% of total admission days). The admission rate was 1.15 episodes per patient year or 10.5 days per patient year. The diabetic patients were more likely to be admitted (58.5% vs 44.6%) and had a higher rate of admission days per patient year (14.4 vs 7.39 in non-diabetic patients). PD related infections accounted for 20% of the admissions, other infections accounted for 20% and other causes accounted for 60%. The commonest cause of “Other Infections” was pneumonia/bronchitis (8/18, 44.4%) and the majority of the “Others” causes were cardiac-related. Of note were 8 admissions to hospital for the treatment of anemia.

When compared to the previous year (2009), the rates of hospitalization were slightly lower.

Table 12: Hospitalisations

HOSPITALISATION	ALL		DM		NON-DM	
	2009	2010	2009	2010	2009	2010
Number of patients ever in prog	106	88	53	41	53	47
Total patient years	94.2	78.4	45	34.4	49.2	44.0
Number of patients ever admitted	59	45	33	24	26	21
Admission episodes	117	90	76	47	41	43
Admission days	1491	821	1135	496	356	325
Days hospitalized						
PD related – technical	10	0	4	0	6	0
- infection	266	163	91	121	175	42
Other Infections	420	299	377	167	43	132
Others	795	359	663	208	132	151
% patients ever admitted	55.7	51.7	62.3	58.5	49.1	44.6
Episodes per patient year	1.24	1.15	1.68	1.36	0.83	0.98
Days per patient year	15.8	10.5	25.2	14.4	7.24	7.39
Days per patient year						
PD related – technical	0.12	0.0	0.08	0.0	0.12	0.0
- infection	2.82	2.08	2.02	3.52	3.56	0.95
Other Infections	4.46	3.81	8.38	4.85	0.87	3.00
Others	8.44	4.58	14.73	6.05	2.68	3.43

% of admissions						
PD related - technical	1.7	0.0	1.3	0.0	2.3	0.0
- infections	16.9	20.0	7.9	27.1	33.4	11.6
Other Infections	20.4	20.0	23.7	20.8	14.3	18.6
Others	61.0	60.0	67.1	52.1	50.0	69.8

Hospitalisations during the period Jan-Dec 2010 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 2.21 ± 0.44 . It is encouraging to note that the dialysate KT/V (2.06 ± 0.35) is also above the minimum target and this implies that no change in the dialysis prescription would be required when the patient loses residual renal function. Although the mean KT/V was above the minimum requirement, 5 patients (7.8 %) did not meet the required minimum of 1.7. One of the five patients is on supplementary haemodialysis as he prefers to remain on peritoneal dialysis as his primary modality.

Fig 7: KT/V

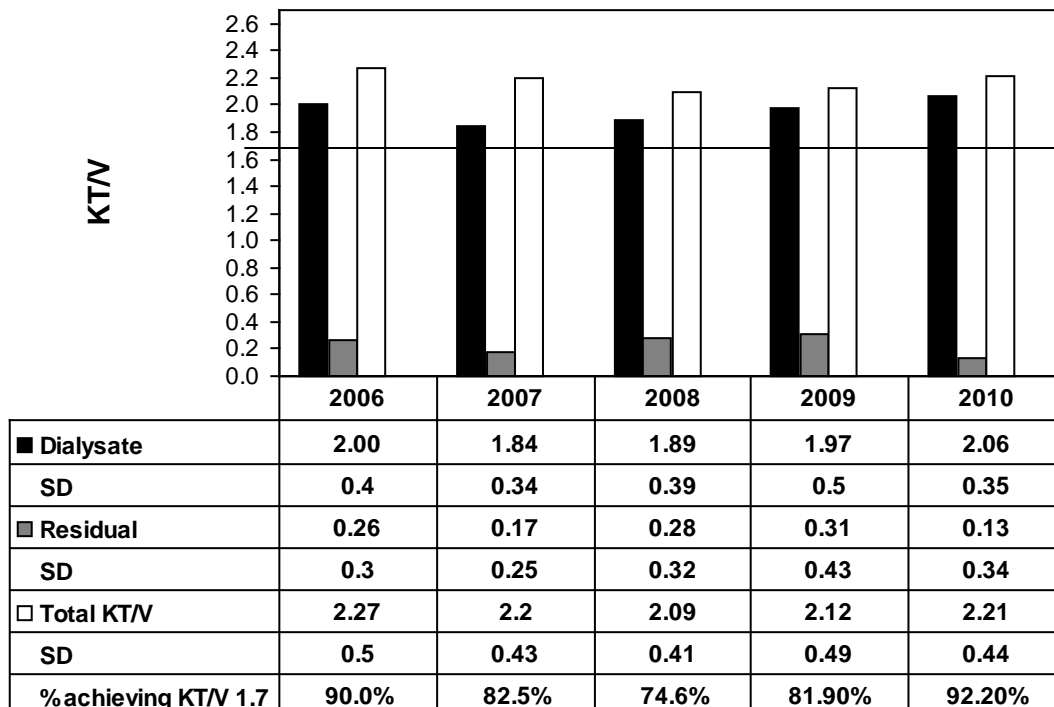


Table 13: KT/V

	2006	2007	2008	2009	2010
N	60 (6 not done)	40 (11 not done)	71 (30 not done)	83 (3 not done)	64 (6 not done)
Total KT/V	2.27 ± 0.5	2.20 ± 0.43	2.09 ± 0.41	2.12 ± 0.49	2.21 ± 0.44
Dialysate KT/V	2.00 ± 0.4	1.84 ± 0.34	1.89 ± 0.39	1.97 ± 0.5	2.06 ± 0.35
Residual KT/V	0.26 ± 0.3	0.17 ± 0.25	0.28 ± 0.32	0.31 ± 0.43	0.13 ± 0.34
% patients with KT/V ≥ 1.7	90.0 (6/60 <1.7)	82.5 (7/40 <1.7)	74.6 (18/71 <1.7)	81.9 (15/83 <1.7)	92.2 (5/64 <1.7)

Peritonitis

Patients who develop peritonitis are treated at their primary hospitals. As such, the KDF PD programme only captures data of hospitalisations for peritonitis.

Sixteen patients (8 CAPD, 8 APD) were admitted for peritonitis during the period of 1 Jan 2010 to 31 Dec 2010. Unfortunately, one patient died from septicemia associated with the peritonitis. Of the remaining 15, 7 resolved and 8 were transferred to hemodialysis.

Anaemia

The mean haemoglobin was 10.97 ± 1.78 g/dl with 87.1% (61/70) of the patients receiving erythropoietin (EPO). The mean dose of EPO was 5943 ± 3257 U/week (range 930 – 12000 U/week). There was a group of patients on the long-acting EPO (Darbepoietin alfa) and they used a mean dose of 36.2 ± 18.5 ug/week. The mean haemoglobin has remained stable over the last three years. Unlike in past years, all patients with haemoglobin less than 10 g/dl were on EPO. 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

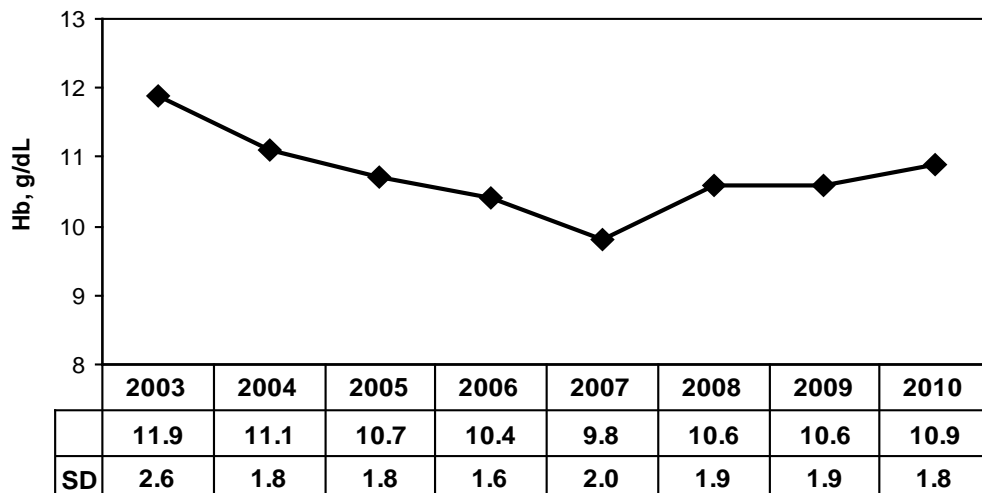


Fig 9: Percentage of patients on EPO

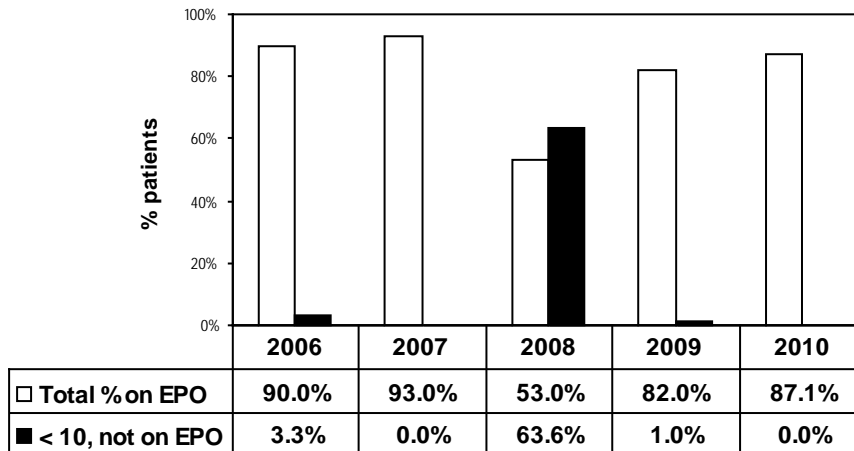


Table 14: Haemoglobin and Use of EPO

Hb (g/dl)	2006		2007		2008		2009		2010	
N	66		43		83*		86		68	
Mean ± SD	10.4 ± 1.6		9.8 ± 2.0		10.6 ± 1.9		10.6 ± 1.9		10.9 ± 1.8	
< 10 not on EPO	1	1.5%	0	0	14	16.9%	1	1.0%	0	0%
< 10 on EPO	29	43.9%	22	51%	18	21.7%	32	37.0%	20	29.4%
> 10 not on EPO	5	7.6%	3	7%	25	30.1%	14	16.0%	6	8.8%
> 10 on EPO	31	47.0%	18	42%	26	31.3%	39	45.0%	42	61.8%

* 18 patients with no data (2008)

Serum Albumin

The patients continue to have a low serum albumin level with a mean of 30.9 ± 4.23 g/L. The majority of patients (88.6%) did not achieve a normal albumin level of 37 g/L and 42.9% 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.

KDF will be providing a subsidy for a protein supplement (Bene protein) to help improve the albumin status of PD patients.

Table 15: Serum albumin

Albumin (g/L)	2006	2007	2008	2009	2010
N	66	46	82	84*	70*
Mean \pm SD	31.0 \pm 5.2	30.3 \pm 3.9	30.9 \pm 4.3	30.4 \pm 4.4	30.9 \pm 4.2
% < 37 g/L	45.5	58.7	52.4	93.0	88.6
% < 30 g/L	40.9	39.1	40.2	43.0	42.9

* No results in 2 patients

Mineral Metabolism

This is the first year this data is being presented. The mean corrected serum calcium was 2.42 ± 0.41 mmol/L and the mean serum phosphate was 1.75 ± 0.49 mmol/L (42.4% of patients had a serum phosphate > 1.78 mmol/L). All the patients were on calcium supplements (calcium acetate 63.6%, calcium carbonate 36.4%) and 8 patients (12.1%) were also on Lanthanum carbonate (non-calcium phosphate binder). As Lanthanum is costly, the patients received a subsidy for the medication.

The mean iPTH level was 65.52 ± 63.71 pmol/L with only 25.4% of the patients falling within the normal limits of 16.5-33 pmol/L. The 2003 KDOQI guidelines recommend that the iPTH in dialysis patients (CKD Stage 5) should be maintained within the normal range. Hyperphosphatemia is a major factor and more attention to reducing the phosphate levels to within normal limits will definitely contribute to reducing the problem and the eventual need for surgical parathyroidectomy. The subsidies for Lanthanum carbonate are timely.

Table 16: Percentage of patients according to iPTH levels

	2010	
	N	%
<16.5	10	15.9
16.5-33.0	16	25.4
>33.0	37	58.7
Total	63*	100.0

*Date not available for 7 patients

Hyperlipidaemia

The lipid profile of the patients remained largely unchanged when compared to the previous years. The mean LDL cholesterol level was 2.65 ± 1.06 mmol/L with 47.6% of the patients achieving the recommended MOH guidelines for LDL cholesterol of < 2.6 mmol/L. The mean HDL cholesterol level was 1.08 ± 0.34 mmol/L and the mean triglyceride level was 2.02 ± 1.44 mmol/L. Once again, as in previous years, it is interesting to note that a large proportion of patients (74.6%) achieve the recommended MOH guideline for triglyceride levels. A significant number of the patients (59/70, 84.3%) are on lipid-lowering agents.

Fig 10: Lipid profile

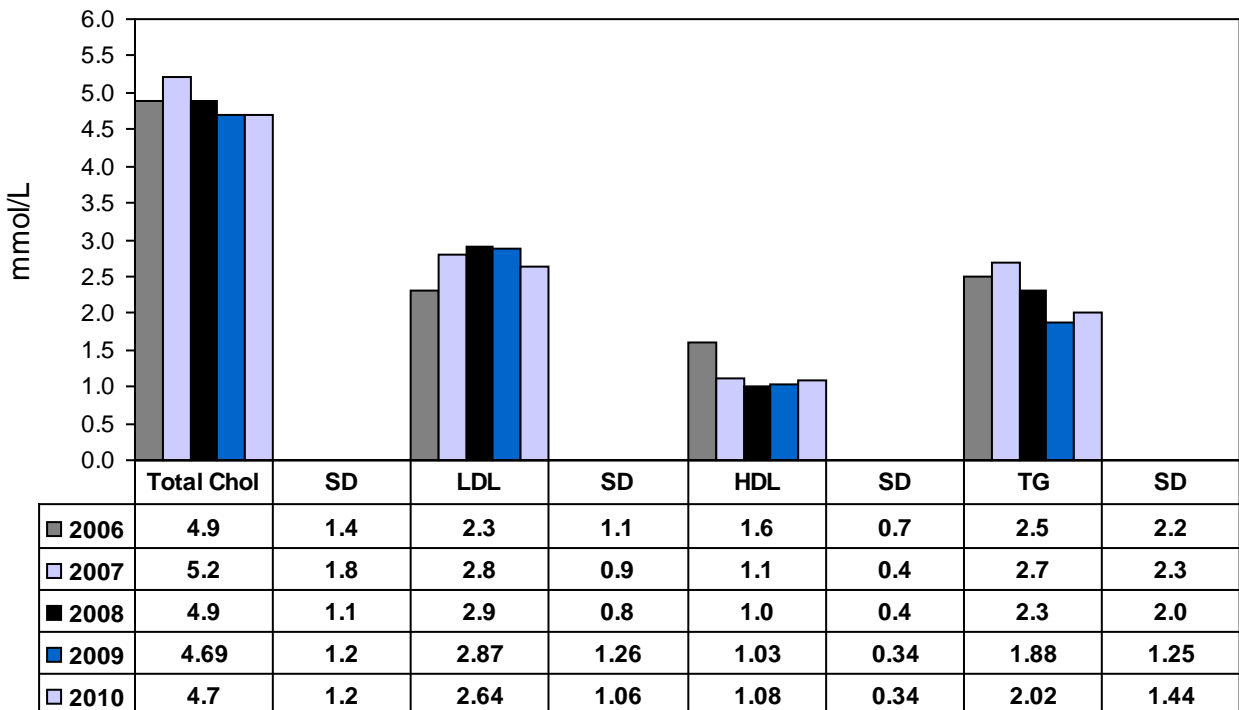
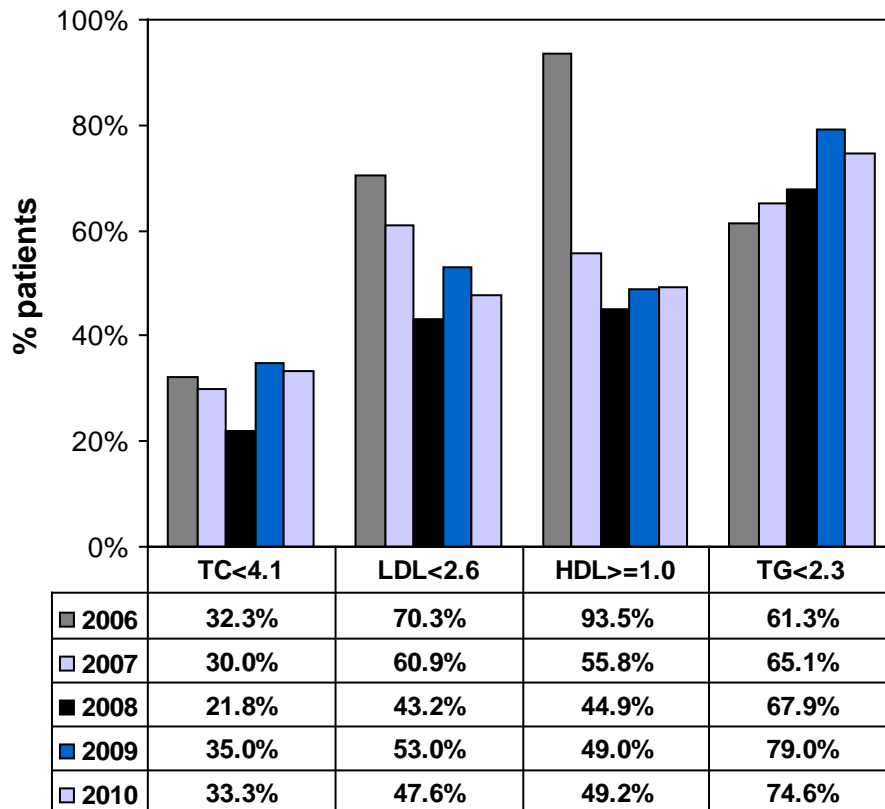


Fig 11: Lipid profile – Percentage achieving MOH target levels



TRANSPLANT WAITING LIST

Seventeen (24.3%) patients were registered on the transplant register and 16 (22.9%) were pending registration. Half of the patients (35 patients, 50%) were not eligible for transplant as a result of exceeding the age limit of 60 years (20/35 patients, 57.1%); seven had ischemic heart disease and three were seropositive for Hepatitis B or C.

Table 17: Transplant status

	2006		2007		2008		2009		2010	
N	66		117		101		86		70	
Registered	13	19.7%	28	23.9%	19	18.8%	17	19.8%	17	24.3%
Not eligible	21	31.8%	52	44.4%	63	62.4%	48	55.8%	35	50%
Opted out	11	16.7%	2	1.7%	2	2%	2	2.3%	2	2.9%
Pending	21	31.8%	35	29.9%	17	16.8%	19	22.1%	16	22.9%

INTERIM HEMODIALYSIS

Three patients required interim hemodialysis (due to peritonitis) and all were subsequently converted to permanent hemodialysis. Two of the patients were accepted into the KDF HD Programme and one went to a private dialysis centre.

4. ACTIVITIES OF THE PD CENTRE

Patient Activities

The PD patients participated in the following activities:

1. a Patient Education Seminar on “Eat Healthy, Stay Healthy” cum cooking competition on 25th April 2010,
2. a patients’ outing “Duck Tour Adventure” on 11 July 2010,
3. a Patient Education Seminar on “Living with Kidney Failure – Coping with Biopsychosocial changes” on 3 October 2010, and a
4. Patients’ Party with the theme “Together We Party” in 16 January 2011.

Provider Contract Expiry

The provider revised their contract and a new contract was signed to agree in funding the centre operation. This contract will be for 2 years till 1 January 2012.

Patient Review

The Medical Director reviews about 10 patients monthly at the PD centre. The PD nurse schedules all patients’ 6 monthly review in KDF accordingly.

5. CONCLUSION

The KDF PD programme provides an affordable home-based dialysis to patients who often require high dependency care. Meeting dialysis targets remains a challenge in this group as compliance is often difficult to track. However, dedicated personal care from the PD dialysis nurses has certainly added quality to the dialysis programme.

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

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