

# **KIDNEY DIALYSIS FOUNDATION**

## **ANNUAL REPORT**

### **MEDICAL (P.D.)**

**2004**

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## EXECUTIVE SUMMARY

The Peritoneal Dialysis Centre of the Kidney Dialysis Foundation is located at the Kreta Ayer 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 2004.

**Patient demographics:** There were 23 patients on the PD programme as of 31 Dec 2004. Fourteen new patients were accepted into the PD programme during the period of 1 Jan 2004 to 31 Dec 2004. Twelve of the patients were referred from the Singapore General Hospital and 2 from the National University Hospital.

The mean age of the 23 patients was  $48 \pm 8$  years; 4 were male, 19 female; Chinese-13, Malay-8, Indian-2. Twenty-two patients were on CAPD and one on APD. The major cause of end-stage renal failure was diabetic nephropathy making up 42.9% of the new patients and 34.8% of the existing patients. The average age of entry into the programme increased from  $46 \pm 9.3$  years in 2003 to  $49 \pm 7.3$  years in 2004.

**Hospitalisations:** 34.8% of the patients were admitted in the year. The admission rate was 0.90 episodes per patient year or 12 days per dialysis year. The rate in diabetics was 1.32 episodes per patient year and 14.5 days per dialysis year.

### Dialysis Parameters

**Dialysis Adequacy:** The total KT/V was  $2.53 \pm 0.5$  with 100% of the patients meeting the minimum target of 1.7.

**Peritonitis Rate:** The peritonitis rate was 1 in 112 patient months and the episodes were solely in CAPD patients.

**Anemia:** The mean haemoglobin was  $11.1 \pm 1.8$  g/dl with 16 patients (69.6%) on erythropoietin. Seven (30%) patients had a haemoglobin above the target level of 12 g/dl.

**Serum Albumin:** The patients tended to have a low serum albumin level with a mean of  $30.7 \pm 5.9$  g/L. Most (95.2%) of the patients could not meet the lower limit of normal which is 37 g/L.

**Lipid profiles:** Profiles were generally poor with a mean LDL cholesterol of  $3.1 \pm 1.0$  mmol/L and triglyceride of  $2.3 \pm 1.8$  mmol/L. The mean HDL cholesterol level was  $1.5 \pm 0.4$  mmol/L.

**Transplant Waiting List:** 26% of the patients were on the National Transplant waiting list while another 17.4% were not medically eligible for transplantation.

## **INTRODUCTION**

The Peritoneal Dialysis Centre of the Kidney Dialysis Foundation is located at the Kreta Ayer Centre and was renovated with generous donations from the Khoo Foundation and Singapore Pools Pte Ltd. The Khoo Foundation also continues to contribute to the deficit funding of the Centre. The PD Centre obtained its license on 7 May 2003 but because of the SARS outbreak, it only became operational on 1 July 2003 when it accepted its first patient. 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 2004.

## **STAFFING**

### **Medical**

The Medical Director of the PD programme reviews the PD patients every 6 months following their routine blood investigations. The patients continue on follow-up with their referring physicians in the restructured hospitals. Urgent medical cover has been arranged with family physicians working in the vicinity.

### **Nursing**

The PD programme is supervised by the Patient Services Manager Ms Theresa Soh and there are two nurses employed by the dialysis provider, Baxter Healthcare Pte Ltd. The Charge Nurse, Wu Sin Yan, is renal-trained and based in the Kreta Ayer PD Centre while the second nurse, S/N Jill Tan Chye Teng is currently based in the Singapore General Hospital. The number of nurses in the programme will be increased at the rate of one new nurse for every 40 new patients with a current cap of 200 patients and 6 nurses. The charge nurse and other KDF staff perform home visits on a periodic basis.

## **PATIENT TRAINING**

As of Dec 2004, CAPD training has been conducted by the parent hospital. In instances where the patient has been admitted to the KDF PD programme prior to initiation of dialysis, the patient undergoes orientation in KDF prior to training. On completion of training by the hospital, the patient is assessed after discharge by the KDF charge nurse in the PD Centre. The charge nurse and other KDF staff also perform a home visit to ensure a proper environment for the PD procedure.

## **PATIENT WELFARE**

Patients received subsidies for dialysis and erythropoietin on a case by case basis and patient welfare matters are handled by the Welfare Executive, Ms Janice Soon.

## PATIENT POPULATION

There were 23 patients on the PD programme as of 31 Dec 2004. Fourteen new patients were accepted into the PD programme during the period of 1 Jan 2004 to 31 Dec 2004. Twelve of the patients were referred from the Singapore General Hospital and 2 from the National University Hospital.

## STOCK AND FLOW

**Table 1 – Patient Stock and Flow**

<b>ENTRY</b>	<b>2003</b>	<b>2004</b>
New cases	9	14
Transfers	0	0
<b>Total Entries</b>	9	14
<b>EXIT</b>		
<b>Total Exits</b>	0	0
<b>Total No of Pt</b>	9	23

**Table 2 – Source of Referral**

	<b>2003</b>	<b>2004</b>
SGH	7	12
NUH	2	2
Private	0	0
<b>Total Entries</b>	9	14

### Patient characteristics

The mean age of the 23 patients was  $48 \pm 8$  years; 4 were male, 19 female; Chinese-13, Malay-8, Indian-2. Twenty-two patients were on CAPD and one on APD. The major cause of end-stage renal failure in the PD programme is diabetic nephropathy making up 42.9% of the new patients and 34.8% of the existing patients. The average age of entry into the programme increased from  $46 \pm 9.3$  years in 2003 to  $49 \pm 7.3$  years in 2004.

## CAUSE OF END-STAGE RENAL DISEASE

**Table 3 - Etiology of end-stage renal disease in new patients**

<b>Etiology</b>	<b>2003</b>		<b>2004</b>	
	n	%	n	%
Chronic glomerulonephritis (no biopsy)	2	22.0	2	14.3
IgA nephropathy	2	22.0	2	14.3
Focal sclerosing GN	-	-	1	7.1
Diabetic nephropathy	2	22.0	6	42.9
PCKD	3	34.0	-	
Renal calculi	-	-	1	7.1
Unknown	-	-	2	14.3
<b>Total</b>	<b>9</b>	<b>100.0</b>	<b>14</b>	<b>100.0</b>

**Table 4 - Etiology of end-stage renal disease in prevalent patients**

<b>Etiology</b>	<b>2003</b>		<b>2004</b>	
	n	%	n	%
Chronic glomerulonephritis (no biopsy)	2	22.0	4	17.4
IgA nephropathy	2	22.0	4	17.4
Focal sclerosing GN	-	-	1	4.3
Diabetic nephropathy	2	22.0	8	34.8
PCKD	3	34.0	3	13.0
Renal calculi	-	-	1	4.3
Unknown	-	-	2	8.8
<b>Total</b>	<b>9</b>	<b>100.0</b>	<b>23</b>	<b>100.0</b>

## GENDER

**Table 5 - Gender of new patients**

	2003		2004	
	n	%	n	%
Male	1	90.1	3	21.4
Female	8	88.9	11	78.6
<b>Total</b>	9	100.0	14	100.0

**Table 6 - Gender of prevalent patients**

	2003		2004	
	n	%	n	%
Male	1	90.1	4	17.4
Female	8	88.9	19	82.6
<b>Total</b>	9	100.0	23	100.0

There is a marked predominance of females on the PD programme.

**Table 7 – Ethnic distribution of new patients**

	2003		2004	
	n	%	n	%
Chinese	5	56.0	8	57.0
Malay	2	22.0	6	43.0
Indian	2	22.0	0	0
Others	0	0	0	0
<b>Total</b>	9	100.0	14	100.0

**Table 8 – Ethnic distribution of prevalent patients**

	2003		2004	
	n	%	n	%
Chinese	5	56.0	13	56.5
Malay	2	22.0	8	34.8
Indian	2	22.0	2	8.7
Others	0	0	0	0
<b>Total</b>	9	100.0	23	100.0

## AGE

**Table 9 – Average age of entry into programme**

<b>Year</b>	<b>2003</b>	<b>2004</b>
<b>Mean age (years)</b>	46	49
<b>SD</b>	9.3	7.3

**Table 10 – Average age of prevalent patients on programme**

<b>Year</b>	<b>2003</b>	<b>2004</b>
<b>Mean age (years)</b>	49	48
<b>SD</b>	9.0	8.1

## COMORBIDITY

There were 8 (34.8%) patients with diabetes in the prevalent population in 2004.

## DEATHS AND WITHDRAWALS

There were no deaths or withdrawals in 2004.

## HOSPITALISATIONS

There were 15 admissions in 8 patients (one patient was admitted 4 times and stayed a total of 107 days in hospital). Therefore, 34.8% of the patients were admitted in the year. The admission rate was 0.90 episodes per patient year or 12 days per dialysis year. The rate in diabetics was 1.32 episodes per patient year and 14.5 days per dialysis year.

**Table 11 – Hospitalisations**

<b>HOSPITALISATION</b>	<b>ALL</b>	<b>DM</b>	<b>NON-DM</b>
Number of patients ever in prog	23	8	15
Total patient years	16.5	5.3	11.2
Number of patients ever admitted	8	4	4
Admission episodes	15	7	8
Admission days	198	77	121
<b>Days hospitalized</b>			
PD related – technical	20	0	20
- infection	0	0	0
Other Infections	124	40	84
Others	56	37	19
% patients ever admitted	34.8%	50.0%	26.7%
Episodes per patient year	0.90	1.32	0.71
Days per patient year	12.0	14.5	10.8
<b>Days per patient year</b>			
PD related – technical	1.21	0	1.78
- infection	0	0	0
Other Infections	7.52	7.55	7.50
Others	3.39	6.98	1.69
PD related - technical	13.3%	0.0%	25.5%
- infections	0.0%	0.0%	0.0%
Other Infections	20.0%	14.3%	25.0%
Others	66.7%	84.7%	50.0%

Hospitalisations during the period Jan-Dec 2004 were analysed and expressed as day 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 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  $2.53 \pm 0.5$ . It is encouraging to note, once again, that the dialysate KT/V was  $2.07 \pm 0.3$  which suggests that our patients would not have to increase their dialysis prescription even when they completely lose their residual renal function.

**Table 12 - KT/V**

	<b>2003</b>	<b>2004</b>
N	9	23
Total KT/V	$2.55 \pm 0.5$	$2.53 \pm 0.5$
Dialysate KT/V	$2.10 \pm 0.3$	$2.07 \pm 0.3$
Residual KT/V	$0.45 \pm 0.4$	$0.46 \pm 0.3$
% patients with KT/V $\geq 1.7$	100.0	100.0

### Peritonitis Rate

There were 2 episodes of peritonitis during the period 1 Jan 2004 to 31 Dec 2004 making the peritonitis rate 1 in 112 patient months. Both these episodes occurred in patients on CAPD.

### Anemia

The mean haemoglobin was  $11.1 \pm 1.8$  g/dl with 16 patients (69.6%) on erythropoietin. Seven (30%) patients had a haemoglobin above the target level of 12 g/dl.

**Table 13 – Haemoglobin and Use of Erythropoietin**

<b>Hb (g/dl)</b>	<b>2003</b>		<b>2004</b>	
N	9		23	
Mean $\pm$ SD	$11.9 \pm 2.6$		$11.1 \pm 1.8$	
< 10 not on EPO	1	11.0%	1	4.3%
< 10 on EPO	2	22.0%	4	17.4%
> 10 not on EPO	1	11.0%	6	26.0%
> 10 on EPO	5	56.0%	12	52.2%

## Serum Albumin

The patients tended to have a low serum albumin level with a mean of  $30.7 \pm 5.9$  g/L. Most (95.2%) of the patients did not exceed the lower limit of normal which is 37 g/L.

**Table 14 – Serum albumin**

Albumin (g/L)	2003	2004
N	9	21*
Mean $\pm$ SD	$28.7 \pm 4.6$	$30.7 \pm 5.9$
% < 37 g/L	88.8	95.2
% < 30 g/L	66.7	33.3

\* 2 patients entered PD programme late in the year and have no serum albumin levels

## Hyperlipidemia

Patients had poor lipid profiles with a mean LDL cholesterol of  $3.1 \pm 1.0$  mmol/L and triglyceride of  $2.3 \pm 1.8$  mmol/L. Only 26.7% of the patients were within the recommended MOH guidelines for LDL cholesterol (< 2.6 mmol/L) while 56.3% were within the recommended level for triglyceride (<2.3 mmol/L). Interestingly, the mean HDL cholesterol level was  $1.5 \pm 0.4$  mmol/L with 94.0% falling within the recommended level ( $\geq 1.0$  mmol/L).

**Table 15 – Serum Cholesterol and Triglycerides**

	2003	2004
Total Cholesterol (mmol/L)	$5.7 \pm 2.2$ (n = 2)	$5.7 \pm 1.2$ (n =18)
% <4.1 mmol/L	50.0	11.0
LDL Cholesterol (mmol/L)	$3.3 \pm 1.2$ (n = 2)	$3.1 \pm 1.0$ (n =15)
% < 2.6 mmol/L	100.0	26.7
HDL Cholesterol (mmol/L)	$1.9 \pm 0.6$ (n = 2)	$1.5 \pm 0.4$ (n = 18)
% $\geq 1.0$ mmol/L	100.0	94.0
Triglycerides (mmol/L)	$1.3 \pm 0.8$ (n = 2)	$2.3 \pm 1.8$ (n=16)
% < 2.3 mmol/L	100.0	56.3

## TEMPORARY HEMODIALYSIS

Three patients required hemodialysis for problems of (1) an exit site leak, (2) an abdominal wall leak and (3) a periumbilical hernia requiring surgical repair.

## TRANSPLANT WAITING LIST

**Table 16 - Transplant Status**

	2003		2004	
N	9		23	
Registered	1	11.0%	6	26.0%
Not eligible	1	11.0%	4	17.4%
Opted out	0	0	4	17.4%
Pending	7	78.0%	9	39.0%

## ACTIVITIES OF THE PD CENTRE

An “Open House” was conducted for all nephrologists from SGH, NUH and TTSH on 29 Jan 2004 to create awareness of the PD Programme in KDF. Fourteen doctors attended the Open House.

A KDF-NUH programme was developed to increase cooperation between the two organizations. Both existing and new patients will be accepted into the KDF-NUH programme and doctors from NUH will assist with the follow-up of PD patients at the Kreta Ayer Centre when the patient numbers increase.

A Public Forum on peritoneal dialysis was conducted on 3 July 2004 at Suntec Convention Centre. The speakers were Dr Grace Lee, Dr Ram Gokal and Dr Lai Kar Neng. An estimated 700 members of the public attended the forum.

A corporate lunch talk on “Prevention of Kidney Failure” was delivered to the Port of Singapore Authority (PSA) staff on 13 January 2005. The speaker was Dr Grace Lee.

## PATIENT ACTIVITIES

The PD patients participated in the following activities:

1. an educational talk on “Cooking It Right” on 16 May 2004,
2. a cruise on the “junk” boat Cheng Ho around Kusu Island on 13 June 2004, and
3. a patient outing cum educational talk at the Singapore Zoological Gardens on 12 September 2004. The theme of the seminar was “Exercise Towards a Healthier You”

## Most Compliant Patient Award

The awards are given to compliant patients that participate actively in their dialysis treatment and the PD nurses and Medical Director (PD) select the awardees based on standard criteria. This year’s awardees were Mdm Roszia bte Hashim and Mdm Teo Kah Luan.

## **CONCLUSION**

The PD Centre continues to grow and looks actively into partnership with the hospitals in order to provide holistic and seamless care to the PD patient. One such “tie-up” is the KDF-NUH programme.

With more data available, it is also clear that the patients require nutritional counseling and medical intervention to improve their nutritional profile in terms of the serum albumin and lipid levels. Efforts will be directed to improve these areas.

The Centre will also continue its efforts to actively increase public awareness of peritoneal dialysis.

Dr Grace Lee Siew Luan  
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