

CHAPTER 11

HAEMODIALYSIS PRACTICES

Tan Chwee Choon
Shahnaz Shah Firdaus Khan

1.1: VASCULAR ACCESS AND ITS COMPLICATIONS

There was a progressive decline in the percentage of patients having native vascular access from 98% in 1997 to 92% in 2005. The ratio of brachiocephalic fistula (BCF) to arteriovenous fistula (AVF) has increased. In 2005, 25% of native vascular access was BCF. The proportion of patients with artificial graft remained at 2% while the use of permanent catheters has increased from 1% in 2004 to 2% in 2005. These developments may be due to the increased intake of diabetic and older patients. (Table 11.1.1)

Table 11.1.1: Vascular Access on Haemodialysis, 1997-2005

Access types	1997		1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%	No.	%
Wrist AVF	1427	85	1763	84	2406	81	3561	82	4049	79
BCF*	213	13	273	13	431	14	655	15	897	17
Venous graft	4	0	6	0	8	0	11	0	19	0
Artificial graft	13	1	20	1	34	1	31	1	64	1
Permanent CVC	4	0	8	0	17	1	19	0	25	0
Temporary CVC*	20	1	37	2	77	3	77	2	90	2
Temporary FVC*	0	0	0	0	0	0	0	0	0	0
TOTAL	1681	100	2107	100	2973	100	4354	100	5144	100

Access types	2002		2003		2004		2005	
	No.	%	No.	%	No.	%	No.	%
Wrist AVF	4680	78	5253	75	5891	73	6264	69
BCF*	1068	18	1360	19	1693	21	2119	23
Venous graft	14	0	23	0	41	1	27	0
Artificial graft	78	1	114	2	150	2	216	2
Permanent CVC	43	1	62	1	99	1	178	2
Temporary CVC*	138	2	180	3	233	3	263	3
Temporary FVC*	0	0	0	0	0	0	7	0
TOTAL	6021	100	6992	100	8107	100	9074	100

* BCF=Brachiocephalic fistula

* FVC= Femoral venous catheter

* CVC= Central venous catheter

Table 11.1.2: Difficulties reported with Vascular Access, 1997-2005

Access difficulty	1997		1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%	No.	%
Difficulty with needle placement	55	47	82	4	133	5	146	4	217	5
Difficulty in obtaining desired blood flow rate	48	41	60	3	112	5	136	4	239	5
Other difficulties	12	10	30	2	55	2	32	1	39	1
No difficulties	1	1	1778	91	2155	88	3402	92	4276	90
TOTAL	116	100	1950	100	2455	100	3716	100	4771	100

Access difficulty	2002		2003		2004		2005	
	No.	%	No.	%	No.	%	No.	%
Difficulty with needle placement	215	4	217	3	255	3	318	4
Difficulty in obtaining desired blood flow rate	235	4	243	4	301	4	346	4
Other difficulties	57	1	60	1	67	1	59	1
No difficulties	5073	91	5975	92	6957	92	8146	92
TOTAL	5580	100	6495	100	7580	100	8869	100

Complication rates have remained similar despite an increase in intake of elderly and diabetic patients on dialysis in recent years. 12% had vascular access complications in 2005, of these 3% were due to thrombosis. (Table 11.1.3)

Table 11.1.3: Complications reported with Vascular Access, 1997-2005

Complication	1997		1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%	No.	%
Thrombosis	71	19	69	3	129	5	148	4	209	4
Bleed	23	6	37	2	23	1	30	1	62	1
Aneurysmal dilatation	121	33	134	6	159	6	208	5	212	4
Swollen limb	35	9	36	2	51	2	44	1	67	1
Access related infection, local/systemic	29	8	21	1	34	1	52	1	49	1
Distal limb ischaemia	4	1	12	1	9	0	26	1	22	0
Venous outflow obstruction	45	12	50	2	71	3	78	2	123	2
Carpal tunnel	23	6	19	1	35	1	42	1	41	1
Others	18	5	48	2	64	2	37	1	74	1
No complications	0	0	1636	79	2119	79	3237	83	4204	83
TOTAL	369	100	2062	100	2694	100	3902	100	5063	100

Complication	2002		2003		2004		2005	
	No.	%	No.	%	No.	%	No.	%
Thrombosis	202	3	220	3	284	4	284	3
Bleed	66	1	54	1	67	1	73	1
Aneurysmal dilatation	211	4	200	3	193	2	177	2
Swollen limb	56	1	55	1	77	1	82	1
Access related infection, local/systemic	52	1	43	1	70	1	63	1
Distal limb ischaemia	17	0	13	0	37	0	35	0
Venous outflow obstruction	101	2	119	2	151	2	166	2
Carpal tunnel	44	1	63	1	49	1	55	1
Others	118	2	118	2	133	2	108	1
No complications	4988	85	5967	87	6896	87	7917	88
TOTAL	5855	100	6852	100	7957	100	8960	100

11.2: HD PRESCRIPTION

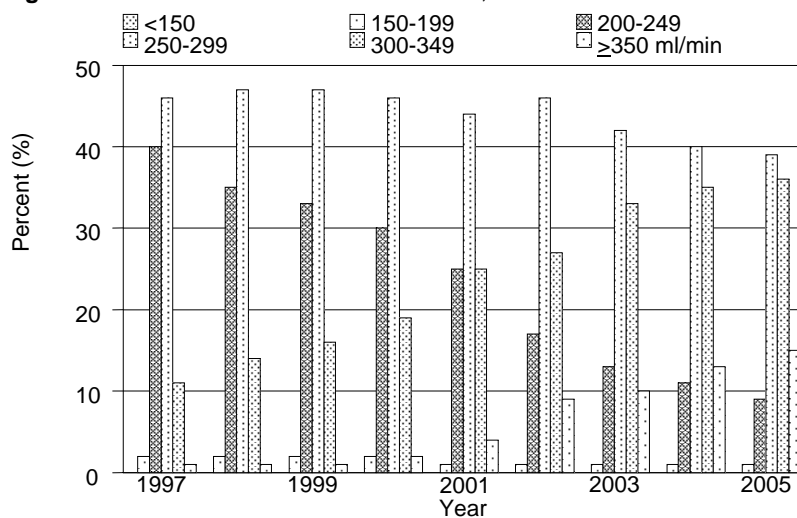
There was an increasing trend towards the use of higher blood flow rates from 1997 to 2005. The proportion of patients with blood flow of 300-349 ml/min had increased from 11% to 36% and those with blood flow ≥ 350 ml/min from 1% to 15%. In 2005, 51% had blood flow rates of ≥ 300 ml/min compared to only 12% in 1997. (Table 11.2.1 and Fig. 11.2.1)

Table 11.2.1: Blood Flow Rates in HD Units, 1997– 2005

Blood flow rates	1997		1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%	No.	%
<150 ml/min	2	0	4	0	6	0	9	0	7	0
150-199 ml/min	34	2	36	2	65	2	85	2	69	1
200-249 ml/min	649	40	735	35	962	33	1282	30	1233	25
250-299 ml/min	734	46	968	47	1367	47	1938	46	2229	44
300-349 ml/min	176	11	298	14	455	16	814	19	1276	25
≥ 350 ml/min	18	1	30	1	31	1	94	2	216	4
TOTAL	1613	100	2071	100	2886	100	4222	100	5030	100

Blood flow rates	2002		2003		2004		2005	
	No.	%	No.	%	No.	%	No.	%
<150 ml/min	9	0	4	0	11	0	7	0
150-199 ml/min	69	1	84	1	86	1	91	1
200-249 ml/min	973	17	882	13	879	11	761	9
250-299 ml/min	2692	46	2867	42	3112	40	3424	39
300-349 ml/min	1590	27	2242	33	2711	35	3186	36
≥ 350 ml/min	505	9	691	10	1020	13	1322	15
TOTAL	5838	100	6770	100	7819	100	8791	100

Figure 11.2.1: Blood Flow Rates in HD Units, 1997–2005



97% of patients were on 3 HD sessions per week. This has increased over the years from 92% in 2000 to 97% in 2005. Three percent were on 2 HD sessions per week. The small percentage of patients on 2 HD sessions per week is likely to be patients who are dialysing in private centres and who are unable to do 3 HD sessions per week because of financial or logistic reasons. (Table 11.2.2)

Table 11.2.2: Number of HD Sessions per week, 1997 – 2005

HD sessions per week	1997		1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%	No.	%
1	1	0	1	0	4	0	8	0	8	0
2	6	0	5	0	153	5	341	8	337	7
3	1664	99	2110	100	2811	95	3982	92	4761	92
4	9	1	2	0	3	0	10	0	50	1
TOTAL	1680	100	2118	100	2971	100	4341	100	5156	100

HD sessions per week	2002		2003		2004		2005	
	No.	%	No.	%	No.	%	No.	%
1	10	0	15	0	11	0	7	0
2	369	6	343	5	281	3	247	3
3	5603	93	6562	95	7709	96	8824	97
4	18	0	10	0	30	0	30	0
TOTAL	6000	100	6930	100	8031	100	9108	100

The majority of patients (98%) were on 4 hours HD session. Only a small percentage was more than 4 hours (1%) and ≤ 3 hours (1%). (Table 11.2.3)

Table 11.2.3: Duration of HD, 1997 – 2005

Duration of HD per session	1997		1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%	No.	%
≤ 3 hours	7	0	3	0	4	0	8	0	6	0
3.5 hours	3	0	18	1	9	0	12	0	33	1
4 hours	1594	95	1993	94	2735	92	4053	93	4956	96
4.5 hours	69	4	91	4	160	5	189	4	106	2
5 hours	8	0	8	0	61	2	77	2	59	1
≥ 5 hours	1	0	3	0	0	0	13	0	0	0
TOTAL	1682	100	2116	100	2969	100	4352	100	5160	100

Duration of HD per session	2002		2003		2004		2005	
	No.	%	No.	%	No.	%	No.	%
≤ 3 hours	19	0	20	0	87	1	98	1
3.5 hours	15	0	7	0	17	0	17	0
4 hours	5844	97	6757	98	7766	97	8899	98
4.5 hours	68	1	76	1	119	1	52	1
5 hours	48	1	66	1	47	1	40	0
≥ 5 hours	0	0	0	0	3	0	0	0
TOTAL	5994	100	6926	100	8039	100	9106	100

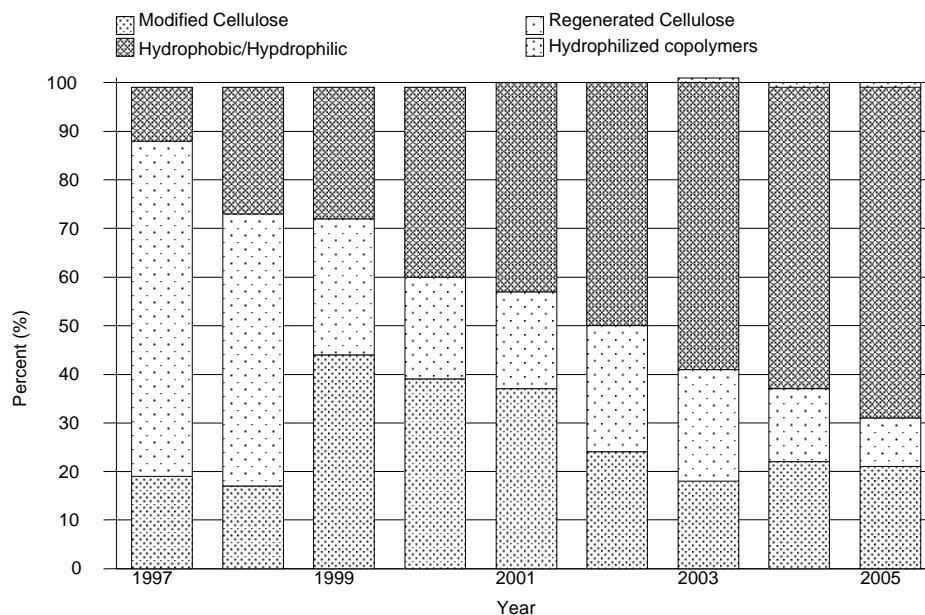
The use of synthetic membrane (hydrophobic/hydrophilic and hydrophilised copolymer) has increased from 11% in 1997 to 69% in 2005. Regenerated cellulose membrane usage has progressively declined from 67% in 1997 to 10% in 2005. The use of modified cellulose membrane remained at about 21%. (Table 11.2.4 and fig. 11.2.4)

Table 11.2.4: Dialyser membrane types in HD Units, 1997 – 2005

Dialyser membrane	1997		1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%	No.	%
Modified Cellulose	317	19	338	17	1216	44	1602	39	1666	37
Regenerated Cellulose	1136	69	1114	56	777	28	871	21	890	20
Hydrophobic/Hypdrophilic	184	11	524	26	754	27	1586	39	1944	43
Hydrophilized copolymers	1	0	2	0	1	0	0	0	0	0
TOTAL	1638	100	1978	100	2748	100	4059	100	4500	100

Dialyser membrane	2002		2003		2004		2005	
	No.	%	No.	%	No.	%	No.	%
Modified Cellulose	1376	24	1129	18	1719	22	1782	21
Regenerated Cellulose	1470	26	1480	23	1149	15	878	10
Hydrophobic/Hypdrophilic	2828	50	3758	59	4836	62	5802	68
Hydrophilized copolymers	1	0	35	1	74	1	110	1
TOTAL	5675	100	6402	100	7778	100	8572	100

Figure 11.2.4: Dialyser membrane types in HD Units, 1997 – 2005



Reuse of dialysers is a common practice in Malaysia whereby 96% reuse the dialyser. The frequency of reuse depends on the type of dialyser membrane. One of the common reuse frequencies is 6 times (11%) for modified cellulose and regenerated cellulose. The other common frequencies are 10, 12 and >13 times with 15%, 26% and 30% respectively for synthetic membrane. In 2005, 71% of patients reused their dialysers 10 times or more. Four percent of patients were on single use in 2005 and the trend has not changed in recent years. The latter are likely to be patients who have hepatitis B or C and whose centres do not reuse such dialysers. (Table 11.2.5)

Table 11.2.5: Dialyser Reuse Frequency in HD Units, 1997- 2005

Dialyser reuse frequency	1997		1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%	No.	%
1*	21	1	16	1	65	2	116	3	152	3
2	9	1	5	0	13	0	17	0	15	0
3	996	63	215	11	191	7	205	5	232	5
4	174	11	113	6	250	9	477	12	416	9
5	194	12	137	7	264	10	312	8	357	7
6	154	10	1072	55	1414	51	1730	43	1413	29
7	2	0	37	2	46	2	69	2	85	2
8	4	0	66	3	122	4	357	9	793	16
9	30	2	109	6	179	6	101	2	132	3
10	0	0	84	4	96	3	246	6	400	8
11	0	0	23	1	6	0	4	0	43	1
12	0	0	64	3	118	4	333	8	470	10
≥ 13	0	0	0	0	0	0	91	2	331	7
TOTAL	1584	100	1941	100	2764	100	4058	100	4839	100

Dialyser reuse frequency	2002		2003		2004		2005	
	No.	%	No.	%	No.	%	No.	%
1*	197	4	251	4	319	4	181	4
2	41	1	19	0	42	1	1	0
3	316	6	350	5	194	3	78	2
4	337	6	339	5	192	3	77	2
5	318	6	267	4	192	3	98	2
6	1216	22	916	14	806	11	543	11
7	124	2	71	1	89	1	44	1
8	866	16	852	13	809	11	396	8
9	59	1	87	1	50	1	45	1
10	538	10	880	14	1160	16	769	15
11	36	1	25	0	42	1	12	0
12	879	16	1512	24	1916	26	1330	26
≥ 13	644	12	820	13	1644	22	1533	30
TOTAL	5571	100	6389	100	7455	100	5107	100

1* is single use i.e. no reuse

99% of patients were on bicarbonate dialysate buffer in 2005 compared to 67% in 1997. In 2005 there were still 58 patients who were using acetate as a buffer. (Table 11.2.6)

Table 11.2.6: Dialysate Buffer used in HD Units, 1997 – 2005

Dialysate buffer	1997		1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%	No.	%
Acetate	551	33	627	30	552	19	393	9	240	5
Bicarbonate	1123	67	1492	70	2429	81	3969	91	4920	95
TOTAL	1674	100	2119	100	2981	100	4362	100	5160	100

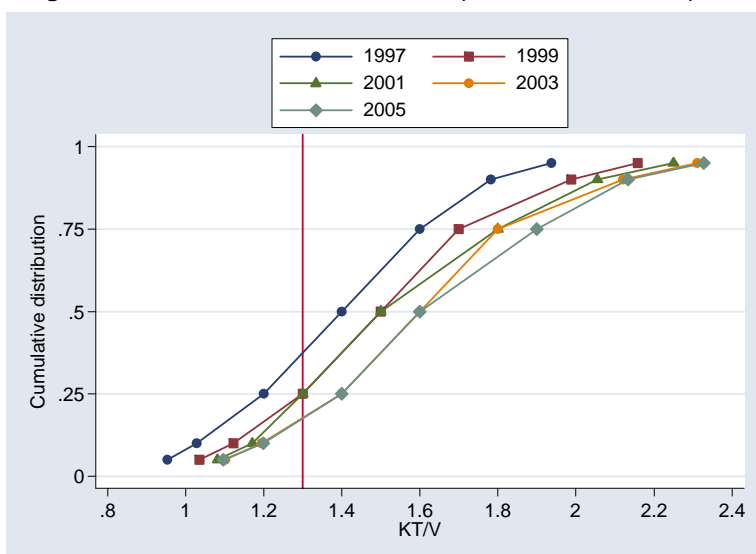
Dialysate buffer	2002		2003		2004		2005	
	No.	%	No.	%	No.	%	No.	%
Acetate	138	2	77	1	33	0	58	1
Bicarbonate	5880	98	6819	99	7957	100	9061	99
TOTAL	6018	100	6896	100	7990	100	9119	100

The median prescribed KT/V was 1.6. The percentage of patients with $Kt/V \geq 1.3$ has increased from 60% in 1997 to 82% in 2005. Since 2002, the median KT/V and the percentage of patients with $KT/V \geq 1.3$ has plateaued. (Table 11.2.7)

Table 11.2.7: Distribution of prescribed KT/V, HD patients 1997-2005

Year	No. of subjects	Mean	SD	Median	LQ	UQ	% patients ≥ 1.3
1997	1558	1.4	.3	1.4	1.2	1.6	60
1998	2022	1.5	.3	1.4	1.2	1.6	68
1999	2831	1.5	.3	1.5	1.3	1.7	73
2000	4087	1.6	.4	1.5	1.3	1.8	75
2001	4908	1.6	.4	1.5	1.3	1.8	78
2002	5496	1.6	.4	1.6	1.4	1.8	81
2003	6520	1.6	.4	1.6	1.4	1.8	82
2004	7453	1.6	.4	1.6	1.4	1.8	81
2005	8555	1.6	.4	1.6	1.4	1.9	82

Figure 11.2.7: Cumulative distribution of prescribed KT/V, HD patients 1997-2005



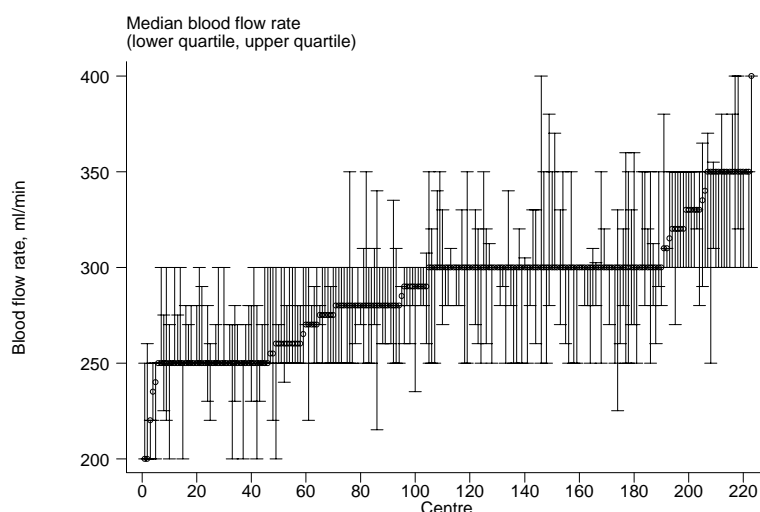
The median blood flow rates among centres had increased from 250ml/min in 1997 to 300mls/min in 2005. There is still a wide variation in practice among centers. The median blood flow rates among centres ranged from 200ml/min to 400ml/min. (Table 11.2.8 (a) and Fig. 11.2.8 (a))

Table 11.2.8: Variation in HD prescription among HD centres 2005

(a) Median blood flow rates in HD patients

Year	No. of centres	Min	5 th Centile	LQ	Median	UQ	95 th Centile	Max
1997	45	200	200	220	250	250	280	300
1998	46	200	200	230	250	250	300	300
1999	67	200	200	230	250	250	300	300
2000	100	200	200	240	250	275	300	300
2001	116	200	220	250	252.5	300	300	350
2002	137	200	230	250	280	300	300	350
2003	155	200	240	250	280	300	325	350
2004	184	220	250	257.5	287.5	300	350	400
2005	223	200	250	260	300	300	350	400

Figure 11.2.8(a): Variation in median blood flow rates in HD patients among HD centres 2005



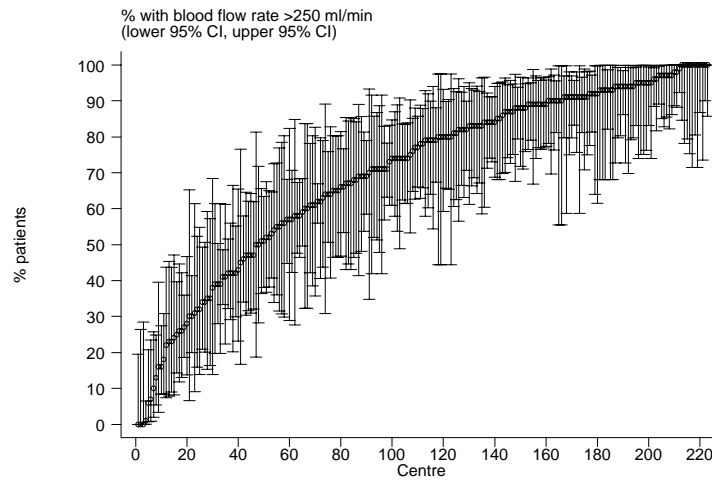
There is an increase in the proportion of patients with blood flow rates of > 250 ml/min. In 2005, 50% of centers had 78% of their patients with blood flow rate of >250mls/min. This represents a marked improvement when compared with 1997 when it was only 13%. (Table 11.2.8 (b))

(b) Proportion of patients with blood flow rates > 250 ml/min

Year	No. of centres	Min	5 th Centile	LQ	Median	UQ	95 th Centile	Max
1997	45	0	0	4	13	27	60	64
1998	46	0	2	9	20.5	38	79	100
1999	67	0	2	8	28	49	85	100
2000	100	0	0	10.5	31.5	59.5	85.5	91
2001	116	0	0	22.5	49.5	73.5	92	100
2002	137	0	2	36	61	82	95	100
2003	155	0	4	42	70	85	98	100
2004	184	0	17	50	73	86	96	100
2005	223	0	22	55	78	91	99	100

In 2005 as in 2004, there was still a wide variation in the proportion of patients with blood flow rates >250mls/min among HD centres. This is clearly reflected in fig. 11.2.8 (b). Three centres had no patients with blood flow rate of > 250mls/min. A small number of centres reported 100% of their patients with blood flow rates of > 250 ml/min.

Figure 11.2.8(b): Variation in Proportion of patients with blood flow rates > 250 ml/min among HD centres 2005

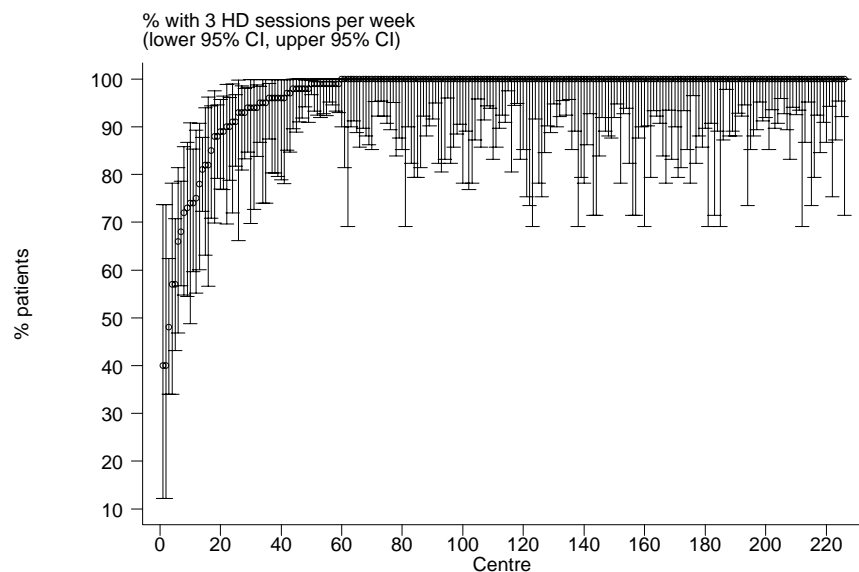


The majority of centres had 100% of their patients with 3 HD sessions per week. There were still a number of HD centres with a significant proportion of their patients with less than 3 HD sessions per week. In 2005, 3 HD centers had less than 50% of their patients with 3 HD sessions per week. (Table 11.2.8 (c) and figure 11.2.8 (c))

(c) Proportion of patients with 3 HD sessions per week

Year	No. of centres	Min	5 th Centile	LQ	Median	UQ	95 th Centile	Max
1997	47	80	92	99	100	100	100	100
1998	46	80	98	100	100	100	100	100
1999	69	17	45	97	100	100	100	100
2000	100	25	44.5	90.5	100	100	100	100
2001	118	23	50	92	100	100	100	100
2002	137	28	48	94	99	100	100	100
2003	160	36	55	97	100	100	100	100
2004	188	37	70	98	100	100	100	100
2005	226	40	75	99	100	100	100	100

Figure 11.2.8(c): Variation in proportion of patients with 3 HD sessions per week among HD centres 2005



The median prescribed KT/V in HD patients was 1.6 in 2005. The minimum prescribed KT/V was 1.3 and the maximum prescribed KT/V was 2.0. The variation of prescribed KT/V among centres (fig. 11.2.8.d) was less marked than the variation in proportion of patients with blood flow rates of > 250 ml/min (fig. 11.2.8 b.).

(d) Median prescribed KT/V in HD patients

Year	No. of centres	Min	5 th Centile	LQ	Median	UQ	95 th Centile	Max
1997	44	1.2	1.2	1.3	1.4	1.4	1.5	1.8
1998	45	1.1	1.3	1.4	1.4	1.5	1.6	1.7
1999	67	1.2	1.3	1.4	1.5	1.6	1.7	1.8
2000	99	1.2	1.3	1.4	1.5	1.6	1.8	2.8
2001	114	1.2	1.3	1.5	1.5	1.7	1.8	1.9
2002	132	1.2	1.4	1.5	1.6	1.7	1.8	2.1
2003	150	1.2	1.4	1.5	1.6	1.7	1.9	2.1
2004	181	1.2	1.4	1.5	1.6	1.7	1.9	2.2
2005	219	1.3	1.4	1.5	1.6	1.7	1.9	2

Figure 11.2.8(d): Variation in median prescribed KT/V in HD patients among HD centres 2005

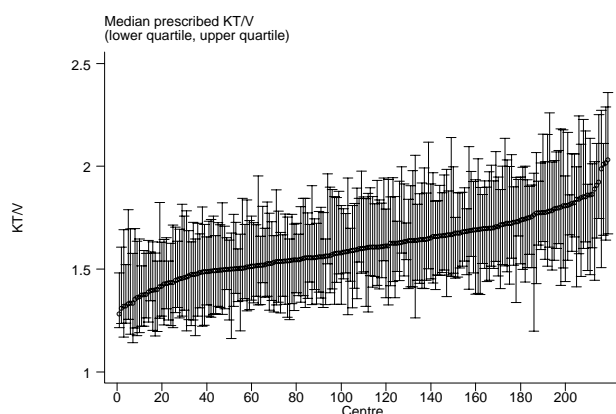
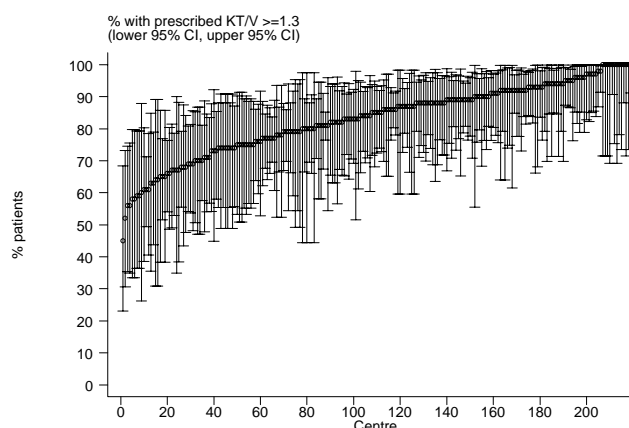


Figure 11.2.8(e): Variation in proportion of patients with prescribed KT/V ≥ 1.3 among HD centres 2005



In 2005, half the centres had 85% of their patients with a prescribed KT/V ≥ 1.3 . This is an improvement compared to 1997 when half the centres had only 60% of their patients with KT/V of ≥ 1.3 . However, there is still a wide variation in the proportion of patients with KT/V ≥ 1.3 among HD centres ranging from below 45% to 100%. (table 11.2.8e, fig 11.2.8 e).

(e) Proportion of patients with prescribed KT/V ≥ 1.3

Year	No. of centres	Min	5 th Centile	LQ	Median	UQ	95 th Centile	Max
1997	44	32	44	51.5	60	70	90	100
1998	45	0	46	60	67	74	85	96
1999	67	36	50	67	74	83	94	100
2000	99	26	47	67	79	86	94	100
2001	114	42	50	71	81.5	88	96	100
2002	132	35	58	74.5	82	90	97	100
2003	150	30	57	77	83.5	91	96	100
2004	181	28	61	74	83	91	100	100
2005	219	45	61	75	85	92	100	100

11.3: TECHNIQUE SURVIVAL ON DIALYSIS

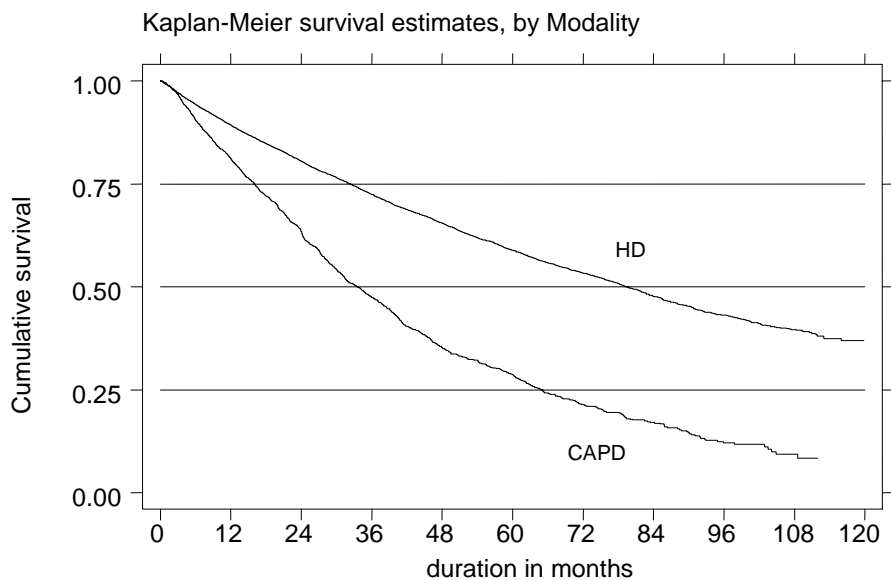
The unadjusted HD technique survival at 1 year, 5 years and 10 years was 89%, 59% and 37%. CAPD unadjusted technique survival was 81% at 1 year and 29% at 5 years. The CAPD technique survival was negligible at 10 years. (Table 11.3.1 and Fig. 11.3.1)

Table 11.3.1: Unadjusted technique survival by Dialysis modality, 1996-2005

Dialysis modality Interval (months)	CAPD			HD			All Dialysis		
	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE
6	2374	90	1	15266	94	0	17640	94	0
12	1980	81	1	13066	89	0	15046	88	0
24	1300	63	1	9515	81	0	10813	78	0
36	769	47	1	6881	72	0	7650	69	0
48	439	35	1	4822	65	0	5261	61	0
60	267	29	1	3303	59	1	3569	55	0
72	147	21	1	2188	53	1	2335	49	1
84	89	17	1	1330	48	1	1417	43	1
96	39	12	1	716	43	1	754	39	1
108	13	9	1	278	40	1	290	35	1
120	-	-	-	17	37	1	17	33	1

* No. = Number at risk SE=standard error

Figure 11.3.1: Unadjusted technique survival by Dialysis modality, 1996-2005



There was no apparent difference in the unadjusted HD technique survival by year of starting dialysis for the years 1996 to 2005. (Table 11.3.2 and fig 11.3.2)

Table 11.3.2: Unadjusted technique survival by year of entry, 1996-2005

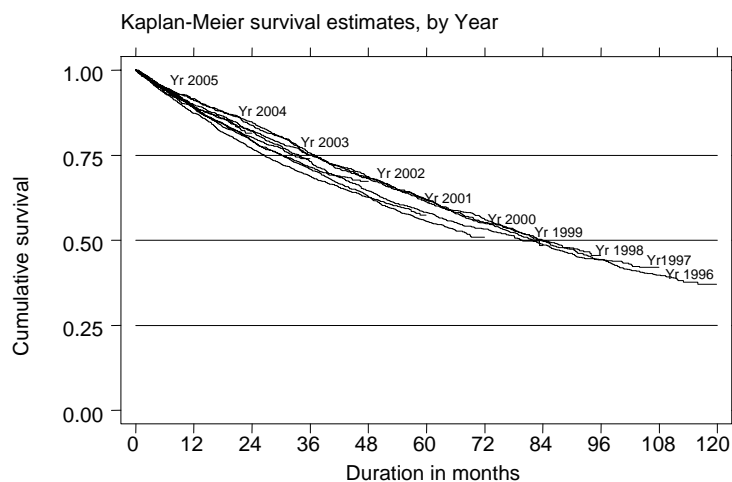
Year Interval (months)	1996			1997			1998			1999		
	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE
6	735	94	1	946	94	1	1098	95	1	1320	95	1
12	692	91	1	892	89	1	1048	92	1	1238	90	1
24	630	85	1	811	82	1	940	84	1	1101	82	1
36	552	75	2	736	75	1	836	76	1	964	73	1
48	500	69	2	661	69	1	741	68	1	842	65	1
60	445	62	2	589	62	2	661	61	1	751	58	1
72	395	55	2	515	55	2	599	56	2	684	53	1
84	352	50	2	452	49	2	528	50	2	-	-	-
96	310	44	2	407	44	2	-	-	-	-	-	-
108	278	40	2	-	-	-	-	-	-	-	-	-
120	17	37	2	-	-	-	-	-	-	-	-	-

Year Interval (months)	2000			2001			2002			2003		
	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE
6	1597	95	1	1757	93	1	1998	94	1	2131	94	0
12	1476	89	1	1610	87	1	1872	89	1	1975	89	1
24	1272	79	1	1396	77	1	1614	79	1	1750	80	1
36	1119	71	1	1228	69	1	1445	72	1	-	-	-
48	979	63	1	1104	63	1	-	-	-	-	-	-
60	859	56	1	-	-	-	-	-	-	-	-	-

Year Interval (months)	2004			2005		
	No.	% Survival	SE	No.	% Survival	SE
6	2441	95	0	1250	94	1
12	2267	89	1	-	-	-

* No. = Number at risk SE=standard error

Figure 11.3.2: Unadjusted technique survival by year of entry, 1996-2005



As expected unadjusted HD technique survival showed better technique survival in the younger age groups than the older age groups. Ten year unadjusted HD technique survival in the age groups of 25-34, 35-44, 45-54, 55-64 and > 65 was 68%, 59%, 38%, 21% and 14% respectively. (Table 11.3.3 and fig 11.3.3)

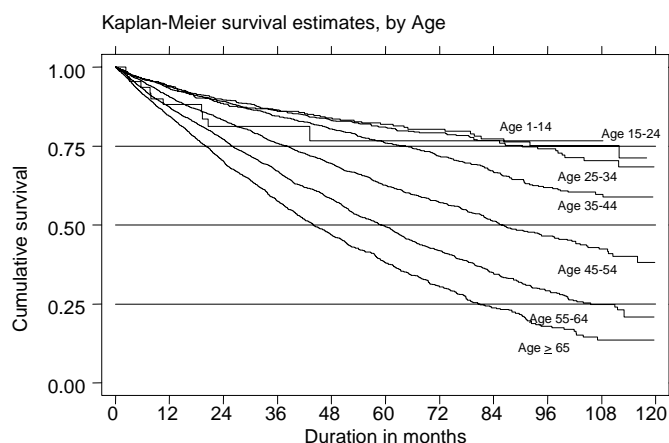
Table 11.3.3: Unadjusted technique survival by age, 1996-2005

Age group (years)	≤ 14			15-24			25-34			35-44		
	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE
6	55	94	0	611	96	1	1307	96	1	2247	96	0
12	46	88	0	526	94	1	1145	94	1	1990	93	1
24	33	81	1	384	88	1	893	90	1	1574	89	1
36	25	81	1	302	87	1	712	86	1	1244	85	1
48	16	77	1	228	84	2	536	83	1	965	80	1
60	13	77	1	173	82	2	425	81	1	721	76	1
72	11	77	1	126	80	2	307	79	1	507	72	1
84	6	77	1	85	77	3	206	77	2	335	67	1
96	4	77	1	53	75	3	123	74	2	188	62	2
108	2	77	1	23	75	3	53	70	2	79	60	2
120	-	-	-	-	-	-	3	68	3	4	59	2

Age group (years)	45-54			55-64			≥ 65		
	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE
6	3928	96	0	4181	93	0	2939	91	0
12	3369	91	0	3558	87	1	2436	84	1
24	2502	83	1	2548	77	1	1586	70	1
36	1846	76	1	1764	67	1	992	58	1
48	1310	69	1	1180	58	1	593	47	1
60	905	63	1	742	49	1	329	38	1
72	598	57	1	462	42	1	184	30	1
84	351	51	1	256	35	1	97	24	1
96	183	47	1	131	29	1	40	18	2
108	73	42	2	42	25	2	13	14	2
120	7	38	3	3	21	2	2	14	2

* No. = Number at risk SE=standard error

Figure 11.3.3: Unadjusted technique survival by age, 1996-2005



Unadjusted HD technique survival in the non diabetic patients at 1 year, 5 years and 10 years was 92%, 71% and 50% respectively. In contrast unadjusted HD technique survival in diabetic patients was worse at 86%, 44% and 17% respectively. More than 50% of diabetic patients have HD technique failure at 5 years. (Table 11.3.4 and fig 11.3.4)

Table 11.3.4: Unadjusted technique survival by Diabetes status, 1996-2005

Diabetes status Interval (months)	Non-Diabetic			Diabetic		
	No.	% Survival	SE	No.	% Survival	SE
6	8076	95	0	7190	93	0
12	7077	92	0	5989	86	0
24	5488	86	0	4027	74	1
36	4255	81	0	2626	63	1
48	3192	76	1	1630	53	1
60	2321	71	1	983	44	1
72	1617	66	1	573	37	1
84	1027	61	1	304	30	1
96	595	56	1	122	25	1
108	243	52	1	36	21	1
120	14	50	1	4	17	3

Figure 11.3.4: Unadjusted technique survival by Diabetes status, 1996-2005

