

CHRONIC PERITONEAL DIALYSIS

IN

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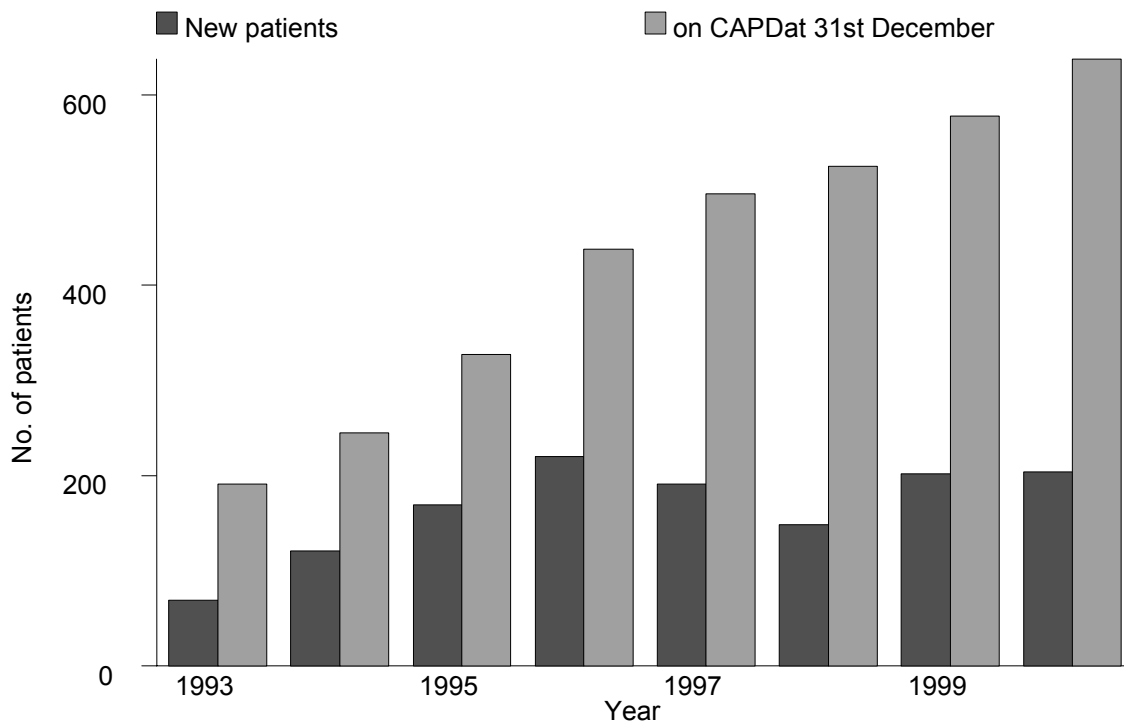
4. CHRONIC PERITONEAL DIALYSIS

4.1 STOCK AND FLOW

Table 4.01 Stock and Flow of Chronic PD Patients 1993 - 2000

Year	1993	1994	1995	1996	1997	1998	1999	2000
New Dialysis patients	69	121	169	220	191	148	202	204
Died	23	42	58	61	73	74	98	71
Transferred to HD	14	22	22	38	50	33	37	63
Transplanted	2	3	7	8	10	12	12	8
Lost to follow up	1	0	0	2	0	0	2	2
Dialysing at 31st December	191	245	327	438	496	525	578	638

Figure 4.01 Stock and Flow of Chronic PD Patients 1993 - 2000

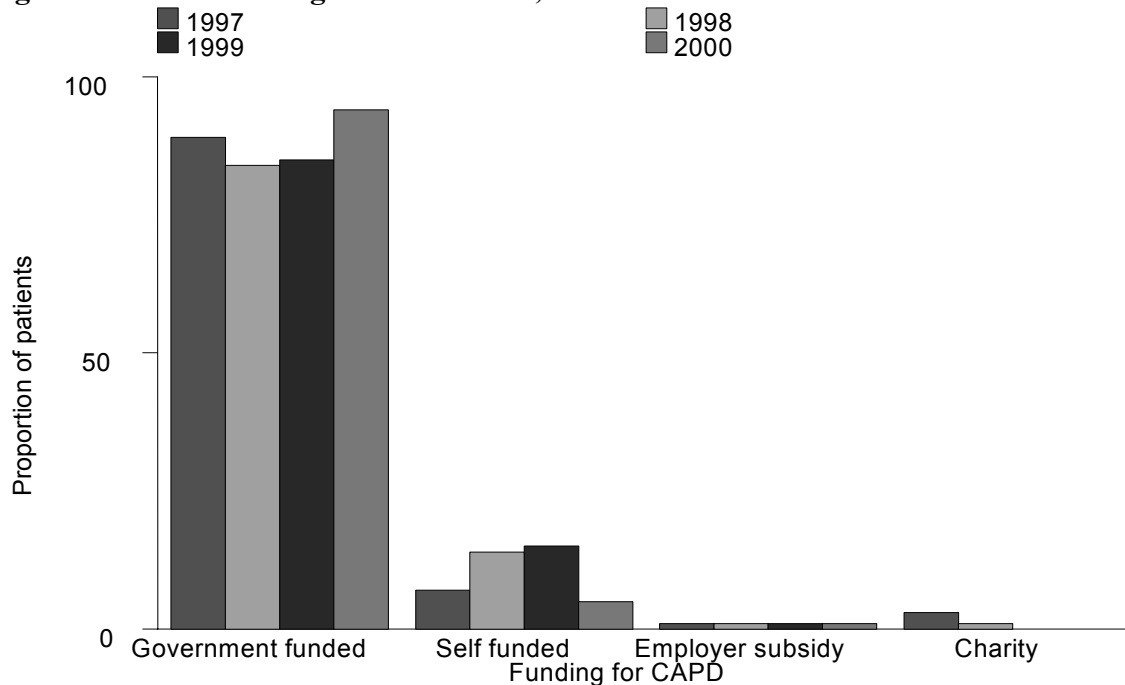


4.2 FUNDING FOR CHRONIC PERITONEAL DIALYSIS

Table 4.03: Funding for CAPD, Government Centres 1997 – 2000

Year	1997	1998	1999	2000
New Dialysis patients	191	148	202	204
% Government funded	89	84	85	94
% Self funded	7	14	15	5
% Employer subsidised	1	1	1	1
% Charity	3	1	0	0
Dialysing at 31st December	496	525	578	638
% Government funded	87	85	86	88
% Self funded	9	12	12	10
% Employer subsidised	1	1	1	1
% Charity	2	2	1	1

Figure 4.03: Funding for new CAPD, Government Centres 1997 – 2000



4.3 DEATH ON CAPD AND TRANSFER TO HAEMODIALYSIS

Table 4.04: Death Rate and Transfer to HD Government Centres 1993 - 2000

Year	1993	1994	1995	1996	1997	1998	1999	2000
No. at risk	191	218	286	383	467	511	552	608
Death (No.)	23	42	58	61	73	74	98	71
Death rate %	12	19	20	16	16	14	18	12
No transferred to HD	14	22	22	38	50	33	37	63
Transfer to HD rate %	7	10	8	10	11	6	7	10
All losses	37	64	80	99	123	107	135	134
All losses rate %	19	29	28	26	26	21	24	22

Figure 4.04: Death Rates on CAPD, Government Centres 1993 - 2000

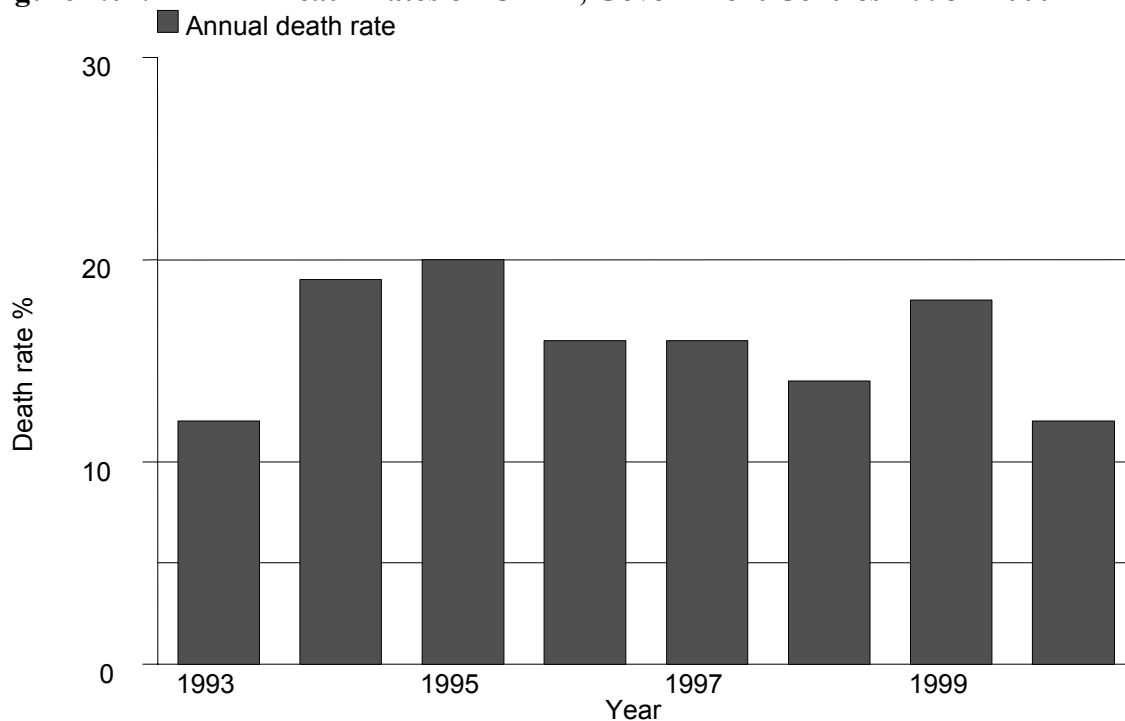


Table 4.05: Causes of Death on CAPD, Government Centres 1997 – 2000

Year	1997		1998		1999		2000	
	No	%	No	%	No	%	No	%
Cardiovascular	25	34	23	31	26	27	19	27
Died at home	18	25	11	15	32	33	20	28
Sepsis	16	22	16	22	15	15	15	21
CAPD peritonitis	4	5	1	1	7	7	9	13
GIT bleed	0	0	0	0	3	3	1	1
Cancer	1	1	0	0	1	1	0	0
Liver disease	0	0	0	0	0	0	0	0
Others	8	11	12	16	11	11	7	10
Unknown	1	1	11	15	3	3	0	0
Total	73	100	74	100	98	100	71	100

Table 4.06: Causes of Transfer to CAPD 1997 - 2000

Year	1997		1998		1999		2000	
	No.	%	No.	%	No.	%	No.	%
Peritonitis	29	58	17	52	23	62	39	62
Cather related infection	3	6	0	0	2	5	1	2
Technical problem	0	0	3	9	0	0	3	5
Membrane failure	6	12	3	9	3	8	9	14
Patient preference/cannot cope	0	0	2	6	3	8	4	6
Others	2	4	0	0	3	8	3	5
Unknown	10	20	8	24	3	8	4	6
Total	50	100	33	100	37	100	63	100

4.4 GOVERNMENT CAPD CENTRES

Table 4.07: Centre Distribution of CAPD patients, 2000

N	Centre	No	Percent
0	No.on CAPD at 31st December	638	100
1	Ipoh Hospital	40	6
2	Kota Bharu Hospital	4	1
3	Kuala Lumpur Hospital	167	26
4	Kuala Lumpur Hospital (Paed.)	23	4
5	Kuala Terengganu Hospital	21	3
6	Pulau Pinang Hospital	90	14
7	Queen Elizabeth Hospital	18	3
8	Selayang Hospital	11	2
9	Seremban Hospital	49	8
10	Sultanah Aminah Hospital	100	16
11	Tengku Ampuan Afzan Hospital, Kuantan	2	0
12	Tengku Ampuan Rahimah Hospital, Klang	26	4
13	Universiti Kebangsaan Malaysia Hospital	5	1
14	University Hospital	82	13

4.5 CAPD PATIENTS' CHARACTERISTICS

Table 4.08: Percentage Age Distribution of CAPD patients 1997 – 2000

Year	1997	1998	1999	2000
New Dialysis patients	191	148	202	204
1-14 years	8	13	11	10
15-24 years	7	9	7	12
25-34 years	14	14	6	8
35-44 years	16	12	13	16
45-54 years	29	19	21	25
55-64 years	12	25	24	18
≥65 years	14	9	16	11
Dialysing at 31st December	496	525	578	638
1-14 years	10	11	12	11
15-24 years	4	5	6	8
25-34 years	14	16	14	14
35-44 years	16	16	16	16
45-54 years	27	25	24	24
55-64 years	19	18	19	18
≥65 years	10	9	9	9

Table 4.09: CAPD Patient Characteristics 1997- 2000

Year	1997	1998	1999	2000
New Dialysis patients	191	148	202	204
Mean age \pm sd	44 \pm 18	43 \pm 19	47 \pm 19	43 \pm 19
% male	52	49	52	47
% Diabetic	42	37	44	36
% HBsAg+	3	0	1	3
% Anti-HCV+	6	3	3	4

4.6 SURVIVAL ANALYSIS

Table 4.10: CAPD Patient Survival related to Year of Entry, Government Centres 1995 – 2000

Year	1995			1996			1997		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	93	2	152	94	2	200	96	1	180
12	87	3	140	88	2	177	91	2	163
24	71	4	96	77	3	139	78	3	133
36	58	4	70	66	3	105	66	4	100
48	44	4	48	57	4	68			
60	36	4	31						

Year	1998			1999			2000		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	94	2	137	94	2	181	95	2	87
12	86	3	121	90	2	168			
24	74	4	91						

No. = number at risk

SE = standard error

Figure 4.10: CAPD Patient Survival related to Year of Entry, Government Centres 1996 – 2000

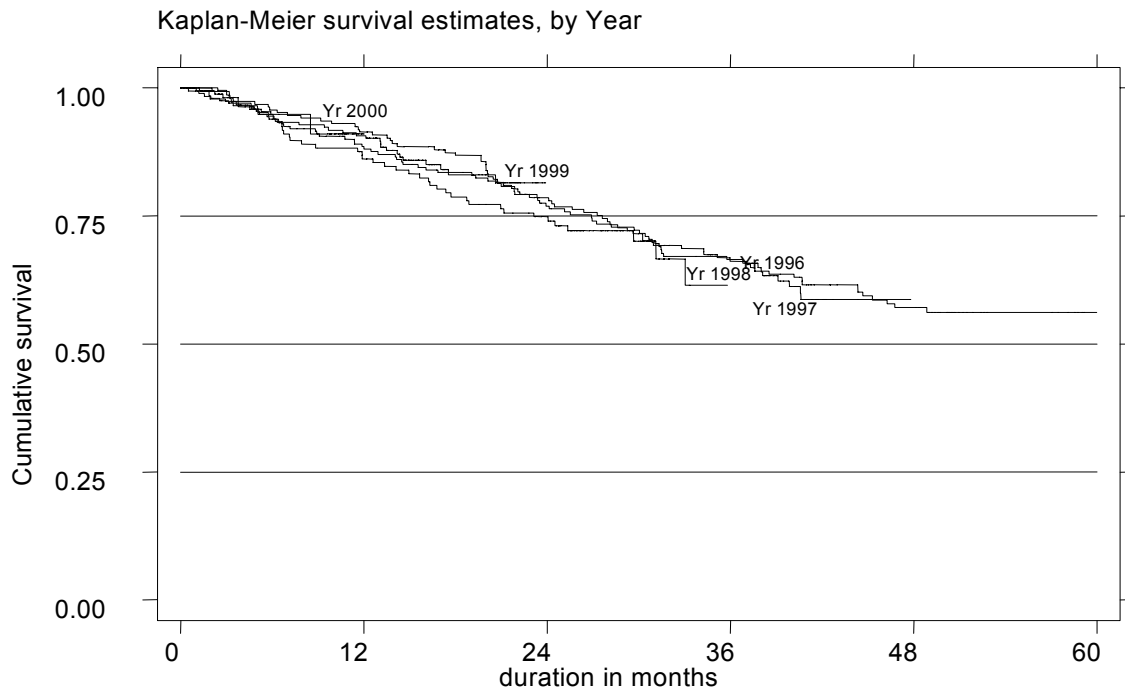


Table 4.11: CAPD Technique Survival related to Year of Entry, Government Centres 1995 – 2000

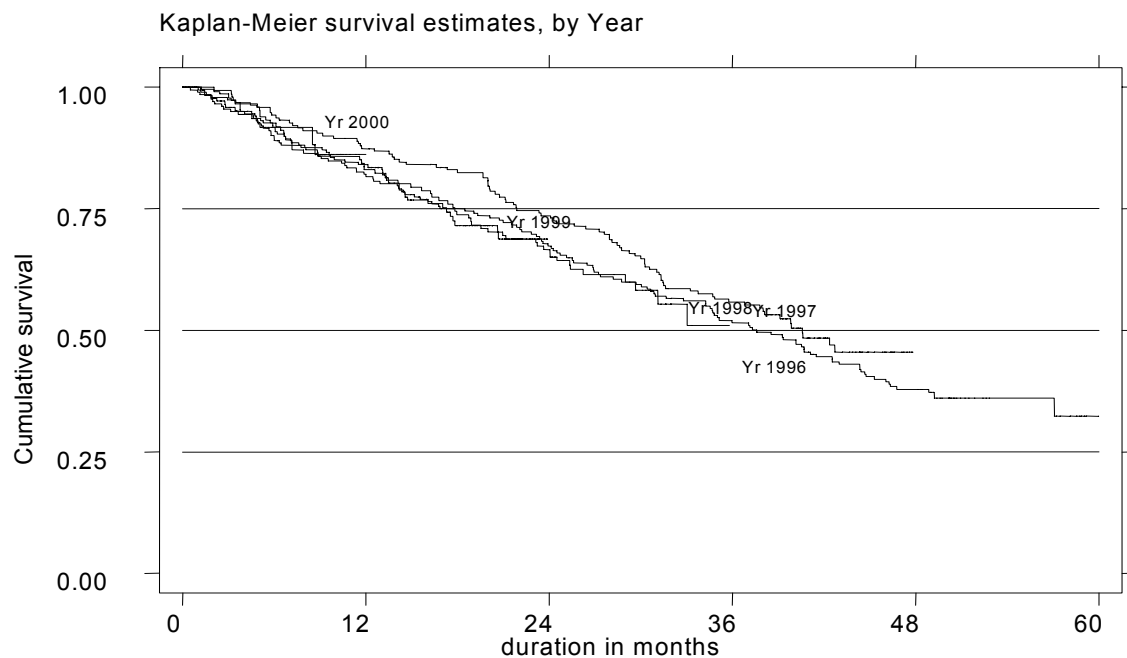
Year	1995			1996			1997		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	90	2	152	91	2	199	94	2	180
12	83	3	140	82	3	177	87	2	163
24	58	4	96	67	3	139	73	3	133
36	43	4	70	52	3	105	56	4	100
48	30	4	48	38	3	68			
60	22	3	32						

Year	1998			1999			2000		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	92	2	137	89	2	181	92	2	87
12	83	3	121	84	3	168			
24	65	4	91						

No. = number at risk

SE = standard error

Figure 4.11: CAPD Technique Survival by Year of Entry Government Centres 1996 – 2000



4.7 WORK RELATED REHABILITATION AND QUALITY OF LIFE ON CAPD

**Table 4.12: Work Related Rehabilitation on CAPD, Government Centres
1997 - 2000**

REHABILITATION STATUS	1997		1998		1999		2000	
	No.	%	No.	%	No.	%	No.	%
Full time work for pay	78	19	83	20	96	19	92	17
Part time work for pay	26	6	23	6	45	9	27	5
Able to work but unable to get a job	15	4	13	3	14	3	25	5
Able to work but not yet due to dialysis schedule	0	0	4	1	3	1	7	1
Able but disinclined to work	7	2	7	2	11	2	10	2
Home maker	126	31	121	29	143	28	166	31
Full time student	43	11	45	11	67	13	81	15
Age<15 years	5	1	11	3	13	3	8	2
Retired	42	10	37	9	38	7	45	8
Age>65 years	38	9	38	9	39	8	42	8
Unable to work due to poor health	26	6	36	9	43	8	29	5
Total	406	100	418	100	512	100	532	100

Table 4.13: Quality of Life on CAPD, Government Centres 1997 – 2000

QOL Index Summated Score	1997		1998		1999		2000	
	No.	%	No.	%	No.	%	No.	%
0 (Worst QOL)	78	19	83	20	96	19	92	17
1	26	6	23	6	45	9	27	5
2	15	4	13	3	14	3	25	5
3	0	0	4	1	3	1	7	1
4	7	2	7	2	11	2	10	2
5	126	31	121	29	143	28	166	31
6	43	11	45	11	67	13	81	15
7	5	1	11	3	13	3	8	2
8	42	10	37	9	38	7	45	8
9	38	9	38	9	39	8	42	8
10 (Best QOL)	26	6	36	9	43	8	29	5
Total	406	100	418	100	512	100	532	100

4.8 CAPD PRACTICES

Table 4.14: Chronic Peritoneal Dialysis Regimes 1997 - 2000

PD regime	1997		1998		1999		2000	
	No	%	No	%	No	%	No	%
Standard CAPD	453	96	504	95	580	96	637	98
DAPD	15	3	22	4	19	3	12	2
Automated PD	4	1	6	1	4	1	4	1
Total	472	100	532	100	603	100	653	100

Table 4.15: CAPD Connectology 1997 - 2000

CAPD connectology	1997		1998		1999		2000	
	No	%	No	%	No	%	No	%
UVXD	36	8	11	2	4	1	2	0
Baxter disconnect	426	90	500	95	343	58	233	39
Braun disconnect	10	2	18	3	248	42	370	61
Total	472	100	529	100	595	100	605	100

Table 4.16: CAPD Number of Exchanges per day 1997 - 2000

No of Exchanges/day	1997		1998		1999		2000	
	No	%	No	%	No	%	No	%
2	0	0	2	0	0	0	2	0
3	3	1	4	1	4	1	1	0
4	455	97	508	96	579	97	624	96
5	12	3	16	3	13	2	23	4
100	470	100	531	100	597	100	650	100

Table 4.17: CAPD Volume per Exchange 1997 - 2000

Volume per Exchange (L)	1997		1998		1999		2000	
	No	%	No	%	No	%	No	%
1	24	5	25	5	19	3	25	4
2	445	95	496	95	557	96	595	95
3	0	0	0	0	2	0	7	1
Total	469	100	521	100	578	100	627	100

4.9. DYSLIPIDAEMIA IN CAPD PATIENTS, GOVERNMENT CENTRES

Table 4.24: Distribution of serum Cholesterol Concentrations (mmol/l), CAPD patients, Government Centres 1997 – 2000

year	No of subjects	No of observations	median	LQ	UQ	% patients < 5.3 mmol/l
1997	421	795	6	5.1	7	35
1998	348	519	5.9	5	6.8	39
1999	434	619	5.5	4.8	6.5	48
2000	526	833	5.8	4.9	6.8	40

Figure 4.24: Cumulative distribution of serum cholesterol concentration by year

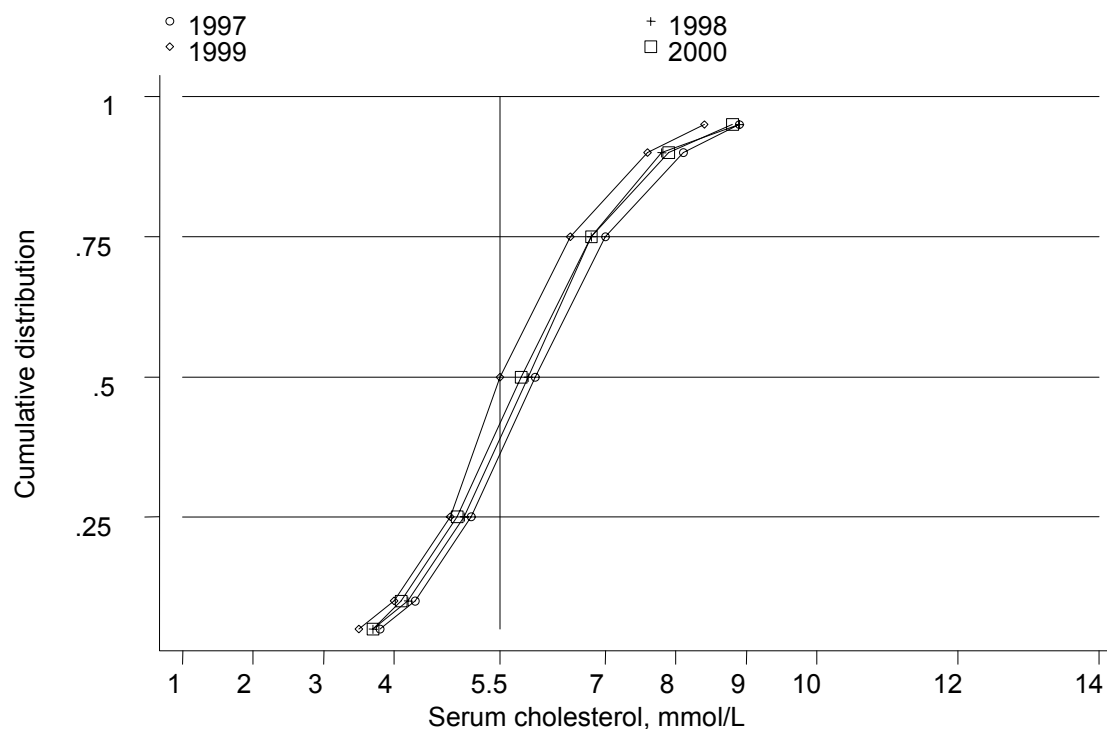


Table 4.25: Distribution of serum Triglyceride (mmol/l), CAPD patients, Government Centres 1997 - 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 3.5 mmol/l
1997	414	782	2	1.4	3.1	79
1998	344	511	1.8	1.2	3	81
1999	421	602	1.9	1.3	2.9	82
2000	520	819	2.1	1.4	3.1	79

Figure 4.25: Cumulative distribution of serum triglyceride concentration by year

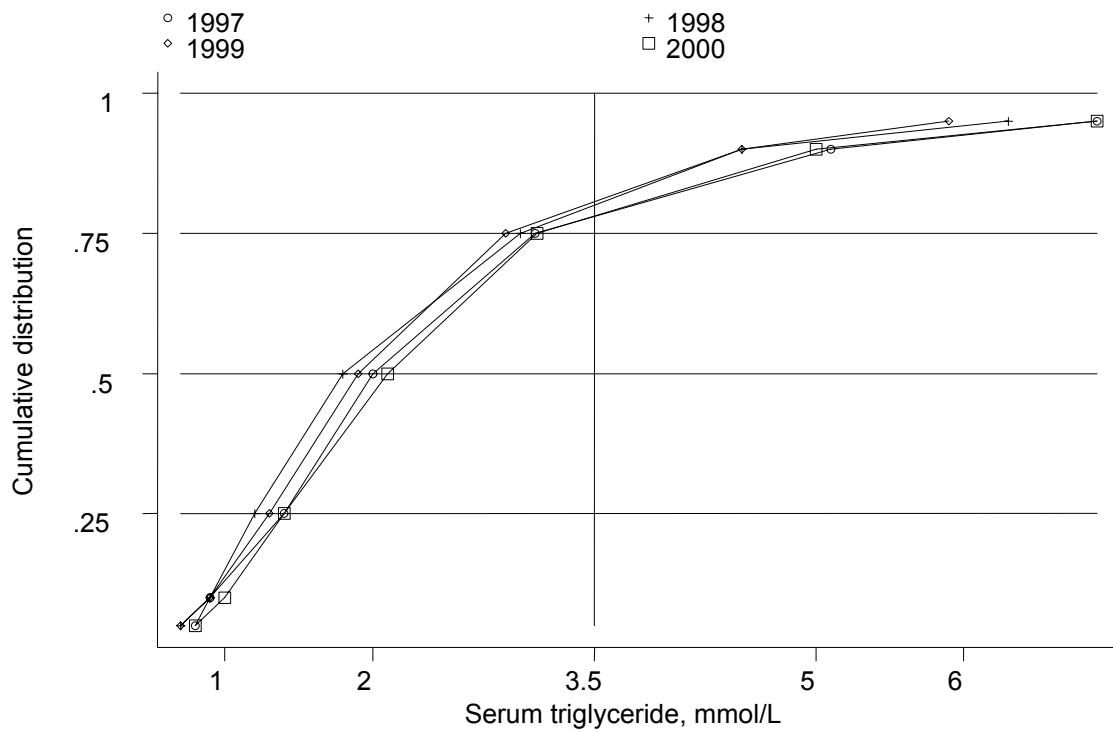


Table 4.26: Distribution of serum LDL (mmol/l), CAPD patient, Government Centres 1997 – 2000

year	No of subjects	No of observations	median	LQ	UQ	% patients <5 mmol/l
1997	259	456	3.7	2.8	4.7	80
1998	146	187	3.9	3.1	4.6	84
1999	198	263	3.4	2.8	4.4	82
2000	271	392	3.6	2.7	4.3	88

Figure 4.26 : Cumulative distribution of serum LDL by year

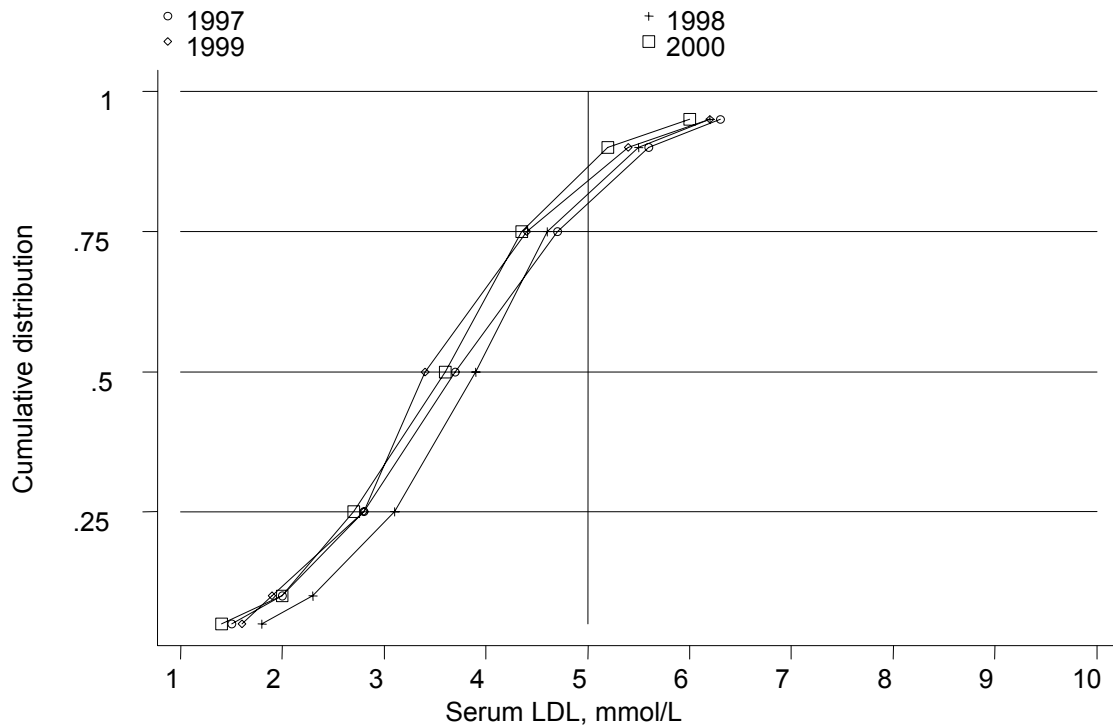
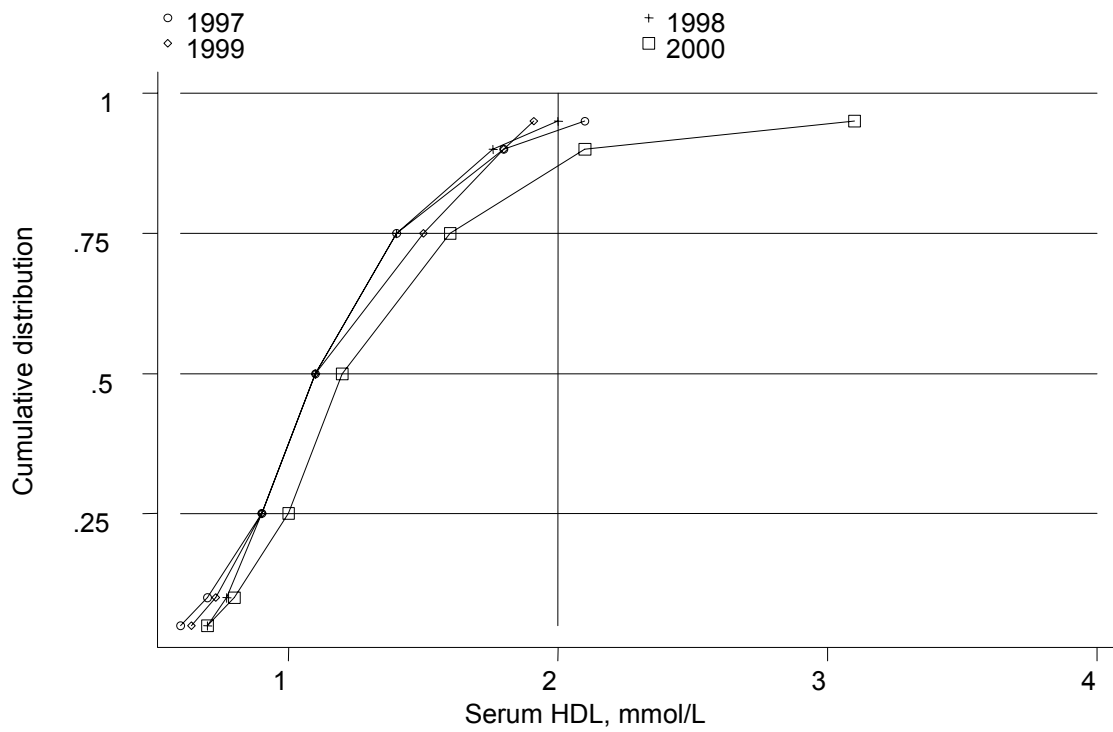


Table 4.27: Distribution of serum HDL (mmol/l), CAPD patient, Government Centres 1997 - 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 2mmol/l
1997	259	456	3.7	2.8	4.7	80
1998	146	187	3.9	3.1	4.6	84
1999	198	263	3.4	2.8	4.4	82
2000	271	392	3.6	2.7	4.3	88

Figure 4.27: Cumulative distribution of serum HDL by year



4.10 MANAGEMENT OF RENAL BONE DISEASE, GOVERNMENT CENTRES

Table 4.28: Treatment for Renal Bone Disease, CAPD patients, Government Centres 1997 - 2000

Year	No of subjects	% on CaCO ₃	% on Al(OH) ₃	% on Vitamin D
1997	477	83	12	24
1998	541	79	9	20
1999	610	74	6	12
2000	662	79	2	15

Table 4.29: Distribution of serum Phosphate concentration (mmol/l), CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 1.6 mmol/l
1996	359	1121	1.5	1.2	1.9	56
1997	471	1562	1.5	1.2	1.9	56
1998	537	1680	1.6	1.3	1.9	52
1999	583	1783	1.6	1.3	2	51

Figure 4.29: Cumulative distribution of serum Phosphate by year

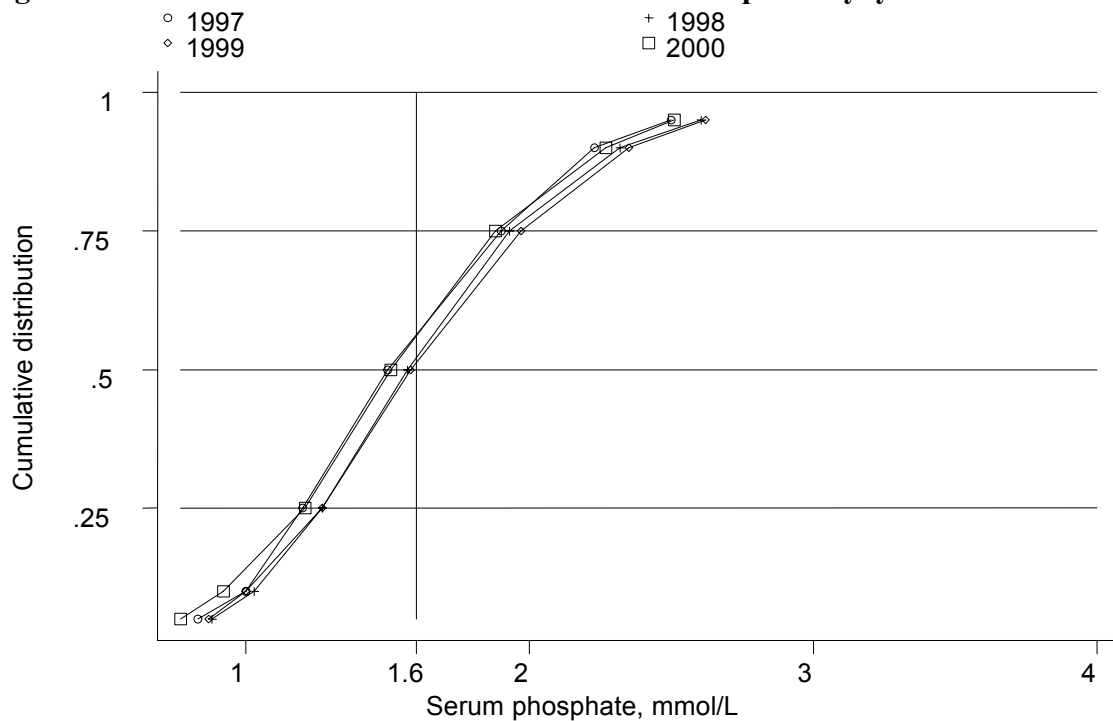


Table 4.30: Distribution of serum Calcium concentration (mmol/l), CAPD patients, Government Centres 1997 – 2000

year	No of subjects	No of observations	median	LQ	UQ	% patients ≥ 2.2 & ≤ 2.6 mmol/l
1997	472	1577	2.4	2.2	2.6	55
1998	539	1707	2.3	2.2	2.5	52
1999	594	1830	2.4	2.2	2.5	55
2000	642	1954	2.4	2.2	2.5	58

Figure 4.30: Cumulative distribution of serum Calcium concentration by year

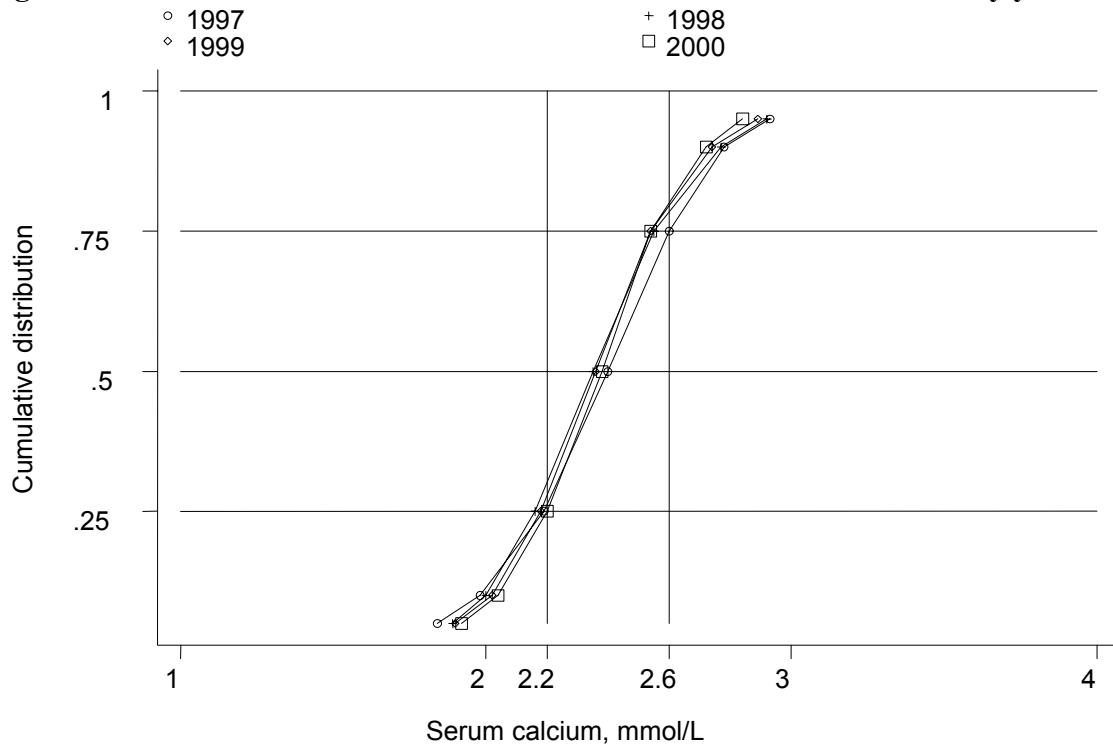
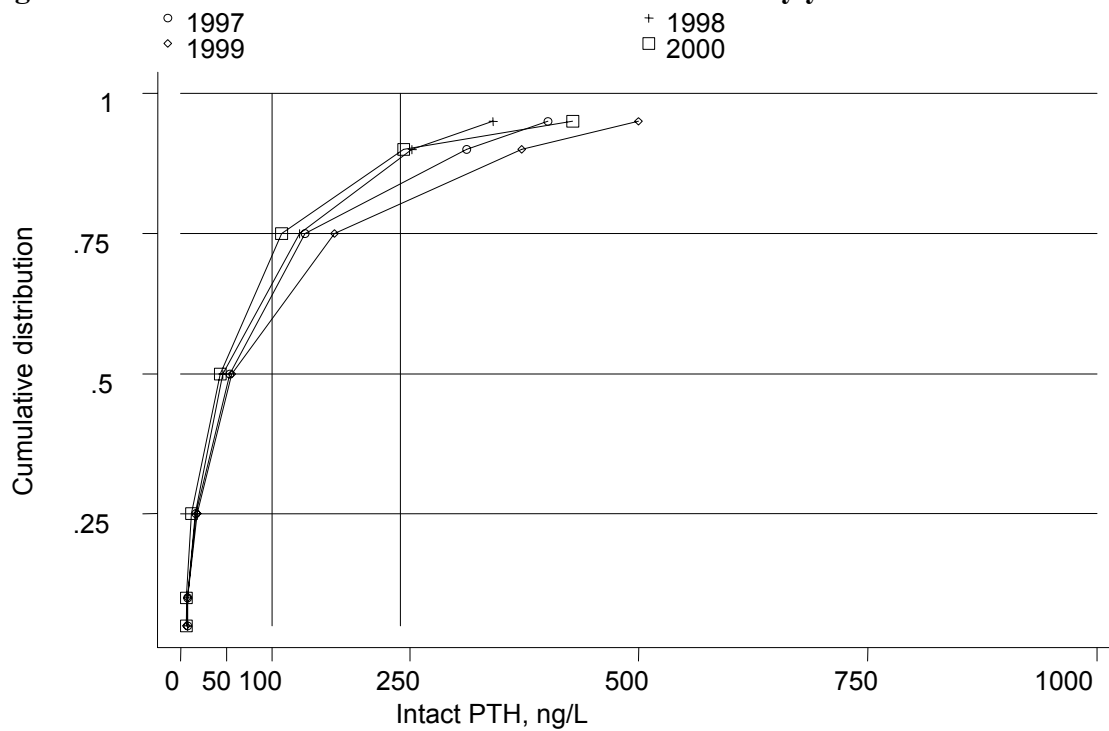


Table 4.31: Distribution of serum intact PTH(ng/L) concentration, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients ≥ 100 & ≤ 250 ng/l
1997	293	428	53.5	17	136	19
1998	280	346	46	16	130	19
1999	365	482	56	18	168	17
2000	406	555	43	11.8	110	18

Figure 4.31: Cumulative Distribution of serum iPTH by year



4.11 MANAGEMENT OF BLOOD PRESSURE, GOVERNMENT CENTRES

Table 4.32: Treatment for hypertension, CAPD patients, Government Centres 1997 - 2000

year	No.	% on anti-hypertensives	% on 1 anti-hypertensives	% on 2 anti-hypertensives	% on 3 anti-hypertensives
1997	477	83	32	33	18
1998	541	88	34	31	23
1999	610	82	30	33	19
2000	662	78	31	27	20

Table 4.33: Distribution of Systolic BP without anti-hypertensives, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 160 mmHg
1997	78	608	120	110	140	87
1998	63	491	120	110	145	86
1999	98	699	120	110	142	87
2000	141	1114	120	110	138	91

Figure 4.33: Cumulative distribution of Systolic BP without anti-hypertensives by year

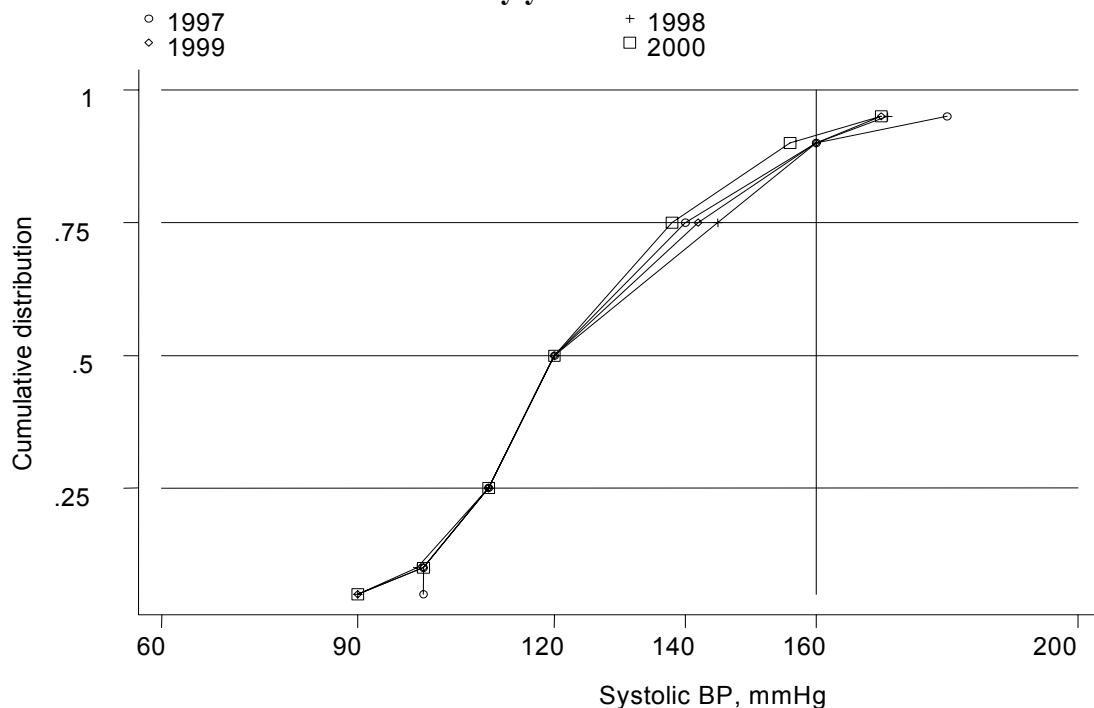


Table 4.34: Distribution of Diastolic BP without anti-hypertensives, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 90 mmHg
1997	78	606	80	70	90	73
1998	63	492	80	70	89	76
1999	98	700	76.5	67	87.5	76
2000	141	1116	80	70	88	76

Figure 4.34: Cumulative distribution of Diastolic BP without anti-hypertensives by year

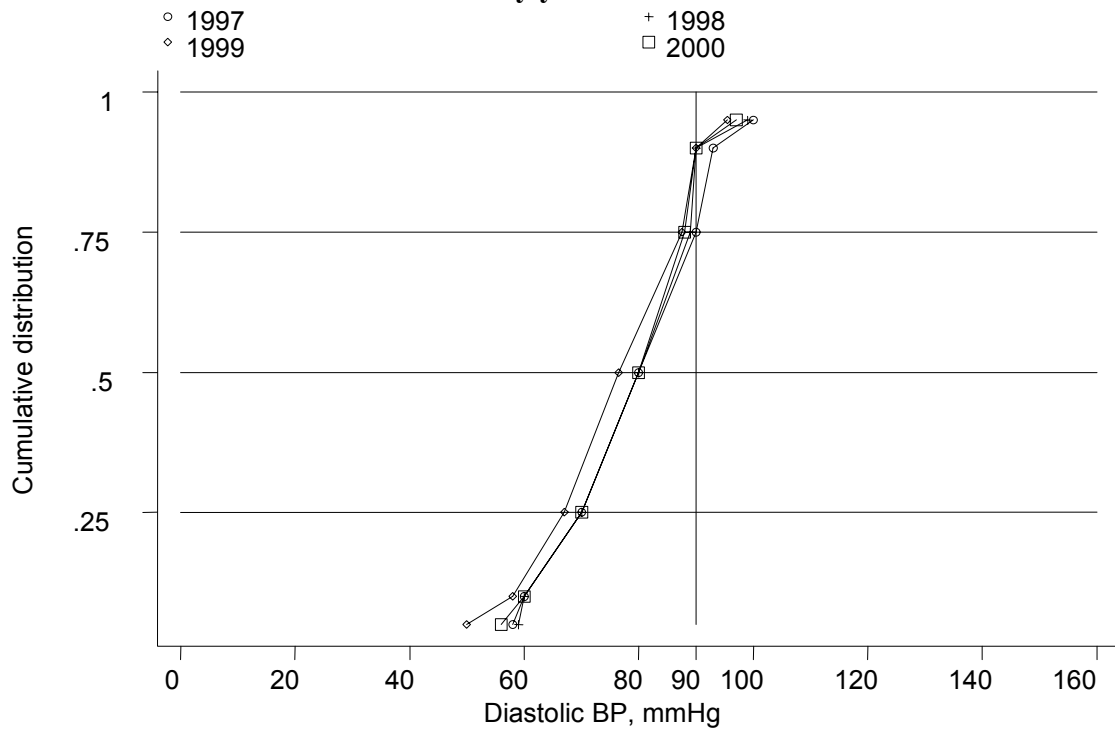


Table 4.35: Distribution of systolic BP on anti-hypertensives CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 160 mmHg
1997	391	3303	140	130	160	69
1998	456	3900	140	124	160	72
1999	478	3833	140	130	160	72
2000	497	4188	140	123	158	76

Figure 4.35: Cumulative distribution of systolic BP on anti-hypertensives by year

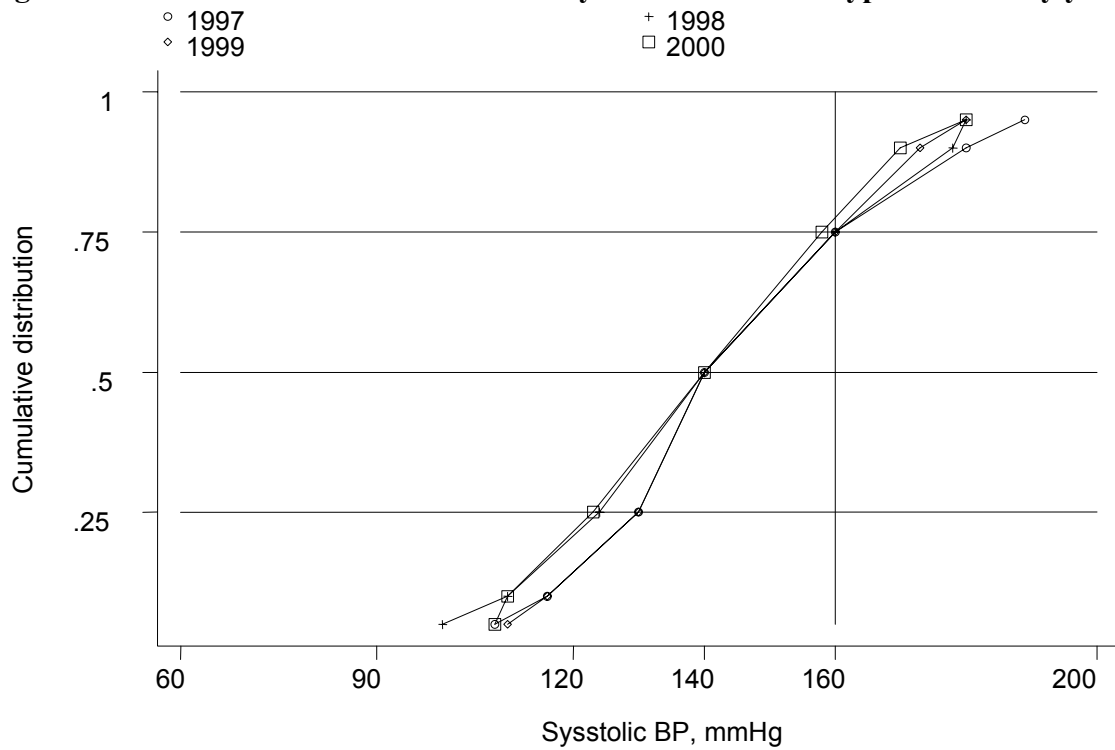
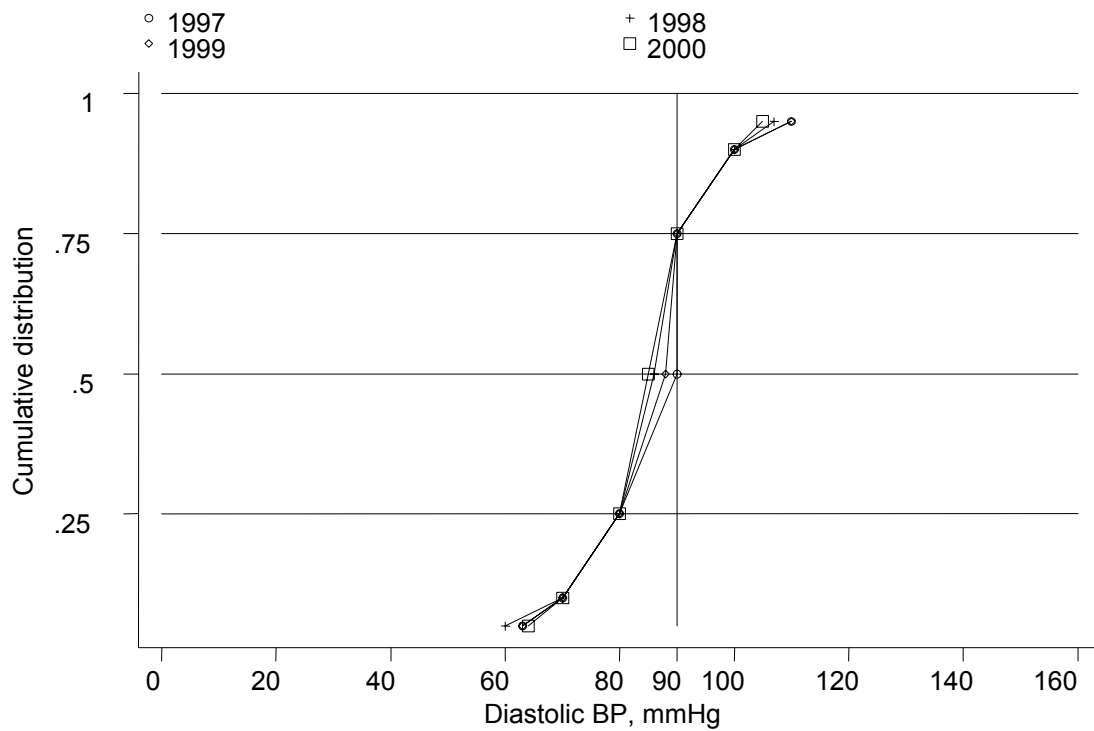


Table 4.36: Distribution of diastolic BP on anti-hypertensives, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 90 mmHg
1997	390	3293	90	80	90	50
1998	456	3899	86	80	90	53
1999	478	3838	88	80	90	51
2000	497	4191	85	80	90	56

Figure 4.36: Cumulative distribution of diastolic BP on anti-hypertensives by year



4.12 TREATMENT OF ANAEMIA, GOVERNMENT CAPD CENTRES

Table 4.37: Treatment for Anaemia, CAPD patients, Government Centres 1997 - 2000

Year	No	% on rHuEpo	% received blood transfusion	% received oral iron	% received parenteral iron
1997	36	28	3	86	8
1998	49	39	6	84	0
1999	396	61	23	81	13
2000	768	63	21	75	3

Table 4.38: Distribution of rHuEpo dose per week, CAPD patients, Government Centres 1997 - 2000

Year	1997	1998	1999	2000
No. of patients	170	225	259	287
% on 2000 u/week	19	25	35	31
% on 2-4000 u/week	66	56	50	53
% on 4-6000 u/week	2	6	3	5
% on 6-8000 u/week	11	12	9	9
% on 8-12000 u/week	1	1	2	3
% on >12000 u/week	0	0	0	0

Table 4.39: Distribution of serum Iron concentration without rHuEpo, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 10 umol/l
1997	254	627	14	10	20	75
1998	190	446	15	11	24	76
1999	202	470	15	11	26	78
2000	255	549	15.8	10	23	75

Figure 4.39: Cumulative distribution of serum Iron without rHuEpo by year

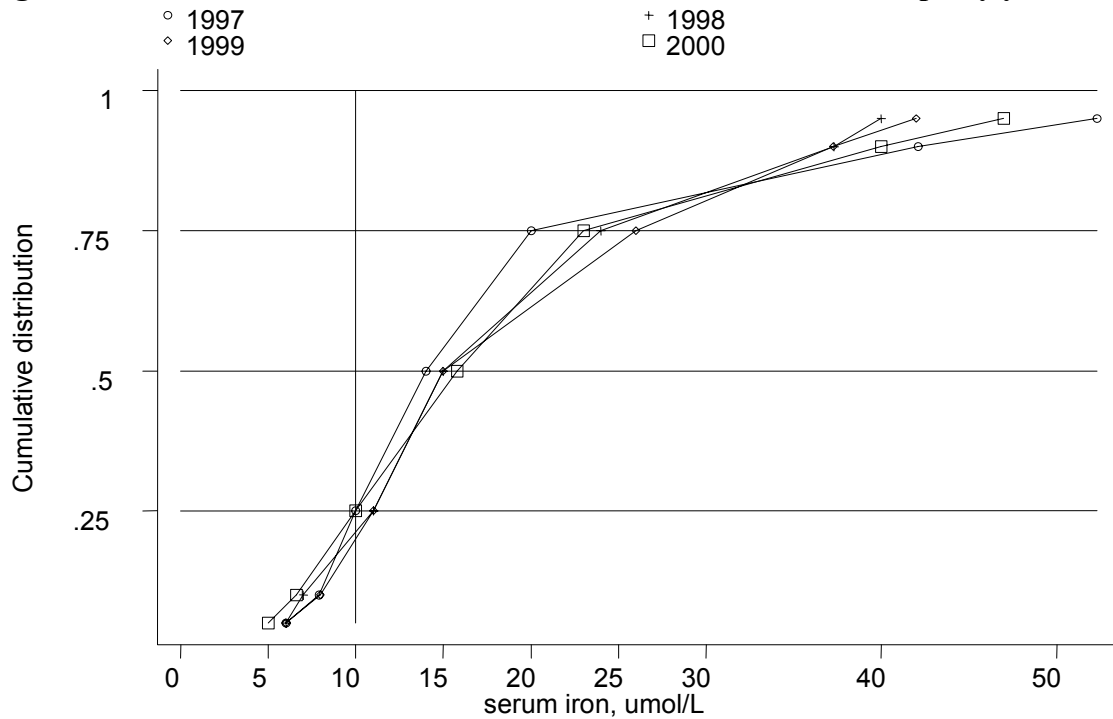


Table 4.40: Distribution of serum Iron concentration on rHuEpo, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 10 umol/l
1997	153	424	15	10	30.9	72
1998	113	323	16	11	30.3	79
1999	143	392	18	11	28	81
2000	244	557	15	10	25	73

Figure 4.40: Cumulative distribution of serum Iron concentration on rHuEpo by year.

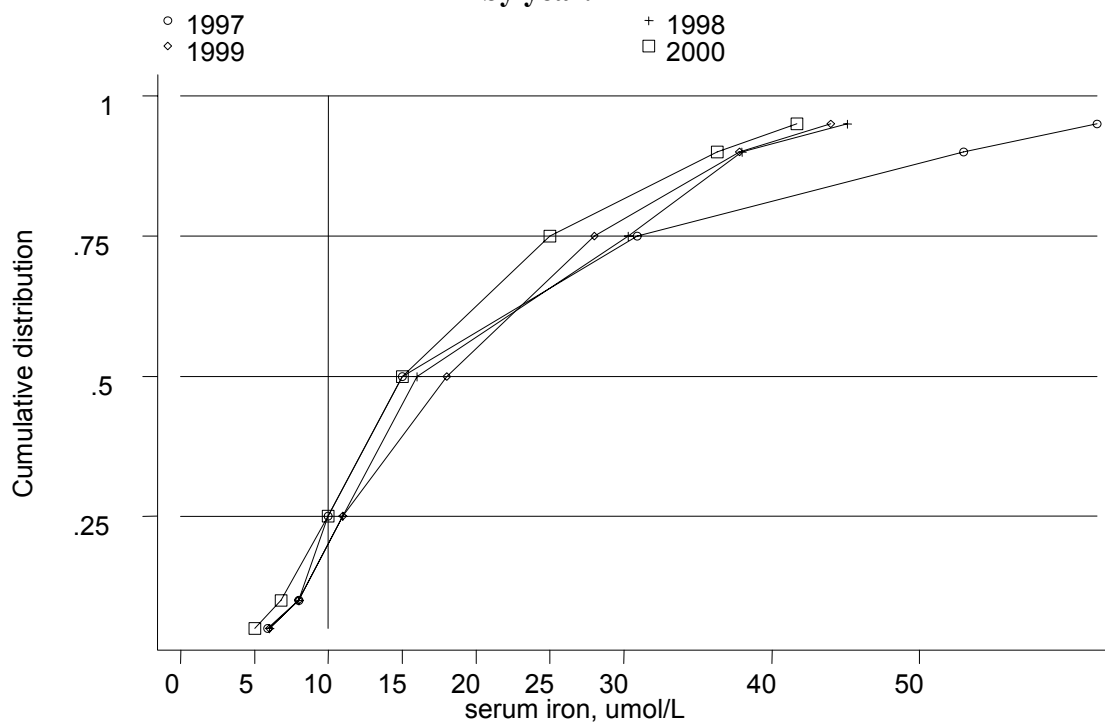


Table 4.41: Distribution of serum Transferrin Saturation without rHuEpo, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 20%
1997	246	984	33.3	21.8	47.8	80
1998	158	632	35.6	22.9	49.1	78
1999	134	536	34.2	23.3	45.1	85
2000	234	936	35.3	22.4	50	80

Figure 4.41: Cumulative distribution of serum Transferrin Saturation without rHuEpo by year

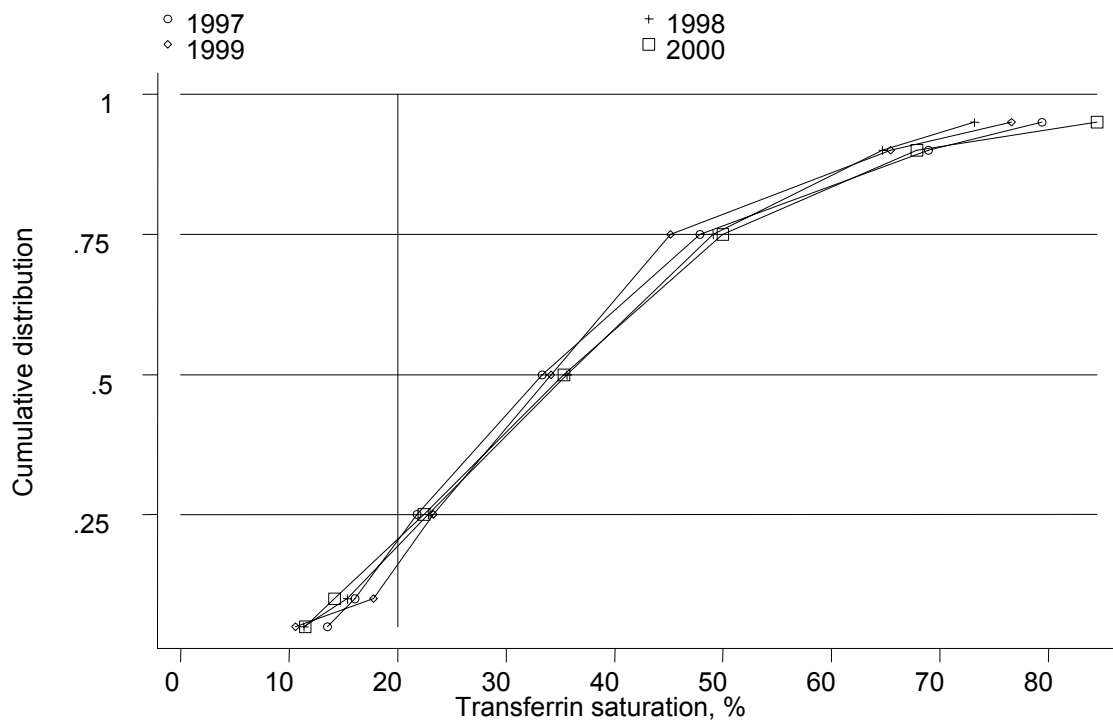


Table 4.42: Distribution of serum Transferrin Saturation on rHuEpo, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 20%
1997	141	564	37.1	25	61.4	86
1998	103	412	39.3	28.1	55	88
1999	92	368	37.2	25.3	48.1	85
2000	233	932	34.1	22	49.4	82

Figure 4.42: Cumulative distribution of serum Transferrin Saturation on rHuEpo by year

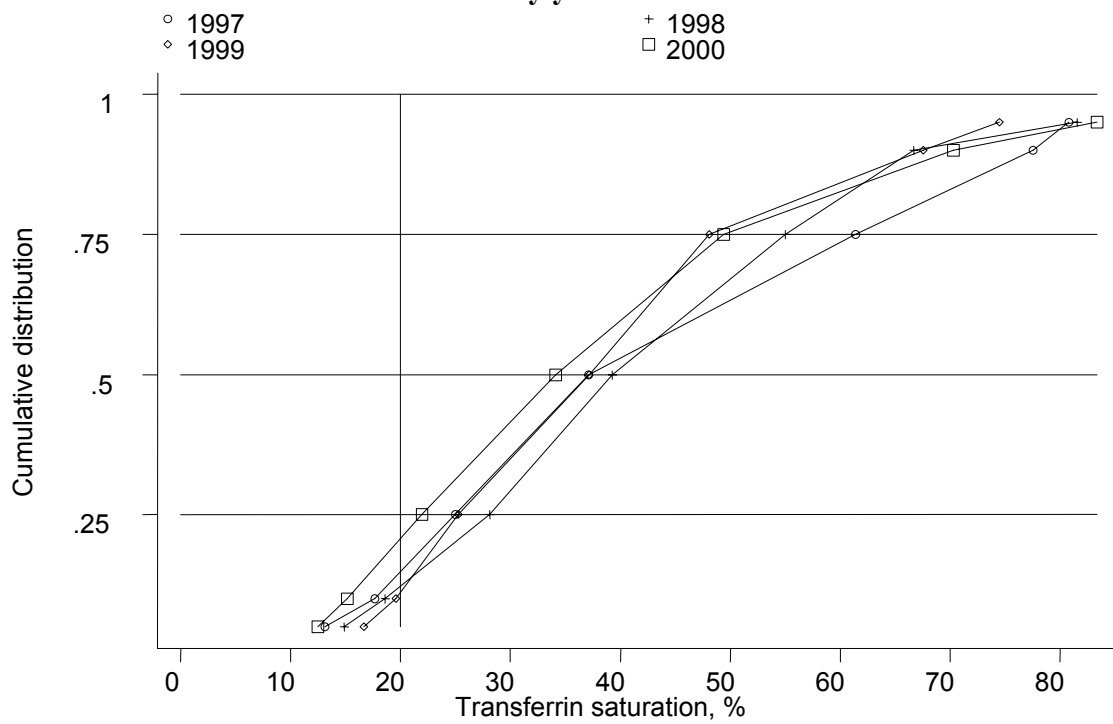


Table 4.43: Distribution of serum Ferritin without rHuEpo, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 100 ug/l
1997	133	193	407	217	749	86
1998	92	105	394	196	686	86
1999	124	154	482	259.7	729	93
2000	144	204	462	167.5	726.3	86

Figure 4.43: Cumulative distribution of serum Ferritin without rHuEpo by year

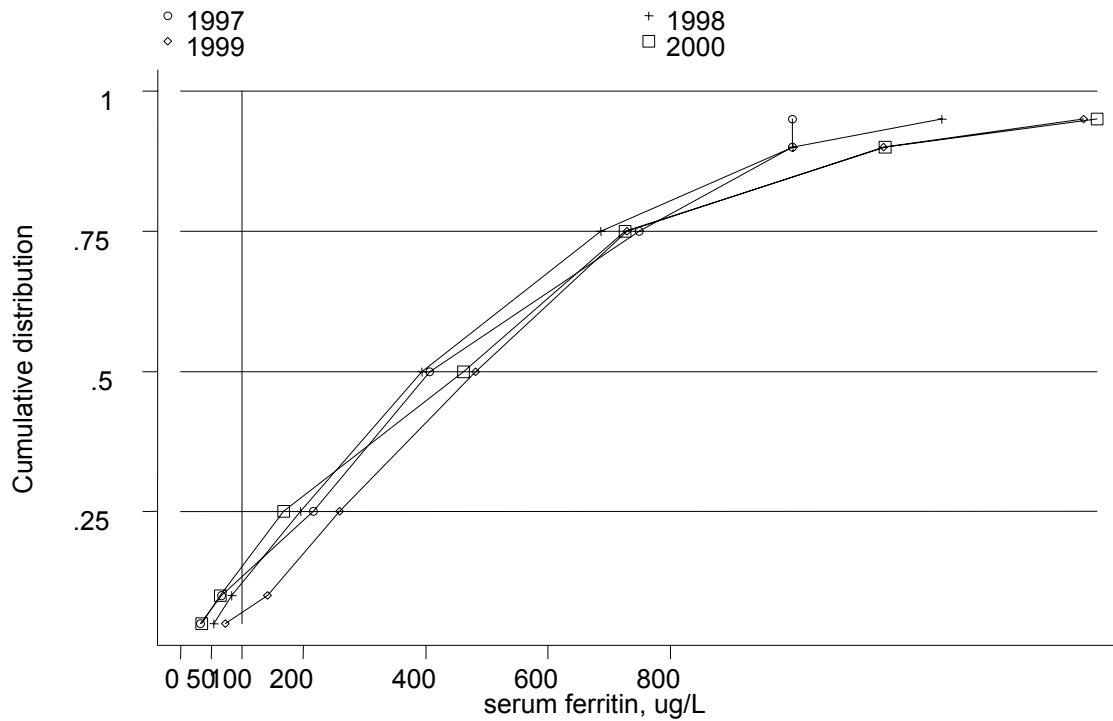


Table 4.44: Distribution of serum Ferritin concentration on rHuEpo, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 100 ug/l
1997	129	216	495.5	260	994	92
1998	135	185	518	246	851	92
1999	136	201	553.3	254	857.3	93
2000	180	271	545	292.9	839.5	90

Figure 4.44: Cumulative distribution of serum Ferritin concentration on rHuEpo, by year

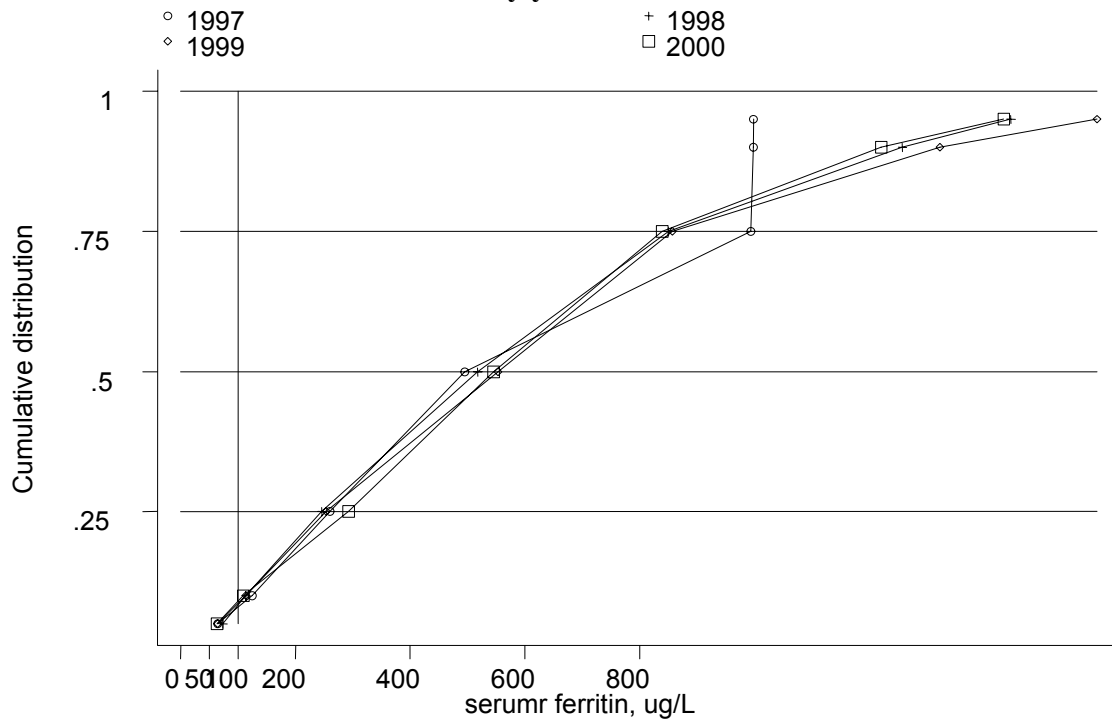


Table 4.45: Distribution of Haemoglobin concentration without rHuEpo, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients <10 g/dl	% patients ≥ 10 & ≤ 12 g/dl	% patients >12 g/dl
1997	298	981	9.1	8	10.4	67	26	7
1998	301	915	9.2	8	10.5	65	26	9
1999	336	967	9.4	8.3	10.7	61	32	7
2000	342	960	9.8	8.6	11	53	35	12

Figure 4.45: Cumulative distribution of haemoglobin concentration without rHuEpo by year

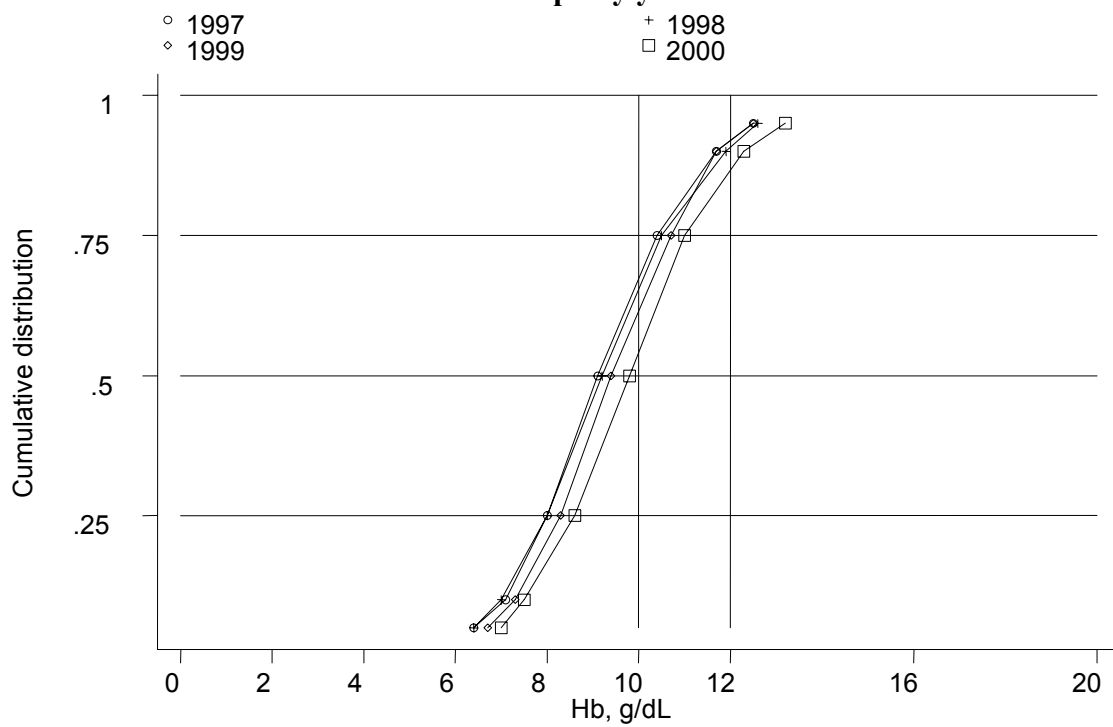
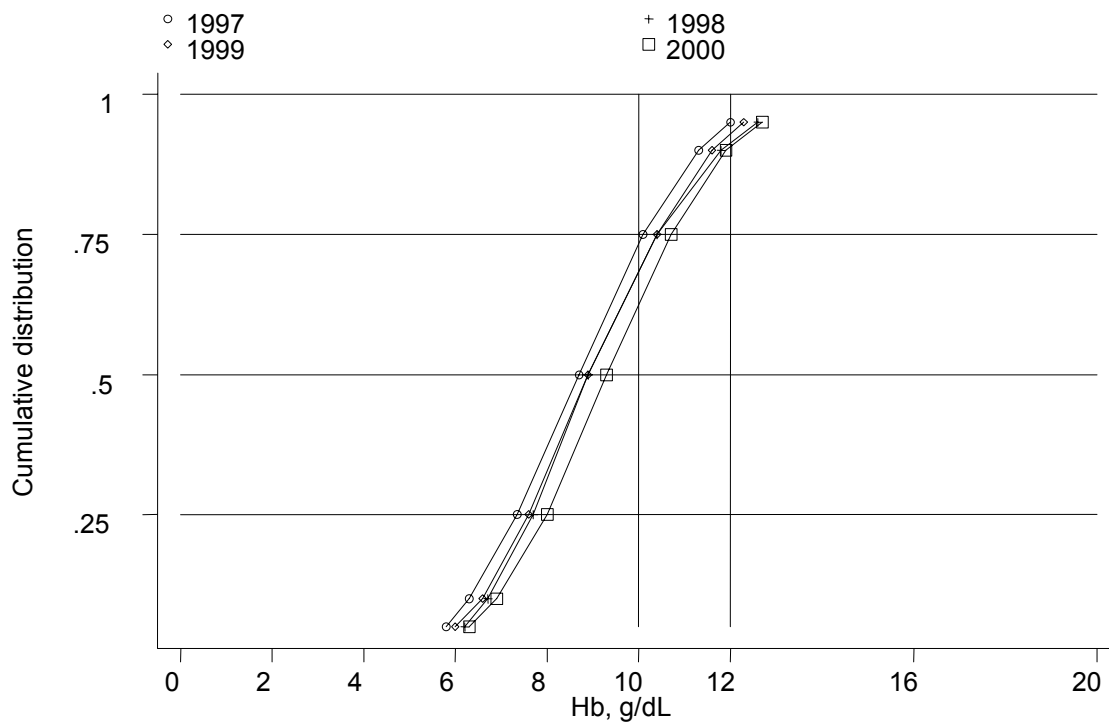


Table 4.46: Distribution of Haemoglobin concentration on rHuEpo, CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients <10 g/dl	% patients ≥ 10 & ≤ 12 g/dl	% patients >12 g/dl
1997	175	652	8.7	7.3	10.1	73	22	5
1998	238	826	8.9	7.7	10.4	69	23	8
1999	262	906	8.9	7.6	10.4	69	25	6
2000	299	1013	9.3	8	10.7	62	30	9

Figure 4.46: Cumulative distribution of Haemoglobin on rHuEpo by year

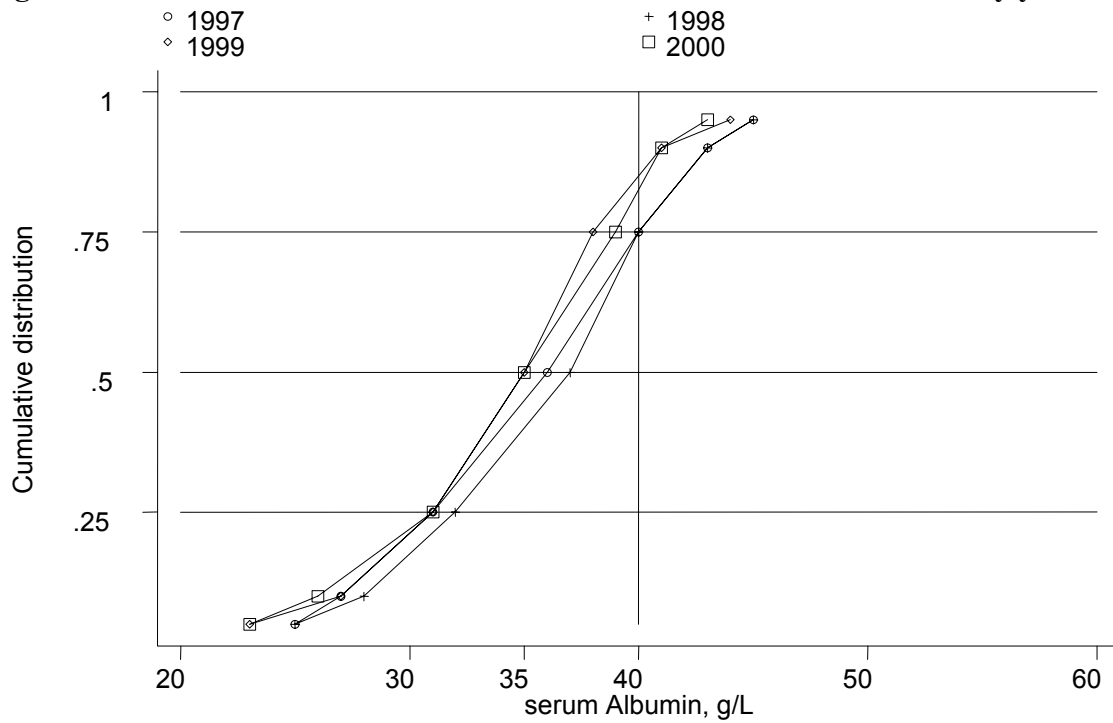


4.13 NUTRITIONAL STATUS OF CAPD PATIENTS, GOVERNMENT CENTRES

Table 4.47: Distribution of serum Albumin concentration(g/L), CAPD patients, Government Centres 1997 – 2000

Year	No of subjects	No of observations	median	LQ	UQ	% patients >40g/l
1997	472	1572	36	31	40	28
1998	536	1692	37	32	40	29
1999	597	1872	35	31	38	18
2000	640	1970	35	31	39	19

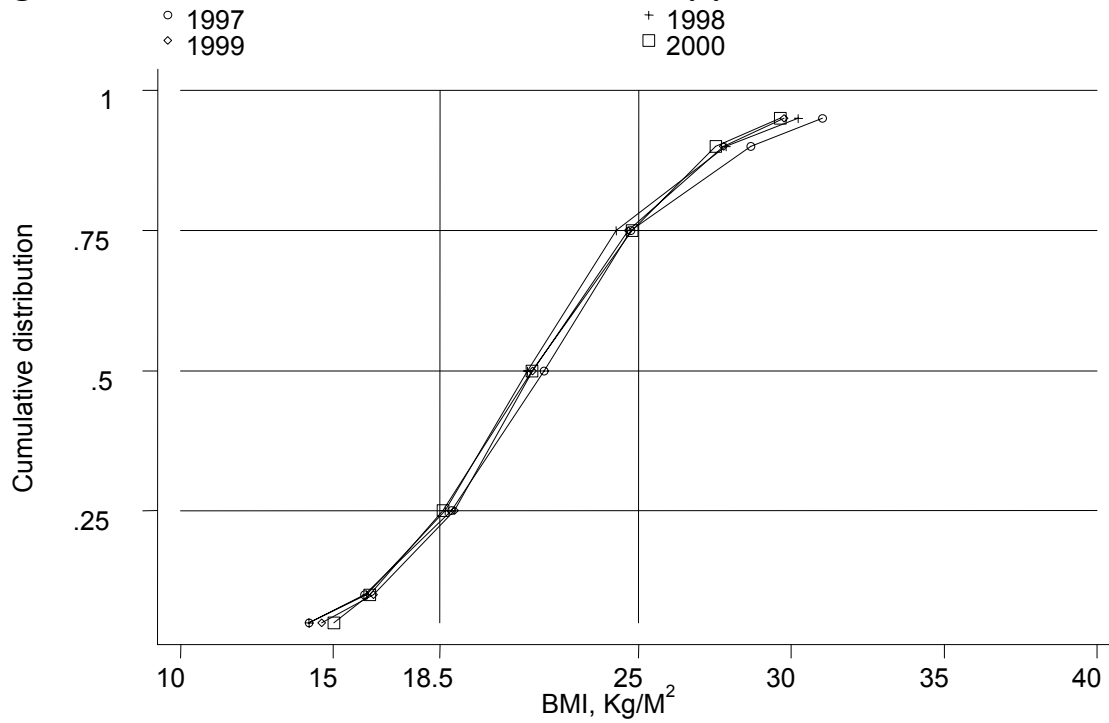
Figure 4.47: Cumulative distribution of serum Albumin concentration by year



**Table 4.48: Distribution of Body Mass Index
CAPD patients, Government Centres 1997 – 2000**

Year	No of subjects	No of observations	median	LQ	UQ	% patients <18.5	% patients ≥ 18.5 & ≤ 25	% patients >25
1997	419	3579	21.9	18.9	24.7	22	55	24
1998	489	4243	21.4	18.7	24.3	23	55	21
1999	550	4316	21.5	19	24.7	22	56	23
2000	599	4990	21.5	18.6	24.8	24	53	23

Figure 4.48: Cumulative distribution of BMI by year



4.14 SEROLOGICAL STATUS, CAPD PATIENTS, GOVERNMENT CENTRES

Table 4.49: Prevalence of positive anti-HCV and HBsAg APD patients, Government Centres 1997 – 2000

Year	No	% HBsAg positive	% anti-HCV positive
1997	477	3	5
1998	541	3	6
1999	610	2	5
2000	662	2	5

Figure 4.49: Prevalence of positive anti-HCV and HBsAg CAPD patients, Government Centres 1997 – 2000

