

CHRONIC PERITONEAL DIALYSIS
IN
GOVERNMENT CENTRES

Stock and Flow

Funding for CPD

Death on CPD and Transfer to HD

Government CAPD Centres

CAPD Patients' Characteristics

Survival Analysis

Work related rehabilitation and quality of life

CAPD practices

Dyslipidaemia in CAPD patients

Treatment of Renal Bone Disease

Management of Blood Pressure

Management of Anaemia

Nutritional status

Serological Status on CAPD

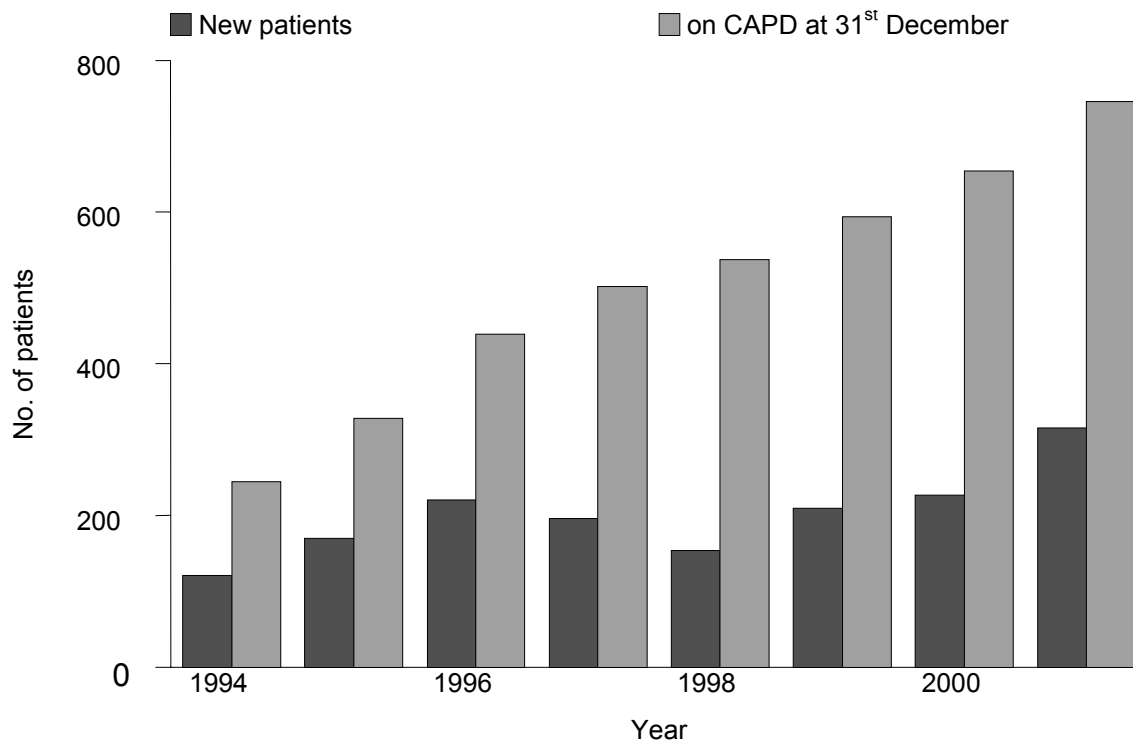
4. CHRONIC PERITONEAL DIALYSIS

4.1 STOCK AND FLOW

Table 4.01: Stock and Flow of Chronic PD Patients 1994 – 2001

Year	1994	1995	1996	1997	1998	1999	2000	2001
New Dialysis patients	121	170	220	196	154	209	227	315
Died	42	58	61	73	74	100	91	126
Transferred to HD	22	22	38	50	33	38	63	85
Transplanted	3	7	8	10	12	13	11	11
Lost to follow up	0	0	2	0	0	1	2	1
Dialysing at 31st December	245	328	439	502	537	594	654	746

Figure 4.01: Stock and Flow of Chronic PD Patients 1994 – 2001

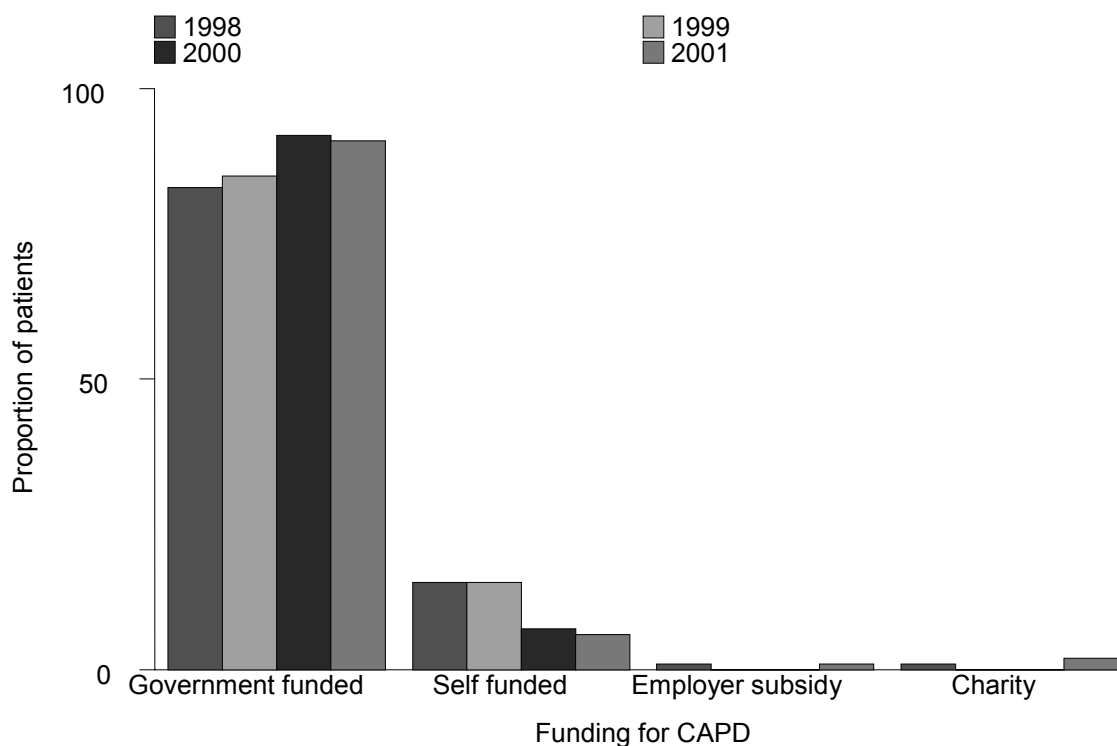


4.2 FUNDING FOR CHRONIC PERITONEAL DIALYSIS

Table 4.03: Funding for CAPD, Government Centres 1998 – 2001

Year	1998	1999	2000	2001
New Dialysis patients	154	209	227	315
% Government funded	83	85	92	91
% Self funded	15	15	7	6
% Employer subsidised	1	0	0	1
% Charity	1	0	0	2
Dialysing at 31st December	537	594	654	746
% Government funded	85	86	88	89
% Self funded	12	12	10	9
% Employer subsidised	1	1	1	1
% Charity	2	1	1	2

Figure 4.03: Funding for new CAPD, Government Centres 1998 – 2001



4.3 DEATH ON CAPD AND TRANSFER TO HAEMODIALYSIS

Table 4.04: Death Rate and Transfer to HD Government Centres 1994 – 2001

Year	1994	1995	1996	1997	1998	1999	2000	2001
No. at risk	245	287	384	471	520	566	624	700
Death (No.)	42	58	61	73	74	100	91	126
Death rate %	17	20	16	16	14	18	15	18
No transferred to HD	22	22	38	50	33	38	63	85
Transfer to HD rate %	9	8	10	11	6	7	10	12
All losses	64	80	99	123	107	138	154	211
All losses rate %	26	28	26	26	21	24	25	30

Figure 4.04: Death Rates on CAPD, Government Centres 1994 – 2001

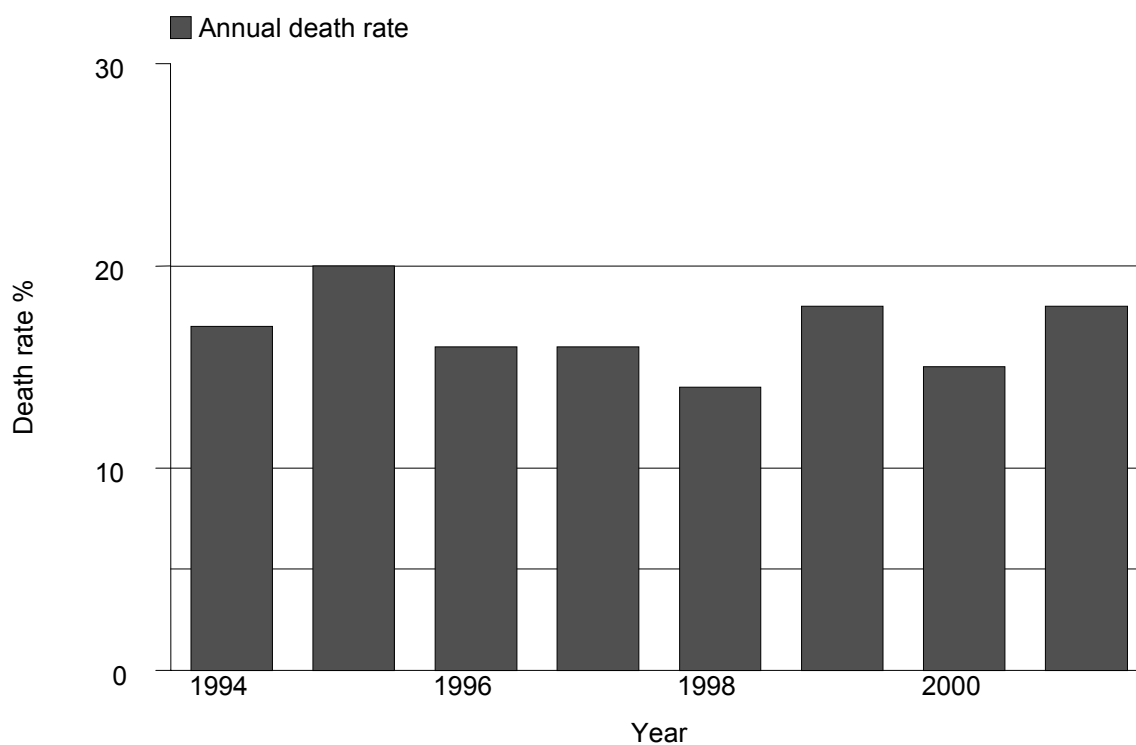


Table 4.05: Causes of Death on CAPD, Government Centres 1998 – 2001

Year	1998		1999		2000		2001	
	No	%	No	%	No	%	No	%
Cardiovascular	23	31	27	27	28	31	34	27
Died at home	11	15	32	32	22	24	29	23
Sepsis	16	22	15	15	15	16	25	20
CAPD peritonitis	1	1	8	8	15	16	19	15
GIT bleed	0	0	3	3	1	1	4	3
Cancer	0	0	1	1	0	0	2	2
Liver disease	0	0	0	0	0	0	0	0
Others	12	16	11	11	10	11	8	6
Unknown	11	15	3	3	0	0	5	4
Total	74	100	100	100	91	100	126	100

Table 4.06: Causes of Transfer to CAPD 1998 – 2001

Year	1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%
Peritonitis	17	52	23	61	39	62	30	35
Cather related infection	0	0	2	5	1	2	1	1
Technical problem	3	9	0	0	3	5	0	0
Membrane failure	3	9	3	8	9	14	5	6
Patient preference/cannot cope	2	6	3	8	4	6	4	5
Others	0	0	3	8	3	5	4	5
Unknown	8	24	4	11	4	6	41	48
Total	33	100	38	100	63	100	85	100

4.4 GOVERNMENT CAPD CENTRES

Table 4.07: Centre Distribution of CAPD patients, 2001

	Centre	No	Percent
	Number on CAPD at 31 st December	746	100
1	Berjaya NKF Dialysis Centre, Petaling Jaya	3	0
2	Ipoh Hospital	40	5
3	Kota Bharu Hospital	10	1
4	Kuala Lumpur Hospital	169	23
5	Kuala Lumpur Hospital (Paed.)	24	3
6	Kuala Terengganu Hospital	41	5
7	Kuching Hospital	10	1
8	Melaka Hospital	1	0
9	Pulau Pinang Hospital	93	12
10	Queen Elizabeth Hospital	18	2
11	Sabah Medical Centre	1	0
12	Selayang Hospital	22	3
13	Seremban Hospital	63	8
14	Sultanah Aminah Hospital	103	14
15	Tengku Ampuan Afzan Hospital, Kuantan	8	1
16	Tengku Ampuan Rahimah Hospital, Klang	29	4
17	Universiti Kebangsaan Malaysia Hospital	5	1
18	University Malaya Medical Centre	106	14

4.5 CAPD PATIENTS' CHARACTERISTICS

Table 4.08: Percentage Age Distribution of CAPD patients 1998 – 2001

Year	1998	1999	2000	2001
New Dialysis patients	154	209	227	315
1-14 years	13	10	9	8
15-24 years	9	7	11	9
25-34 years	14	7	8	10
35-44 years	13	12	16	14
45-54 years	18	22	25	19
55-64 years	25	25	19	27
≥65 years	8	16	11	12
Dialysing at 31st December	537	594	654	746
1-14 years	11	12	11	11
15-24 years	5	6	7	8
25-34 years	15	14	14	14
35-44 years	17	15	16	16
45-54 years	25	24	24	21
55-64 years	19	20	19	21
≥65 years	9	8	8	8

Table 4.09: CAPD Patient Characteristics 1998- 2001

Year	1998	1999	2000	2001
New Dialysis patients	154	209	227	315
Mean age ± sd	42±19	47±19	43±18	46±18
% male	49	51	49	47
% Diabetic	36	44	37	41
% HBsAg+	0	1	4	4
% Anti-HCV+	3	4	4	3

4.6 SURVIVAL ANALYSIS

Table 4.10: CAPD Patient Survival related to Year of Entry, Government Centres 1996–2001

Year	1996			1997			1998		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	94	2	200	96	1	185	94	2	142
12	88	2	177	92	2	168	86	3	126
24	77	3	139	79	3	139	72	4	94
36	66	3	105	65	4	100	62	4	64
48	52	4	67	55	4	74			
60	48	4	53						

Year	1999			2000			2001		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	94	2	188	94	2	206	92	2	147
12	90	2	173	88	2	183			
24	73	3	115						

No. = number at risk

SE = standard error

Figure 4.10: CAPD Patient Survival related to Year of Entry, Government Centres 1997 – 2001

Kaplan-Meier survival estimates, by year

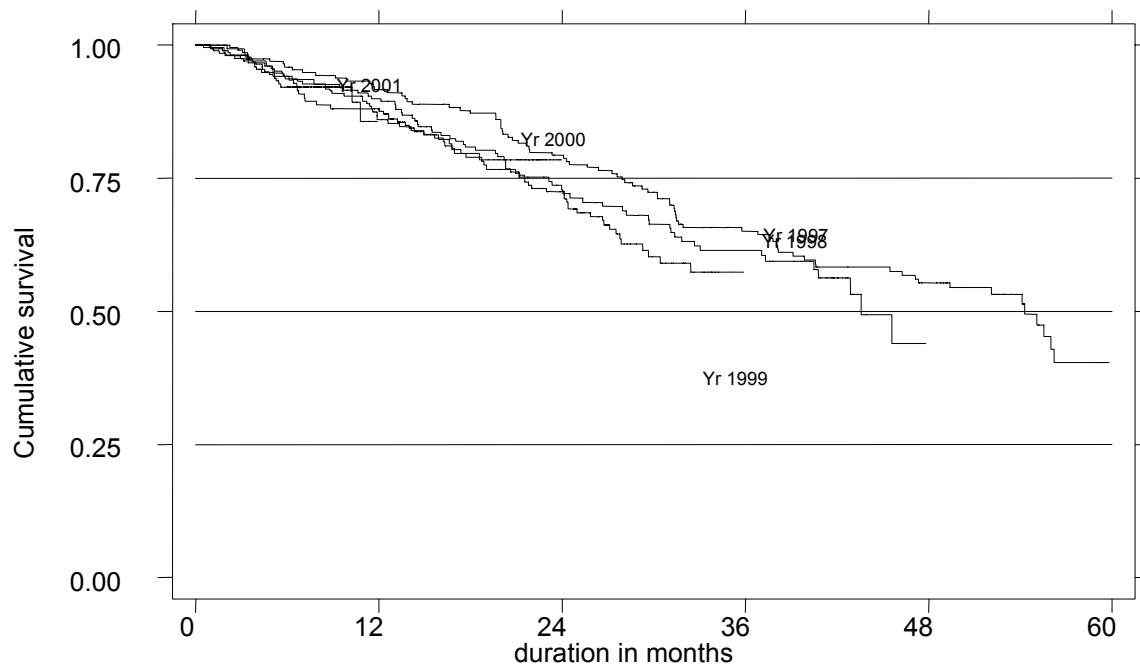


Table 4.11: CAPD Technique Survival related to Year of Entry, Government Centres 1996 – 2001

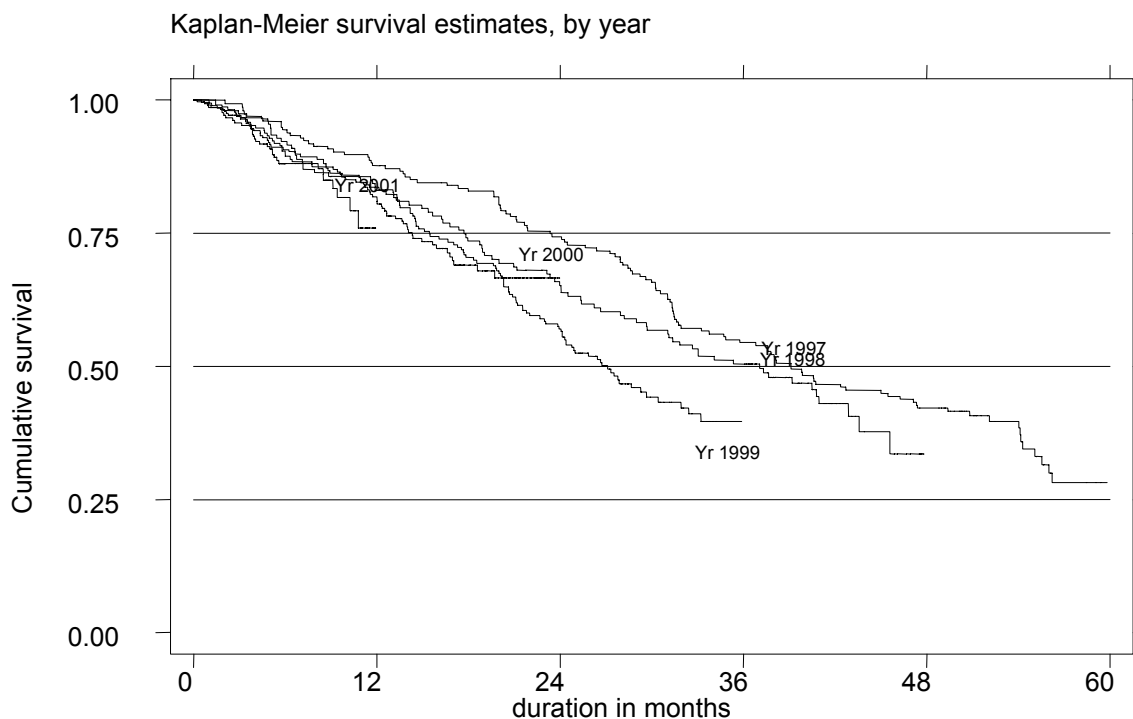
Year	1996			1997			1998		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	91	2	199	94	2	185	92	2	142
12	82	3	177	88	2	168	83	3	126
24	67	3	139	74	3	139	65	4	94
36	52	3	105	54	4	100	50	4	68
48	34	3	67	42	4	74			
60	28	3	53						

Year	1999			2000			2001		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	89	2	188	91	2	206	88	2	146
12	83	3	173	81	3	184			
24	57	3	115						

No. = number at risk

SE = standard error

Figure 4.11: CAPD Technique Survival by Year of Entry Government Centres 1997 – 2001



4.7 WORK RELATED REHABILITATION AND QUALITY OF LIFE ON CAPD

**Table 4.12: Work Related Rehabilitation on CAPD, Government Centres
1998 – 2001**

REHABILITATION STATUS	1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%
Full time work for pay	83	20	96	19	92	17	99	16
Part time work for pay	23	6	45	9	27	5	35	6
Able to work but unable to get a job	13	3	14	3	25	5	22	4
Able to work but not yet due to dialysis schedule	4	1	3	1	7	1	9	1
Able but disinclined to work	7	2	11	2	10	2	11	2
Home maker	121	29	143	28	166	31	213	35
Full time student	45	11	67	13	81	15	89	15
Age<15 years	11	3	13	3	8	2	11	2
Retired	37	9	38	7	45	8	47	8
Age>65 years	38	9	39	8	42	8	49	8
Unable to work due to poor health	36	9	43	8	29	5	26	4
Total	418	100	512	100	532	100	611	100

Table 4.13: Quality of Life on CAPD, Government Centres 1998 – 2001

QOL Index Summated Score	1998		1999		2000		2001	
	No.	%	No.	%	No.	%	No.	%
0 (Worst QOL)	0	0	0	0	1	0	0	0
1	0	0	0	0	1	0	0	0
2	2	0	1	0	1	0	0	0
3	8	2	3	1	1	0	7	1
4	11	3	16	3	13	3	11	2
5	26	6	19	4	17	3	19	3
6	14	3	25	5	22	4	21	3
7	32	8	26	5	37	7	37	6
8	32	8	37	7	29	6	35	6
9	45	11	46	9	30	6	62	10
10 (Best QOL)	236	58	338	66	366	71	425	69
Total	406	100	511	100	518	100	617	100

4.8 CAPD PRACTICES

Table 4.14: Chronic Peritoneal Dialysis Regimes 1998 – 2001

PD regime	1998		1999		2000		2001	
	No	%	No	%	No	%	No	%
Standard CAPD	504	95	580	96	637	98	745	99
DAPD	22	4	19	3	12	2	7	1
Automated PD	6	1	4	1	4	1	2	0
Total	532	100	603	100	653	100	754	100

Table 4.15: CAPD Connectology 1998 – 2001

CAPD connectology	1998		1999		2000		2001	
	No	%	No	%	No	%	No	%
UVXD	11	2	4	1	2	0	0	0
Baxter disconnect	500	95	343	58	233	39	435	57
Braun disconnect	18	3	248	42	370	61	323	43
Total	529	100	595	100	605	100	758	100

Table 4.16: CAPD Number of Exchanges per day 1998 – 2001

No of Exchanges/day	1998		1999		2000		2001	
	No	%	No	%	No	%	No	%
2	2	0	0	0	2	0	1	0
3	4	1	4	1	1	0	5	1
4	508	96	579	97	624	96	726	95
5	16	3	13	2	23	4	31	4
100	531	100	597	100	650	100	763	100

Table 4.17: CAPD Volume per Exchange 1998 – 2001

Volume per Exchange (L)	1998		1999		2000		2001	
	No	%	No	%	No	%	No	%
1	25	5	19	3	25	4	32	4
2	496	95	557	96	595	95	703	94
3	0	0	2	0	7	1	9	1
Total	521	100	578	100	627	100	744	100

4.9. *DYSLIPIDAEMIA IN CAPD PATIENTS, GOVERNMENT CENTRES*

Table 4.24: Distribution of serum Cholesterol Concentrations (mmol/l), CAPD patients, Government Centres 1998 – 2001

year	No of subjects	No of observations	median	LQ	UQ	% patients < 5.3 mmol/l
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
2001	577	896	5.7	4.8	6.6	44

Figure 4.24: Cumulative distribution of serum cholesterol concentration by year

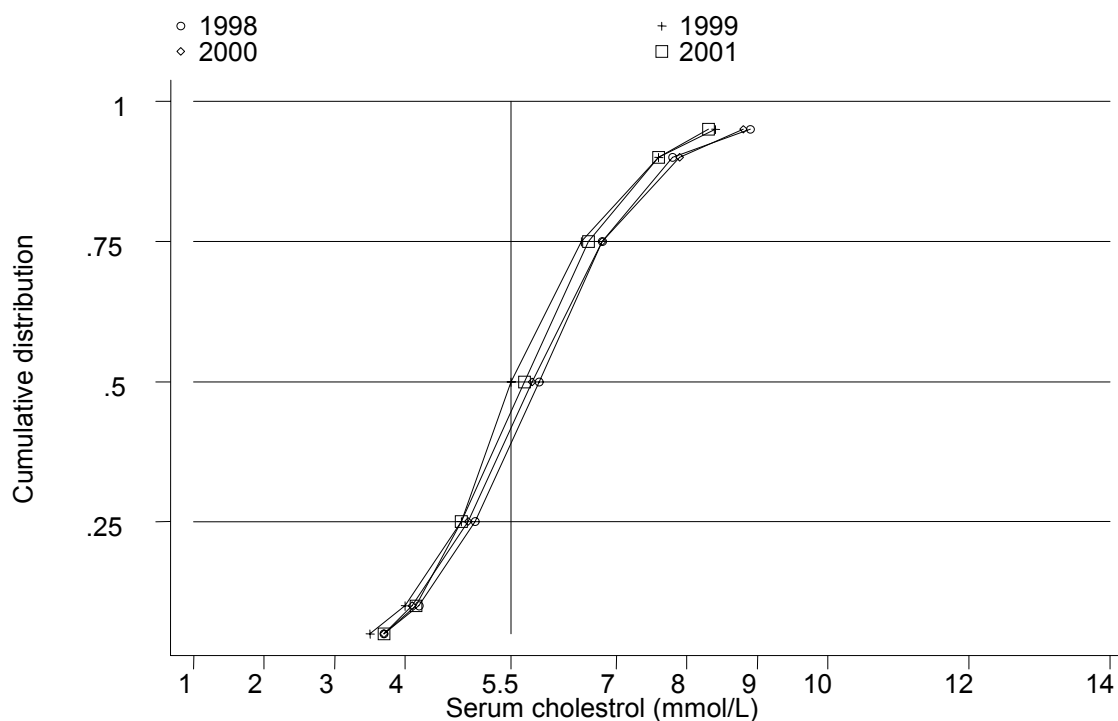


Table 4.25: Distribution of serum Triglyceride (mmol/l), CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 3.5 mmol/l
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
2001	571	890	2	1.4	3.1	80

Figure 4.25: Cumulative distribution of serum triglyceride concentration by year

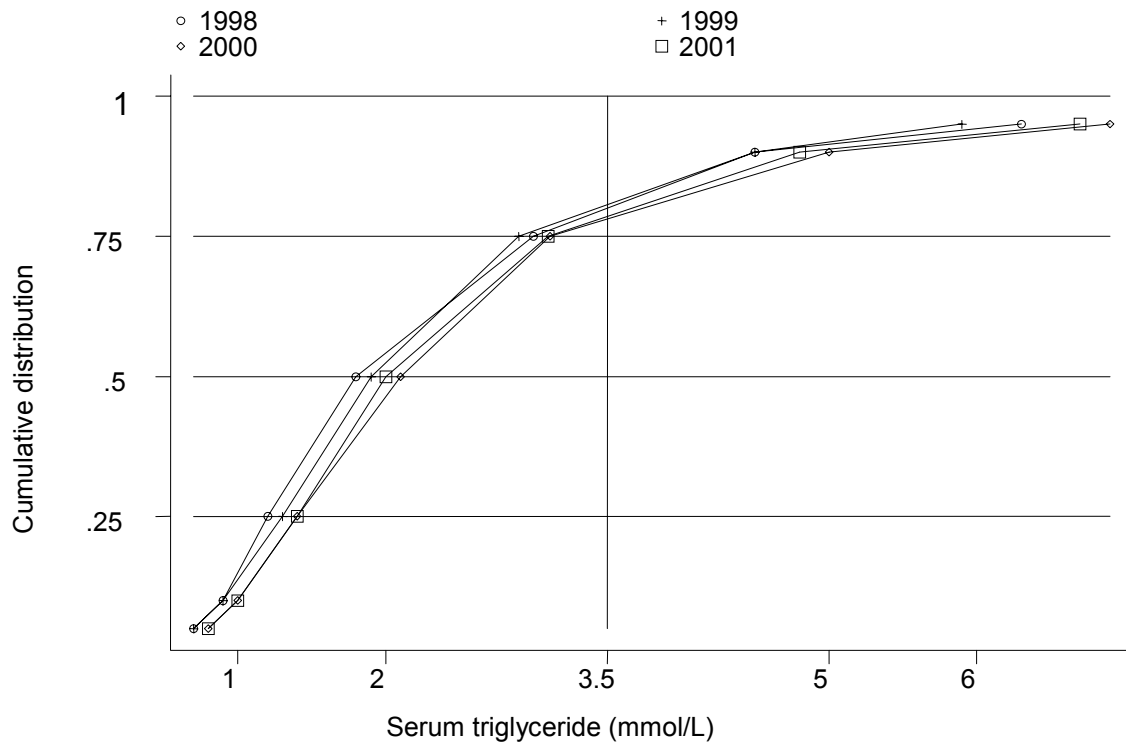


Table 4.26: Distribution of serum LDL (mmol/l), CAPD patient, Government Centres 1998 – 2001

year	No of subjects	No of observations	median	LQ	UQ	% patients <5 mmol/l
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
2001	407	587	3.3	2.6	4.2	89

Figure 4.26: Cumulative distribution of serum LDL by year

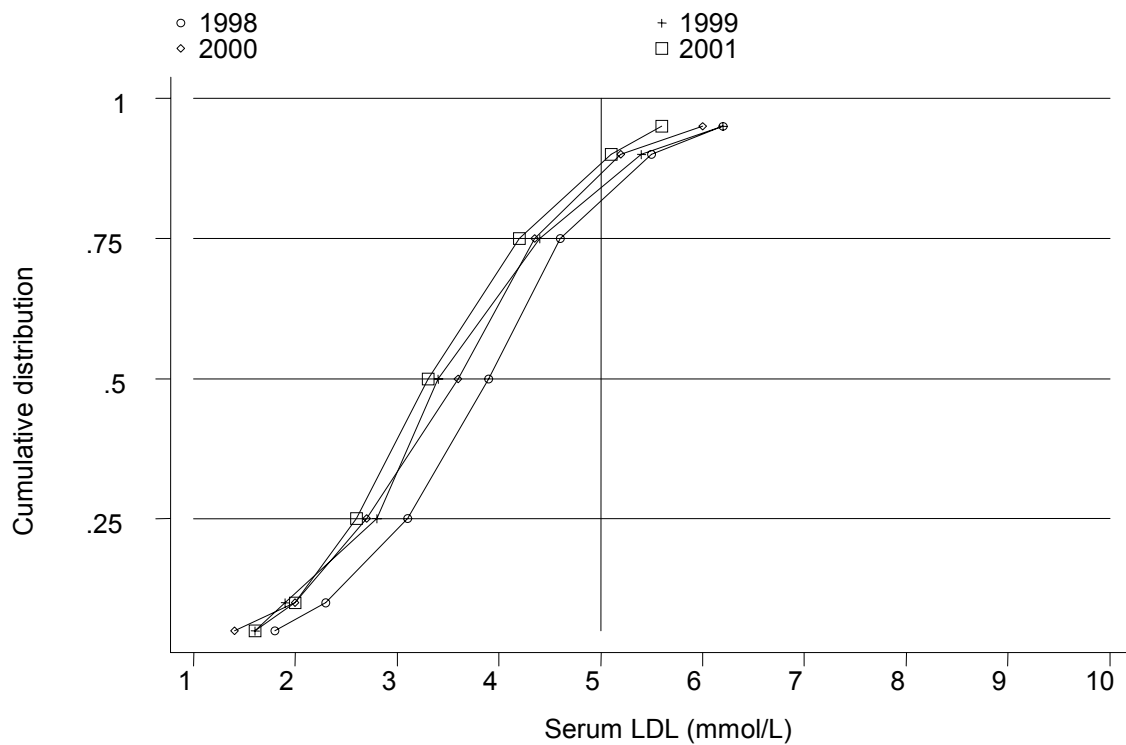
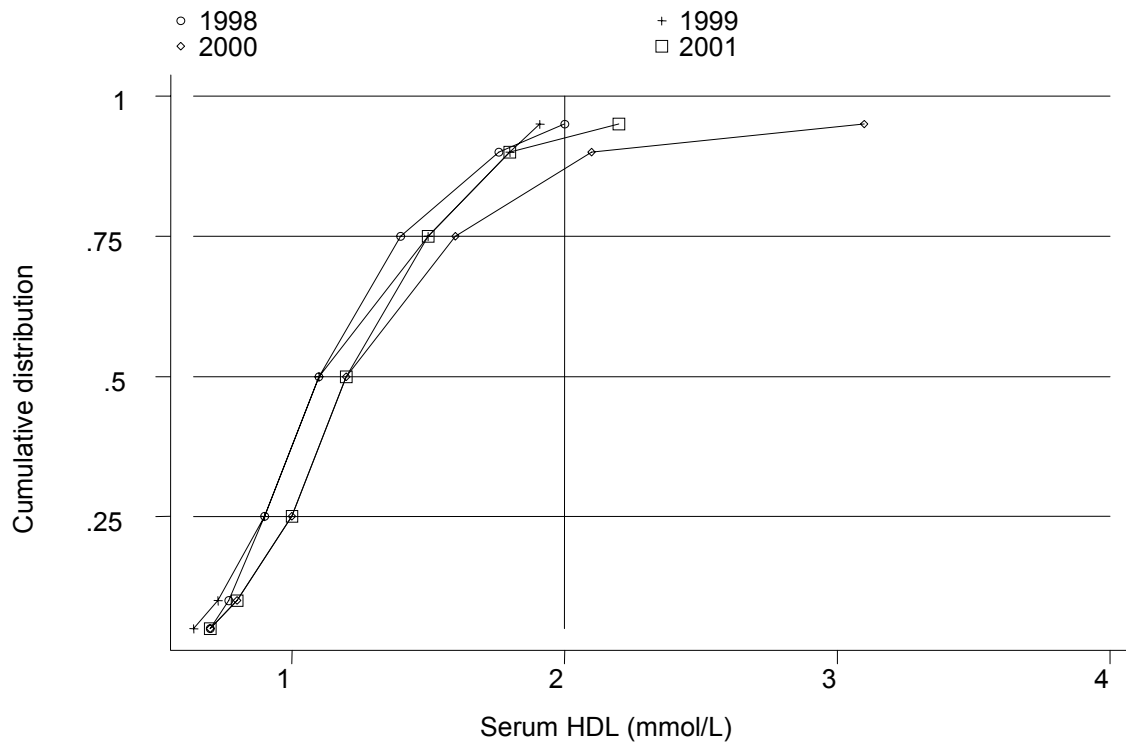


Table 4.27: Distribution of serum HDL (mmol/l), CAPD patient, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 2mmol/l
1998	152	198	1.1	.9	1.4	93
1999	210	279	1.1	.9	1.5	96
2000	283	415	1.2	1	1.6	88
2001	417	610	1.2	1	1.5	94

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 1998 – 2001

Year	No of subjects	% on CaCO ₃	% on Al(OH) ₃	% on Vitamin D
1998	541	79	9	20
1999	610	74	6	12
2000	662	79	2	15
2001	772	75	1	10

Table 4.29: Distribution of serum Phosphate concentration (mmol/l), CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 1.6 mmol/l
1998	537	1680	1.6	1.3	1.9	52
1999	583	1783	1.6	1.3	2	51
2000	633	1879	1.5	1.2	1.9	56
2001	722	2179	1.5	1.1	1.8	60

Figure 4.29: Cumulative distribution of serum Phosphate by year

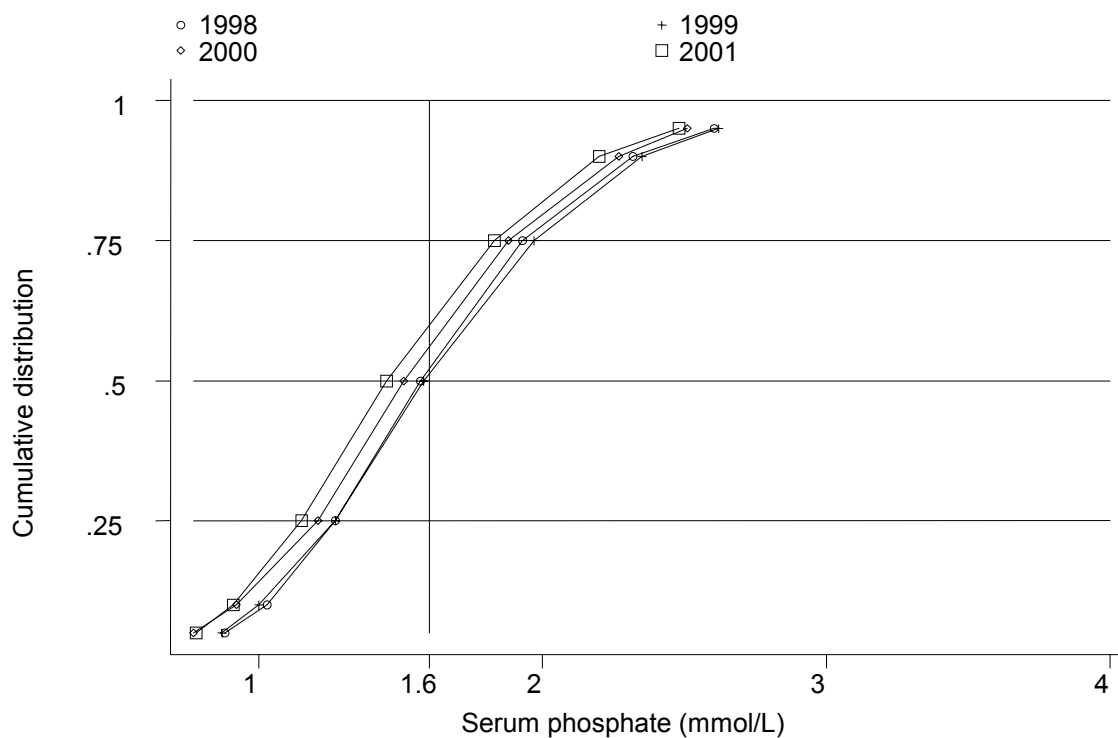


Table 4.30: Distribution of serum Calcium concentration (mmol/l), CAPD patients, Government Centres 1998 – 2001

year	No of subjects	No of observations	median	LQ	UQ	% patients ≥ 2.2 & ≤ 2.6 mmol/l
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
2001	739	2255	2.4	2.2	2.5	59

Figure 4.30: Cumulative distribution of serum Calcium concentration by year

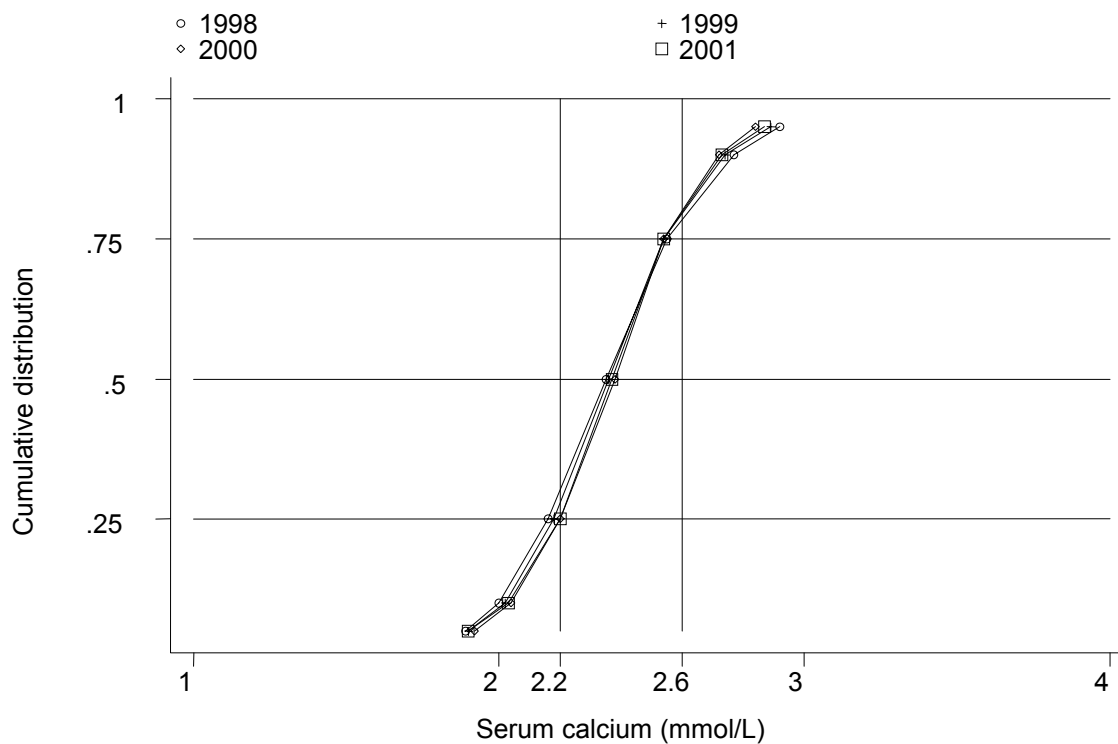
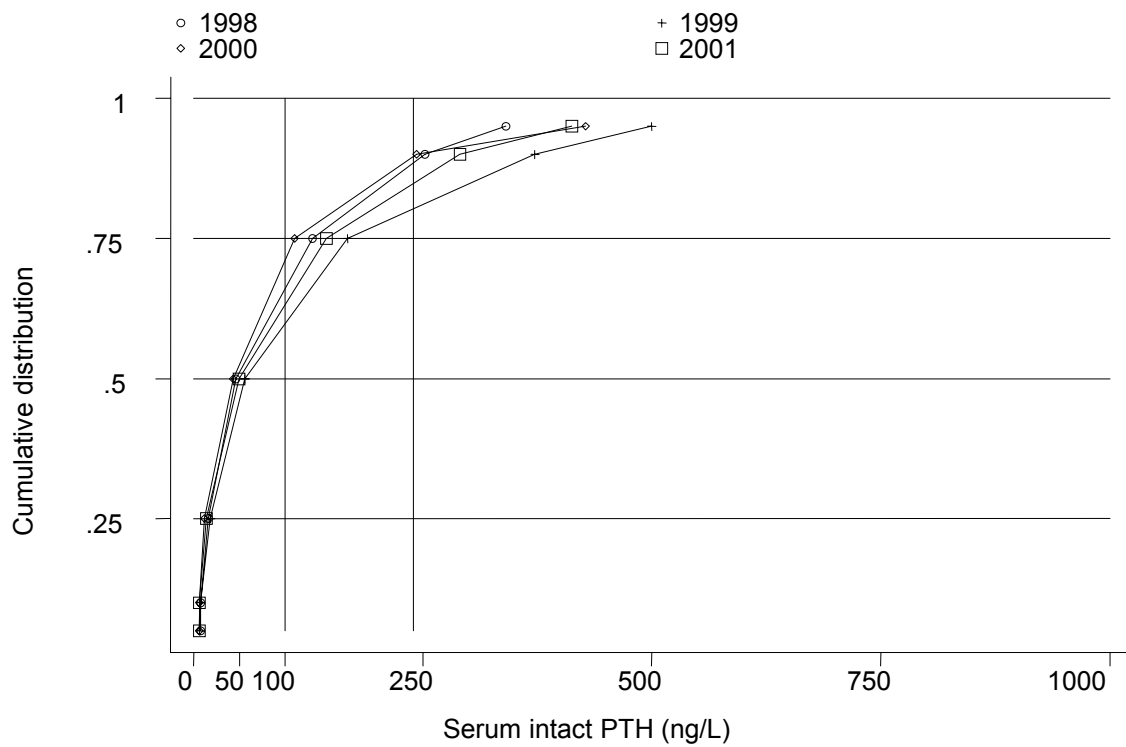


Table 4.31: Distribution of serum intact PTH (ng/L) concentration, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients ≥ 100 & ≤ 250 ng/l
1998	280	346	46	16	130	19
1999	365	482	56	18	168	17
2000	406	555	43	11.8	110	18
2001	527	736	49.5	14	145	20

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
1998 – 2001**

year	No.	% on anti-hypertensives	% on 1 anti-hypertensives	% on 2 anti-hypertensives	% on 3 anti-hypertensives
1998	541	88	34	31	23
1999	610	82	30	33	19
2000	662	78	31	27	20
2001	772	77	31	28	18

Table 4.33: Distribution of Systolic BP without anti-hypertensives, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 160 mmHg
1998	63	491	120	110	145	86
1999	98	699	120	110	142	87
2000	141	1114	120	110	138	91
2001	162	1316	127	110	140	92

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

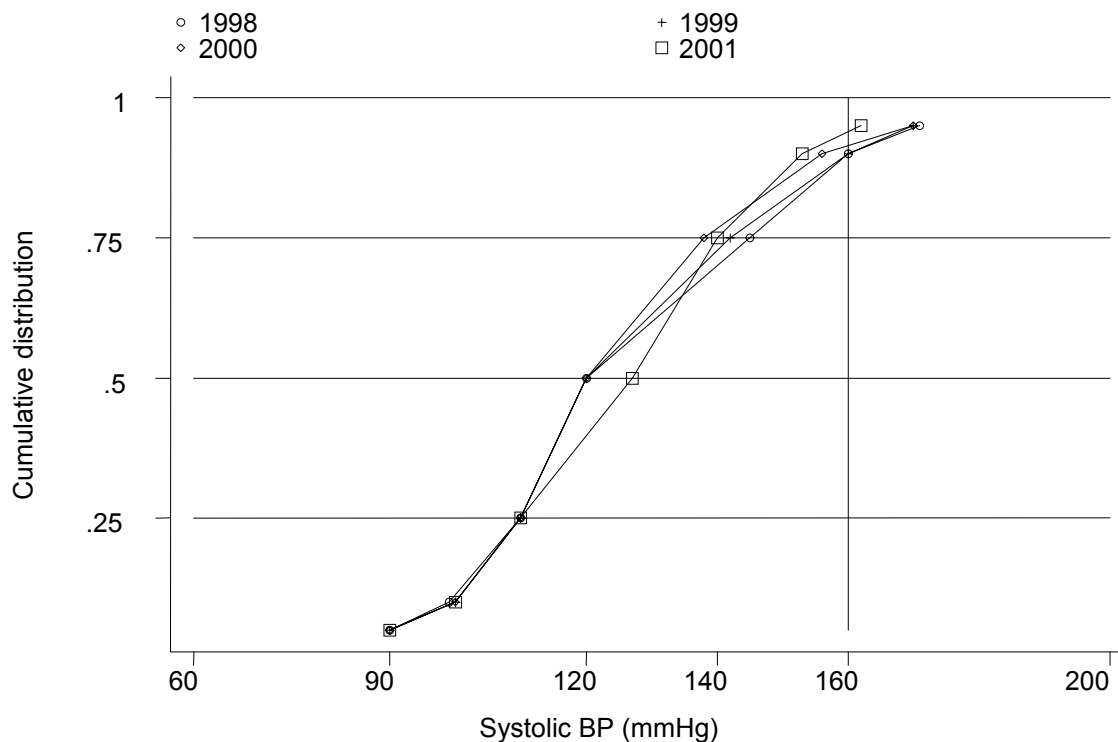


Table 4.34: Distribution of Diastolic BP without anti-hypertensives, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 90 mmHg
1998	63	492	80	70	89	76
1999	98	700	76.5	67	87.5	76
2000	141	1116	80	70	88	76
2001	162	1315	80	70	86	78

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

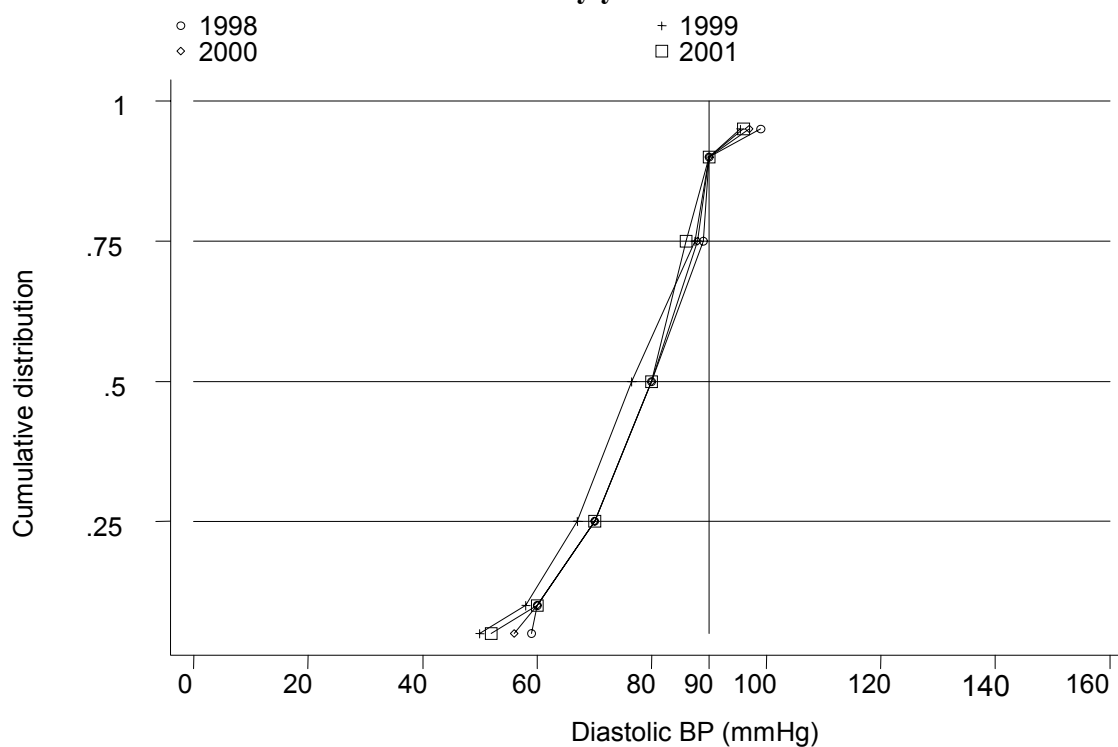


Table 4.35: Distribution of systolic BP on anti-hypertensives CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 160 mmHg
1998	456	3900	140	124	160	72
1999	478	3833	140	130	160	72
2000	497	4188	140	123	158	76
2001	569	4647	140	124	159	75

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

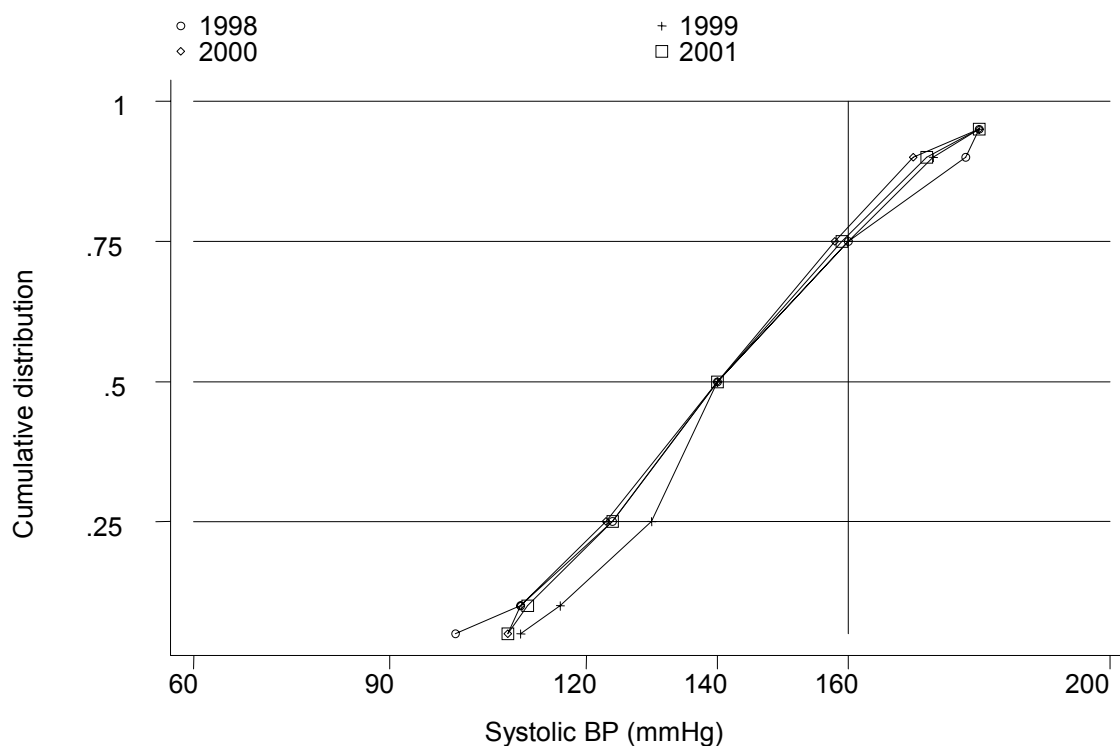
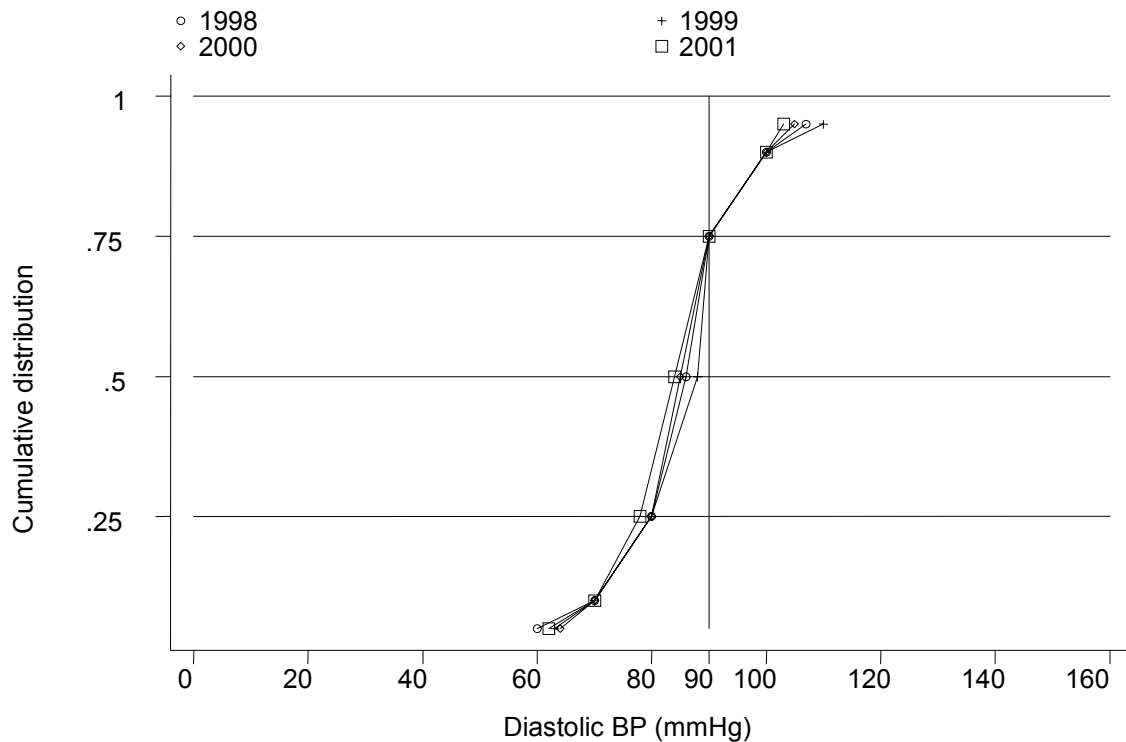


Table 4.36: Distribution of diastolic BP on anti-hypertensives, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients < 90 mmHg
1998	456	3899	86	80	90	53
1999	478	3838	88	80	90	51
2000	497	4191	85	80	90	56
2001	569	4671	84	78	90	58

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
1998 – 2001**

Year	No	% on rHuEpo	% received blood transfusion	% received oral iron	% received parenteral iron
1998	541	44	16	96	3
1999	610	44	14	94	0
2000	662	46	11	92	4
2001	772	45	11	91	2

**Table 4.38: Distribution of rHuEpo dose per week, CAPD patients,
Government Centres 1998 – 2001**

Year	1998	1999	2000	2001
No. of patients	225	259	287	331
% on 2000 u/week	25	35	31	33
% on 2-4000 u/week	56	50	53	50
% on 4-6000 u/week	6	3	5	7
% on 6-8000 u/week	12	9	9	7
% on 8-12000 u/week	1	2	3	2
% on >12000 u/week	0	0	0	0

Table 4.39: Distribution of serum Iron concentration without rHuEpo, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 10 umol/l
1998	190	446	15	11	24	76
1999	202	470	15	11	26	78
2000	255	549	15.8	10	23	75
2001	311	649	17	11	33	80

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

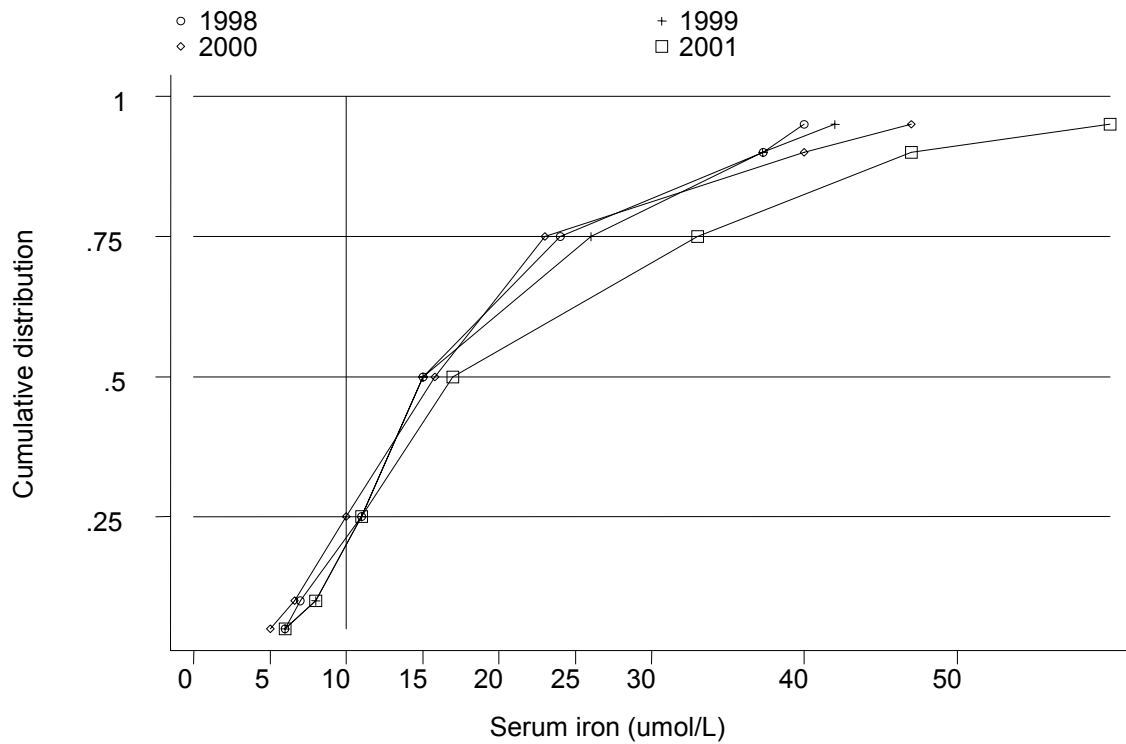


Table 4.40: Distribution of serum Iron concentration on rHuEpo, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 10 umol/l
1998	113	323	16	11	30.3	79
1999	143	392	18	11	28	81
2000	244	557	15	10	25	73
2001	301	712	17	11	32	77

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

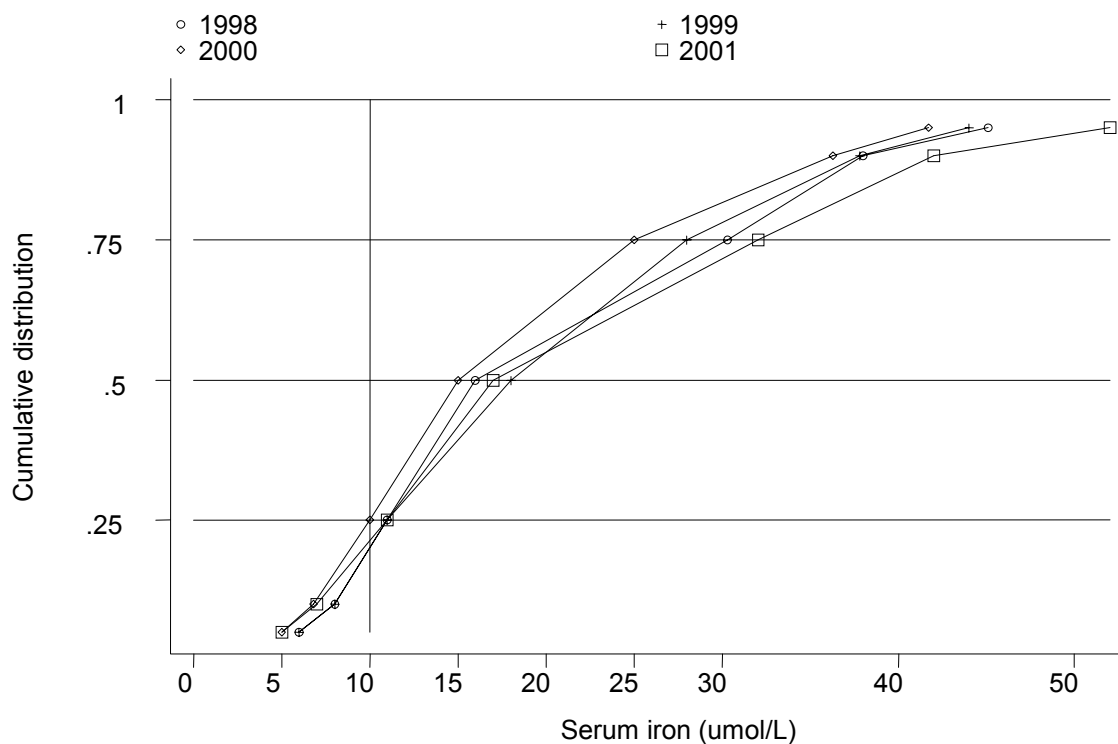


Table 4.41: Distribution of serum Transferrin Saturation without rHuEpo, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 20%
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
2001	259	1036	39	26.8	60.4	88

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

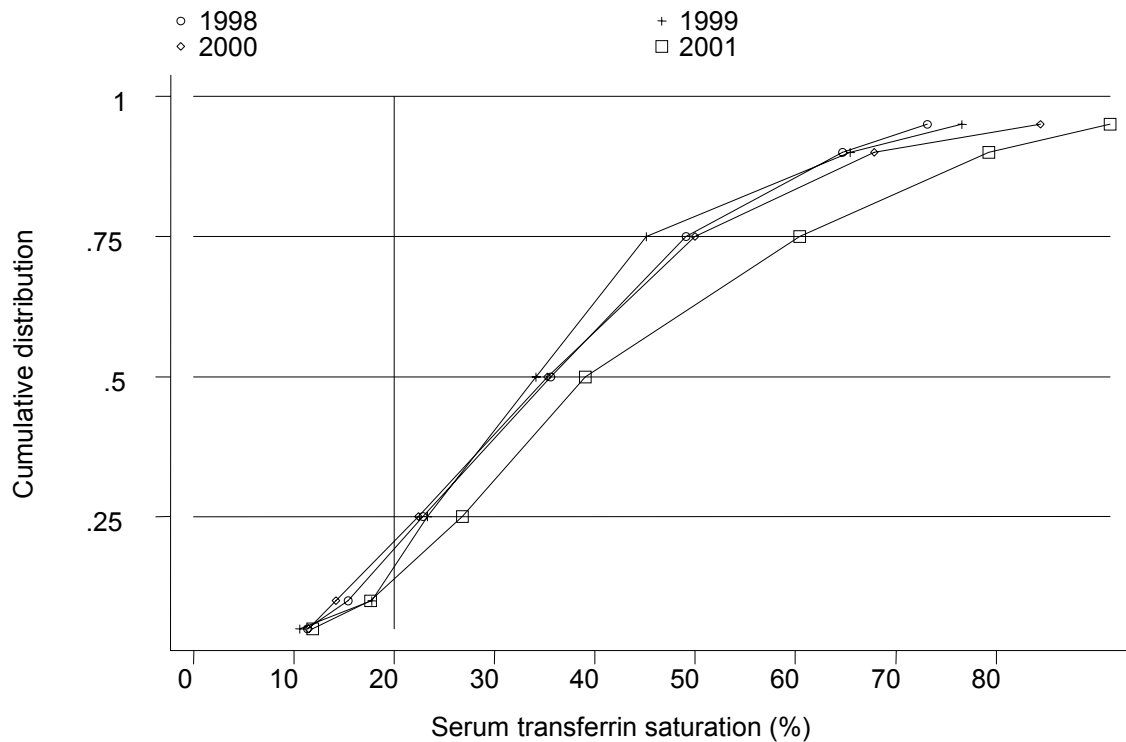


Table 4.42: Distribution of serum Transferrin Saturation on rHuEpo, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 20%
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
2001	261	1044	42.2	29.4	58.3	91

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

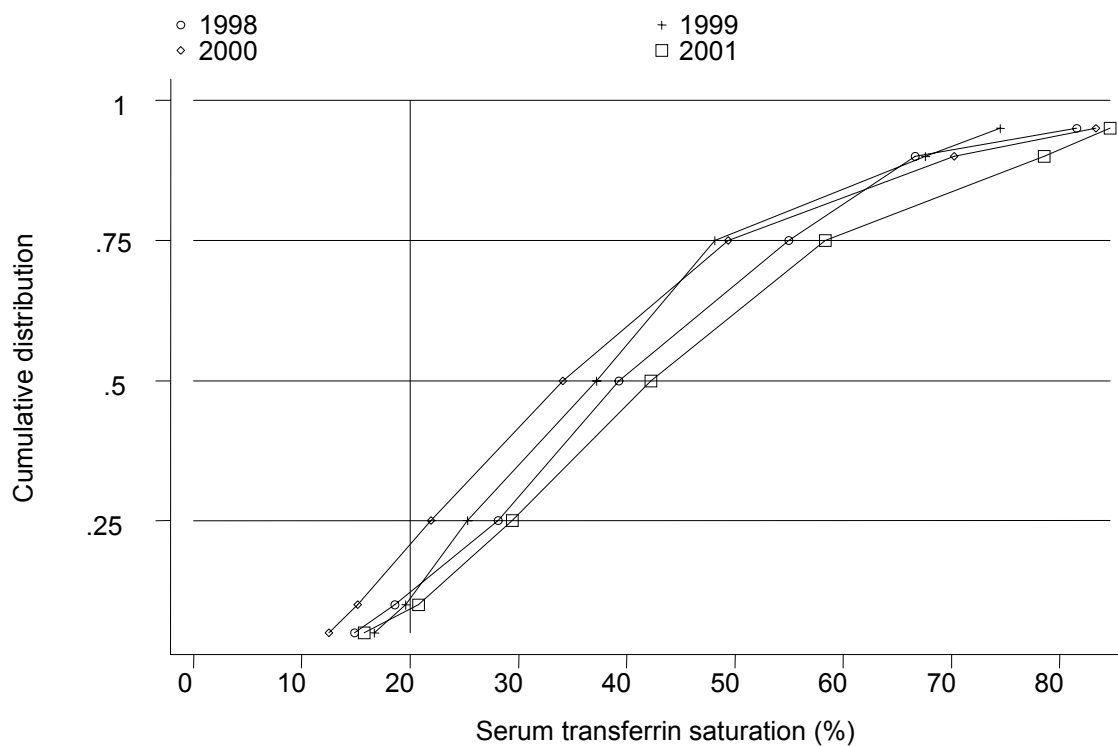


Table 4.43: Distribution of serum Ferritin without rHuEpo, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 100 ug/l
1998	92	105	394	196	686	86
1999	124	154	482	259.7	729	93
2000	144	204	462	167.5	726.3	86
2001	219	313	436	226.6	774.2	91

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

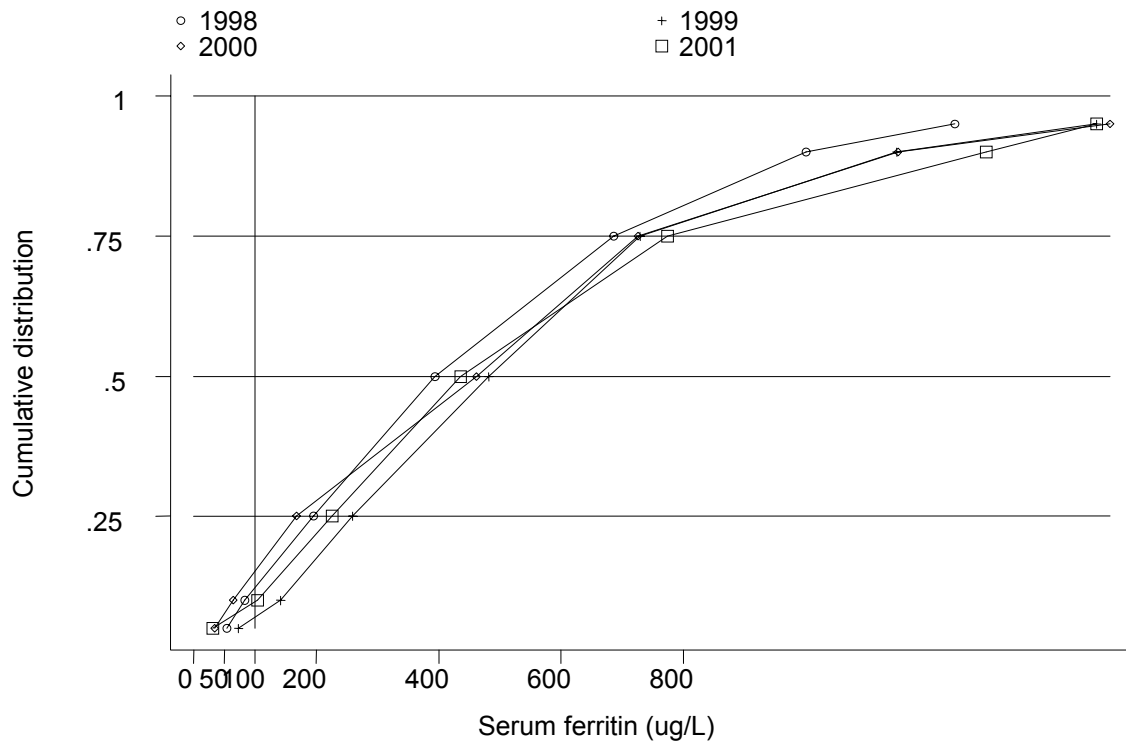


Table 4.44: Distribution of serum Ferritin concentration on rHuEpo, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients > 100 ug/l
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
2001	258	415	546	264	908.1	91

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

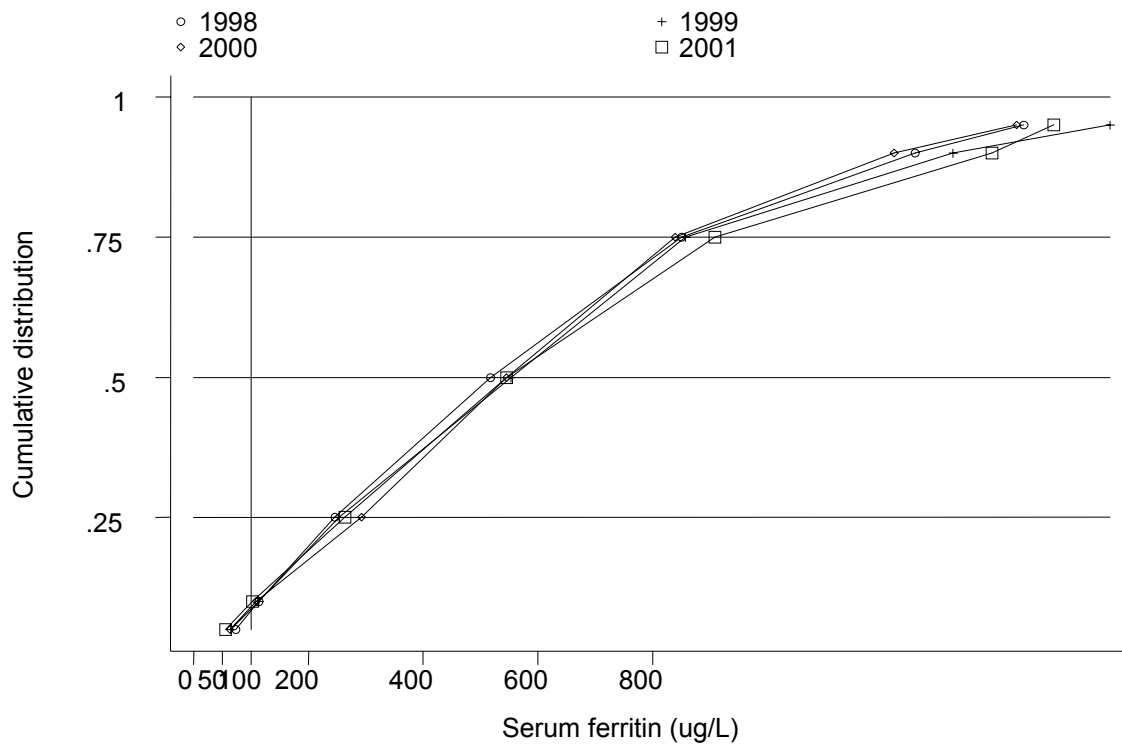


Table 4.45: Distribution of Haemoglobin concentration without rHuEpo, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients <10 g/dl	% patients ≥ 10 & ≤ 12 g/dl	% patients >12 g/dl
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
2001	400	1073	9.8	8.6	11.1	55	33	12

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

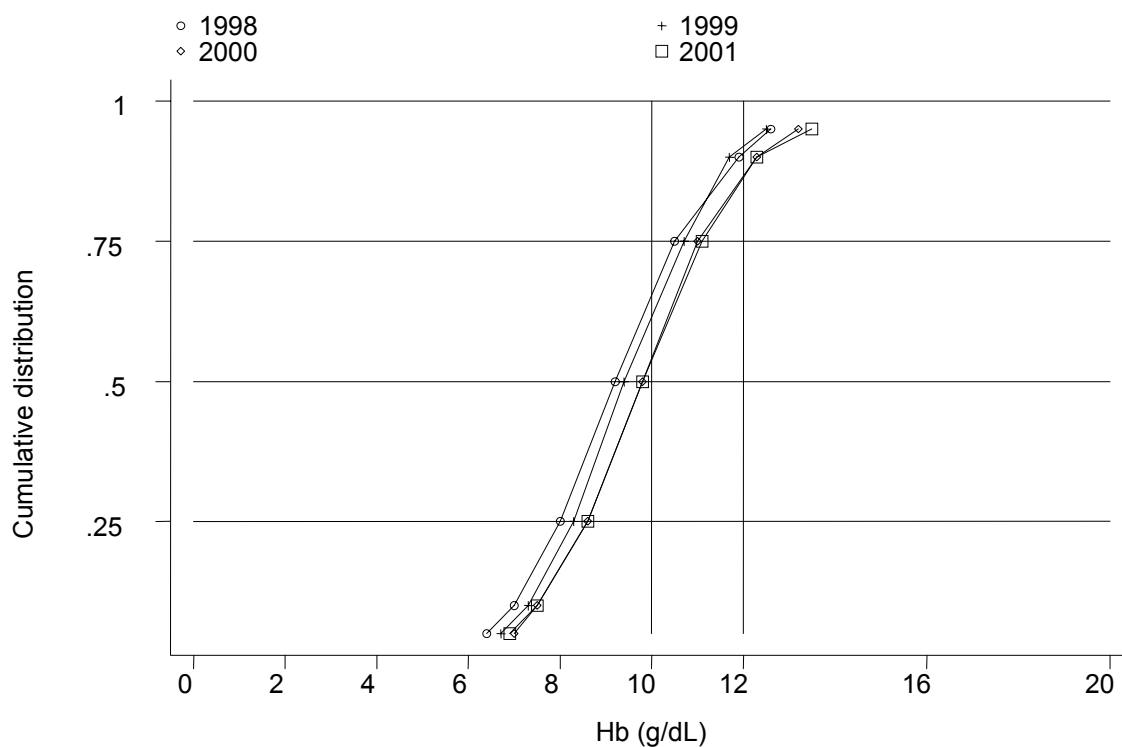
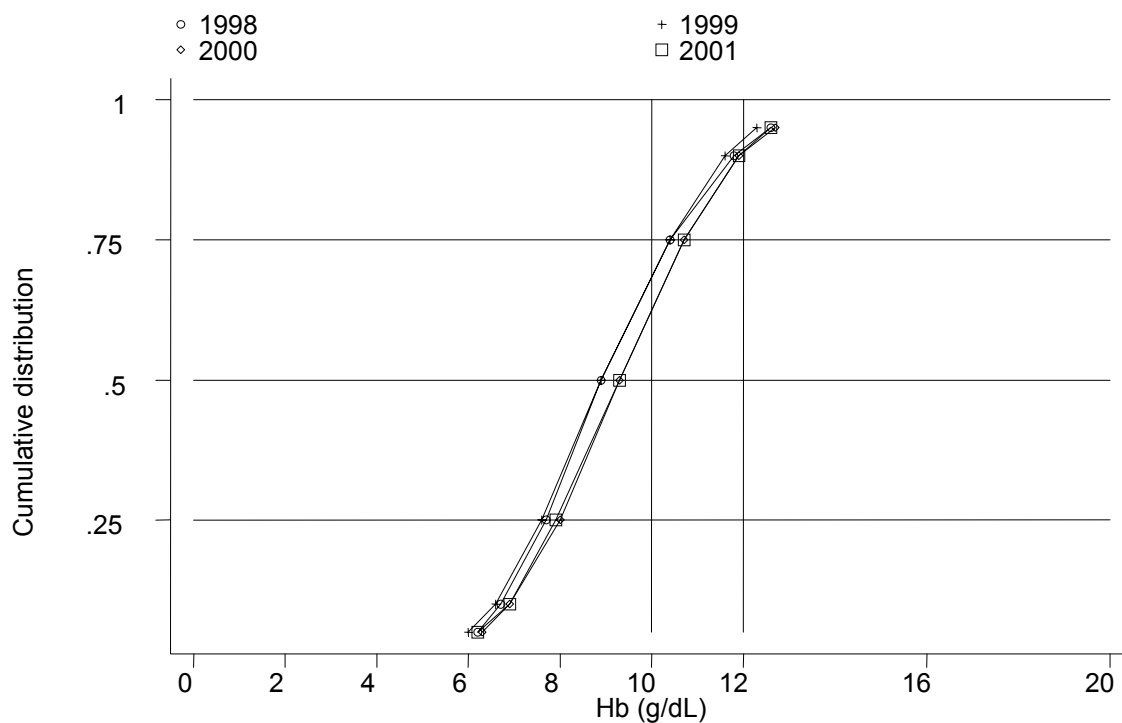


Table 4.46: Distribution of Haemoglobin concentration on rHuEpo, CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients <10 g/dl	% patients ≥ 10 & ≤ 12 g/dl	% patients >12 g/dl
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
2001	340	1179	9.3	7.9	10.7	62	28	9

Figure 4.46: Cumulative distribution of Haemoglobin on rHuEpo by year

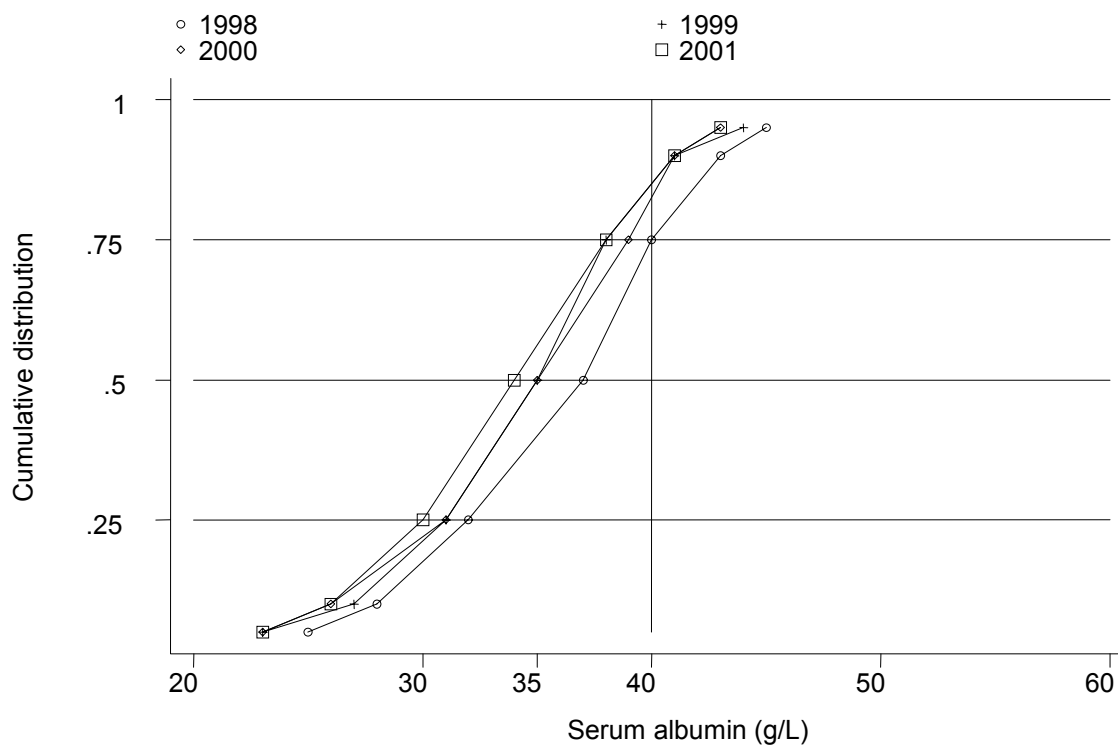


4.13 NUTRITIONAL STATUS OF CAPD PATIENTS, GOVERNMENT CENTRES

Table 4.47: Distribution of serum Albumin concentration (g/L), CAPD patients, Government Centres 1998 – 2001

Year	No of subjects	No of observations	median	LQ	UQ	% patients >40g/l
1998	536	1692	37	32	40	29
1999	597	1872	35	31	38	18
2000	640	1970	35	31	39	19
2001	740	2275	34	30	38	15

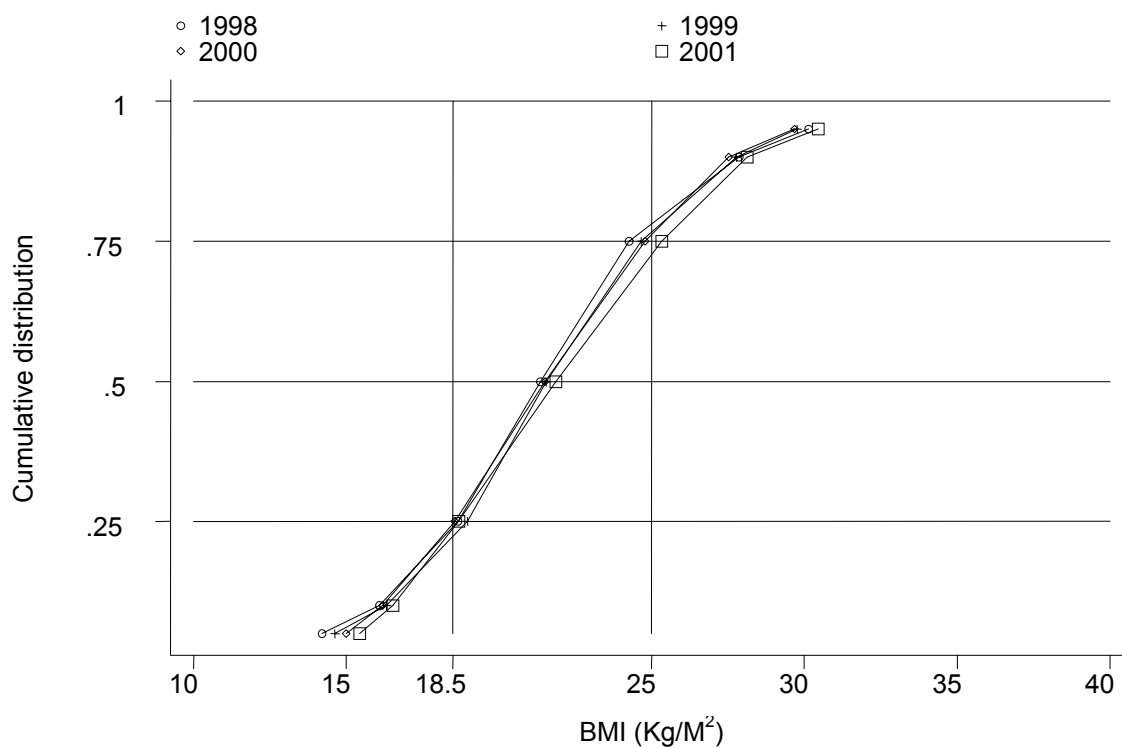
Figure 4.47: Cumulative distribution of serum Albumin concentration by year



**Table 4.48: Distribution of Body Mass Index CAPD patients, Government Centres
1998 – 2001**

Year	No of subjects	No of observations	median	LQ	UQ	% patients <18.5	% patients ≥ 18.5 & ≤ 25	% patients >25
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	25	53	23
2001	646	5502	21.9	18.7	25.3	23	50	27

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 CAPD patients, Government Centres 1998 – 2001

Year	No	% HBsAg positive	% anti-HCV positive
1998	541	3	6
1999	610	2	5
2000	662	2	5
2001	772	2	3

Figure 4.49: Prevalence of positive anti-HCV and HBsAg CAPD patients, Government Centres 1998 – 2001

