

CHRONIC PERITONEAL DIALYSIS
IN
GOVERNMENT CENTRES

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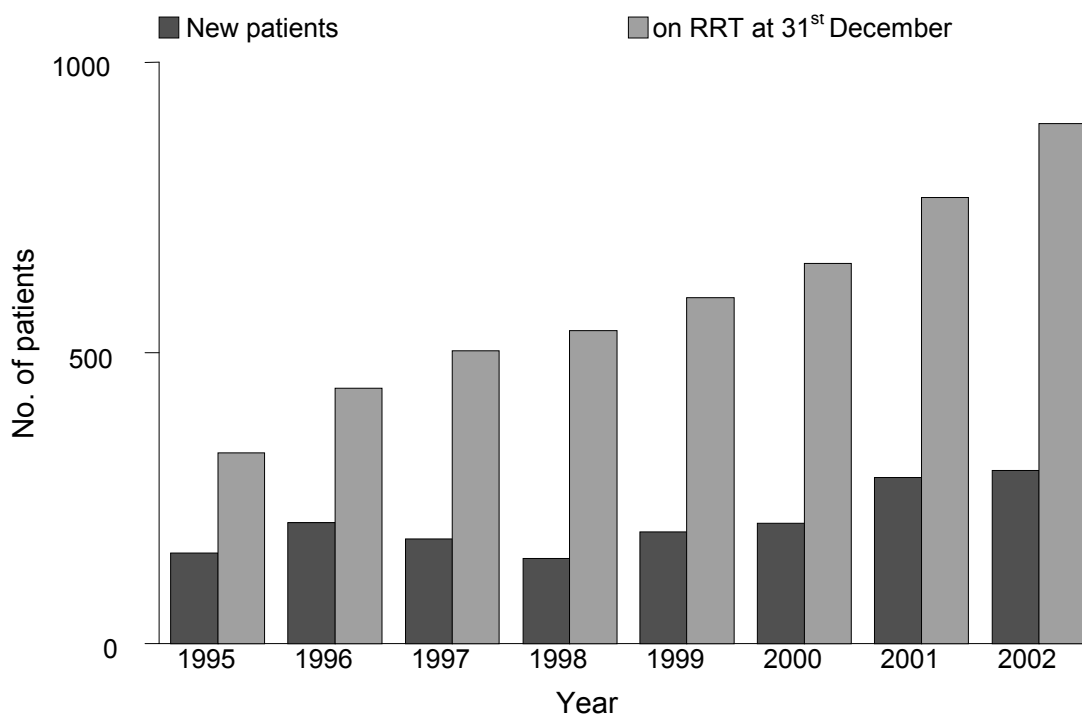
4. CHRONIC PERITONEAL DIALYSIS

4.1 STOCK AND FLOW

Table 4.01: Stock and Flow of Chronic PD Patients 1995 – 2002

Year	1995	1996	1997	1998	1999	2000	2001	2002
New Dialysis patients	156	208	180	146	192	207	286	298
Died	58	62	73	74	100	90	128	113
Transferred to HD	22	38	50	33	38	63	84	85
Transplanted	7	8	10	12	13	12	12	18
Lost to follow up	0	1	0	0	1	2	2	3
Dialysing at 31 st December	328	439	503	538	595	654	767	894

Figure 4.01: Stock and Flow of Chronic PD Patients 1995 – 2002

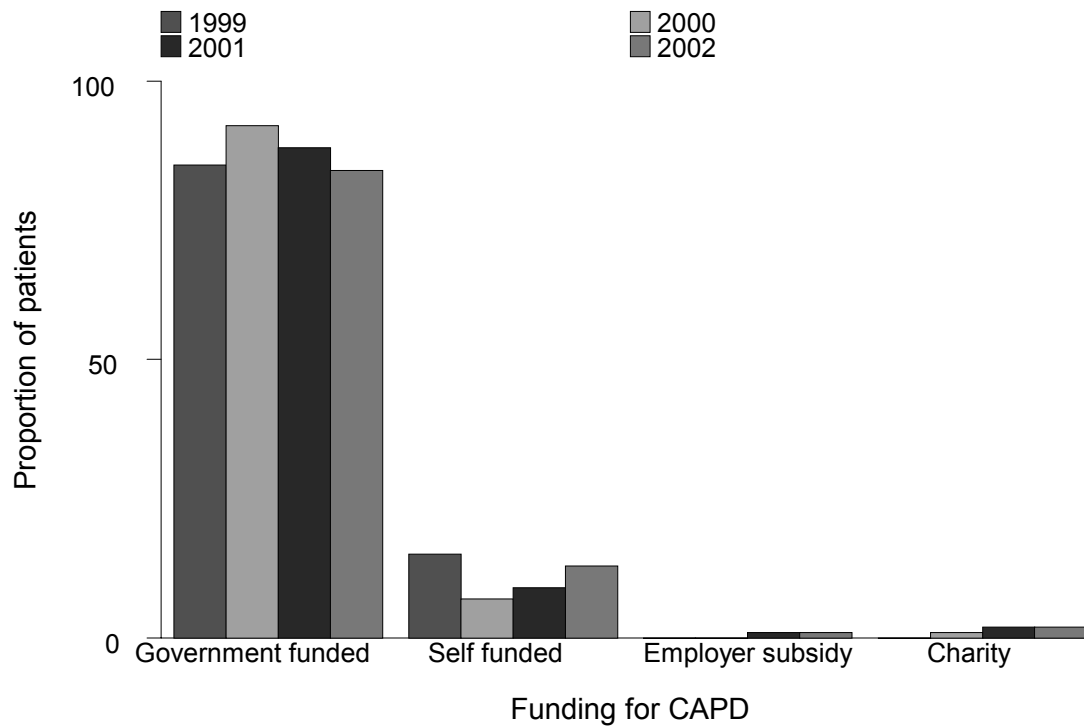


4.2 FUNDING FOR CHRONIC PERITONEAL DIALYSIS

Table 4.03: Funding for CAPD, Government Centres 1999 – 2002

Year	1999	2000	2001	2002
New Dialysis patients	192	207	286	298
% Government funded	85	92	88	84
% Self funded	15	7	9	13
% Employer subsidised	0	0	1	1
% Charity	0	1	2	2
Dialysing at 31 st December	595	654	767	894
% Government funded	86	88	88	87
% Self funded	12	10	9	10
% Employer subsidised	1	1	1	1
% Charity	1	1	2	2

Figure 4.03: Funding for new CAPD, Government Centres 1999 – 2002



4.3 DEATH ON CAPD AND TRANSFER TO HAEMODIALYSIS

Table 4.04: Death Rate and Transfer to HD Government Centres 1995 – 2002

Year	1995	1996	1997	1998	1999	2000	2001	2002
No. at risk	328	384	471	521	567	625	711	831
Death (No.)	58	62	73	74	100	90	128	113
Death rate %	18	16	15	14	18	14	18	14
No transferred to HD	22	38	50	33	38	63	84	85
Transfer to HD rate %	7	10	11	6	7	10	12	10
All losses	80	100	123	107	138	153	212	198
All losses rate %	24	26	26	21	24	24	30	24

Figure 4.04: Death Rates on CAPD, Government Centres 1995 – 2002

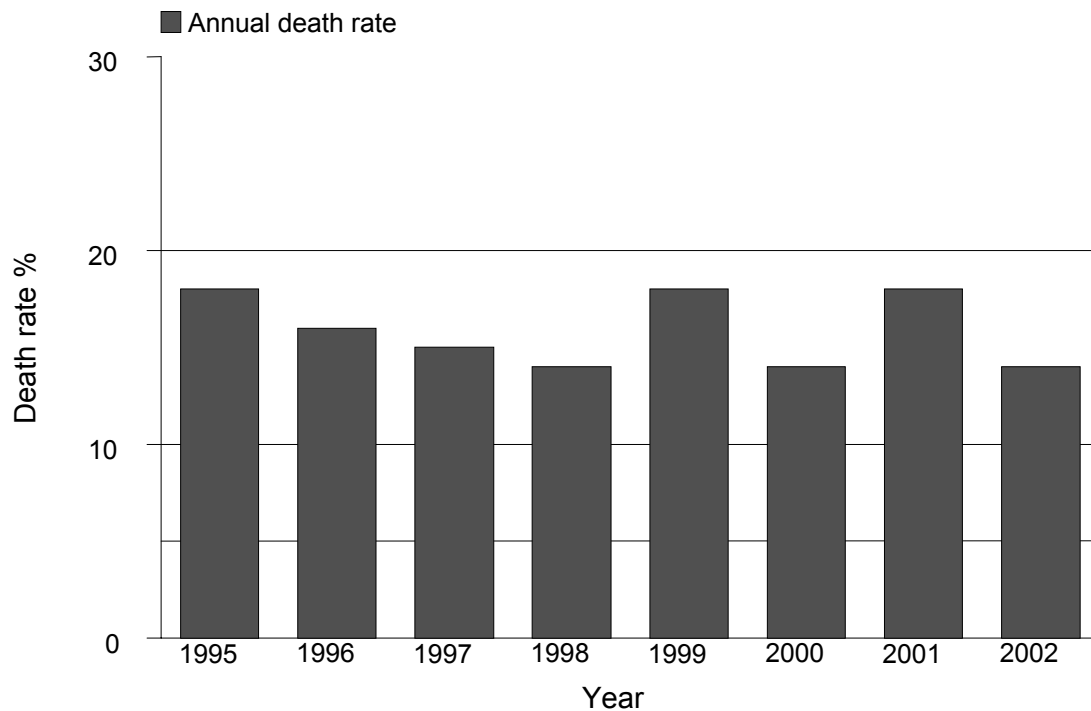


Table 4.05: Causes of Death on CAPD, Government Centres 1999 – 2002

Year	1999		2000		2001		2002	
	No	%	No	%	No	%	No	%
Cardiovascular	27	27	28	31	34	27	39	35
Died at home	32	32	22	24	30	23	32	28
Sepsis	16	16	15	17	26	20	19	17
CAPD peritonitis	8	8	15	17	19	15	9	8
GIT bleed	3	3	1	1	4	3	1	1
Cancer	1	1	0	0	2	2	0	0
Liver disease	0	0	0	0	0	0	0	0
Others	10	10	9	10	11	9	10	9
Unknown	3	3	0	0	2	2	3	3
Total	100	100	90	100	128	100	113	100

Table 4.06: Causes of Transfer to CAPD 1999 – 2002

Year	1999		1999		2000		2002	
	No.	%	No.	%	No.	%	No.	%
Peritonitis	23	61	39	62	51	61	31	36
Cather related infection	2	5	1	2	0	0	4	5
Technical problem	0	0	3	5	1	1	5	6
Membrane failure	3	8	10	16	7	8	11	13
Patient preference/cannot cope	3	8	4	6	3	4	9	11
Others	5	13	3	5	7	8	7	8
Unknown	2	5	3	5	15	18	18	21
Total	38	100	63	100	84	100	85	100

4.4 GOVERNMENT CAPD CENTRES

Table 4.07: Centre Distribution of CAPD patients, 2002

	Centre	No	Percent
	Number on RRT at 31 st December	894	100
1	Berjaya NKF Dialysis Centre, Petaling Jaya	3	0
2	Ipoh Hospital	42	5
3	Kota Bharu Hospital	18	2
4	Kuala Lumpur Hospital	167	19
5	Kuala Lumpur Hospital (Paed.)	31	3
6	Kuala Terengganu Hospital	47	5
7	Kuching Hospital	23	3
8	Melaka Hospital	6	1
9	Pulau Pinang Hospital	99	11
10	Queen Elizabeth Hospital	34	4
11	Sabah Medical Centre	1	0
12	Selayang Hospital	32	4
13	Seremban Hospital	70	8
14	Sultanah Aminah Hospital	138	15
15	Tengku Ampuan Afzan Hospital, Kuantan	16	2
16	Tengku Ampuan Rahimah Hospital, Klang	36	4
17	Universiti Kebangsaan Malaysia Hospital	24	3
18	Universiti Sains Malaysia Hospital	1	0
19	University Malaya Medical Centre	106	12

4.5 CAPD PATIENTS' CHARACTERISTICS

Table 4.08: Percentage Age Distribution of CAPD patients 1999 – 2002

Year	1999	2000	2001	2002
New Dialysis patients	192	207	286	298
1-14 years	11	10	9	9
15-24 years	8	11	7	13
25-34 years	7	8	10	9
35-44 years	13	17	14	15
45-54 years	20	26	20	24
55-64 years	26	18	29	18
≥65 years	16	11	12	10
Dialysing at 31 st December	595	654	767	894
1-14 years	12	11	11	11
15-24 years	6	7	8	10
25-34 years	14	14	14	12
35-44 years	15	16	17	17
45-54 years	24	24	21	23
55-64 years	20	19	21	19
≥65 years	8	8	8	8

Table 4.09: CAPD Patient Characteristics 1999- 2002

Year	1999	2000	2001	2002
New Dialysis patients	192	207	286	298
Mean age ± sd	47 ± 19	43 ± 18	46 ± 18	42 ± 19
% Male	51	50	47	52
% Diabetic	45	38	41	40
% HBsAg+	2	4	4	3
% Anti-HCV+	3	3	2	1

4.6 SURVIVAL ANALYSIS

Table 4.10: CAPD Patient Survival related to Year of Entry, Government Centres 1997– 2002

Year	1997			1998			1999		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	96	1	186	94	2	142	94	2	188
12	92	2	169	86	3	126	90	2	173
24	79	3	140	72	4	94	73	3	115
36	65	4	101	61	4	73	55	4	74
48	56	4	77	53	4	51			
60	49	4	56						

Year	2000			2001			2002		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	94	2	205	93	1	302	94	2	163
12	88	2	182	88	2	258			
24	76	3	136						

No. = number at risk

SE = standard error

Figure 4.10: CAPD Patient Survival related to Year of Entry, Government Centres 1998 – 2002

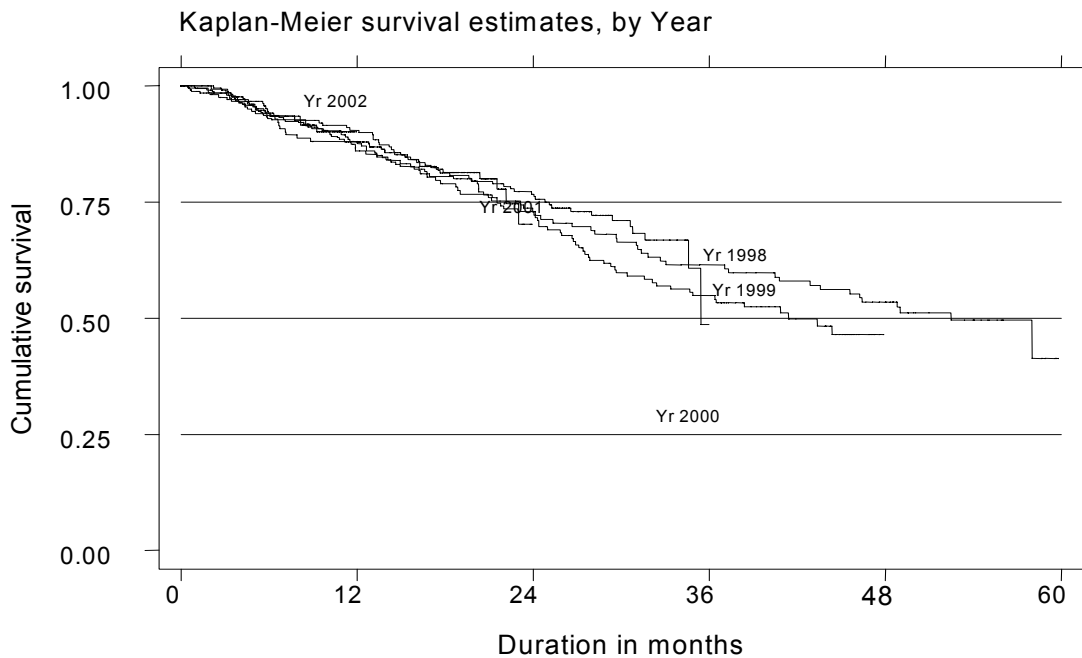


Table 4.11: CAPD Technique Survival related to Year of Entry, Government Centres 1997 – 2002

Year	1997			1998			1999		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	94	2	186	92	2	142	89	2	188
12	88	2	169	83	3	126	84	3	173
24	74	3	140	65	4	94	57	3	115
36	55	4	101	50	4	73	39	3	74
48	42	4	76	39	4	56			
60	32	3	56						

Year	2000			200			2002		
Interval (months)	% survival	SE	No	% survival	SE	No	% survival	SE	No
6	91	2	205	89	2	302	91	2	163
12	81	3	183	80	2	260			
24	62	3	136						

No. = number at risk

SE = standard error

Figure 4.11: CAPD Technique Survival by Year of Entry Government Centres 1998 – 2002



4.7 *WORK RELATED REHABILITATION AND QUALITY OF LIFE ON CAPD*

**Table 4.12: Work Related Rehabilitation on CAPD, Government Centres
1999 – 2002**

REHABILITATION STATUS	1999		2000		2001		2002	
	No.	%	No.	%	No.	%	No.	%
Full time work for pay	96	19	92	17	102	16	120	16
Part time work for pay	45	9	27	5	37	6	41	6
Able to work but unable to get a job	14	3	25	5	23	4	23	3
Able to work but not yet due to dialysis schedule	3	1	7	1	9	1	8	1
Able but disinclined to work	11	2	10	2	11	2	10	1
Home maker	143	28	166	31	215	35	243	33
Full time student	67	13	81	15	89	14	104	14
Age<15 years	13	3	8	2	11	2	20	3
Retired	38	7	45	8	48	8	52	7
Age>65 years	39	8	42	8	49	8	64	9
Unable to work due to poor health	43	8	29	5	26	4	51	7
Total	512	100	532	100	620	100	736	100

Table 4.13: Quality of Life on CAPD, Government Centres 1999 – 2002

QOL Index Summated Score	1999		2000		2001		2002	
	No.	%	No.	%	No.	%	No.	%
0 (Worst QOL)	0	0	1	0	0	0	0	0
1	0	0	1	0	0	0	2	0
2	1	0	1	0	0	0	3	0
3	3	1	1	0	7	1	4	1
4	16	3	13	3	11	2	10	1
5	19	4	17	3	19	3	22	3
6	25	5	22	4	21	3	25	3
7	26	5	37	7	38	6	36	5
8	37	7	29	6	36	6	56	8
9	46	9	30	6	62	10	53	7
10 (Best QOL)	338	66	366	71	431	69	529	71
Total	511	100	518	100	625	100	740	100

4.8 CAPD PRACTICES

Table 4.14: Chronic Peritoneal Dialysis Regimes 1999 – 2002

PD regime	1999		2000		2001		2002	
	No	%	No	%	No	%	No	%
Standard CAPD	582	96	644	98	767	99	875	99
DAPD	19	3	12	2	7	1	6	1
Automated PD	4	1	4	1	2	0	4	0
Total	605	100	660	100	776	100	885	100

Table 4.15: CAPD Connectology 1999 – 2002

CAPD Connectology	1999		2000		2001		2002	
	No	%	No	%	No	%	No	%
UVXD	4	1	2	0	0	0	19	2
Baxter disconnect	343	58	233	39	436	57	709	86
B Braun disconnect	248	42	370	61	324	43	93	11
Total	595	100	605	100	760	100	821	100

Table 4.16: CAPD Number of Exchanges per day 1999 – 2002

No of Exchanges/day	1999		2000		2001		2002	
	No	%	No	%	No	%	No	%
2	0	0	2	0	1	0	0	0
3	4	1	1	0	5	1	11	1
4	579	97	624	96	735	95	832	95
5	13	2	23	4	31	4	28	3
100	597	100	650	100	772	100	872	100

Table 4.17: CAPD Volume per Exchange 1999 – 2002

Volume per Exchange (L)	1999		2000		2001		2002	
	No	%	No	%	No	%	No	%
1	19	3	25	4	32	4	37	4
2	557	96	595	95	711	95	791	94
3	2	0	7	1	9	1	14	2
Total	578	100	627	100	752	100	842	100

4.9. DYSLIPIDAEMIA IN CAPD PATIENTS, GOVERNMENT CENTRES

Table 4.24: Distribution of serum Cholesterol Concentrations (mmol/L), CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients < 5.3 mmol/L
1999	434	619	5.5	4.8	6.5	48
2000	526	833	5.8	4.9	6.8	40
2001	581	902	5.7	4.8	6.6	44
2002	764	1286	5.5	4.6	6.5	50

Figure 4.24: Cumulative distribution of serum cholesterol concentration by year

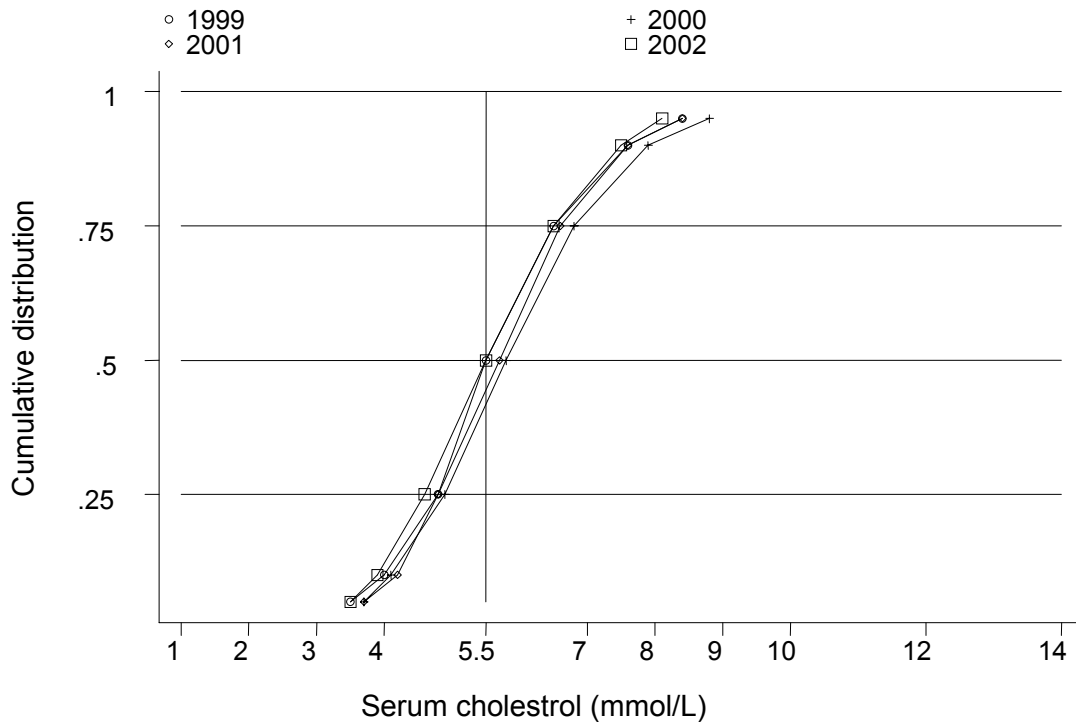


Table 4.25: Distribution of serum Triglyceride (mmol/L), CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients < 3.5 mmol/L
1999	421	602	1.9	1.3	2.9	82
2000	520	819	2.1	1.4	3.1	79
2001	576	897	2	1.4	3.1	80
2002	765	1286	1.9	1.3	3.1	80

Figure 4.25: Cumulative distribution of serum triglyceride concentration by year

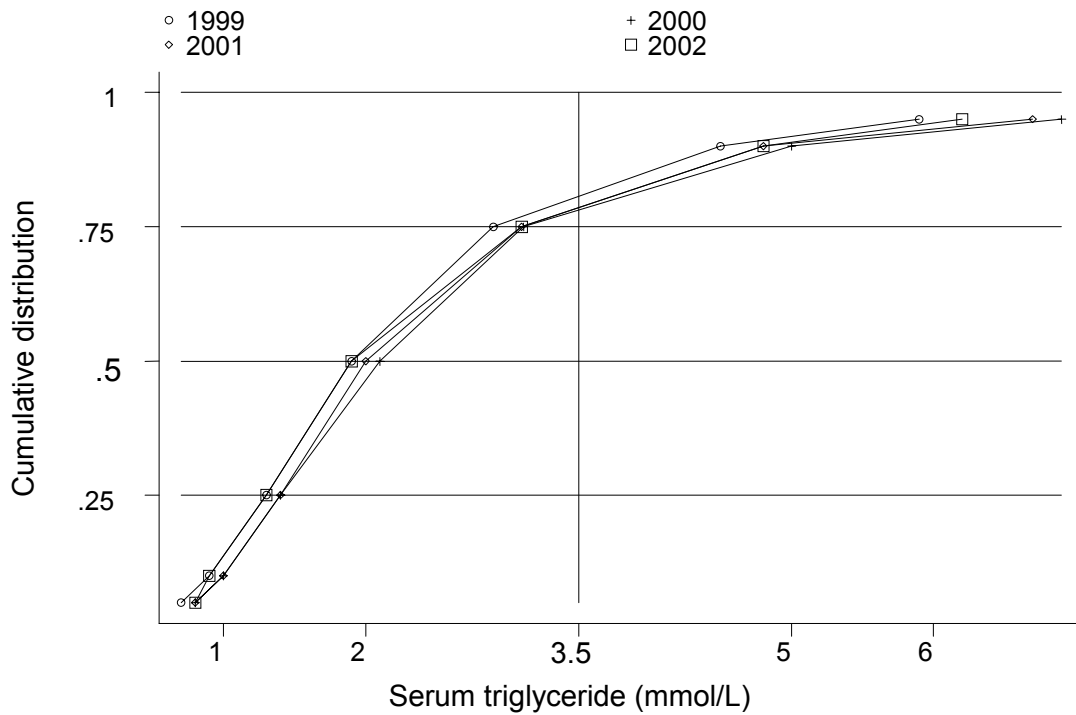


Table 4.26: Distribution of serum LDL (mmol/L), CAPD patient, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients <5 mmol/L
1999	198	263	3.4	2.8	4.4	82
2000	271	392	3.6	2.7	4.3	88
2001	411	592	3.3	2.6	4.2	89
2002	661	1076	3.2	2.5	4.1	91

Figure 4.26: Cumulative distribution of serum LDL by year

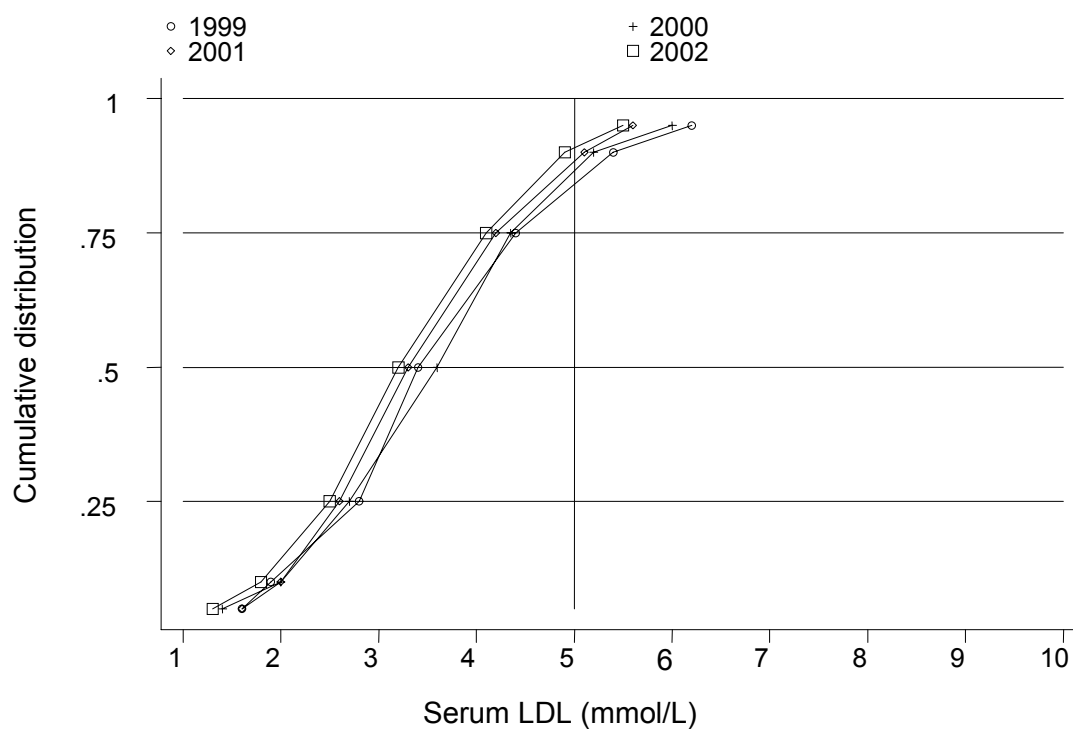
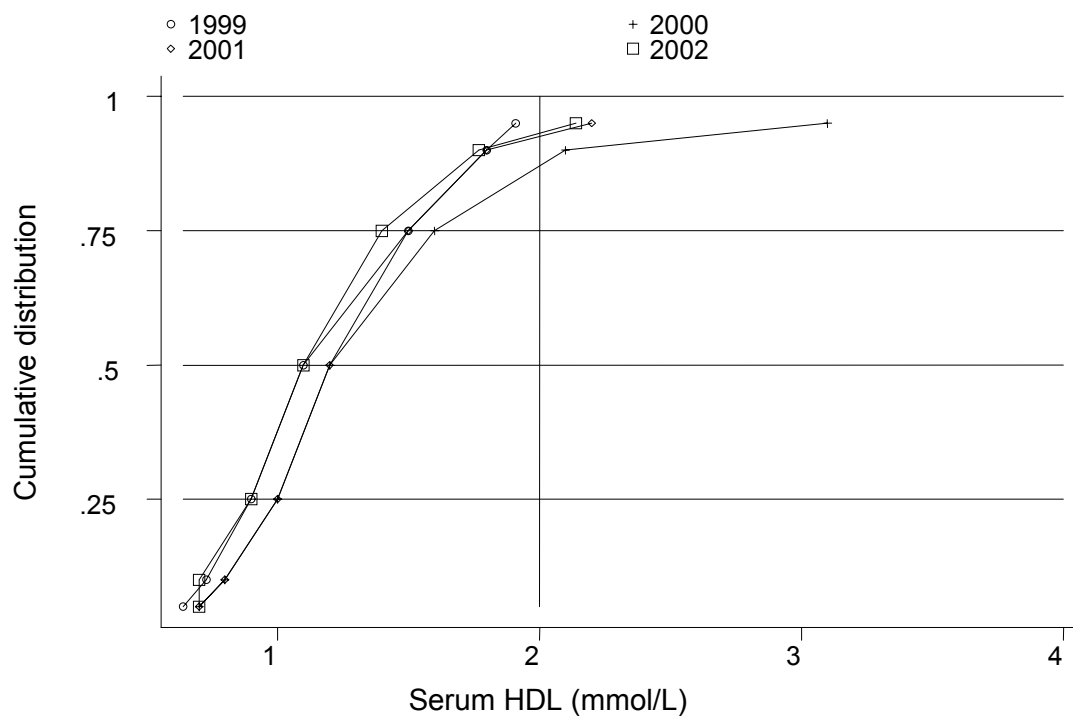


Table 4.27: Distribution of serum HDL (mmol/L), CAPD patient, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients < 2mmol/L
1999	210	279	1.1	0.9	1.5	96
2000	283	415	1.2	1	1.6	88
2001	421	615	1.2	1	1.5	94
2002	673	1113	1.1	0.9	1.4	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 1999 – 2002

Year	No of subjects	% on CaCO ₃	% on Al(OH) ₃	% on Vitamin D
1999	610	74	6	12
2000	662	79	2	15
2001	781	75	1	11
2002	889	80	1	15

Table 4.29: Distribution of serum Phosphate concentration (mmol/L), CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients < 1.6 mmol/L
1999	583	1783	1.6	1.3	2	51
2000	633	1879	1.5	1.2	1.9	56
2001	732	2206	1.5	1.1	1.8	60
2002	860	2706	1.5	1.2	1.9	58

Figure 4.29: Cumulative distribution of serum Phosphate by year

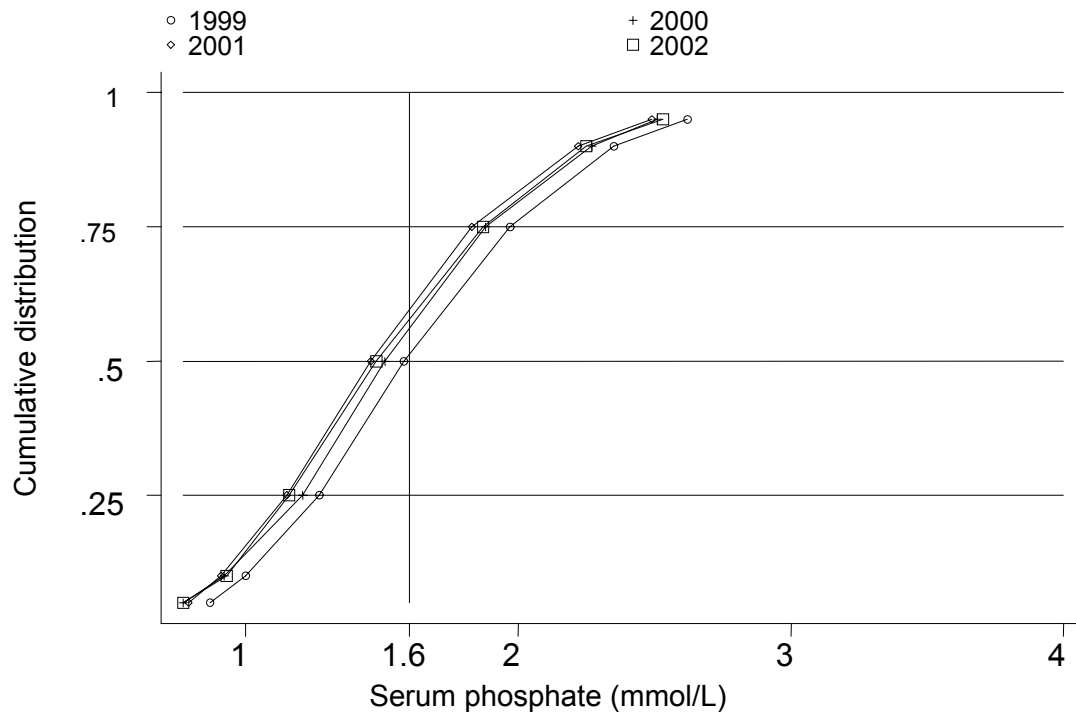


Table 4.30: Distribution of serum Calcium concentration (mmol/L), CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients ≥ 2.2 & ≤ 2.6 mmol/L
1999	594	1830	2.4	2.2	2.5	55
2000	642	1954	2.4	2.2	2.5	58
2001	749	2282	2.4	2.2	2.5	59
2002	864	2753	2.3	2.2	2.5	58

Figure 4.30: Cumulative distribution of serum Calcium concentration by year

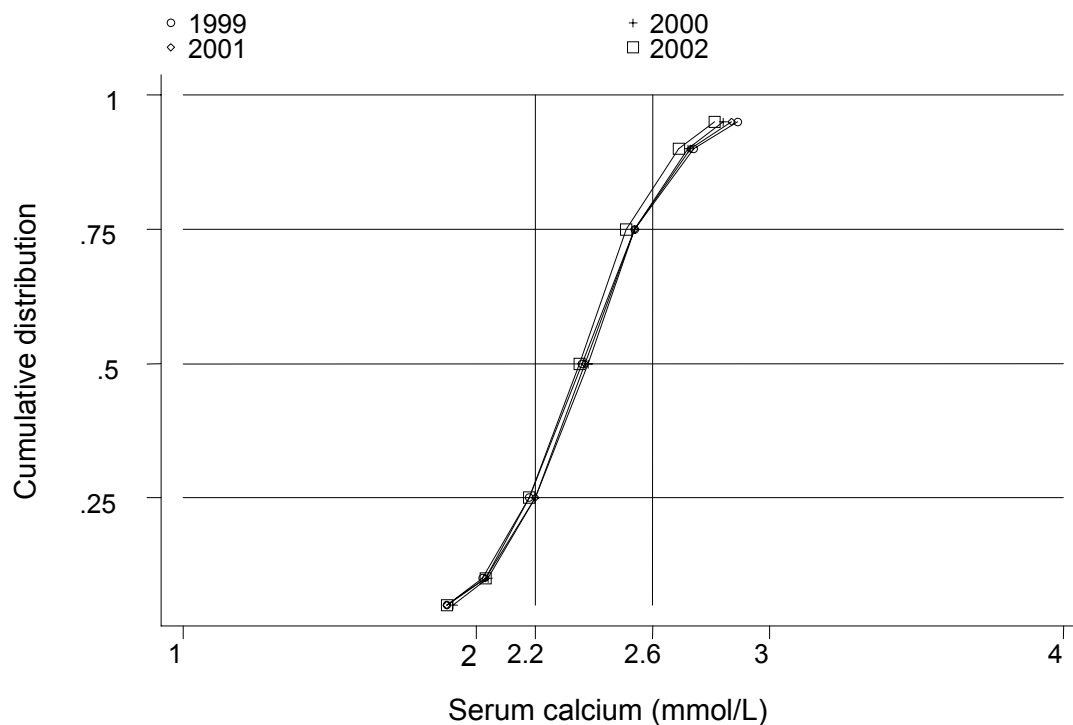
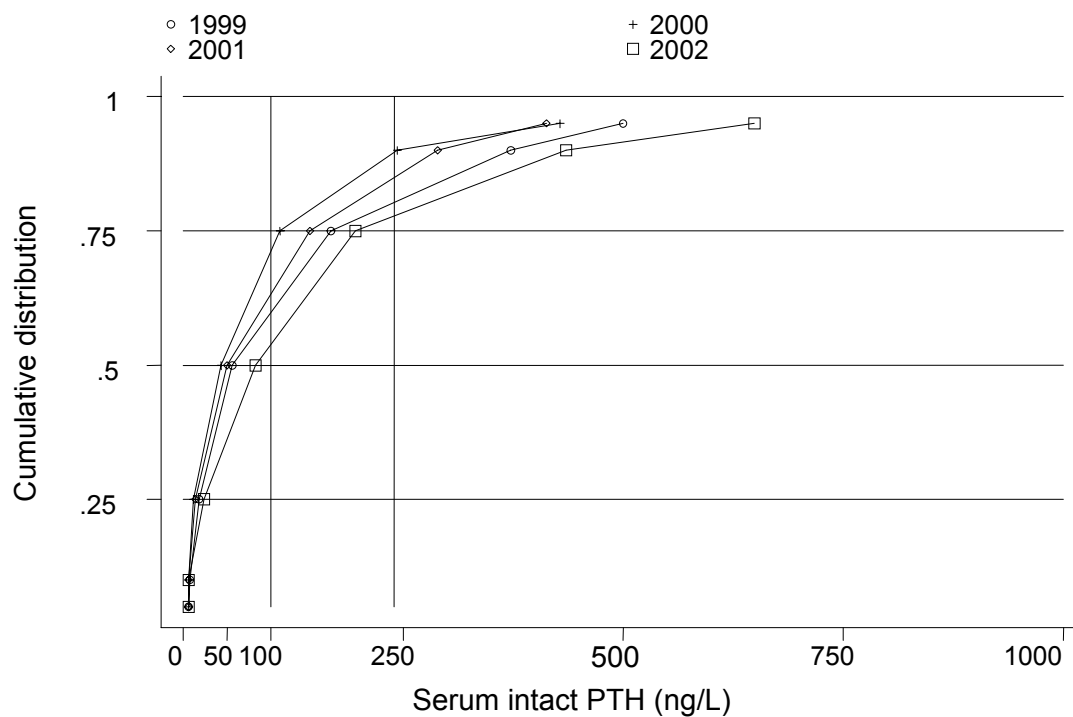


Table 4.31: Distribution of serum iPTH (ng/L) concentration, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients ≥ 100 & ≤ 250 ng/L
1999	365	482	56	18	168	17
2000	406	555	43	11.8	110	18
2001	531	740	50	14	144	20
2002	679	997	82	24	196	23

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
1999 – 2002**

Year	No.	% on anti-hypertensives	% on 1 anti-hypertensives	% on 2 anti-hypertensives	% on 3 anti-hypertensives
1999	610	82	30	33	19
2000	662	78	31	27	20
2001	781	76	31	28	18
2002	889	81	31	31	19

Table 4.33: Distribution of Systolic BP without anti-hypertensives, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients < 160 mmHg
1999	98	699	120	110	142	87
2000	141	1114	120	110	138	91
2001	165	1322	127	110	140	92
2002	156	1191	123	110	140	91

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

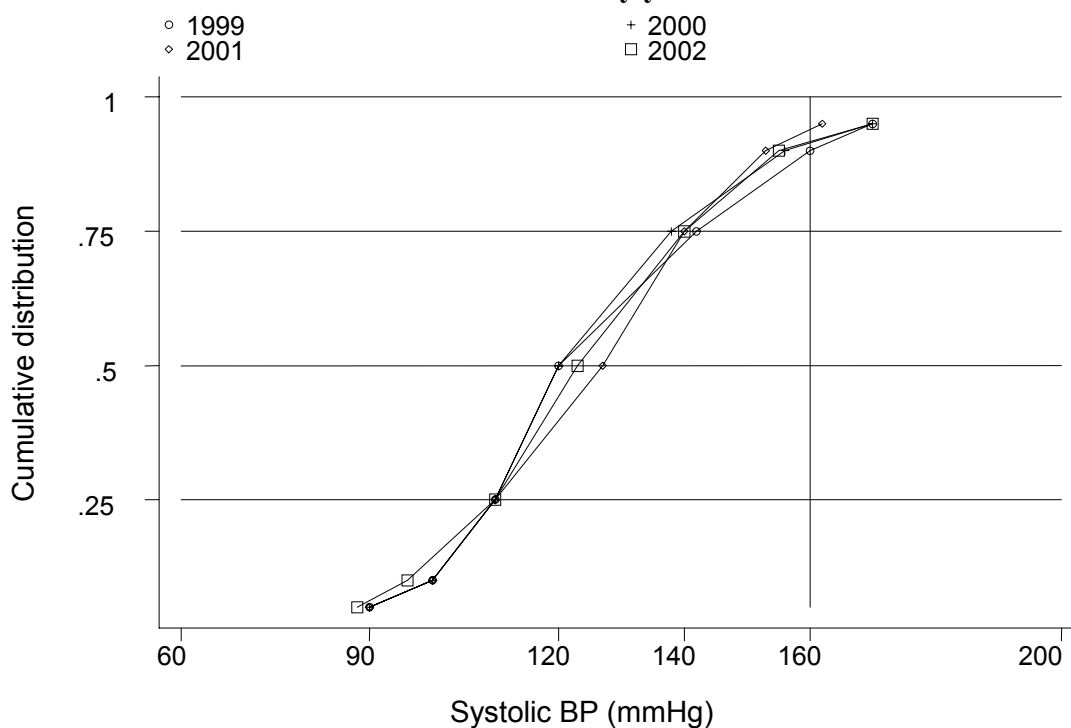


Table 4.34: Distribution of Diastolic BP without anti-hypertensives, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients < 90 mmHg
1999	98	700	76.5	67	87.5	76
2000	141	1116	80	70	88	76
2001	165	1321	80	70	86	78
2002	156	1194	80	70	86	79

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

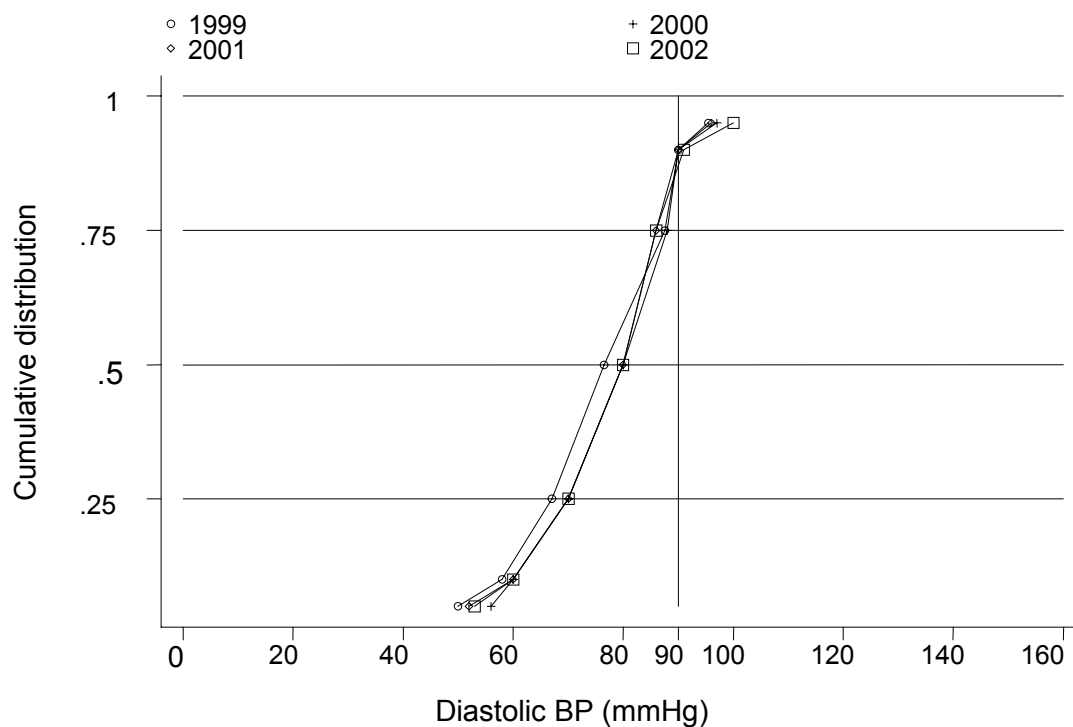


Table 4.35: Distribution of systolic BP on anti-hypertensives CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients < 160 mmHg
1999	478	3833	140	130	160	72
2000	497	4188	140	123	158	76
2001	574	4669	140	124	159	75
2002	685	5759	140	128	157	76

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

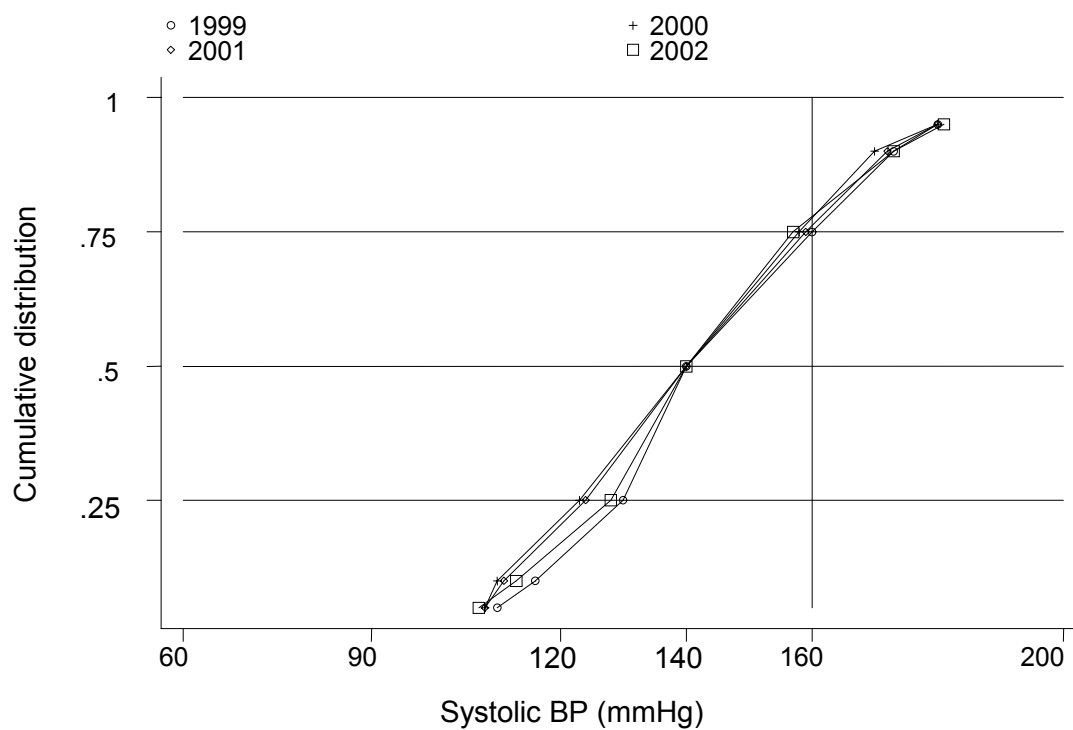
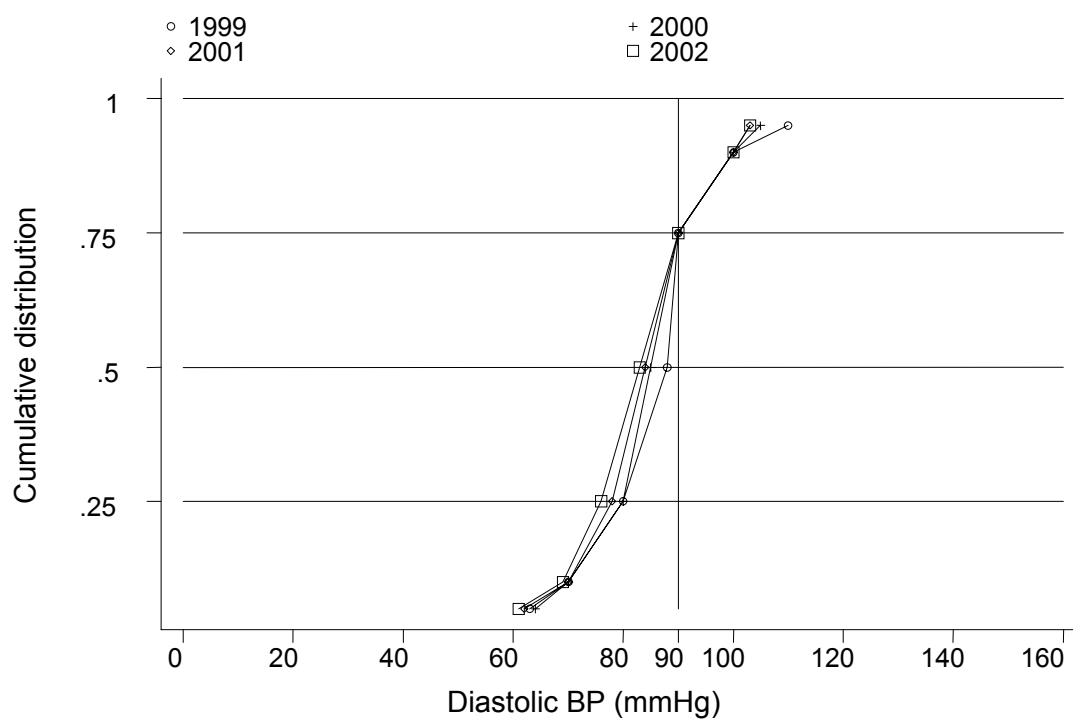


Table 4.36: Distribution of diastolic BP on anti-hypertensives, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients < 90 mmHg
1999	478	3838	88	80	90	51
2000	497	4191	85	80	90	56
2001	574	4693	84	78	90	58
2002	685	5759	83	76	90	59

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
1999 – 2002**

Year	No	% on rHuEpo	% received blood transfusion	% received oral iron	% received parenteral iron
1999	610	44	14	94	0
2000	662	46	11	92	4
2001	781	45	11	91	2
2002	889	49	11	93	2

**Table 4.38: Distribution of rHuEpo dose per week, CAPD patients,
Government Centres 1999 – 2002**

Year	1999	2000	2001	2002
No. of patients	259	287	336	427
% on 2000 u/week	35	31	32	30
% on 2-4000 u/week	50	53	51	52
% on 4-6000 u/week	3	5	7	6
% on 6-8000 u/week	9	9	7	10
% on 8-12000 u/week	2	3	2	3
% on >12000 u/week	0	0	0	0

Table 4.39: Distribution of serum Iron concentration without rHuEpo, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients > 10 $\mu\text{mol/L}$
1999	202	470	15	11	26	78
2000	255	549	15.8	10	23	75
2001	314	652	17	11	33	80
2002	361	804	15.3	10	23	74

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

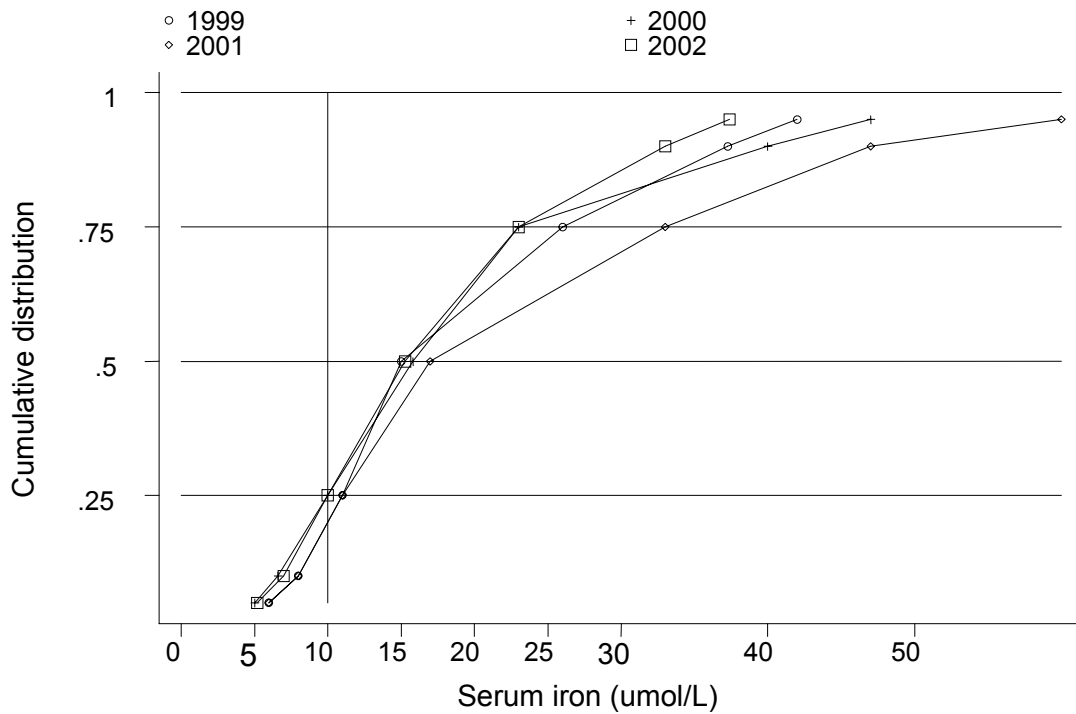


Table 4.40: Distribution of serum Iron concentration on rHuEpo, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients > 10 $\mu\text{mol/L}$
1999	143	392	18	11	28	81
2000	244	557	15	10	25	73
2001	306	718	17	11	32	77
2002	376	994	15	10.8	23	77

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

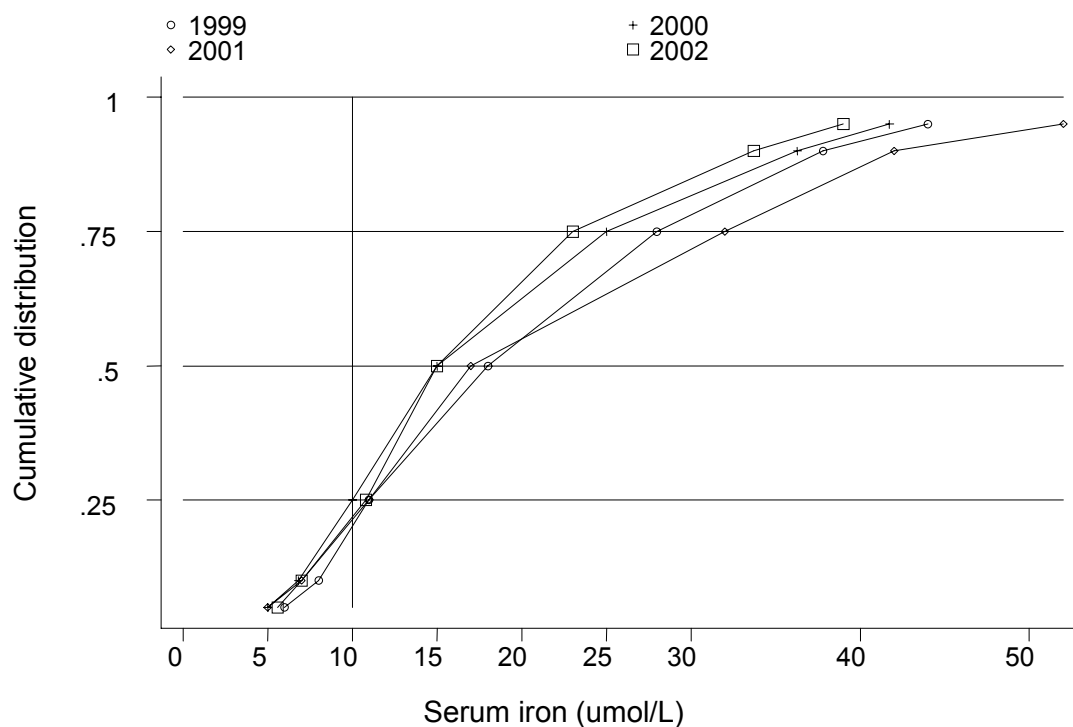


Table 4.41: Distribution of serum Transferrin Saturation without rHuEpo, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients > 20%
1999	134	536	34.2	23.3	45.1	85
2000	234	936	35.3	22.4	50	80
2001	262	1048	38.7	26.8	60	88
2002	309	1236	36.4	24.8	57.4	85

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

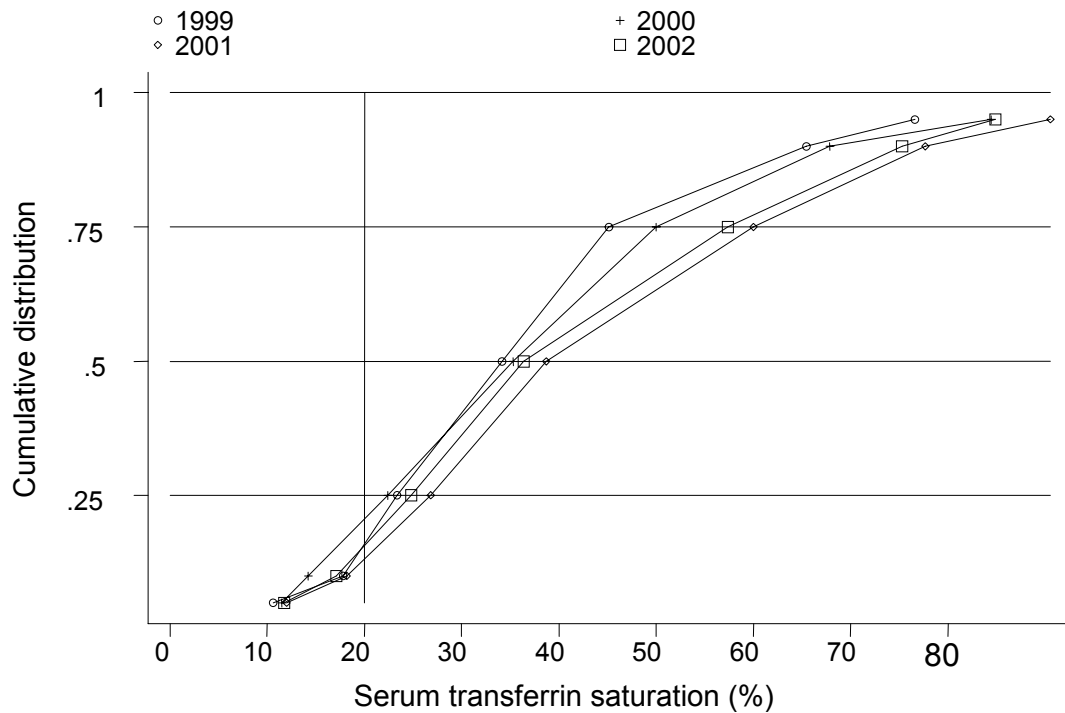


Table 4.42: Distribution of serum Transferrin Saturation on rHuEpo, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients > 20%
1999	92	368	37.2	25.3	48.1	85
2000	233	932	34.1	22	49.4	82
2001	266	1064	42.2	29.4	58.3	91
2002	336	1344	37.9	26.2	57.3	88

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

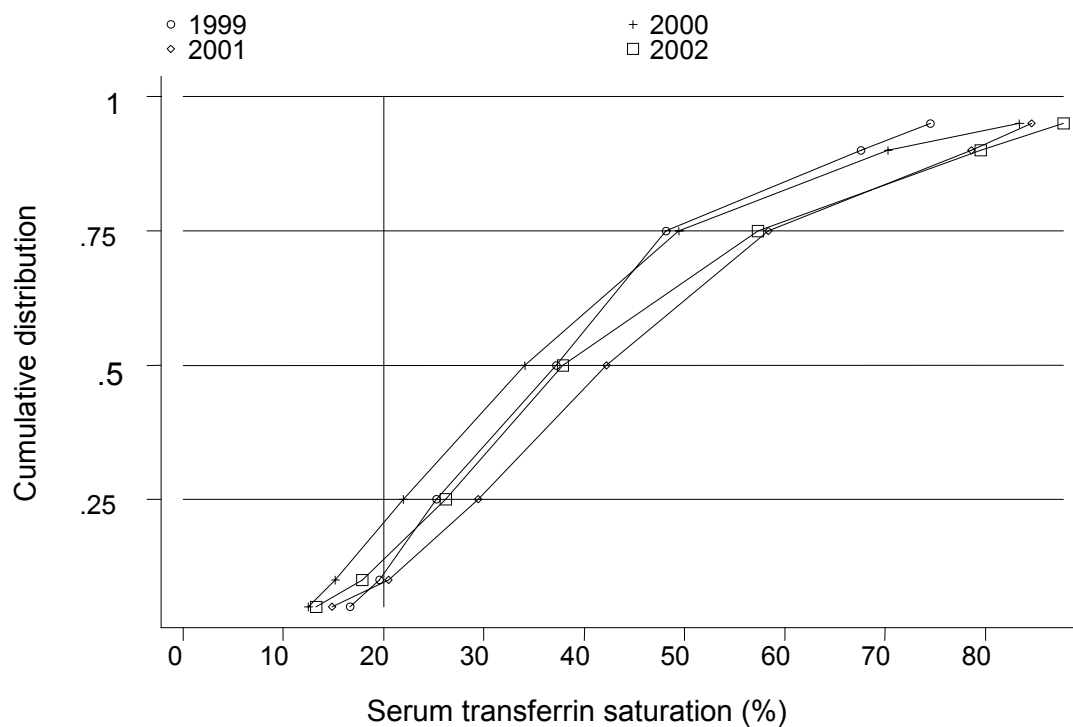


Table 4.43: Distribution of serum Ferritin without rHuEpo, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients > 100 ug/L
1999	124	154	482	259.7	729	93
2000	144	204	462	167.5	726.3	86
2001	223	317	432	225.5	763	91
2002	235	364	485.6	209.3	905.6	92

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

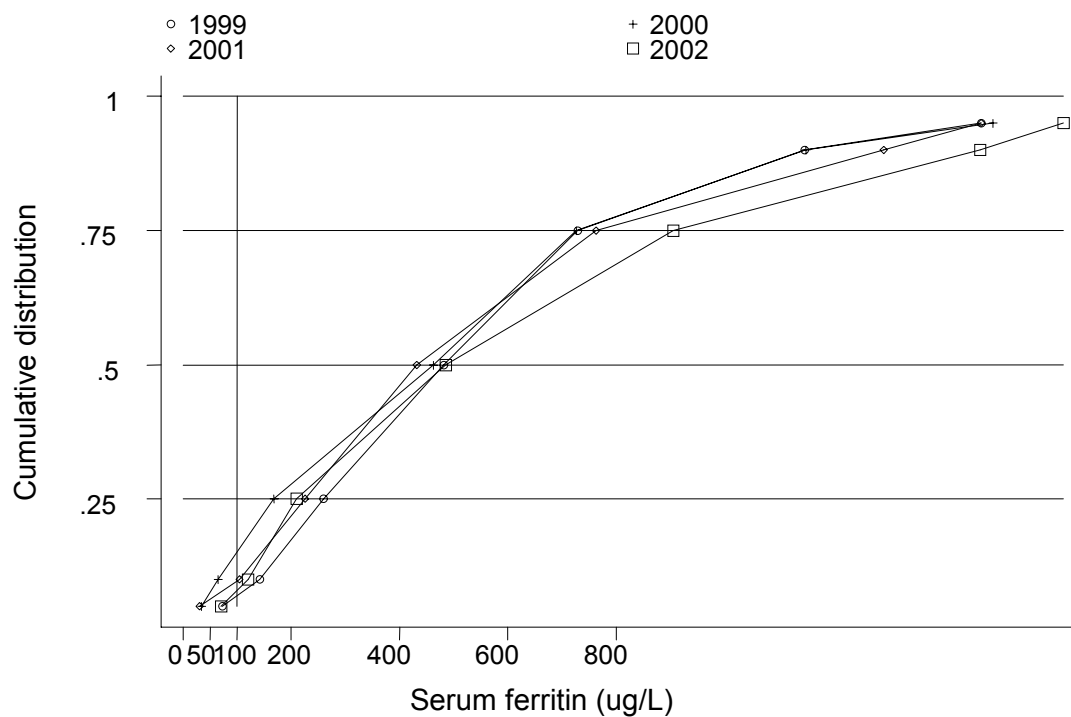


Table 4.44: Distribution of serum Ferritin concentration on rHuEpo, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients > 100 ug/L
1999	136	201	553.3	254	857.3	93
2000	180	271	545	292.9	839.5	90
2001	261	418	548.1	266.8	902	91
2002	344	587	542.3	271	927	93

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

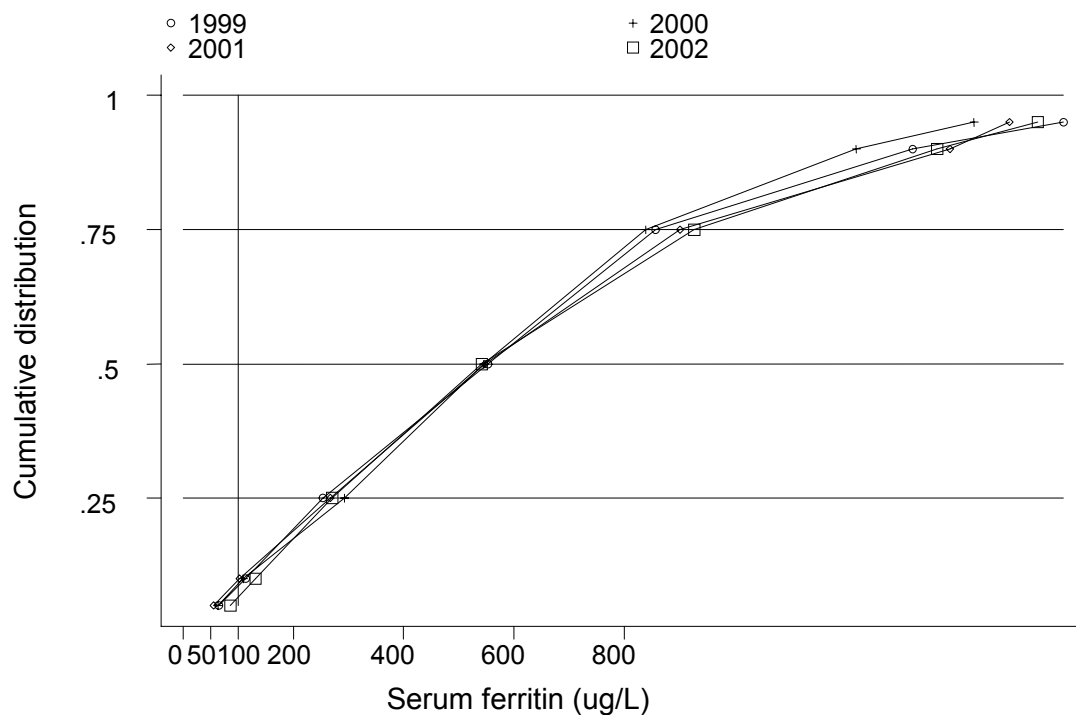


Table 4.45: Distribution of Haemoglobin concentration without rHuEpo, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients <10 g/dL	% Patients ≥ 10 & ≤ 12 g/dL	% Patients >12 g/dL
1999	336	967	9.4	8.3	10.7	61	32	7
2000	342	960	9.8	8.6	11	53	35	12
2001	405	1084	9.8	8.6	11.1	55	33	12
2002	433	1206	9.8	8.7	11.1	53	34	13

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

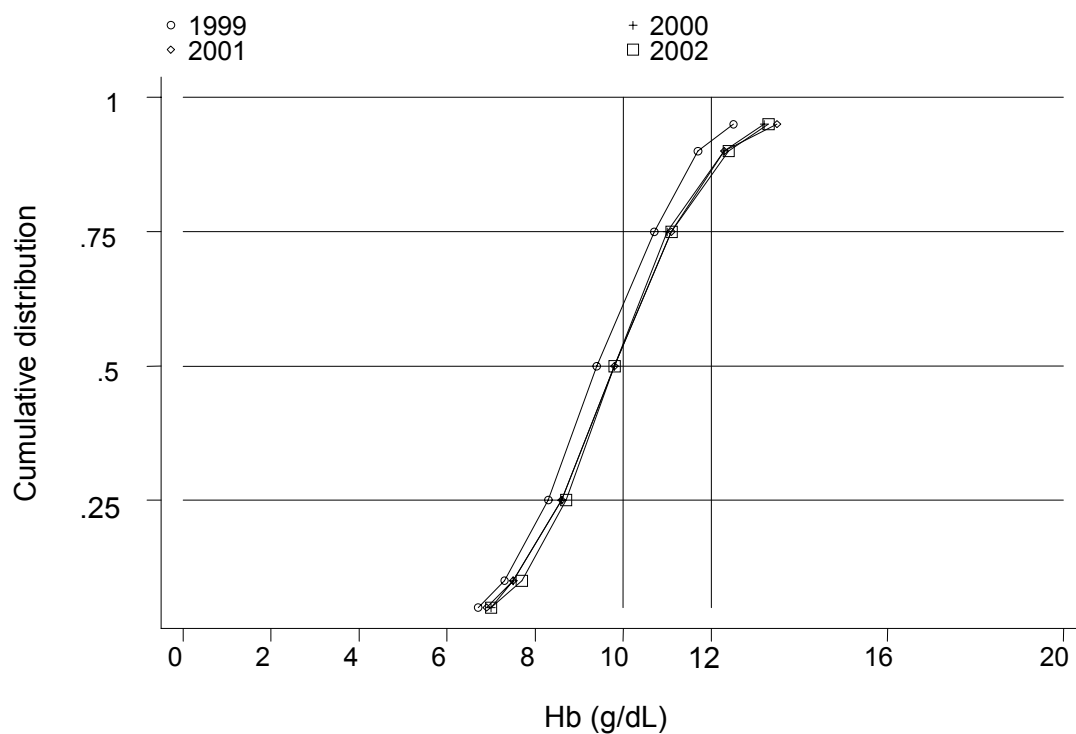
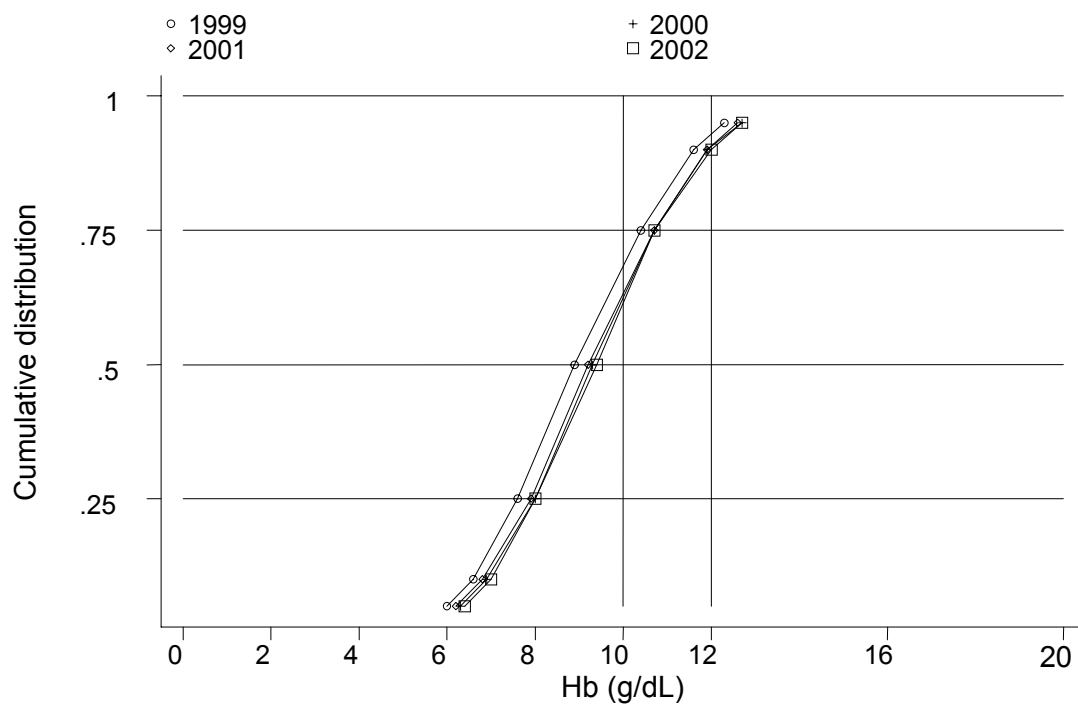


Table 4.46: Distribution of Haemoglobin concentration on rHuEpo, CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% patients <10 g/dL	% patients ≥ 10 & ≤ 12 g/dL	% patients >12 g/dL
1999	262	906	8.9	7.6	10.4	69	25	6
2000	299	1013	9.3	8	10.7	62	30	9
2001	345	1195	9.2	7.9	10.7	63	28	9
2002	431	1543	9.4	8	10.7	63	28	10

Figure 4.46: Cumulative distribution of Haemoglobin on rHuEpo by year

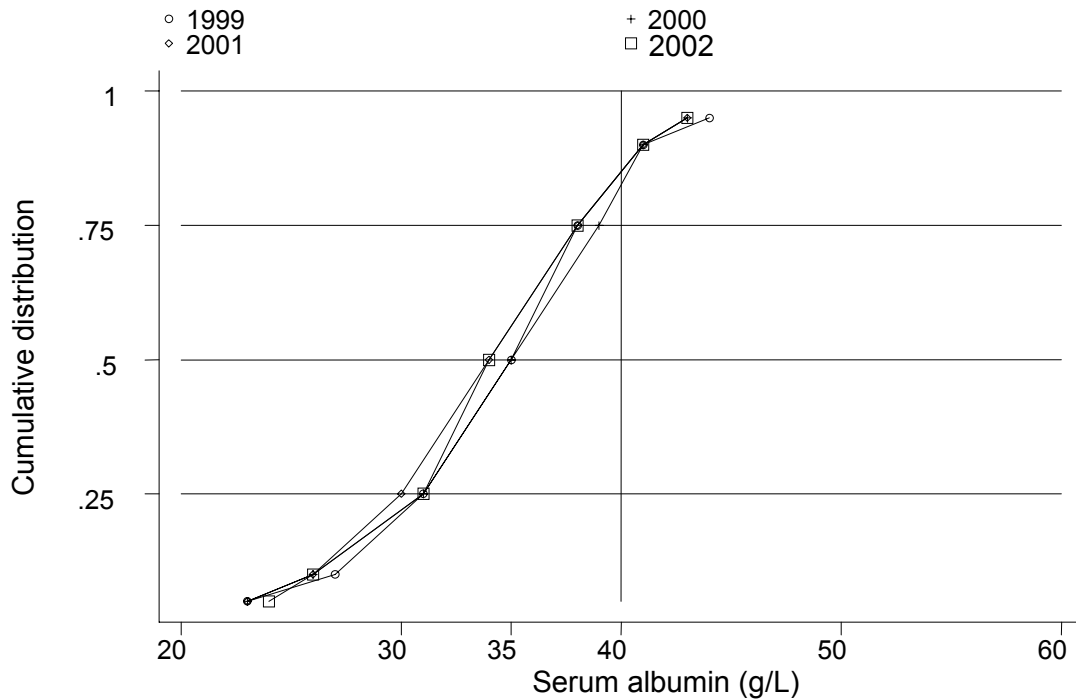


4.13 NUTRITIONAL STATUS OF CAPD PATIENTS, GOVERNMENT CENTRES

Table 4.47: Distribution of serum Albumin concentration (g/L), CAPD patients, Government Centres 1999 – 2002

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients >40g/L
1999	597	1872	35	31	38	18
2000	640	1970	35	31	39	19
2001	750	2301	34	30	38	15
2002	860	2772	34	31	38	16

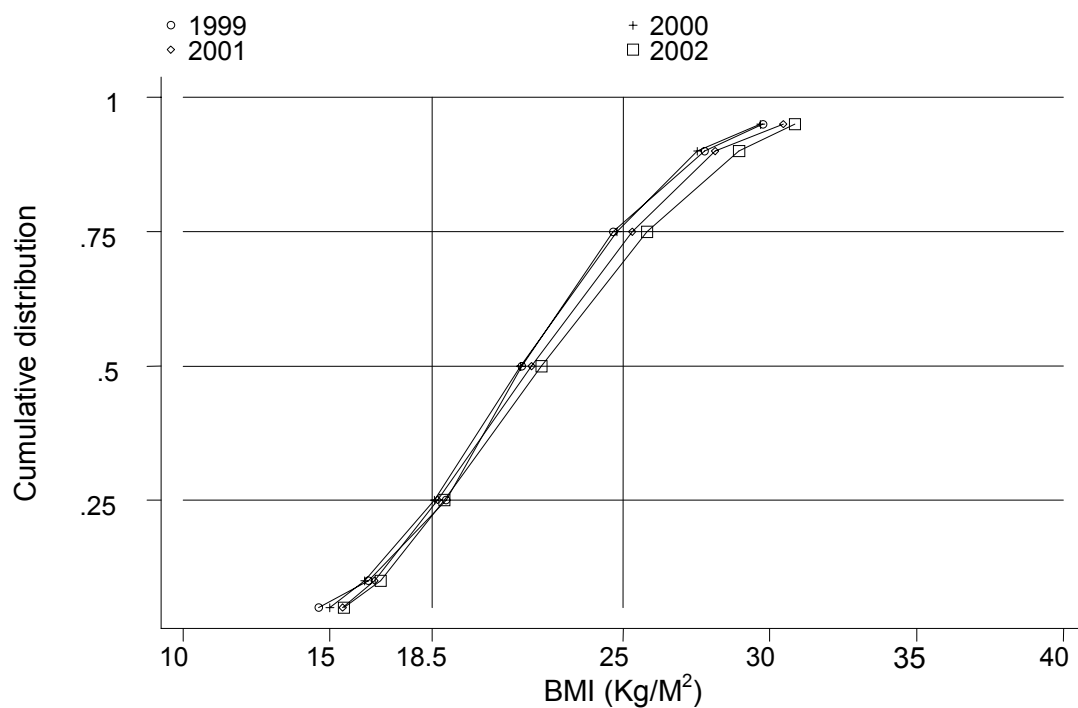
Figure 4.47: Cumulative distribution of serum Albumin concentration by year



**Table 4.48: Distribution of Body Mass Index CAPD patients, Government Centres
1999 – 2002**

Year	No of subjects	No of observations	Median	LQ	UQ	% Patients <18.5	% Patients ≥ 18.5 & ≤ 25	% Patients >25
1999	550	4316	21.5	19	24.7	22	56	23
2000	599	4990	21.5	18.6	24.8	25	53	23
2001	655	5525	21.9	18.7	25.3	23	50	27
2002	738	6240	22.2	18.9	25.8	22	48	31

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 1999 – 2002

Year	No	% HBsAg positive	% anti-HCV positive
1999	610	2	5
2000	662	2	5
2001	781	2	3
2002	889	3	4

Figure 4.49: Prevalence of positive anti-HCV and HBsAg CAPD patients, Government Centres 1999 – 2002

