

CHAPTER 12

**CHRONIC PERITONEAL
DIALYSIS PRACTICES**

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12.1: Mode of PD (Tables 12.1.1 to 12.1.4)

In 2004, CAPD remained the commonest mode of PD (96%), with cyclor-assisted PD accounting for only 1% of PD modalities. The Baxter disconnect system was the commonest connectology used (87%). Ninety-five percent of patients perform 4 exchanges a day, and most (92%) use a fill volume of 2 L.

Table 12.1.1: Chronic Peritoneal Dialysis Regimes, 1997-2004

PD regime	1997		1998		1999		2000	
	No.	%	No.	%	No.	%	No.	%
Standard CAPD	440	94	492	93	577	96	633	97
DAPD	26	6	32	6	16	3	16	2
CCPD	4	1	6	1	6	1	5	1
TOTAL	470	100	530	100	599	100	654	100

PD regime	2001		2002		2003		2004	
	No.	%	No.	%	No.	%	No.	%
Standard CAPD	755	98	837	97	1155	97	1212	96
DAPD	17	2	24	3	33	3	39	3
CCPD	2	0	3	0	5	0	13	1
TOTAL	774	100	864	100	1193	100	1264	100

Table 12.1.2: CAPD Connectology, 1997-2004

CAPD Connectology	1997		1998		1999		2000	
	No.	%	No.	%	No.	%	No.	%
UVXD	28	6	10	2	4	1	1	0
Baxter disconnect	433	92	501	95	343	58	234	39
B Braun disconnect	10	2	18	3	248	42	370	61
Fresenius disconnect	0	0	0	0	0	0	0	0
TOTAL	471	100	529	100	595	100	605	100

CAPD Connectology	2001		2002		2003		2004	
	No.	%	No.	%	No.	%	No.	%
UVXD	0	0	5	1	2	0	1	0
Baxter disconnect	436	57	714	87	1040	87	1133	89
B Braun disconnect	324	43	93	11	7	1	34	3
Fresenius disconnect	0	0	11	1	151	13	109	9
TOTAL	760	100	823	100	1200	100	1277	100

Table 12.1.3: CAPD Number of Exchanges per day, 1997-2004

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	454	97	508	96	579	97	624	96
5	12	3	16	3	13	2	23	4
TOTAL	469	100	530	100	596	100	650	100

No. of Exchanges/ day	2001		2002		2003		2004	
	No.	%	No.	%	No.	%	No.	%
2	1	0	0	0	4	0	6	0
3	5	1	11	1	14	1	12	1
4	735	95	834	96	1138	96	1225	95
5	31	4	28	3	32	3	53	4
TOTAL	772	100	873	100	1188	100	1296	100

Table 12.1.4: CAPD Volume per Exchange, 1997– 2004

Volume per Exchange (L)	1997		1998		1999		2000	
	No.	%	No.	%	No.	%	No.	%
1	24	5	25	5	19	3	25	4
2	444	95	496	95	557	96	595	95
3	0	0	0	0	2	0	7	1
TOTAL	468	100	521	100	578	100	627	100

Volume per Exchange (L)	2001		2002		2003		2004	
	No.	%	No.	%	No.	%	No.	%
1	32	4	37	4	40	3	42	3
2	711	95	793	94	1090	94	1154	92
3	9	1	14	2	31	3	63	5
TOTAL	752	100	844	100	1161	100	1259	100

12.2: Achievement of Solute Clearance and Peritoneal Transport

Data for Kt/V has been collected only since 2003. The median delivered weekly Kt/V was 2.1, with 61% achieving the K/DOQI recommended target of 2.0. When the data was analysed according to the percentage of patients in each center achieving a Kt/V of >2.0, there was a 2-fold variation between the highest- and the lowest-performing centres (85% vs 43%). Half of the centres were able to have up to 56% of their patients achieving the K/DOQI target. As a result of ADEMEX and other studies, a lower Kt/V target of 1.8 has been proposed. Seventy-five percent of patients were able to achieve this lower target. (Tables and figures 12.2.1 and 12.2.2)

Table 12.2.1: Distribution of delivered KT/V, CAPD patients 2003-2004

Year	No of Subjects	Mean	SD	Median	LQ	UQ	% patients ≥2.0 per week
2003	790	3.7	19.9	2.1	1.8	2.5	59
2004	1064	2.8	9.9	2.1	1.8	2.5	61

Figure 12.2.1: Cumulative distribution of delivered KT/V, CAPD patients 2003-2004

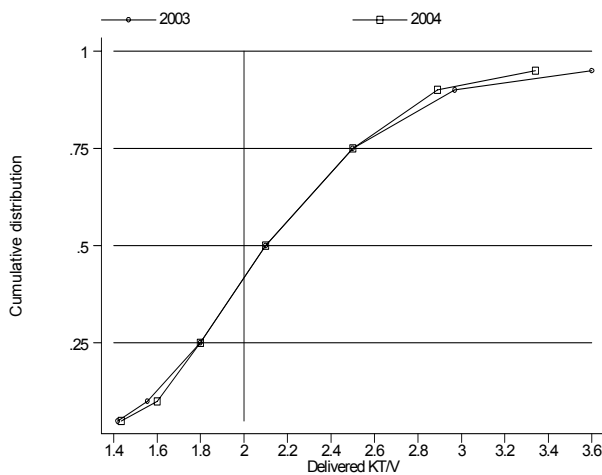


Figure 12.2.2: Variation in proportion of patients with KT/V ≥ 2.0 per week among CAPD centres 2004

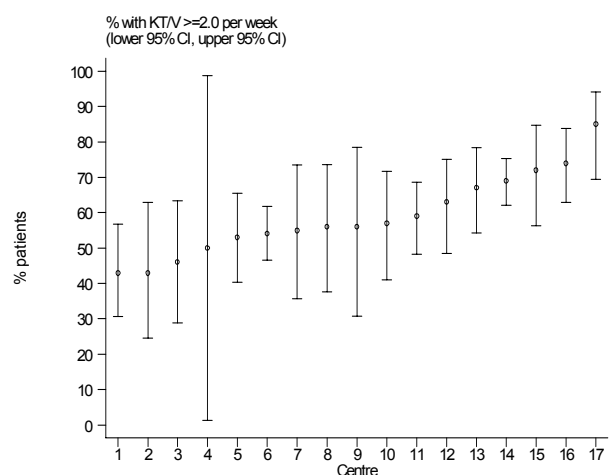


Table 12.2.2: Variation in proportion of patients with KT/V ≥ 2.0 per week among CAPD centres 2004

Year	No. of centres	Min	5 th Centile	LQ	Median	UQ	95 th Centile	Max
2003	14	0	0	51	59	62	73	73
2004	17	43	43	53	56	67	85	85

Data for PET has been collected only since 2003. Seventy-nine percent of new patients, and 81% of prevalent patients, have low- or high-average PET status. However, high PET status was more common among prevalent than new patients (10% vs 6%). These figures were similar to those from 2003. (Tables 12.2.3 and 12.2.4)

Table 12.2.3: Peritoneal transport status by PET D/P creatinine at 4 hours, new PD patients 2003-2004

PET	2003		2004	
	No.	%	No.	%
Low	10	6	67	15
Low average	85	51	187	41
High average	62	37	176	38
High	11	7	29	6
TOTAL	168	100	459	100

* New PD patients=patients commencing dialysis since 2003

Table 12.2.4: Peritoneal transport status by PET D/P creatinine at 4 hours, prevalent PD patients 2003-2004

PET	2003		2004	
	No.	%	No.	%
Low	10	3	40	9
Low average	175	44	180	42
High average	172	43	168	39
High	39	10	41	10
TOTAL	396	100	429	100

*Prevalent PD patients = patients commencing dialysis before 2003

12.3: Technique Survival on PD (Tables and Figures 12.3.1 to 12.3.5)

One- and 2-year technique survival for CAPD was 82% and 63% respectively, which were inferior to haemodialysis (89% and 81% respectively). The figures for CAPD have remained unchanged for patients starting 1995 or later. Technique survival is age-dependent, with a more marked drop-off for patients aged 65 years or above. Diabetics have poorer technique survival than non-diabetics. Females have better technique survival than males, with the 2 curves separating from about 24 months after starting CAPD.

Table 12.3.1: Unadjusted technique survival by Dialysis modality, 1995-2004

Dialysis modality Interval (months)	CAPD			HD		
	No.	% Survival	SE	No.	% Survival	SE
6	2227	91	1	13206	94	0
12	1853	82	1	11250	89	0
24	1144	63	1	8199	81	0
36	673	47	1	5846	73	0
48	380	34	1	4112	66	0
60	236	28	1	2803	59	1
72	140	21	1	1834	54	1
84	79	16	1	1103	49	1
96	30	10	1	577	44	1
108	11	9	1	241	40	1
120	-	-	-	20	36	2

* No. = Number at risk SE=standard error

Figure 12.3.1: Unadjusted technique survival by Dialysis modality, 1995-2004

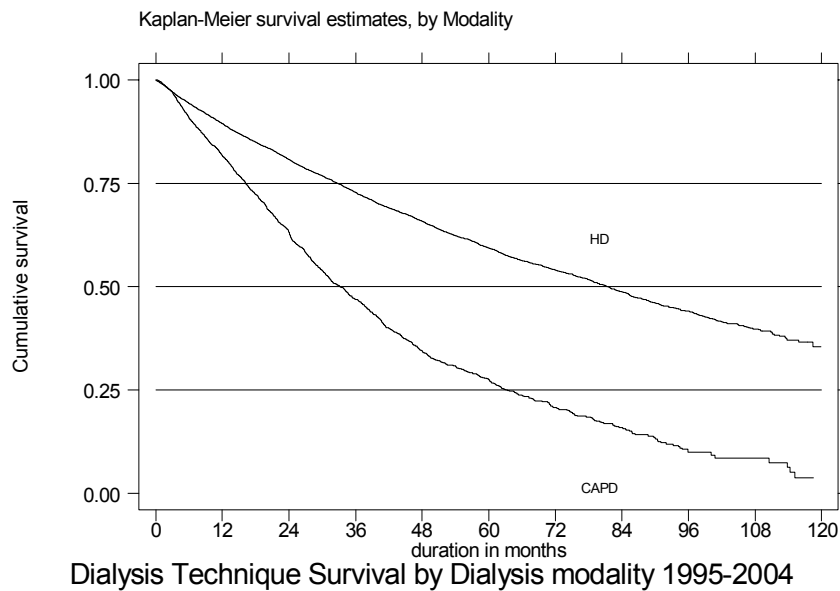


Table 12.3.2: Unadjusted technique survival by year of entry, 1995-2004

Year Interval (months)	1995			1996			1997			1998		
	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE
6	153	91	2	200	91	2	187	94	2	144	92	2
12	140	83	3	178	81	3	170	88	2	127	83	3
24	97	59	4	139	67	3	141	74	3	96	65	4
36	70	43	4	105	51	3	101	55	4	75	51	4
48	49	30	4	68	35	3	76	42	4	59	41	4
60	36	22	3	53	28	3	57	32	3	45	32	4
72	29	18	3	35	18	3	44	25	3	35	25	4
84	22	14	3	27	15	3	32	18	3	-	-	-
96	14	8	2	16	9	2	-	-	-	-	-	-
108	11	7	2	-	-	-	-	-	-	-	-	-
120	2	3	2	-	-	-	-	-	-	-	-	-

Year Interval (months)	1999			2000			2001			2002		
	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE
6	188	89	2	206	91	2	303	90	2	341	92	1
12	174	84	3	185	81	3	264	80	2	291	80	2
24	116	57	3	138	63	3	196	61	3	226	64	3
36	77	38	3	101	46	3	149	46	3	-	-	-
48	56	28	3	77	35	3	-	-	-	-	-	-
60	49	25	3	-	-	-	-	-	-	-	-	-

Year Interval (months)	2003			2004		
	No.	% Survival	SE	No.	% Survival	SE
6	369	89	2	145	91	2
12	331	80	2	-	-	-

* No. = Number at risk SE=standard error

Figure 12.3.2: Unadjusted technique survival by year of entry, 1995-2004

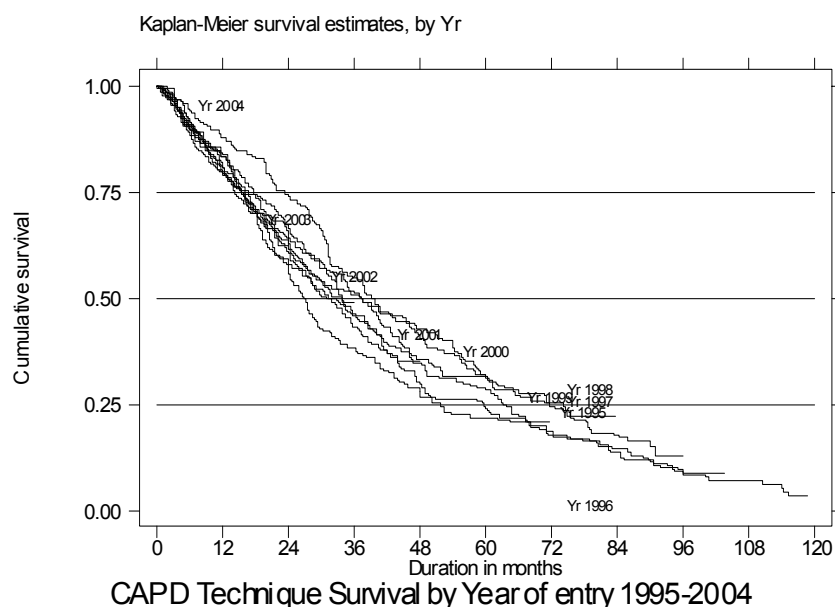


Table 12.3.3: Unadjusted technique survival by age, 1995-2004

Age group (years) Interval (months)	<=14			15-24			25-34			35-44		
	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE
6	199	98	1	194	93	2	229	93	2	323	94	1
12	181	96	1	157	84	3	201	89	2	280	87	2
24	133	86	3	91	69	4	141	78	3	186	70	3
36	85	73	4	50	56	4	108	69	3	113	56	3
48	58	66	4	27	41	5	67	53	4	70	46	3
60	34	59	5	14	31	6	52	47	4	44	36	4
72	18	44	6	8	29	6	37	37	4	23	25	4
84	9	34	7	4	18	7	24	32	4	16	22	4
96	3	20	9	2	18	7	11	25	5	8	15	4
108	2	20	9	2	18	7	4	20	6	4	15	4
120	-	-	-	-	-	-	-	-	-	2	10	5

Age group (years) Interval (months)	45-54			55-64			>=65		
	No.	% Survival	SE	No.	% Survival	SE	No.	% Survival	SE
6	540	92	1	484	89	1	263	81	2
12	447	82	2	392	77	2	201	68	3
24	273	62	2	233	56	2	92	39	3
36	153	43	2	127	38	2	42	21	3
48	90	32	2	54	22	2	20	11	2
60	57	26	2	32	16	2	9	5	2
72	37	21	2	18	11	2	5	4	2
84	21	14	2	8	7	2	3	2	1
96	6	7	2	4	3	2	-	-	-
108	-	-	-	3	3	2	-	-	-
120	-	-	-	-	-	-	-	-	-

* No. = Number at risk SE=standard error

Figure 12.3.3: Unadjusted technique survival by age, 1995-2004

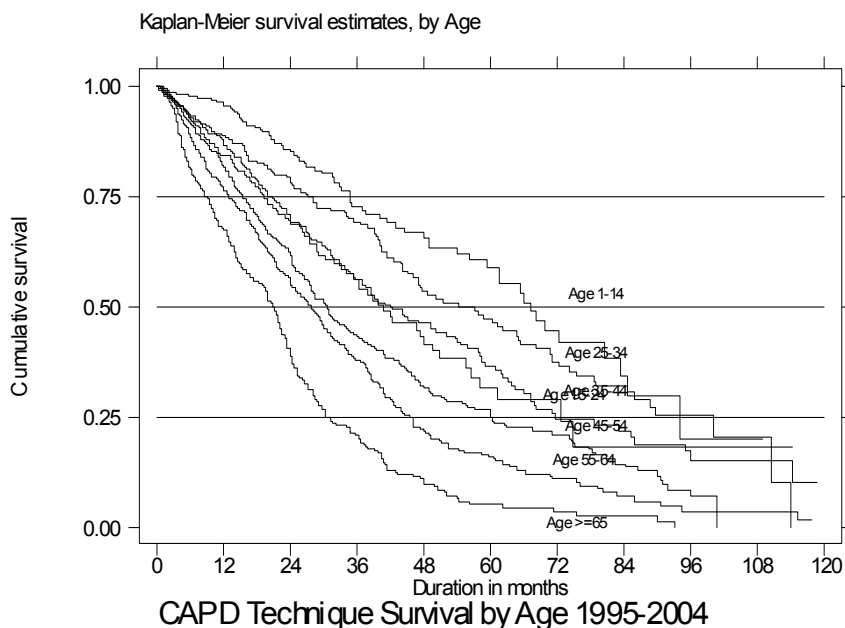


Table 12.3.4: Unadjusted technique survival by Diabetes status, 1995-2004

Diabetes status Interval (months)	Non-Diabetic			Diabetic		
	No.	% Survival	SE	No.	% Survival	SE
6	1366	93	1	862	87	1
12	1169	87	1	684	74	1
24	789	73	1	355	49	2
36	510	60	1	163	28	2
48	301	46	2	80	18	2
60	194	38	2	43	13	1
72	121	29	2	20	8	1
84	71	23	2	9	5	1
96	26	15	2	5	3	1
108	10	13	2	2	1	1
120	2	7	3	-	-	-

* No. = Number at risk SE=standard error

Figure 12.3.4: Unadjusted technique survival by Diabetes status, 1995-2004

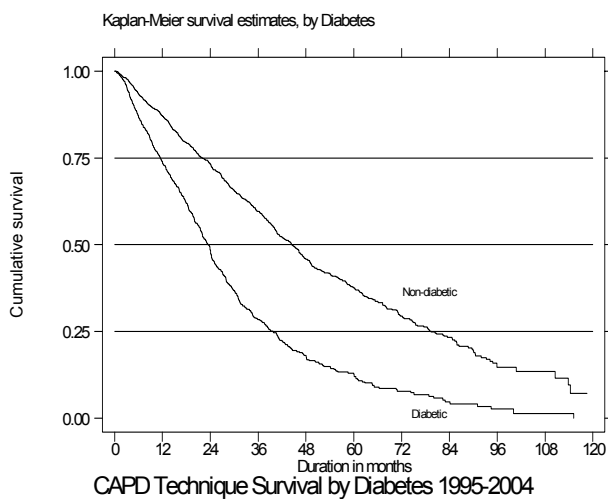


Figure 12.3.5: Unadjusted technique survival by Gender, 1995-2004

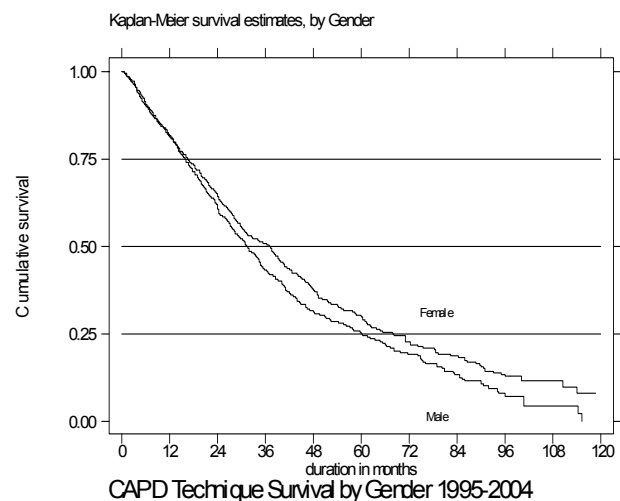


Table 12.3.5: Unadjusted technique survival by Gender, 1995-2004

Gender Interval (months)	Male			Female		
	No.	% Survival	SE	No.	% Survival	SE
6	1133	91	1	1095	90	1
12	940	81	1	914	82	1
24	560	62	1	584	65	1
36	304	43	2	369	51	2
48	167	31	2	214	38	2
60	105	25	2	132	30	2
72	62	19	2	80	22	2
84	31	13	2	49	18	2
96	9	7	2	21	13	2
108	3	5	2	9	11	2
120	-	-	-	2	8	3

* No. = Number at risk SE=standard error

12.4: PD Peritonitis (Tables 12.4.1 to 12.4.3, figure 12.4.1)

There was a greater than 2-fold variation between the centres with the highest and lowest peritonitis rates (21.8 vs 48.2 patient-months/episode). In 2004, Gram positive and Gram negative organisms each accounted for 29% of peritonitis episodes. The culture-negative rate remained stable at 33%. There is a trend to increasing peritonitis rate with patient age. This is especially marked for patients aged 65 years and above. Diabetics had a higher peritonitis rate than non-diabetics, but there was no difference between the genders.

Table 12.4.1: Variation in peritonitis rate (pt-month/epi) among CAPD centres 2004

Year	No. of centres	Min	5 th Centile	LQ	Median	UQ	95 th Centile	Max
2000	12	10.9	10.9	18.4	22.8	34.7	1019.7	1019.7
2001	13	14.1	14.1	21.3	24.1	30	240.9	240.9
2002	14	12	12	17.3	23.9	35.7	86.1	86.1
2003	14	19.8	19.8	23	35.7	83.2	421.8	421.8
2004	14	21.8	21.8	24	33	35.7	48.2	48.2

* Criteria for combination of centres with less than 10 subjects not applied

Figure 12.4.1: Variation in peritonitis rate (pt-month/epi) among CAPD centres 2004

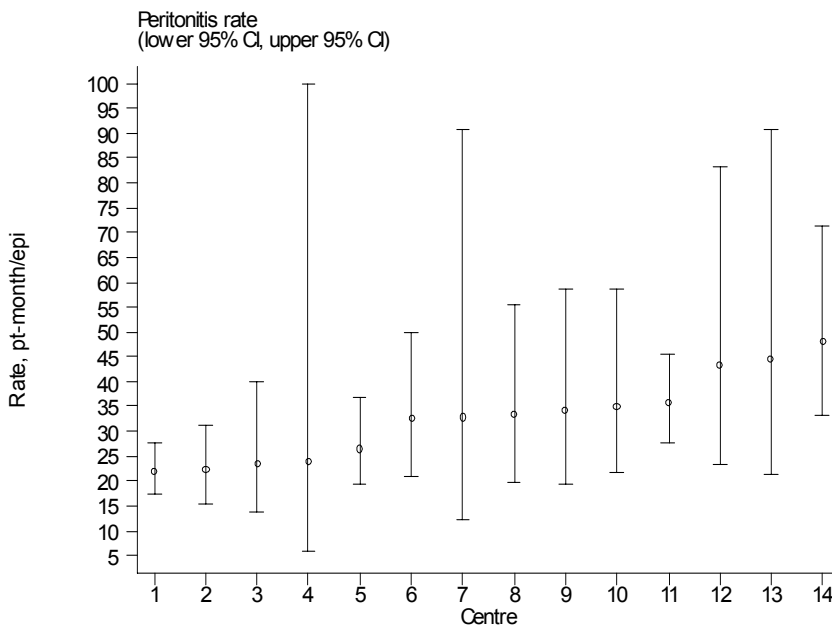


Table 12.4.2: Causative organism in PD peritonitis, 2000-2004

Microorganism	2000		2001		2002		2003		2004	
	No.	%	No.	%	No.	%	No.	%	No.	%
(A) Gram Positives										
• Staph. Aureus	35	11	41	13	62	17	41	12	48	13
• Staph Coagulase Neg.	39	13	34	11	41	11	52	15	43	12
• Strep	12	4	13	4	9	3	11	3	11	3
• Others	4	1	6	2	7	2	15	4	4	1
(B) Gram Negatives										
• Pseudomonas	19	6	14	5	22	6	18	5	27	7
• Others	45	15	56	18	67	19	73	21	79	22
(C) Polymicrobial	9	3	10	3	8	2	3	1	2	1
(D) Others										
• Fungal	19	6	21	7	11	3	10	3	15	4
• Mycobacterium	6	2	4	1	1	0	3	1	4	1
• Others	2	1	14	5	14	4	13	4	8	2
(E) No growth	117	38	96	31	117	33	106	31	120	33
TOTAL	307	100	309	100	359	100	345	100	361	100

Table 12.4.3: Factors influencing peritonitis rate, 2000-2004

Factors	N (No. at risk)	Annualised rate: Epi/ pt-year	(95% CI)	
Age (years):				
<=14	69	0.424	(0.342,	0.527)
15-24	38	0.48	(0.360,	0.641)
25-34	82	0.465	(0.390,	0.553)
35-44	93	0.500	(0.420,	0.596)
45-54	142	0.550	(0.477,	0.636)
55-64	121	0.592	(0.506,	0.693)
>=65	50	0.735	(0.575,	0.939)
Gender:				
Male	281	0.522	(0.470,	0.580)
Female	314	0.525	(0.478,	0.577)
Diabetes:				
No	412	0.494	(0.455,	0.537)
Yes	183	0.619	(0.542,	0.706)