

Table 13.1.1: Stock and Flow of Renal Transplantation, 1975-2004

Year	87	88	89	90	91	92	93	94	95	96
New transplant patients	66	90	95	125	117	118	140	204	103	150
Died	8	9	10	19	13	16	20	28	16	31
Graft failure	8	12	8	12	18	19	23	21	28	28
Lost to follow up	0	0	0	5	1	3	1	3	3	1
Functioning graft at 31 st December	227	296	373	462	547	627	723	875	931	1021

Year	97	98	99	00	01	02	03	04
New transplant patients	126	103	126	143	162	169	157	174
Died	29	23	25	27	35	31	36	32
Graft failure	38	47	36	32	40	38	42	43
Lost to follow up	0	2	4	7	3	5	6	13
Functioning graft at 31 st December	1080	1111	1172	1249	1333	1428	1501	1587

*Incidence of acute rejection among all new patients and all functioning graft in 2004 is 10% and 1% respectively

Figure 13.1.1: Stock and Flow of Renal Transplantation, 1975-2004

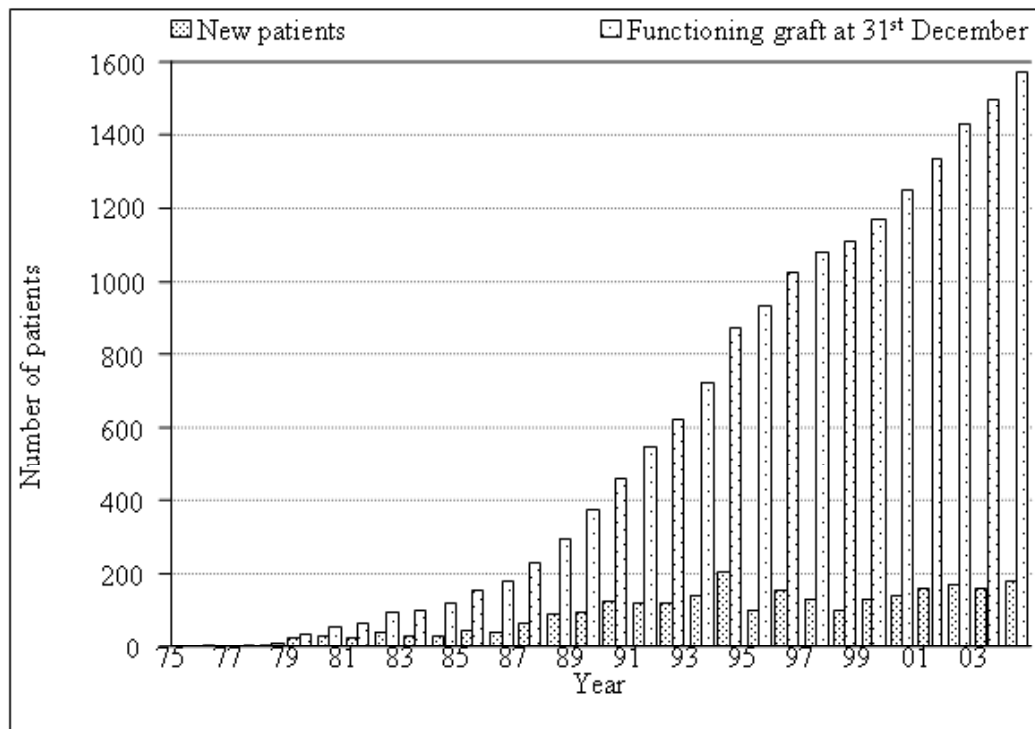


Table 13.1.2: New transplant rate per million population (pmp), 1975-2004

Year	75	76	77	78	79	80	81	82	83	84	85
New transplant patients	1	6	5	8	23	30	25	40	29	27	46
Transplant prevalence rate pmp	0	1	0	1	2	2	2	3	2	2	3
Year	96	97	98	99	00	01	02	03	04		
New transplant patients	150	126	103	126	143	162	169	157	174		
New transplant rate pmp	7	6	5	6	6	7	7	6	7		

Figure 13.1.2: New transplant rate, 1975-2004

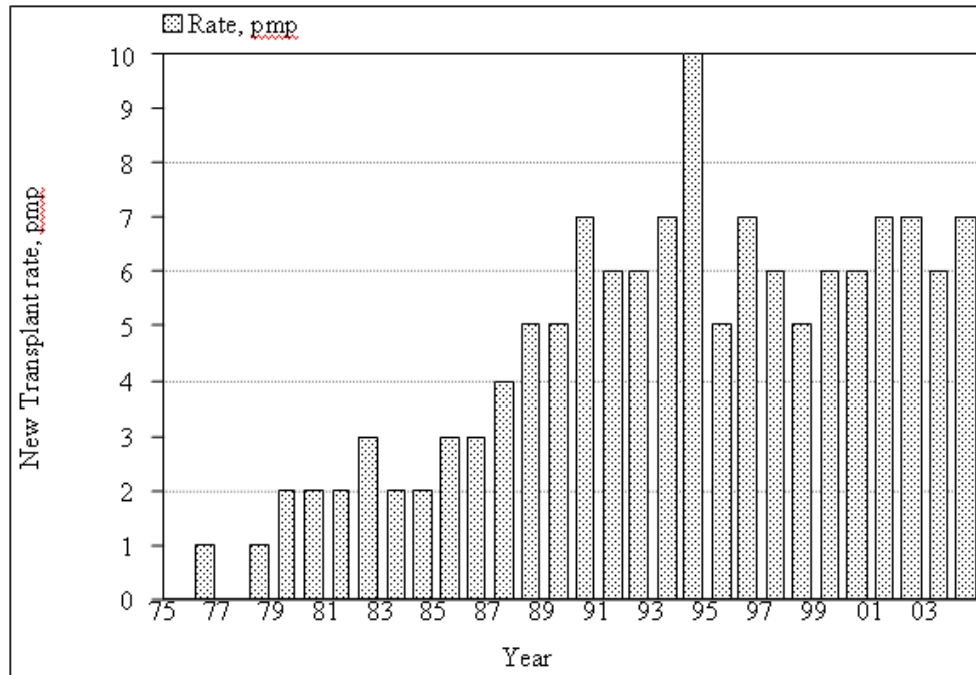


Table 13.1.3: Transplant prevalence rate per million population (pmp), 1975-2004

Year	75	76	77	78	79	80	81	82	83	84	85
Functioning graft at 31 st December	1	5	7	13	32	54	65	96	103	119	150
Transplant prevalence rate pmp	0	0	1	1	3	4	5	7	7	8	9
Year	97	98	99	00	01	02	03	04			
Functioning graft at 31 st December	1080	1111	1172	1249	1333	1428	1501	1587			
Transplant prevalence rate pmp	50	50	52	53	56	58	60	62			

Figure 13.1.3: Transplant prevalence rate, 1975-2004

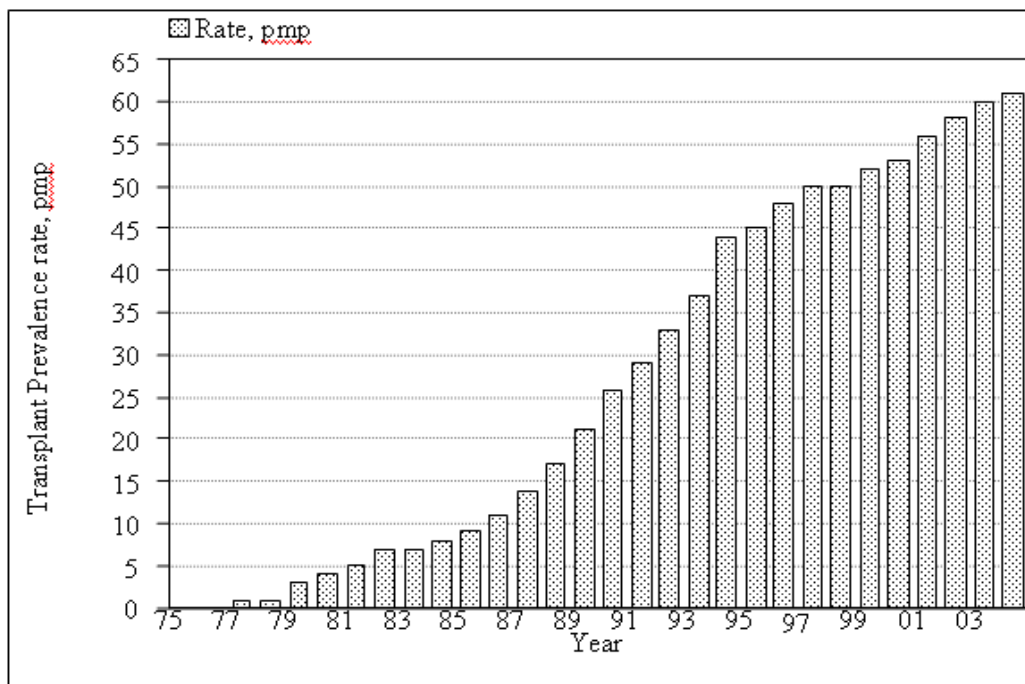


Table 13.2.1: Renal Transplant Recipients' Characteristics, 1975-2004

Year	75	76	77	78	79	80	81	82	83	84
New transplant patients	1	6	5	8	23	30	25	40	29	27
Age at transplant (years)										
Mean	31	37	26	35	30	31	31	29	29	31
SD		6	4	4	8	6	8	9	7	9
% Male	100	83	80	88	78	83	68	70	66	70
% Diabetic (co-morbid / primary renal disease)	0	0	0	0	4	0	4	0	3	7
% HbsAg positive	0	0	0	14	11	21	7	23	25	0
% Anti-HCV positive	0		0	67	0	60	67	50	82	50

Year	85	86	87	88	89	90	91	92	93	94
New transplant patients	46	42	66	90	95	125	117	118	140	204
Age at transplant (years)										
Mean	30	28	32	33	39	35	34	38	38	39
SD	7	8	11	12	15	13	11	13	13	12
% Diabetic (co-morbid / primary renal disease)	0	2	2	4	8	6	7	13	10	11
% HbsAg positive	20	16	24	15	31	16	11	13	9	10
% Anti-HCV positive	55	64	61	60	40	41	18	22	23	13

Year	95	96	97	98	99	00	01	02	03	04	TOTAL
New transplant patients	103	150	126	103	126	143	162	169	157	174	2650
Age at transplant (years)											
Mean	36	39	36	38	37	40	41	40	42	41	37
SD	12	11	12	11	13	13	13	13	13	13	13
% Male	57	57	63	59	61	64	63	56	66	61	63
% Diabetic (co-morbid / primary renal disease)	13	9	11	9	10	14	18	15	22	19	11
% HbsAg positive	7	13	6	6	5	5	4	7	9	6	10
% Anti-HCV positive	16	20	7	18	10	8	15	9	10	8	18

Table 13.2.2: Primary causes of end stage renal failure, 1975-2004

Year	1975		1976		1977		1978		1979		1980		1981		1982		1983		1984	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
New transplant patients	1	100	6	100	5	100	8	100	23	100	30	100	25	100	40	100	29	100	27	100
Glomerulonephritis	0	0	1	17	2	40	2	25	3	13	3	10	4	16	7	18	5	17	4	15
Diabetes Mellitus	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	0	0	0	1	4
Hypertension	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1	3	1	3	1	4
Obstructive uropathy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0
ADPKD	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0
Drugs / toxic nephropathy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hereditary nephritis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	4	67	3	60	6	75	16	70	25	83	16	64	28	70	21	72	14	52
Others	1	100	1	17	0	0	0	0	3	13	3	10	3	12	7	18	2	7	7	26

Year	1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
New transplant patients	103	100	150	100	126	100	103	100	126	100	143	100	162	100	169	100	157	100	174	100	2650	100
Glomerulonephritis	29	28	45	30	29	23	28	27	41	33	47	33	41	25	53	31	51	32	59	34	724	27
Diabetes Mellitus	11	11	10	7	9	7	5	5	9	7	16	11	23	14	16	9	25	16	27	16	207	8
Hypertension	4	4	7	5	4	3	5	5	6	5	18	13	17	10	23	14	24	15	45	26	186	7
Obstructive uropathy	2	2	2	1	3	2	4	4	4	3	3	2	3	2	2	1	2	1	2	1	57	2
ADPKD	1	1	4	3	2	2	1	1	1	1	3	2	1	1	3	2	5	3	4	2	36	1
Drugs / toxic nephropathy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	3	0
Hereditary nephritis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0
Unknown	50	49	77	51	64	51	54	52	62	49	55	38	62	38	69	41	60	38	78	45	1360	51
Others	13	13	11	7	18	14	10	10	6	5	12	8	22	14	15	9	12	8	26	15	265	10

Table 13.3.1: Type of Renal Transplantation, 1975-2004

Year	1985		1986		1987		1988		1989		1990		1991		1992		1993		1994	
	No	%	N.	%	No	%	No	%	No	%	No.	%	No.	%	No.	%	No.	%	No.	%
Commercial Cadaver	0	0	2	5	2	3	0	0	3	3	0	0	3	3	3	3	15	11	21	11
Commercial Live Donor	1	2	1	3	15	25	43	49	61	65	72	59	64	59	73	66	83	61	143	72
Live Donor (genetically related)	42	98	36	92	44	72	45	51	30	32	50	41	42	39	31	28	36	26	33	17
Live Donor (emotionally related)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cadaver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	2	1	2	1
TOTAL	43	100	39	100	61	100	88	100	94	100	122	100	109	100	111	100	136	100	199	100

Year	1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Commercial Cadaver	36	39	105	72	80	68	50	52	60	51	79	56	82	51	102	60	109	69	126	74	879	34
Commercial Live Donor	18	19	4	3	7	6	4	4	4	3	10	7	7	4	11	7	3	2	4	2	628	25
Live Donor (genetically related)	35	38	34	23	23	19	26	27	38	32	20	14	32	20	31	18	25	16	19	11	842	33
Live Donor (emotionally related)	0	0	0	0	0	0	2	2	5	4	6	4	4	2	3	2	5	3	2	1	27	1
Cadaver	4	4	2	1	8	7	15	15	10	9	27	19	37	23	22	13	15	10	19	11	173	7
Total	93	100	145	100	118	100	97	100	117	100	142	100	162	100	169	100	157	100	170	100	254	100

*Commercial cadaver (China, India, other overseas) *Commercial live donor (living unrelated) *Cadaver (local)

*For 101 patients there is no complete information on type; it is known that 84 are living related

Table 13.3.2: Biochemical data, 2004

Biochemical parameters		Biochemical parameters	
Creatinine, $\mu\text{mol/L}$	N=1492	Calcium, mmol/L	N=1492
• Mean	131.6	• Mean	2.4
• SD	63.6	• SD	0.2
• Median	119	• Median	2.4
• Minimum	38	• Minimum	1.1
• Maximum	817	• Maximum	3.3
Hb, g/dL	N=1492	Phosphate, mmol/L	N=1492
• Mean	12.9	• Mean	1.1
• SD	1.9	• SD	0.2
• Median	12.9	• Median	1.1
• Minimum	4.9	• Minimum	0.3
• Maximum	19.7	• Maximum	2.7
Albumin, g/L	N=1492	*Extreme values were excluded and missing data was imputed using the mean	
• Mean	39.6		
• SD	4.9		
• Median	39.6		
• Minimum	11		
• Maximum	57		

Table 13.3.3: Medication data, 2004

Medication data	Single drug treatment		Drug treatment	
	No.	%	No.	%
All patients	1492	100	1492	100
(i) Immunosuppressive drug(s) treatment				
Prednisolone	14	1	1458	98
Azathioprine	0	0	642	43
Cyclosporine	3	0	1193	80
Tacrolimus (FK506)	0	0	186	12
Mycophenolate mofetil (MMF)	1	0	539	36
Rapamycin (sirolimus)	0	0	5	0
Others	1	0	20	1
(ii) Non-Immunosuppressive drug(s) treatment				
Beta blocker	105	7	654	44
Calcium channel blocker	184	12	798	53
ACE inhibitor	39	3	266	18
AIIRB	16	1	86	6
Anti-lipid	67	4	553	37
Other anti-hypertensives	4	0	132	9

*There are 14 patients without any drug treatment

Table 13.4.1: Post transplant complications, 2004

Post transplant complications	Complication developed before transplant (regardless of complication after transplantation)		Complication developed only after transplantation	
	No.	%	No.	%
All patients	1492	100	1492	100
Diabetes	174	12	120	8
Cancer	2	0	18	1
Cardiovascular disease + cerebrovascular disorder	77	5	82	5
Hypertension	956	64	370	25

*Hypertension: BP systolic > 140 and BP diastolic > 90
OR have either Beta blocker / Calcium channel blocker / ACE inhibitor / AIIIRB / Other anti-hypertensive

Table 13.4.2: Transplant Patients Death Rate and Graft Loss, 1975-2004

Year	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91
No. at risk	1	3	6	10	23	43	60	81	100	111	135	164	202	262	335	418	505
Transplant death	0	2	3	2	2	5	4	3	14	6	7	8	8	9	10	19	13
Transplant death rate %	0	67	50	20	9	12	7	4	14	5	5	5	4	3	3	5	3
Graft loss	0	0	0	0	2	3	10	6	8	5	8	7	8	12	8	12	18
Graft loss %	0	0	0	0	9	7	17	7	8	5	6	4	4	5	2	3	4
Acute rejection	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acute rejection rate %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All losses	0	2	3	2	4	8	14	9	22	11	15	15	16	21	18	31	31
All losses rate %	0	67	50	20	17	19	23	11	22	10	11	9	8	8	5	7	6

Year	92	93	94	95	96	97	98	99	00	01	02	03	04
No. at risk	587	675	799	903	976	1051	1096	1142	1211	1291	1381	1465	1544
Transplant death	16	20	28	16	31	29	23	25	27	35	31	36	32
Transplant death rate %	3	3	4	2	3	3	2	2	2	3	2	2	2
Graft loss	19	23	21	28	28	38	47	36	32	40	38	42	43
Graft loss %	3	3	3	3	3	4	4	3	3	3	3	3	3
Acute rejection	0	0	0	0	0	0	0	0	0	0	0	3	18
Acute rejection rate %	0	0	0	0	0	0	0	0	0	0	0	0	1
All losses	35	43	49	44	59	67	70	61	59	75	69	78	75
All losses rate %	6	6	6	5	6	6	6	5	5	6	5	5	5

*Graft loss=graft failure

*All losses=death/graft loss (acute rejection happens concurrently with graft failure/ death)

Figure 13.4.2(i): Transplant Recipient Death Rate, 1975-2004

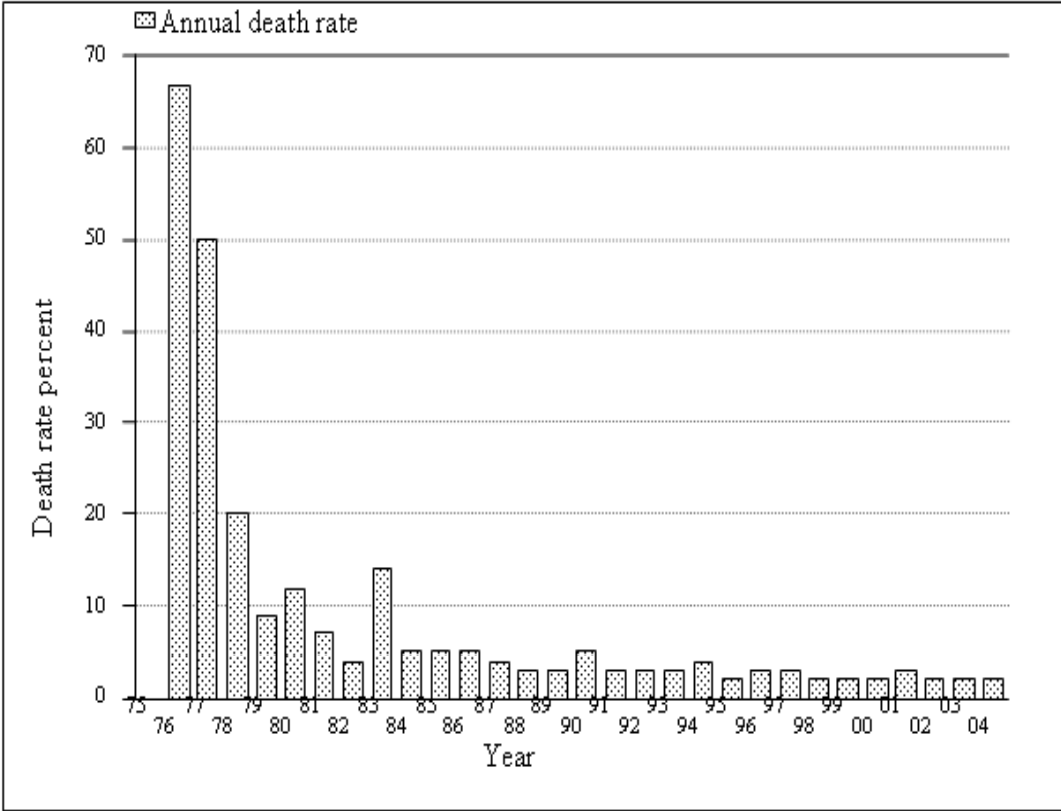


Figure 13.4.2(ii): Transplant Recipient Graft Loss Rate, 1975-2004

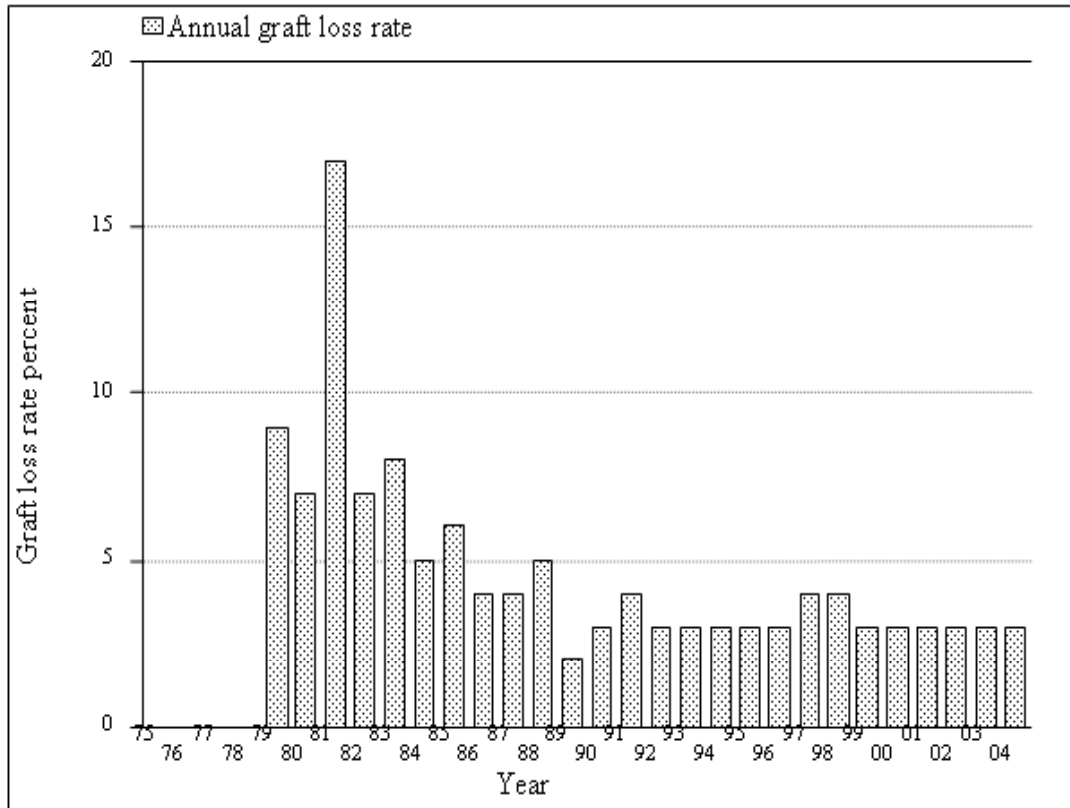


Table 13.4.3: Causes of Death in Transplant Recipients, 1975-2004

Year	1985		1986		1987		1988		1989		1990		1991		1992		1993		1994	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Cardiovascular	0	0	1	13	1	11	0	0	1	8	1	5	0	0	2	13	4	19	4	14
Died at home	0	0	0	0	0	0	0	0	1	8	1	5	3	23	0	0	3	14	0	0
Infection	2	29	2	25	3	33	3	33	6	50	11	52	5	38	8	50	7	33	18	62
Graft failure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cancer	0	0	0	0	0	0	0	0	0	0	3	14	0	0	1	6	1	5	0	0
Liver disease	1	14	1	13	0	0	2	22	1	8	0	0	1	8	1	6	1	5	1	3
Accidental death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	1	14	0	0	0	0	2	22	1	8	4	19	2	15	1	6	1	5	3	10
Unknown	3	43	4	50	5	56	2	22	2	17	1	5	2	15	3	19	4	19	3	10
TOTAL	7	100	8	100	9	100	9	100	12	100	21	100	13	100	16	100	21	100	29	100

Year	1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No.	%	No.	%	No.	%	No.	%
Cardiovascular	7	41	4	13	3	10	3	13	4	13	10	32	6	15	5	16	9	23	4	11	70	14
Died at home	1	6	3	9	2	7	4	17	6	19	1	3	5	12	5	16	5	13	4	11	44	9
Infection	3	18	18	56	14	48	9	38	7	23	11	35	19	46	9	29	10	26	10	29	184	37
Graft failure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cancer	1	6	2	6	0	0	3	13	3	10	2	6	6	15	4	13	6	15	6	17	39	8
Liver disease	1	6	3	9	2	7	2	8	3	10	1	3	1	2	3	10	2	5	1	3	29	6
Accidental death	1	6	0	0	0	0	0	0	1	3	1	3	1	2	1	3	0	0	0	0	5	1
Others	2	12	1	3	4	14	0	0	5	16	3	10	2	5	2	6	5	13	9	26	54	11
Unknown	1	6	1	3	4	14	3	13	2	6	2	6	1	2	2	6	2	5	1	3	72	14
TOTAL	17	100	32	100	29	100	24	100	31	100	31	100	41	100	31	100	39	100	35	100	497	100

Table 13.4.4: Causes of Graft Failure, 1975-2004

Year	1985		1986		1987		1988		1989		1990		1991		1992		1993		1994	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Rejection	2	25	3	43	1	13	5	38	1	13	4	31	10	53	9	47	10	43	10	42
Calcineurin toxicity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other drug toxicity	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	0	0	0
Ureteric obstruction	0	0	0	0	0	0	1	8	0	0	0	0	0	0	0	0	0	0	1	4
Infection	1	13	0	0	0	0	0	0	0	0	1	8	1	5	0	0	0	0	1	4
Vascular causes	0	0	0	0	0	0	0	0	0	0	1	8	0	0	0	0	1	4	1	4
Recurrent / de novo renal disease	0	0	0	0	0	0	0	0	0	0	2	15	1	5	1	5	1	4	2	8
Others	0	0	0	0	0	0	2	15	0	0	1	8	0	0	1	5	0	0	1	4
Unknown	5	63	4	57	7	88	5	38	7	88	4	31	6	32	8	42	11	48	8	33
TOTAL	8	100	7	100	8	100	13	100	8	100	13	100	19	100	19	100	23	100	24	100

Year	1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%	No.	%	No.	%	No.	%	No.	%	No.	%
Rejection	15	52	14	50	20	53	27	53	23	64	19	59	25	61	22	55	22	50	30	70	280	50
Calcineurin toxicity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other drug toxicity	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Ureteric obstruction	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
Infection	0	0	0	0	0	0	1	2	0	0	1	3	2	5	0	0	2	5	1	2	16	3
Vascular causes	1	3	1	4	4	11	3	6	1	3	3	9	1	2	0	0	3	7	4	9	24	4
Recurrent / de novo renal disease	0	0	2	7	1	3	1	2	0	0	0	0	2	5	2	5	1	2	1	2	17	3
Others	1	3	0	0	5	13	5	10	0	0	2	6	0	0	4	10	1	2	0	0	23	4
Unknown	11	38	11	39	7	18	14	27	12	33	7	22	11	27	12	30	15	34	7	16	194	35
TOTAL	29	100	28	100	38	100	51	100	36	100	32	100	41	100	40	100	44	100	43	100	559	100

Table 13.4.5: Patient survival, 1993-2004

Interval (years)	% Survival	SE
1	95	1
3	92	1
5	89	1
10	82	1

SE=standard error

Figure 13.4.5: Patient survival, 1993-2004

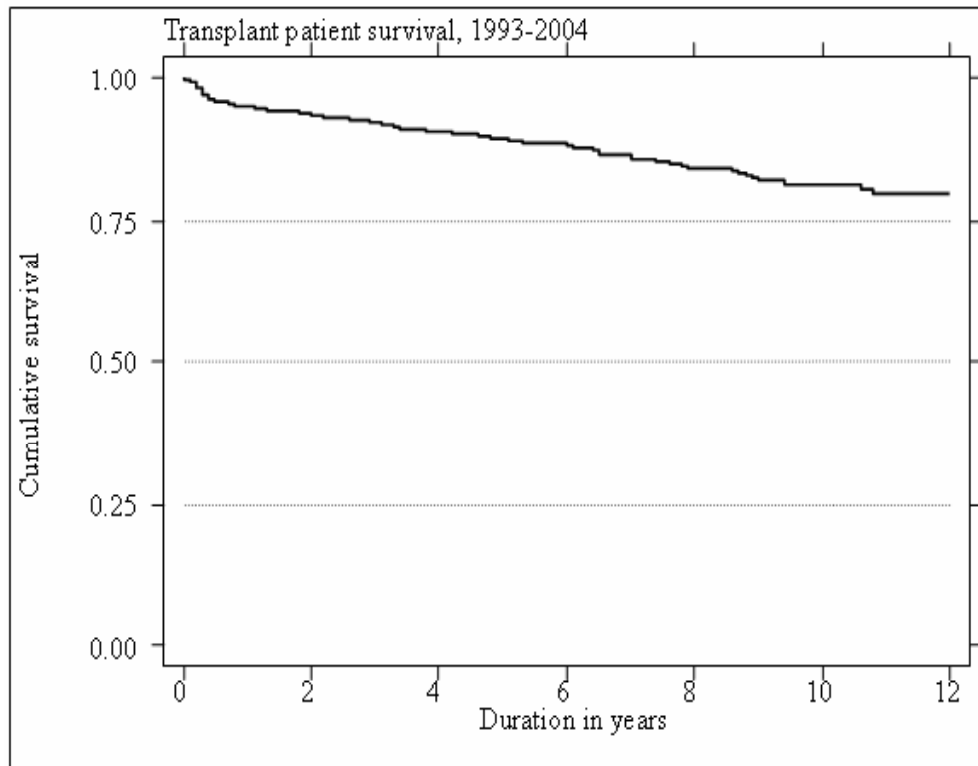


Table 13.4.6: Graft survival, 1993-2004

Interval (years)	% Survival	SE
1	97	0
3	93	1
5	88	1
10	77	2

SE=standard error

Figure 13.4.6: Graft survival, 1993-2004

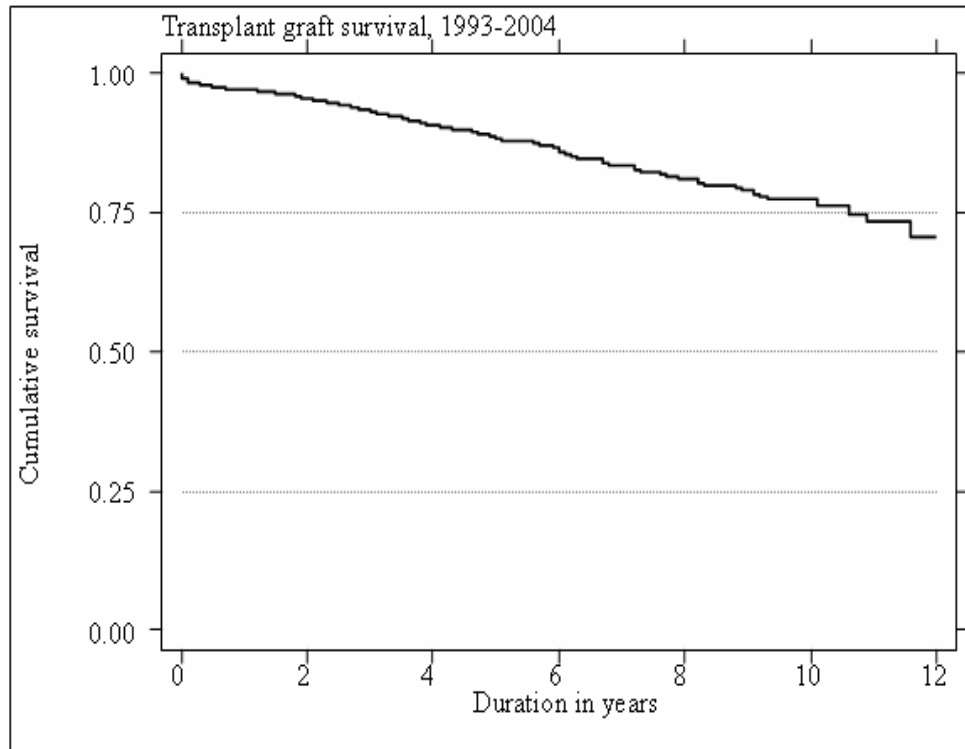


Table 13.4.7: Patient survival by type of transplant, 1993-2004

Type of Transplant	Commercial Cadaver		Commercial Live Donor		Live Donor		Cadaver	
Interval (years)	% Survival	SE	% Survival	SE	% Survival	SE	% Survival	SE
1	96	1	96	1	96	1	85	3
3	93	1	91	2	95	1	81	3
5	89	1	87	2	93	1	77	4
10	86	2	74	3	89	2	67	8

SE=standard error

Figure 13.4.7: Patient survival by type of transplant, 1993-2004

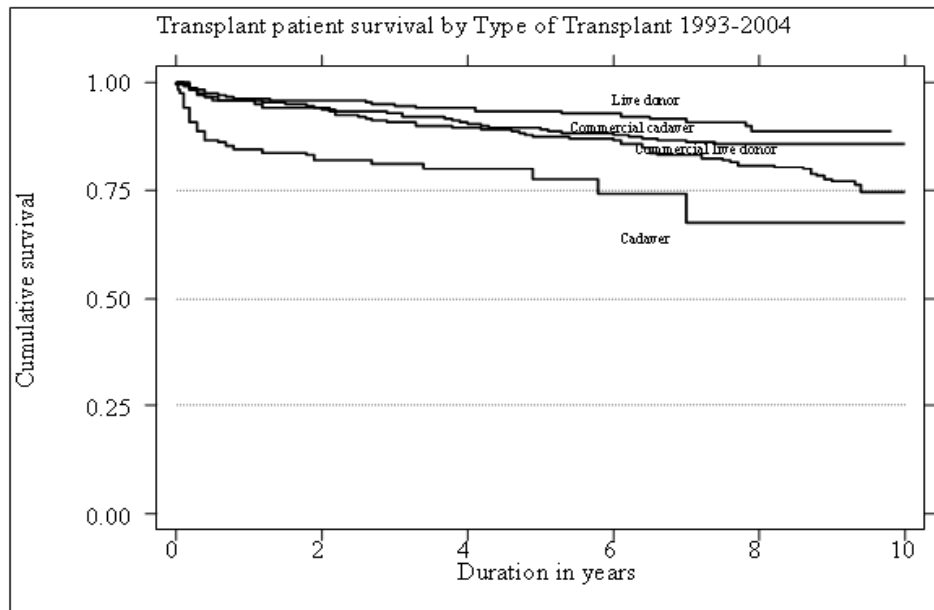


Table 13.4.8: Graft survival by type of transplant, 1993-2004

Type of Transplant	Commercial Cadaver		Commercial Live Donor		Live Donor		Cadaver	
Interval (years)	% Survival	SE	% Survival	SE	% Survival	SE	% Survival	SE
1	98	0	98	1	94	1	91	2
3	97	1	92	2	91	2	85	3
5	93	1	84	2	86	2	85	3
10	83	3	71	3	78	3	52	21

SE=standard error

Figure 13.4.8: Graft survival by type of transplant, 1993-2004

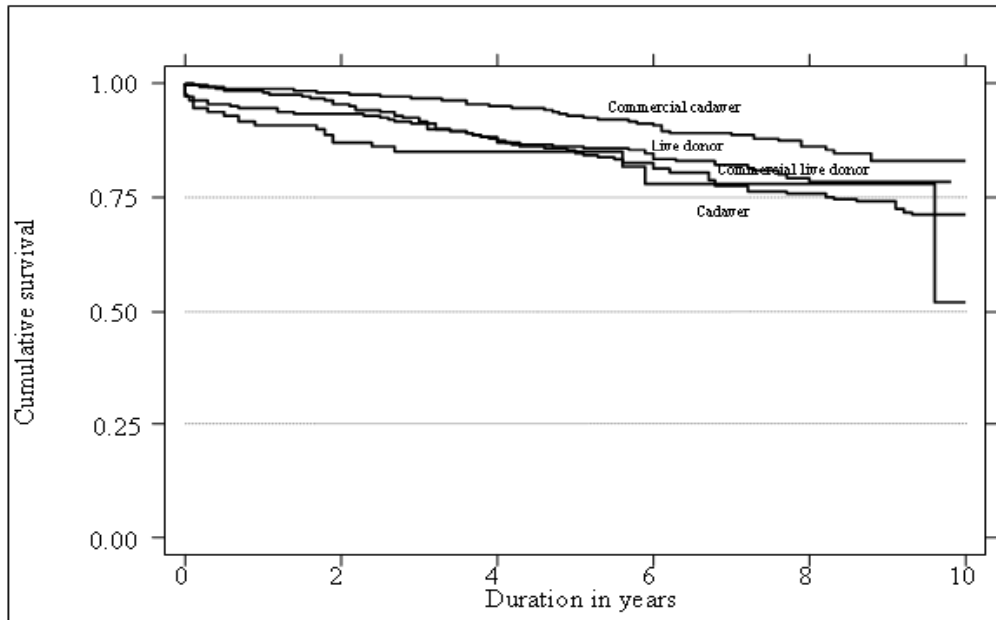


Table 13.4.9: Patient survival by year of transplant (Living related transplant, 1993-2004)

Year of Transplant	1993-1998		1999-2004	
Interval (years)	% Survival	SE	% Survival	SE
1	97	1	96	2
3	95	2	95	2
5	93	2	95	2

SE=standard error

Figure 13.4.9: Patient survival by year of transplant (Living related transplant, 1993-2004)

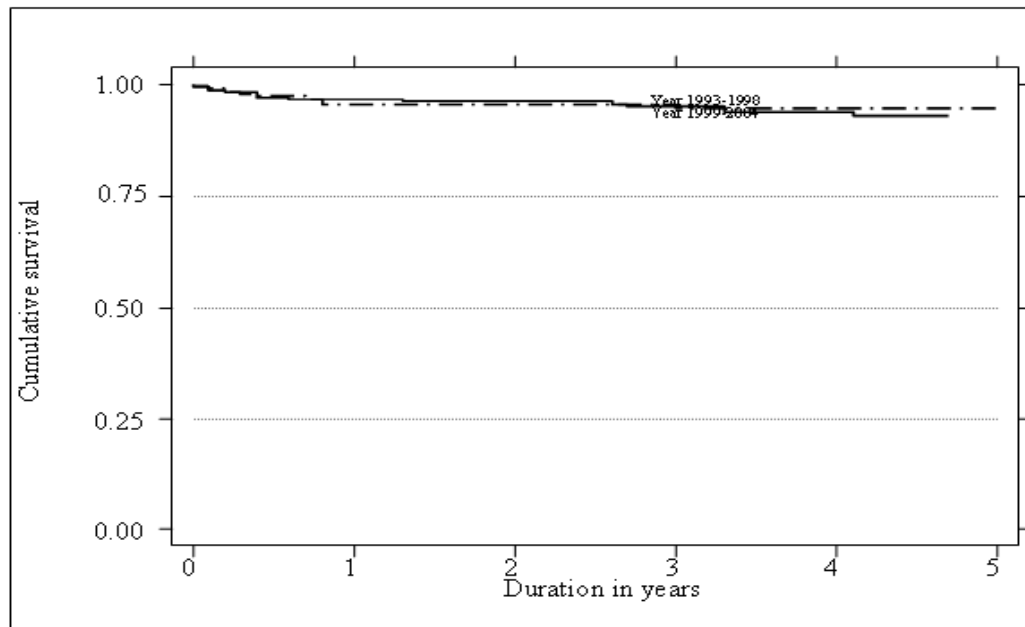


Table 13.4.10: Graft survival by year of transplant (Living related transplant, 1993-2004)

Year of Transplant	1993-1998		1999-2004	
Interval (years)	% Survival	SE	% Survival	SE
1	91	2	98	1
3	87	2	96	2
5	83	3	89	3

SE=standard error

Figure 13.4.10: Graft survival by year of transplant (Living related transplant, 1993-2004)

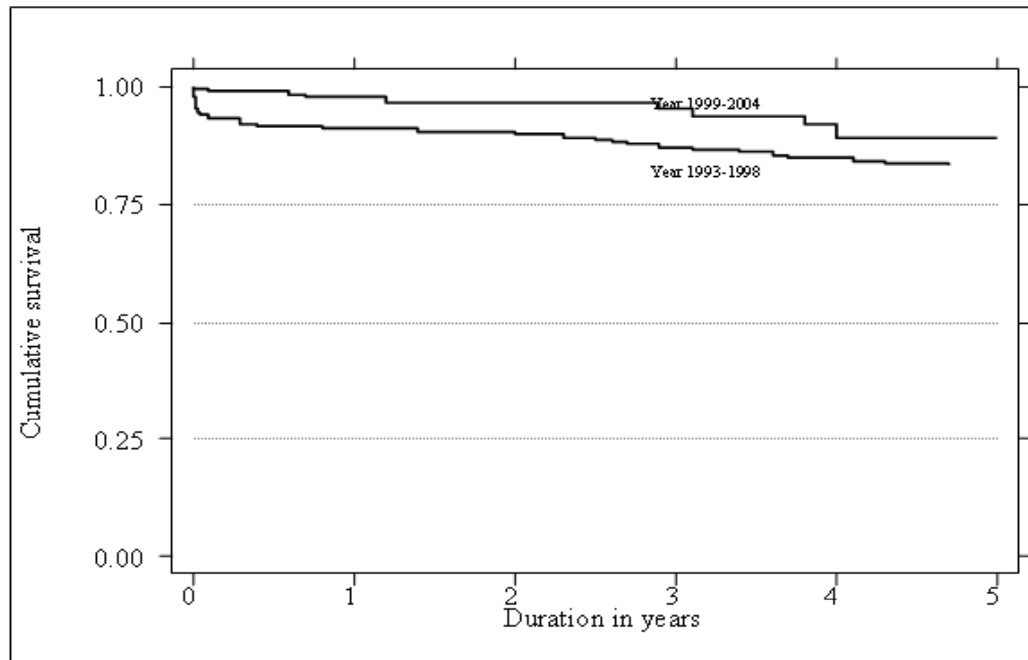


Table 13.4.11: Patient survival by year of transplant (Commercial cadaver transplant, 1993-2004)

Year of Transplant	1993-1998		1999-2004	
Interval (years)	% Survival	SE	% Survival	SE
1	94	1	96	1
3	92	2	93	1
5	87	2	92	1

SE=standard error

Figure 13.4.11: Patient survival by year of transplant (Commercial cadaver transplant, 1993-2004)

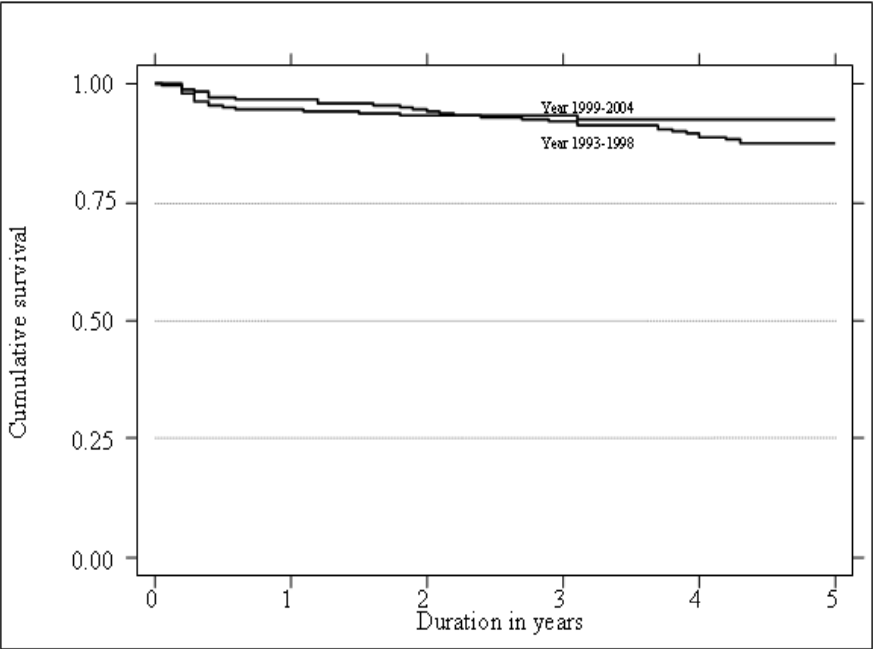


Table 13.4.12: Graft survival by year of transplant (Commercial cadaver transplant, 1993-2004)

Year of Transplant	1993-1998		1999-2004	
Interval (years)	% Survival	SE	% Survival	SE
1	98	1	99	1
3	97	1	97	1
5	92	2	95	2

SE=standard error

Figure 13.4.12: Graft survival by year of transplant (Commercial cadaver transplant, 1993-2004)

