

## **CHAPTER 2**

### **CORNEAL TRANSPLANTATION**

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Table 2.1.1: Number of Corneal Transplantation and Transplant Rate per million population (pmp), 1998-2010

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
No. of new transplants	119	122	126	221	203	165	184	192	177	196	231	209	171
New transplant rate, pmp	5	5	5	9	8	7	7	7	7	7	8	7	6

Table 2.1.2: Types of Corneal Transplant, 1998-2010

Surgery type	1998 (N=119)		1999 (N=122)		2000 (N=126)		2001 (N=221)		2002 (N=203)		2003 (N=165)		2004 (N=184)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=2316)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Penetrating Keratoplasty	114	96	116	95	120	95	207	94	196	97	156	94	165	90	173	90	153	86	175	89	189	82	173	83	122	71	2059	89
Lamellar Keratoplasty	1	1	5	4	4	3	14	6	5	2	8	5	10	5	13	7	16	9	7	4	21	9	15	7	16	9	135	6
Patch Graft for Cornea	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	1	5	3	10	5	12	5	9	4	18	11	59	3
Patch Graft for Sclera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	1	2	1	0	0	5	0
Cornea Scleral Keratoplasty	0	0	1	1	0	0	0	0	0	0	1	1	7	4	2	1	3	2	4	2	4	2	10	5	8	5	40	2
Endothelial keratoplasty	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	7	4	10	0
No data	4	3	0	0	2	2	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0

Table 2.2.1: Gender Distribution, 1998-2010

Year	1998 (N=119)		1999 (N=122)		2000 (N=126)		2001 (N=221)		2002 (N=203)		2003 (N=165)		2004 (N=184)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=2316)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male	78	66	80	66	81	64	142	64	122	60	114	69	112	61	115	60	118	67	129	66	143	62	132	63	117	68	1483	64
Female	41	34	42	34	45	36	79	36	81	40	51	31	72	39	77	40	59	33	67	34	88	38	77	37	54	32	833	36

Table 2.2.2: Ethnic Distribution, 1998-2010

Year	1998 (N=119)		1999 (N=122)		2000 (N=126)		2001 (N=221)		2002 (N=203)		2003 (N=165)		2004 (N=184)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=2316)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Malay	28	24	34	28	41	32	70	32	74	37	52	31	66	36	62	32	60	34	64	33	79	34	61	29	69	40	760	33
Chinese	47	39	46	38	50	40	92	42	83	41	67	41	58	31	73	38	59	33	70	36	84	36	69	33	48	28	846	37
Indian	36	30	35	28	28	22	49	22	35	17	34	21	43	23	41	21	40	23	38	19	41	18	58	28	22	13	500	21
Bumiputra Sabah	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	3	2	2	1	2	1	3	1	6	4	18	1
Bumiputra Sarawak	0	0	0	0	0	0	1	0	0	0	0	0	4	2	5	3	4	2	4	2	7	3	6	3	4	2	35	1
Others	8	7	7	6	7	6	9	4	11	5	12	7	12	7	10	5	11	6	18	9	18	8	12	6	22	13	157	7

Table 2.2.3: Age Distribution of Corneal Transplant Recipient Patients, 1998-2010

Year	1998 (N=119)		1999 (N=122)		2000 (N=126)		2001 (N=221)		2002 (N=203)		2003 (N=165)		2004 (N=184)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=2316)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Age group (years)																													
0-9	4	3	5	4	6	5	8	4	9	4	6	3	6	3	8	4	7	4	4	2	5	2	6	3	15	9	89	4	
10-19	13	11	17	14	9	7	29	13	16	8	21	13	15	8	14	7	23	13	13	7	20	9	27	13	14	8	231	10	
20-39	28	24	34	28	34	27	49	22	53	26	36	22	55	30	59	31	53	30	48	24	68	29	54	26	43	25	614	26	
40-59	38	32	32	26	40	32	61	28	57	28	51	31	52	28	45	24	41	23	66	34	69	30	64	30	52	30	668	29	
≥60	36	30	34	28	37	29	74	33	68	34	51	31	56	31	66	34	53	30	65	33	69	30	58	28	47	28	714	31	
Mean	45		43		44		45		46		45		45		46		44		47		46		44		42		45		
SD	21		22		20		21		21		21		21		21		22		21		20		20		21		21		
Median	45		43		45		50		46		46		44		49		43		49		48		45		45		46		
Minimum	4 months		5		2 months		5 months		1		5 months		2 months		2 months		2 months		3		1		3		5 months		2 months		
Maximum	82		92		86		85		86		84		86		84		96		102		87		86		81		102		

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Table 2.2.4: Diagnosis, 1998-2010

Year	1998 (N=119)		1999 (N=122)		2000 (N=126)		2001 (N=221)		2002 (N=203)		2003 (N=165)		2004 (N=184)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=2316)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Primary Diagnosis	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Keratoconus	24	20	24	20	15	12	38	17	32	16	18	11	34	18	34	18	33	19	28	14	37	16	46	22	13	8	376	16
Corneal scar	33	28	25	20	21	17	34	15	28	14	21	13	26	14	20	10	18	10	25	13	29	13	14	7	17	10	311	13
Microbial keratitis	11	9	11	9	19	15	30	14	31	15	21	13	18	10	13	7	11	6	14	7	18	8	19	9	22	13	238	10
Microbial keratitis+ Corneal perforation	1	1	6	5	1	1	6	3	4	2	4	2	17	9	20	10	7	4	10	5	12	5	28	13	25	15	141	6
Corneal perforation (non microbial)	6	5	7	6	8	6	12	5	12	6	27	16	13	7	18	9	20	11	21	11	18	8	19	9	34	20	215	9
Pseudophakic Bullous keratopathy	10	8	16	13	17	13	23	10	15	7	19	12	19	10	35	18	30	17	36	18	46	20	28	13	23	13	317	14
Other (non pseudophakic) bullous keratopathy	14	12	4	3	19	15	37	17	47	23	25	15	16	9	14	7	11	6	8	4	14	6	8	4	11	6	228	10
Failed previous graft	14	12	12	10	13	10	17	8	15	7	14	8	12	7	14	7	10	6	23	12	16	7	12	6	9	5	181	8
Corneal dystrophy	5	4	6	5	5	4	12	5	9	4	7	4	8	4	6	3	10	6	12	6	10	4	17	8	4	2	111	5
Congenital opacity	1	1	1	1	1	1	1	0	0	0	1	1	8	4	4	2	1	1	1	1	5	2	2	1	2	1	28	1
Others	3	3	8	7	7	6	15	7	14	7	10	6	34	18	34	18	36	20	39	20	48	21	29	14	24	14	301	13
No data	0	0	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0	0	0	8	0

\* Each patient may have more than one diagnosis.

Table 2.2.5: Indications of Corneal Transplant, 2004-2010

Indication of transplant	2004 (N=184)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1360)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Optical	120	65	135	70	124	70	139	71	154	66	101	48	67	39	840	62
Tectonic	26	14	23	12	20	11	17	8	25	11	25	12	34	20	170	13
Therapeutic	27	14	19	10	17	9	24	12	24	10	44	21	27	16	182	13
Tectonic+Therapeutic	9	5	9	4	4	2	8	4	6	2	22	11	22	13	80	6
Optical+Tectonic	1	1	1	1	1	1	0	0	1	1	0	0	0	0	4	0
Optical+Tectonic+Therapeutic	0	0	1	1	0	0	1	1	1	1	2	1	0	0	5	0
Optical+Therapeutic	0	0	0	0	5	3	6	3	8	3	7	3	8	4	34	3
Optical+Others	0	0	0	0	1	1	0	0	1	1	0	0	1	1	3	0
Therapeutic+Others	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0
Others	1	1	4	2	5	3	1	1	10	4	7	3	12	7	40	3
No data	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0

\* Each patient may have more than one indication.

Table 2.3.1.1: No of Previous Grafts in Grafted Eye, 2004-2010

Year	2004* (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0	123	89	174	90	160	90	161	82	204	88	191	91	150	87	1163	89
1	11	8	15	8	15	8	30	15	22	10	12	6	14	8	119	9
2	3	2	2	1	1	1	4	2	5	2	5	2	5	3	25	2
3	0	0	1	1	1	1	0	0	0	0	0	0	1	1	3	0
4	1	1	0	0	0	0	1	1	0	0	0	0	1	1	3	0
Not available	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0

\*In the year 2004 there are total of 185 corneal transplants performed but complete data set was only received for 138 patients.

Table 2.3.1.2: Ocular Co-morbidity, 2004-2010

Year	2004* (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Ocular co-morbidity																
Any ocular co-morbidity (a to d below)	88	64	103	54	82	46	89	45	126	55	118	56	114	67	720	55
a) Superficial corneal vascularisation	44	50	48	47	44	54	53	60	70	56	62	53	57	50	378	53
b) Deep corneal vascularisation	43	49	39	38	22	27	28	31	31	25	38	32	32	28	233	32
c) History of glaucoma	29	33	36	35	36	44	39	44	68	54	54	46	53	46	315	44
d) Current ocular inflammation	42	48	50	49	41	50	39	44	66	52	63	53	70	61	371	52

\*Patient might have multiple ocular co-morbidities.

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Table 2.3.1.3: Pre-operative Vision, 2004-2010

Year	2004* (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Unaided VA																
6/6	3	2	0	0	1	1	1	1	1	1	1	1	1	1	8	1
6/9	1	1	1	1	1	1	2	1	7	3	3	1	1	1	16	1
6/12	0	0	2	1	3	1	0	0	2	1	2	1	1	1	10	1
6/18	0	0	1	1	0	0	2	1	1	1	3	1	5	3	12	1
6/24	3	2	5	2	4	2	2	1	3	1	4	2	7	4	28	2
6/36	4	3	6	3	5	3	3	1	6	2	6	3	6	3	36	3
6/60	7	5	16	8	17	10	11	5	14	6	17	8	12	7	94	7
5/60	1	1	0	0	0	0	0	0	0	0	1	1	1	1	3	0
4/60	3	2	1	1	2	1	2	1	0	0	0	0	3	2	11	1
3/60	2	2	2	1	1	1	4	2	5	2	5	2	0	0	19	1
2/60	1	1	2	1	4	2	1	1	2	1	4	2	1	1	15	1
1/60	4	3	9	4	7	4	2	1	1	1	6	3	2	1	31	2
CF	47	34	47	24	45	25	44	22	40	17	76	36	51	29	350	27
HM	47	34	46	24	37	21	48	24	48	21	61	29	49	28	336	26
PL	13	9	15	8	12	7	17	9	20	8	17	8	23	13	117	9
NPL	2	1	1	1	0	0	1	1	0	0	2	1	2	1	8	1
Others	0	0	0	0	0	0	0	0	0	0	1	1	3	2	4	0
No data	0	0	38	20	38	21	56	29	81	35	0	0	3	2	216	16

Table 2.3.2.1: Source of Donor Cornea Tissue, 2004-2010

Year	2004* (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Source of donor																
Local	21	15	19	10	36	20	31	16	41	18	41	20	51	30	240	18
USA	95	69	133	69	98	56	114	58	151	65	130	62	108	63	829	63
Sri Lanka	22	16	38	20	41	23	51	26	37	16	38	18	11	6	238	18
Others	0	0	0	0	2	1	0	0	2	1	0	0	1	1	5	1
No data	0	0	2	1	0	0	0	0	0	0	0	0	0	0	2	0
If Local, ethnic group:																
• Malay	0	0	4	21	1	3	5	16	0	0	0	0	0	0	10	4
• Chinese	15	71	8	42	12	33	16	52	22	54	29	71	32	63	134	56
• Indian	6	29	7	37	23	64	4	13	9	22	12	29	18	35	79	33
• Others	0	0	0	0	0	0	4	13	10	24	0	0	0	0	14	6
• Unknown	0	0	0	0	0	0	2	6	0	0	0	0	1	2	3	1

\* In the year 2004 there were a total of 184 corneal transplants performed but complete data set was only received for 138 patients.

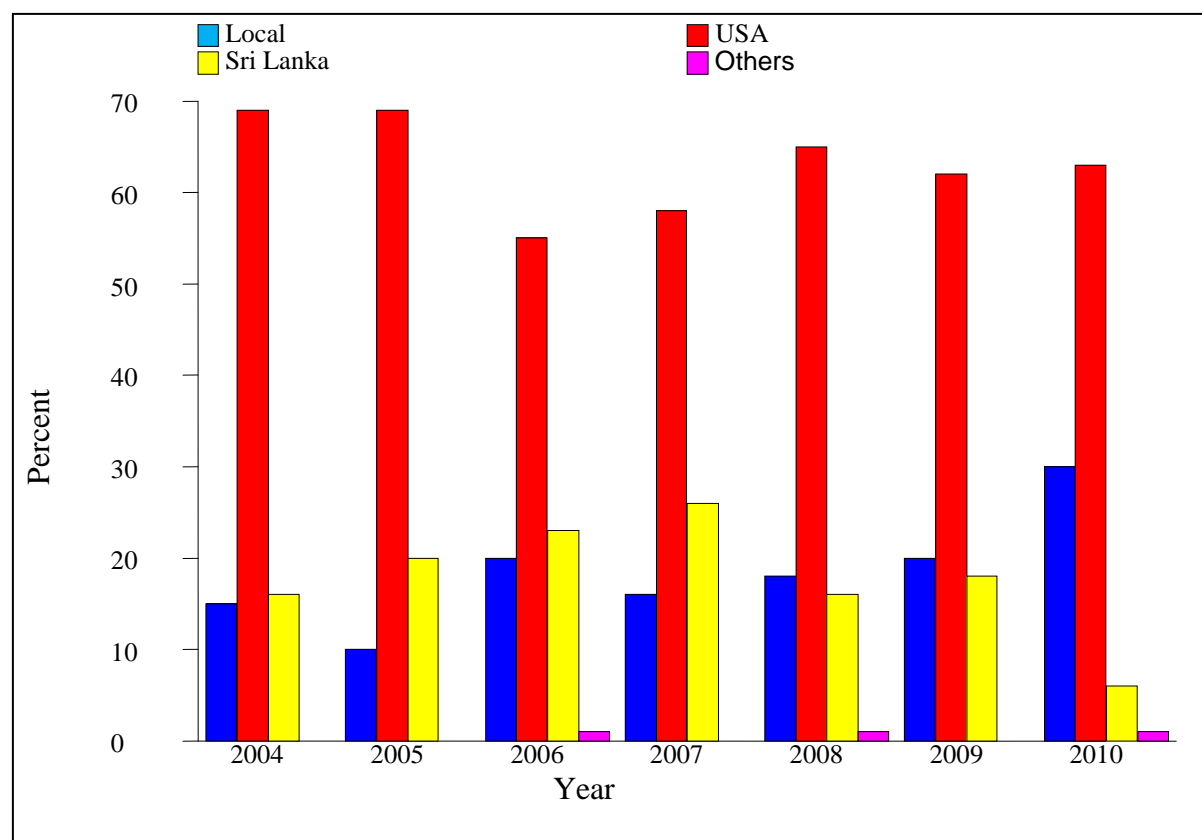


Figure 2.3.2.1: Source of Donor Corneal Tissue, 2004-2010

Table 2.3.2.2: Donor Age Distribution, 2004-2010

Year	2004* (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0-9	2	2	3	2	2	1	2	1	7	3	2	1	1	1	19	1
10-19	6	4	4	2	9	5	5	3	7	3	9	4	7	4	47	4
20-39	11	8	7	4	11	6	13	7	19	8	17	8	21	12	99	8
40-59	51	37	89	46	81	46	83	42	80	35	85	41	73	43	542	41
≥60	68	49	89	46	74	42	93	47	118	51	96	46	69	40	607	46
Mean	57		58		56		57		56		56		53		56	
SD	15		14		16		14		17		16		17		16	
Median	59		58		56		59		60		58		57		59	
Minimum	8		3		6		4		1		1		2		1	
Maximum	78		79		78		78		76		77		75		79	

Table 2.3.2.3: Preservation Media, 2004-2010

Year	2004* (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Optisol GS	90	65	147	77	128	72	134	68	191	83	185	89	160	94	1035	79
MK Medium	22	16	38	20	40	23	51	26	35	15	15	7	11	6	212	16
Moist Chamber	4	3	3	1	7	4	11	6	5	2	8	4	0	0	38	3
Others*	0	0	1	1	0	0	0	0	0	0	1	0	0	0	2	0
No data	22	16	3	1	2	1	0	0	0	0	0	0	0	0	27	2

\*Others (specify) Eusol-C

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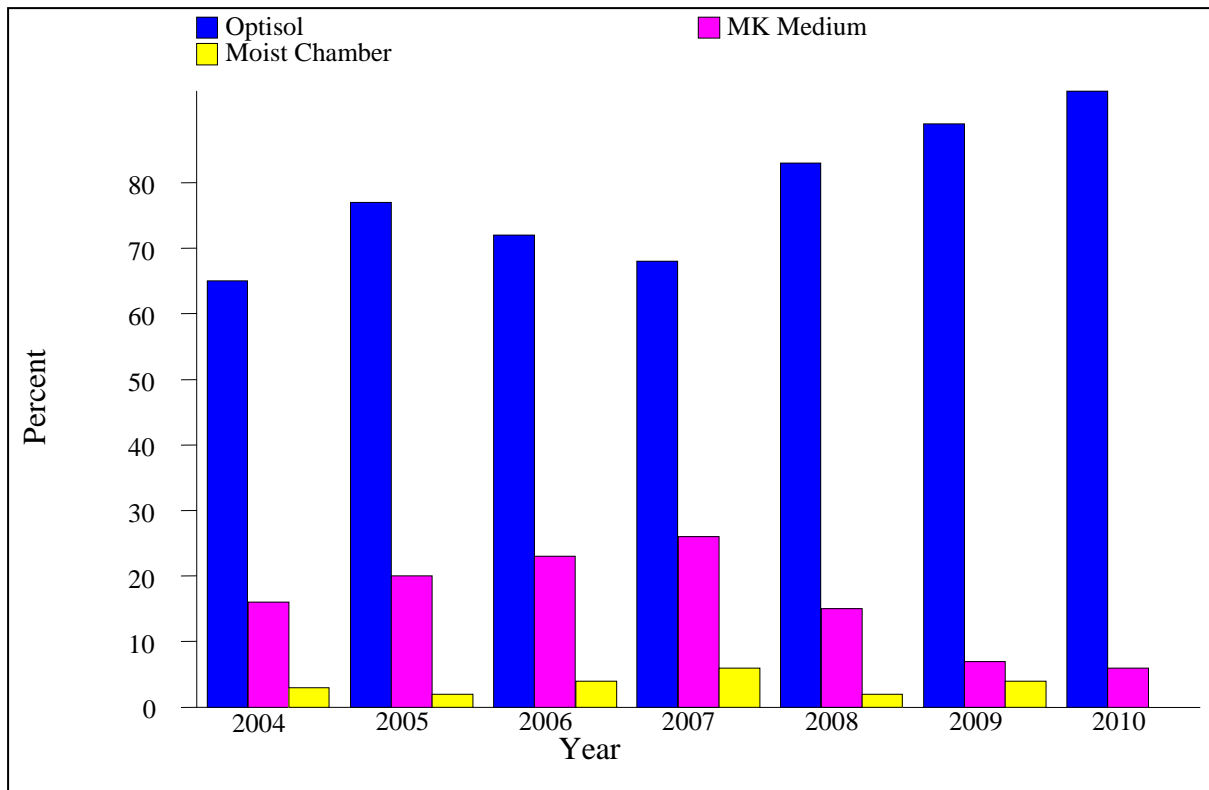


Figure 2.3.2.3: Preservation Media, 2004-2010

Table 2.3.2.4: Cause of Death in Corneal Donors, 2004-2010

Year	2004* (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Cardiac / Circulatory System	47	34	49	26	59	33	75	38	61	26	58	28	44	26	393	30
Cerebrovascular System	17	12	25	13	11	6	23	12	35	15	18	9	20	12	149	11
Malignancy	19	14	31	16	25	14	26	13	41	18	27	13	24	14	193	15
Trauma / Accident	20	15	13	7	19	11	24	12	21	9	28	13	33	19	158	12
Respiratory System	15	11	8	4	8	5	13	7	10	4	25	12	18	11	97	7
Others	17	12	21	11	27	15	32	16	59	26	49	23	30	18	235	18
No data	3	2	45	23	28	16	3	2	4	2	4	2	4	2	91	7

\*May have more than one cause of death in corneal donors

Table 2.3.3.1: Types of Surgeries, 2004-2010

Year	2004* (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Penetrating Keratoplasty	120	87	173	90	153	86	175	89	189	82	173	83	122	71	1105	84
Lamellar Keratoplasty	10	7	13	7	16	9	7	4	21	9	15	7	16	9	98	7
Patch Graft for Corneal	2	2	3	1	5	3	10	5	12	5	9	4	18	11	59	5
Patch Graft for Scleral	0	0	1	1	0	0	0	0	2	1	2	1	0	0	5	0
Cornea Scleral Keratoplasty	6	4	2	1	3	2	4	2	4	2	10	5	8	5	37	3
Endothelial keratoplasty	0	0	0	0	0	0	0	0	3	1	0	0	7	4	10	1
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

\* In the year 2004 there were a total of 184 corneal transplants performed but complete data set was only received for 138 patients.



Table 2.3.3.2: Types of Combined Surgeries, 2004-2010

Year	2004* (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Combined surgeries</b>																
No. of patients with corneal transplant surgery combined with another surgical procedure	30	22	27	14	41	23	35	18	46	20	32	15	27	16	238	18
(a) Glaucoma surgery	2	7	3	11	1	2	0	0	3	7	2	6	0	0	11	5
(b) Cataract extraction	15	50	13	48	21	51	13	37	17	37	15	47	16	59	110	46
(c) IOL	13	43	10	37	24	59	19	54	23	50	10	31	5	19	104	44
(d) Cataract extraction and IOL	9	30	8	30	15	37	10	29	16	35	9	28	4	15	71	30
(e) Retinal surgery ± internal tamponade	1	3	1	4	2	5	4	11	10	22	0	0	0	0	18	8
(f) Anterior vitrectomy	9	30	3	11	4	10	10	29	6	13	9	28	6	22	47	20
(g) Others	5	17	8	30	8	20	16	46	14	30	11	34	7	26	69	29

\*Patients may have more than one combined surgery.

Table 2.3.3.3: Recipient Cornea Trephine Size, 2004-2010

Year	2004 (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<6mm	3	2	4	2	4	2	7	4	4	2	7	3	27	16	56	4
6-9mm	124	90	105	55	102	58	134	68	165	71	187	90	126	73	943	72
>9mm	1	1	2	1	0	0	0	0	5	2	8	4	7	4	23	2
Not applicable*	0	0	0	0	2	1	1	1	0	0	3	1	1	1	7	1
No data	10	7	81	42	69	39	54	27	57	25	4	2	10	6	285	21
Mean	7.5		7.3		7.2		7.3		7.5		7.5		7		7.3	
SD	0.9		1		1		1.1		0.9		1.1		1.6		1.1	
Median	7.5		7.3		7.3		7.5		7.5		7.5		7.4		7.5	
Minimum	2		2		2		2		3		2		2		2	
Maximum	10		9.5		9		9		12		11		12		12	

\*Number of cases of tissue cut "Free-Hand".

Table 2.3.3.4: Difference in Trephined Sizes of Recipient and Donor Corneas, 2004-2010

Year	2004 (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Difference in Graft size, mm</b>																
0.25mm	33	24	27	14	38	21	39	20	47	20	90	43	59	35	333	25
0.5mm	92	67	84	44	66	37	95	48	117	51	100	48	89	52	643	49
0.75mm	0	0	0	0	1	1	1	1	4	2	1	0	0	0	7	1
1.00mm	2	1	0	0	1	1	4	2	2	1	6	3	10	6	25	2
>1.00mm	1	1	0	0	0	0	0	0	1	0	1	0	1	1	4	0
Not applicable	9	7	5	3	9	5	6	3	8	3	6	3	3	2	46	4
No data	1	1	76	40	62	35	51	26	52	23	5	2	9	5	256	19

Table 2.3.3.5: Suture Technique, 2004-2010

Year	2004 (N=138)		2005 (N=192)		2006 (N=177)		2007 (N=196)		2008 (N=231)		2009 (N=209)		2010 (N=171)		TOTAL (N=1314)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Interrupted only	132	96	139	73	124	70	138	70	171	74	175	84	152	89	1031	78
Continuous only	0	0	0	0	5	3	1	1	6	3	7	3	5	3	24	2
Combined	6	4	18	9	18	10	12	6	10	4	26	12	10	6	100	8
No data	0	0	35	18	30	17	45	23	44	19	1	1	4	2	159	12

Table 2.4.1: Stock and Flow - Graft Status (Whole Database)

	Optical		Non optical		Total		
	No.	%	No.	%	No.	%	
<b>Number registered</b>	886	65	474	35	1360	100	
<b>Number followed</b>	<b>Total</b>	<b>404</b>	<b>221</b>	<b>625</b>			
	1 year	228	56	167	76	395	63
	2 year	83	21	31	14	114	18
	3 year	47	12	7	3	54	9
	4 year	22	5	10	5	32	5
	5 year	17	4	5	2	22	4
	6 year	7	2	1	0	8	1
<b>Graft status</b>	<b>Total</b>	<b>404</b>	<b>221</b>	<b>625</b>			
-Surviving graft		318	79	125	57	443	71
-Failed graft		86	21	96	43	182	29
<b>Recipient status</b>	<b>Total</b>	<b>886</b>	<b>474</b>	<b>1360</b>			
-Recipient with complete follow up		177	20	132	27	309	23
-Recipient deaths		4	1	1	1	5	1
-Recipient loss - followed		220	25	86	18	306	22
-Recipient loss - not followed		412	45	161	34	573	42
-Graft not yet followed (Transplant duration less than 1 year)		73	8	94	20	167	12

Table 2.4.2.1: Graft Survival, 2004-2010

Interval (months)	No.	% success	SE
0	625	100	-
12	484	77.5	2
24	230	71.7	2
36	116	67.0	2
48	62	60.6	3
60	30	59.00	3

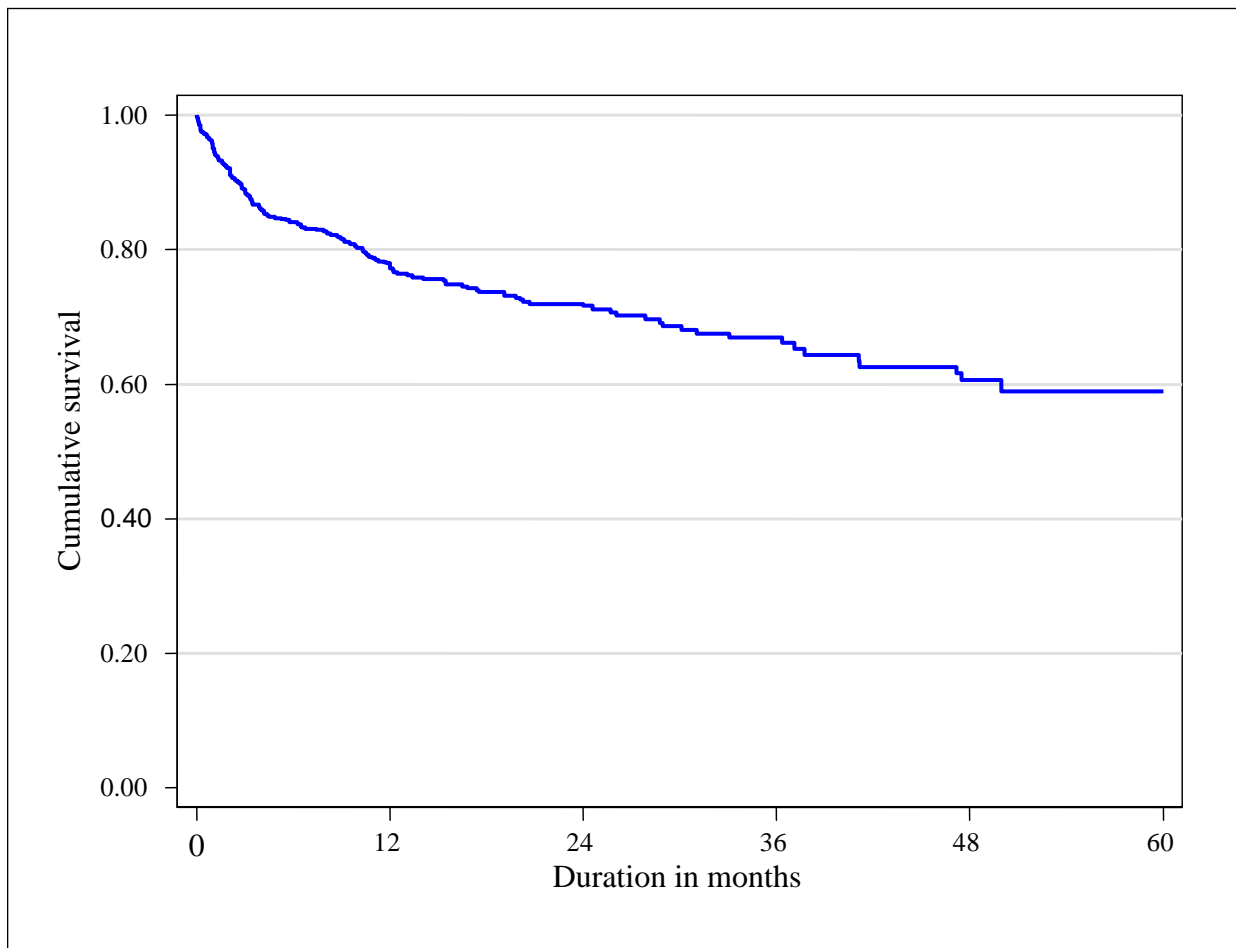


Figure 2.4.2.1: Graft Survival, 2004-2010

Table 2.4.2.2: Graft Survival by Optical and Non-optical Indication, 2004-2010

Interval (months)	Optical			Non-Optical		
	No.	% success	SE	No.	% success	SE
0	404	100	-	221	100	-
12	349	86.6	2	135	60.7	3
24	176	79.9	2	54	56.7	4
36	93	74.0	3	23	54.6	4
48	46	66.1	4	16	51.6	5
60	24	63.8	4	6	51.6	5

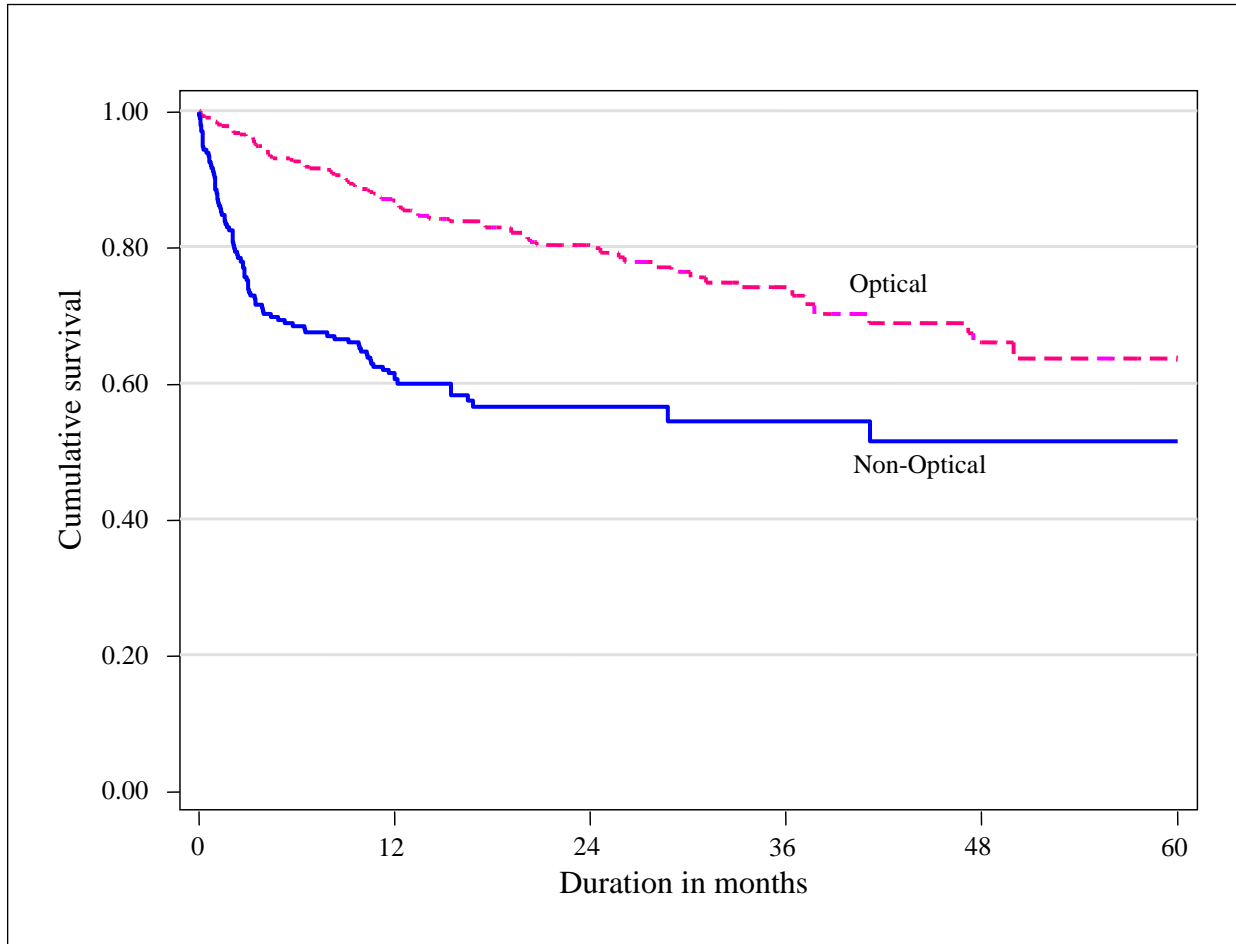


Figure 2.4.2.2: Graft Survival by Optical and Non-optical Indication, 2004-2010

Table 2.4.2.3: Graft Success by Gender, 2004-2010

Interval (months)	Male			Female		
	No.	% success	SE	No.	% success	SE
0	395	100	-	230	100	-
12	305	77.2	2	179	78.1	3
24	134	71.6	3	96	71.8	3
36	68	65.6	3	48	69.2	4
48	37	61.4	4	25	59.8	5
60	20	61.4	4	10	55.2	7

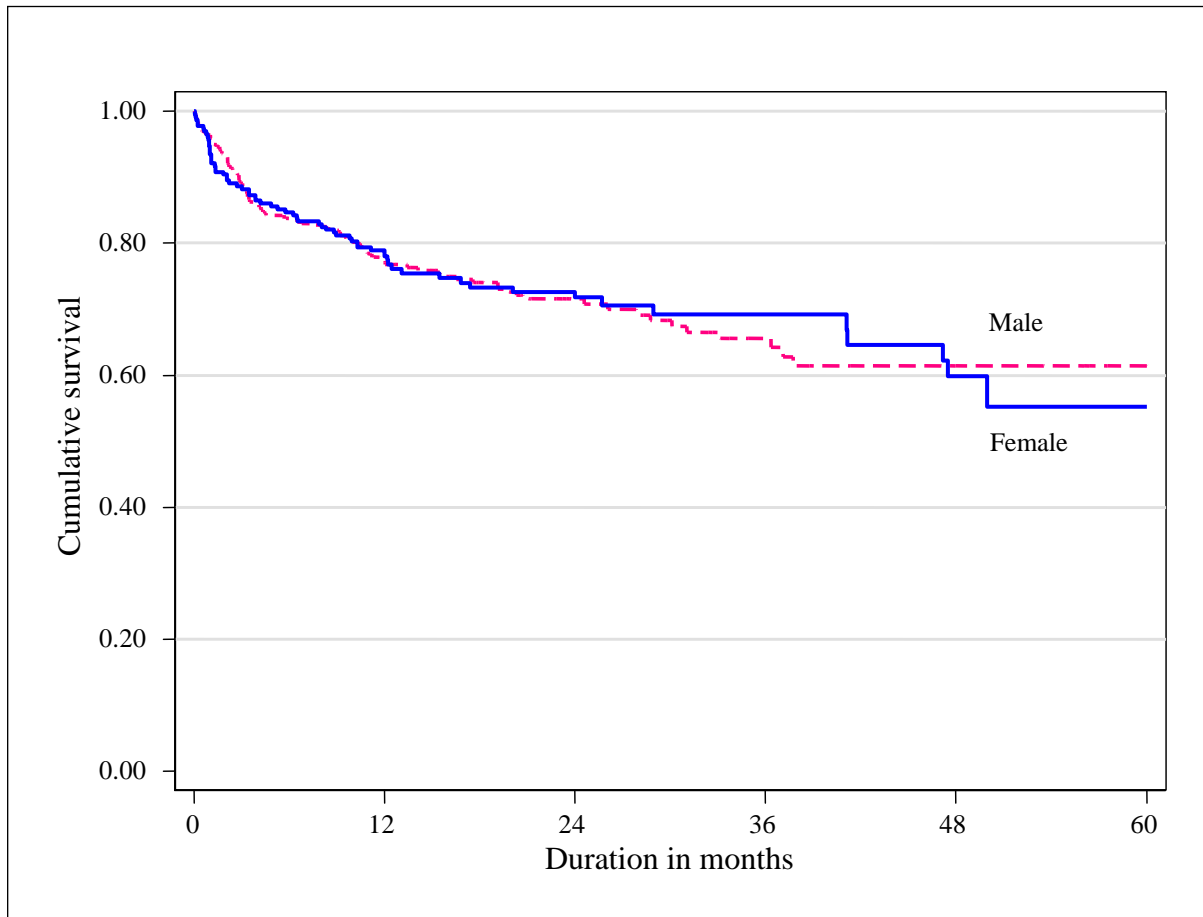


Figure 2.4.2.3: Graft Success by Gender, 2004-2010

Table 2.4.2.4: Graft Survival by Age, 2004-2010

Interval (months)	0-9			10-19		
	No.	% success	SE	No.	% success	SE
0	11	100	-	31	100	-
12	10	90.9	9	27	87.1	6
24	4	54.6	21	19	87.1	6
36	4	54.6	21	16	87.1	6
48	4	54.6	21	5	87.1	6
60	2	54.6	21	1	87.1	6
Interval (months)	20-39			≥40		
	No.	% success	SE	No.	% success	SE
0	42	100	-	541	100	-
12	34	81.0	6	413	76.4	2
24	15	81.0	6	192	70.2	2
36	9	81.0	6	89	64.5	3
48	3	81.0	6	53	57.4	3
	1	81.0	6	26	55.6	4

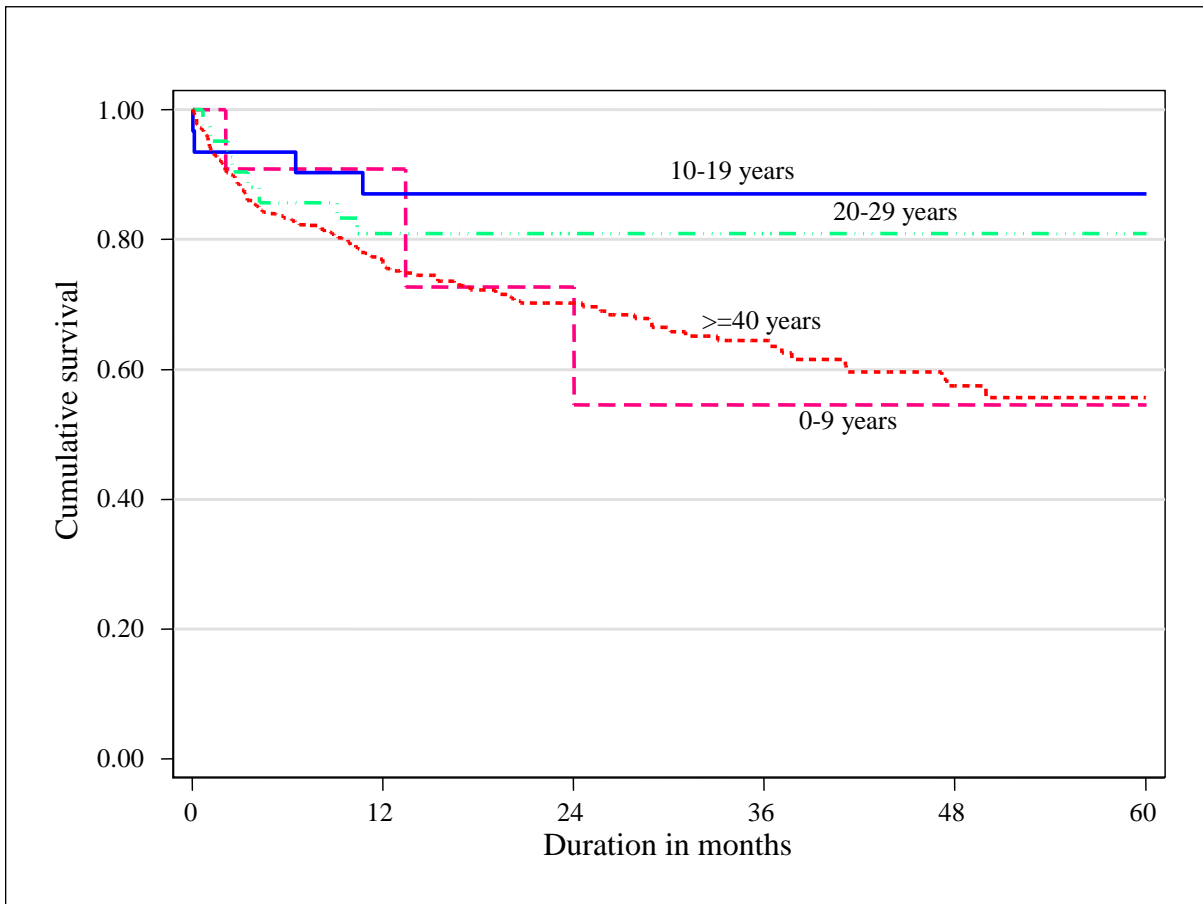


Figure 2.4.2.4: Graft Survival by Age, 2004-2010

Table 2.4.3.1: Availability of Data on Post Corneal Transplant Unaided Vision

	Unaided Vision (N =1360)	
	No.	No.
Data available	641	47
Lost to follow up	676	50
No data	43	3

Table 2.4.3.2: Unaided Visual Outcome after Cornea Transplant Surgery

Reason for graft	Optical (n=392)		Non-optical (n=249)	
	No.	%	No.	%
Vision better	201	51	79	32
Vision same	63	16	56	22
Vision worse	68	18	100	40
Not known*	60	15	14	6

\*Either pre op vision and/or post op vision is not available

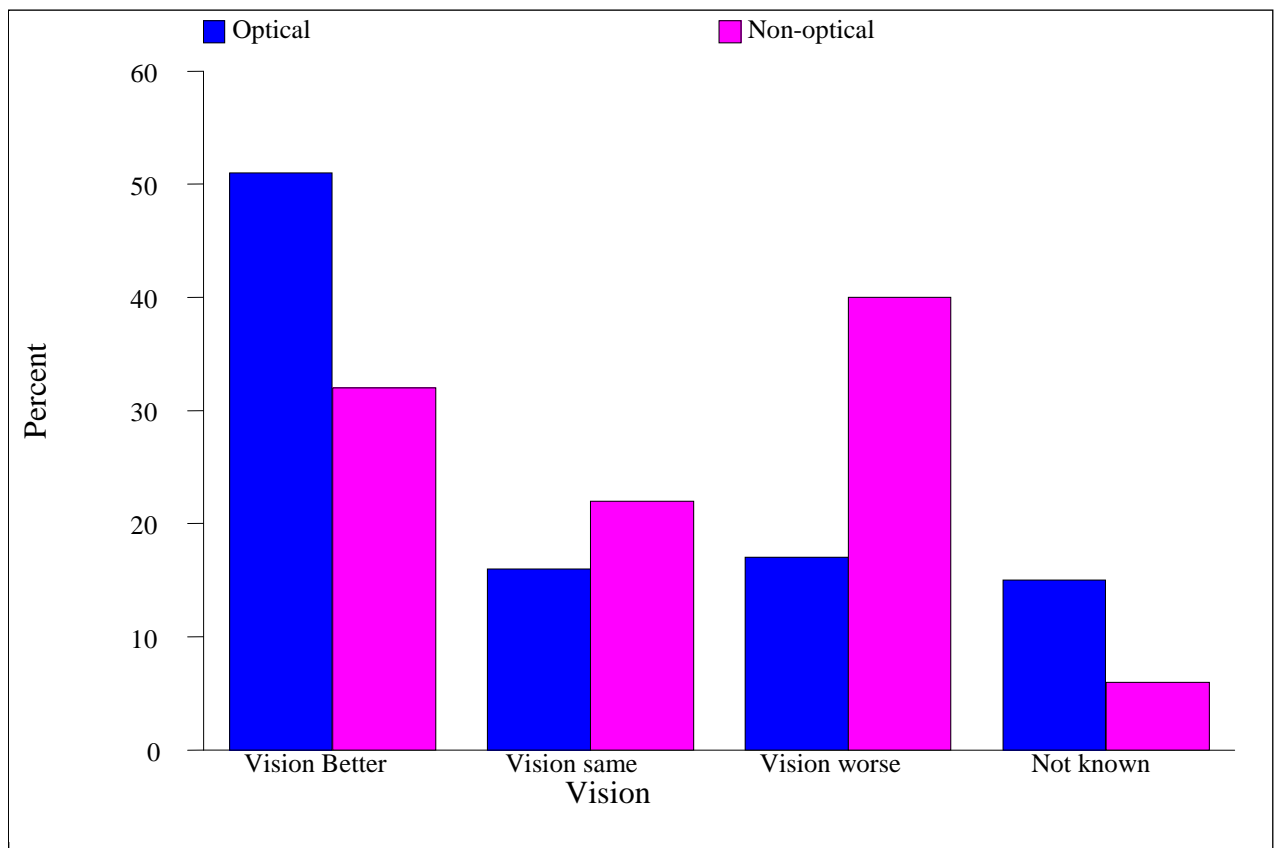


Figure 2.4.3.2: Unaided Visual Outcome after Corneal Transplant Surgery

Table 2.4.3.3: Unaided Vision for Optical and Non Optical Cases

Vision	Optical				Non Optical			
	Graft Survival (313)		Graft Failure (79)		Graft Survival (165)		Graft Failure (84)	
	No.	%	No.	%	No.	%	No.	%
6/18 or Better	92	29	0	0	27	16	2	2
6/24 – 6/60	111	36	3	4	36	22	3	4
Less than 6/60	85	27	74	94	38	23	76	90
Data not available	25	8	2	2	64	39	3	4

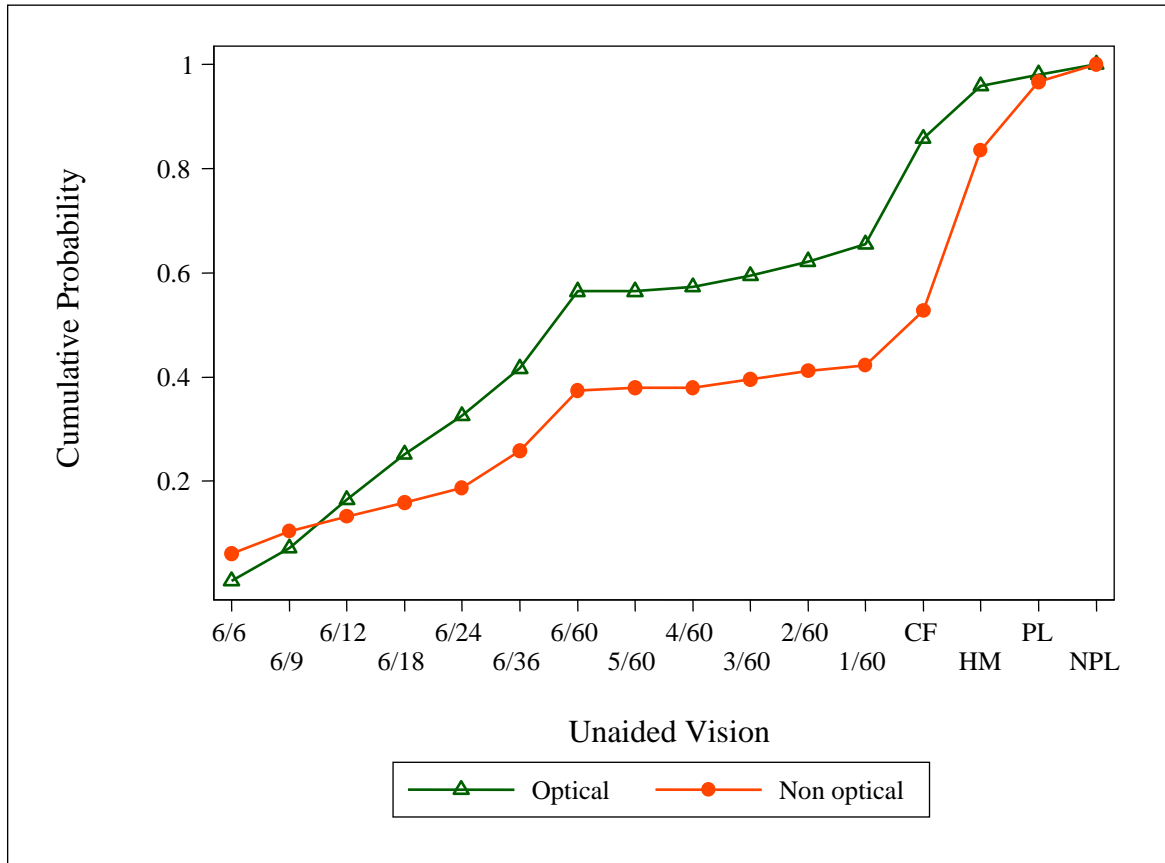


Figure 2.4.3.3: Cumulative Probability for Unaided Vision in Grafts



Table 2.5.1: Post Transplant Complications

		One year outcome (N=395)		2 <sup>nd</sup> year outcome (N=114)		3 <sup>rd</sup> year outcome (N=54)		4 <sup>th</sup> year outcome (N=62)		Total (N=625)	
		No.	%	No.	%	No.	%	No.	%	No.	%
<b>No complication</b>		<b>117</b>	<b>30</b>	<b>40</b>	<b>35</b>	<b>37</b>	<b>69</b>	<b>30</b>	<b>48</b>	<b>224</b>	<b>36</b>
<b>Any complications</b>		<b>129</b>	<b>110</b>	<b>17</b>	<b>43</b>	<b>8</b>	<b>22</b>	<b>16</b>	<b>53</b>	<b>170</b>	<b>76</b>
Complication	Epithelial Problem	32	27	3	8	2	5	3	10	40	18
	Wound Dehiscence	3	3	0	0	0	0	0	0	3	1
	Suture infiltration / abscess	20	17	0	0	1	3	2	7	23	10
	Endophthalmitis	0	0	0	0	0	0	1	3	1	0
	Microbial keratitis	25	21	3	8	0	0	1	3	29	13
	Vascularisation	46	39	9	23	4	11	4	13	63	28
	Post-keratoplasty glaucoma	51	44	8	20	5	14	9	30	73	33
	Graft Rejection	55	13.9	6	5.3	6	11	3	4.8	70	11.2
No data		149	127	57	143	9	24	16	53	231	103

\* Each patient may have more than one complication

Table 2.5.2: Post Transplant Graft Rejection Types

		One year outcome (N=395)		2 <sup>nd</sup> year outcome (N=114)		3 <sup>rd</sup> year outcome (N=54)		4 <sup>th</sup> year outcome (N=62)		Total (N=625)	
		No.	%	No.	%	No.	%	No.	%	No.	%
<b>Graft Rejection</b>		<b>55</b>	<b>13.9</b>	<b>6</b>	<b>5.3</b>	<b>6</b>	<b>11</b>	<b>3</b>	<b>4.8</b>	<b>70</b>	<b>11.2</b>
Types	Epithelial	13	24	2	33	1	17	1	33	17	24
	Stromal	13	24	2	33	0	0	0	0	15	21
	Endothelial	23	42	2	33	3	50	1	33	29	41
	No data	13	24	0	0	2	33	1	33	16	23

\* Each patient may have more than one type of rejection