

CHAPTER 6

HOMOGRAFT - HEART VALVE TRANSPLANTATION

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6.0 INTRODUCTION

Valvular homografts are used routinely in cardiac surgery especially for patients with congenital valvular heart disease. They are used as biological conduits to replace absent valves or to reconstruct outflow tracks in the heart. Homografts are superior to artificial valves due to their inherent traits such as superior perfusion parameters, durability, ease of handling and reduced risk of thrombo-embolic phenomenon. This removes the need for tight anticoagulation treatment post operatively and is extremely convenient for children and women of childbearing age in whom anticoagulation is contraindicated. Homografts have inherent resistance to infection and are preferred in an environment where sepsis is of concern.

Institut Jantung Negara (IJN) established the cardiovascular tissue bank in 1995. This was in response to the rising need for homografts and also the rising cost of importing homografts from overseas.

The Homograft Unit in IJN comprises of surgeons and medical technicians who are involved in retrieving, processing and cryopreserving the homografts for storage. The detailed records of the size of the homografts are documented. The infective state and the serology status of the donors are also documented.

As of 31st December 2009, a total 200 patients were alive with functioning graft and 38 new implantations were performed in 2009.

The continued effort by the National Transplant Resource Center has been instrumental in improving the number of heart valve homograft procurements in the country. The Ministry of Health role in promoting organ and tissue donation nationwide is greatly appreciated.

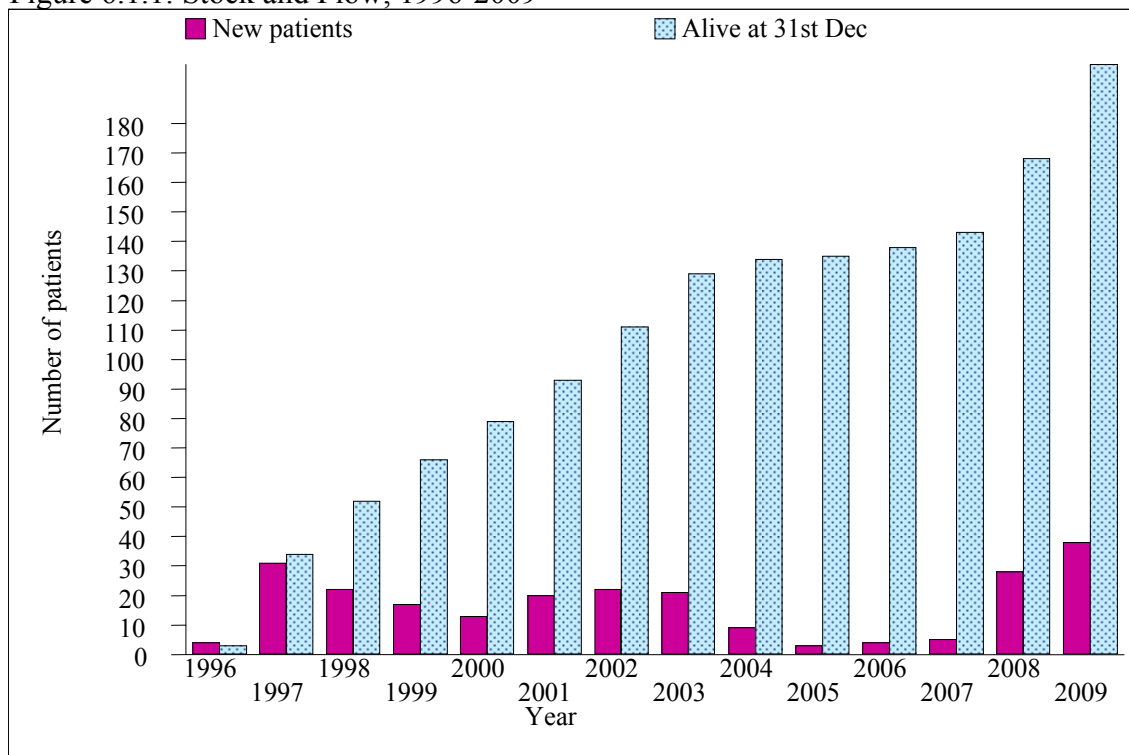
6.1 STOCK AND FLOW

Table 6.1.1: Stock and Flow, 1996-2009

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
New transplant	4	31	22	17	13	20	22	21	9	3	4	5	28	38
Deaths*	1	0	4	3	0	6	4	3	4	2	1	0	3	6
Lost to follow up	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alive with functioning graft at 31 st December	3	34	52	66	79	93	111	129	134	135	138	143	168	200

*based on year of death

Figure 6.1.1: Stock and Flow, 1996-2009



6.2 RECIPIENTS' CHARACTERISTICS

Table 6.2.1: Gender Distribution, 1996-2009

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	TOTAL
Gender	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Male	2	18	9	9	10	6	9	14	3	0	4	2	13	20	119
Female	2	13	13	8	3	14	13	7	6	3	0	3	15	18	118
TOTAL	4	31	22	17	13	20	22	21	9	3	4	5	28	38	237

Figure 6.2.1: Gender Distribution, 1996-2009

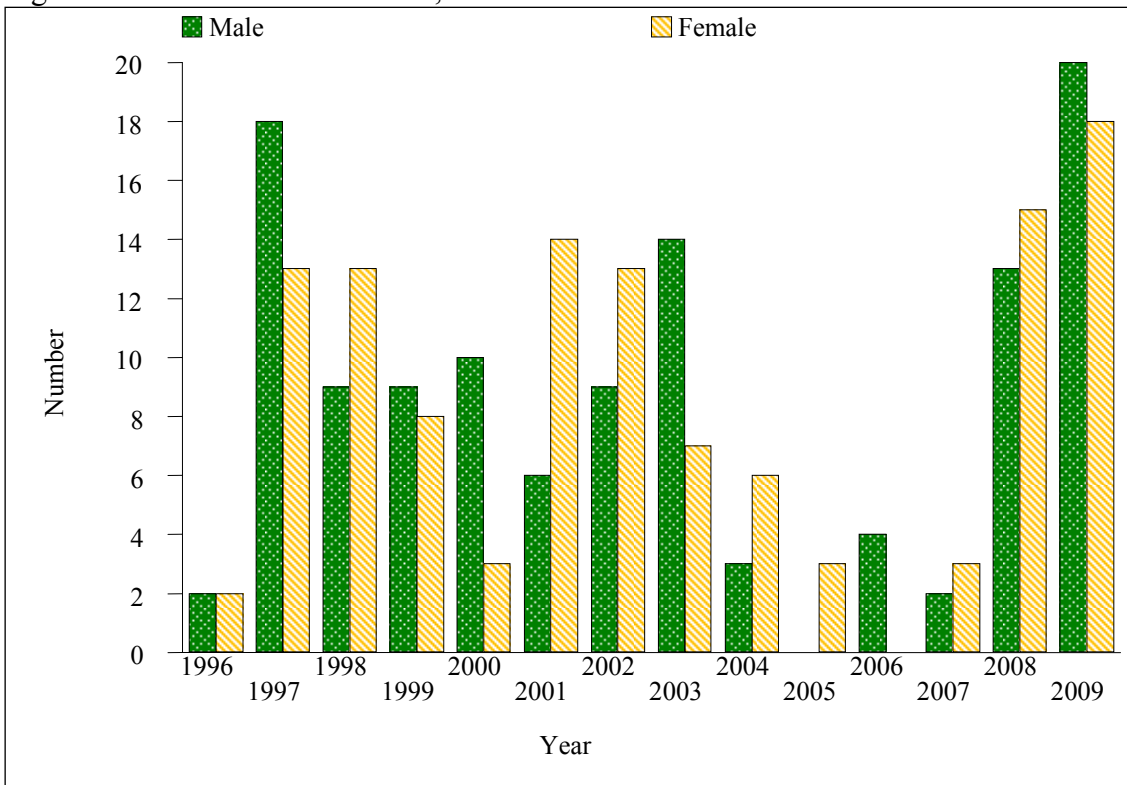


Table 6.2.2: Ethnic Group Distribution, 1996-2009

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	TOTAL
Ethnic group	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Malay	1	18	15	9	9	10	16	12	6	3	2	3	18	29	151
Chinese	3	11	4	3	2	9	4	6	1	0	1	0	7	6	57
Indian	0	2	2	2	0	1	2	2	1	0	1	0	1	3	17
Others	0	0	1	3	2	0	0	1	1	0	0	2	2	0	12
TOTAL	4	31	22	17	13	20	22	21	9	3	4	5	28	38	237

Figure 6.2.2: Ethnic Group Distribution, 1996-2009

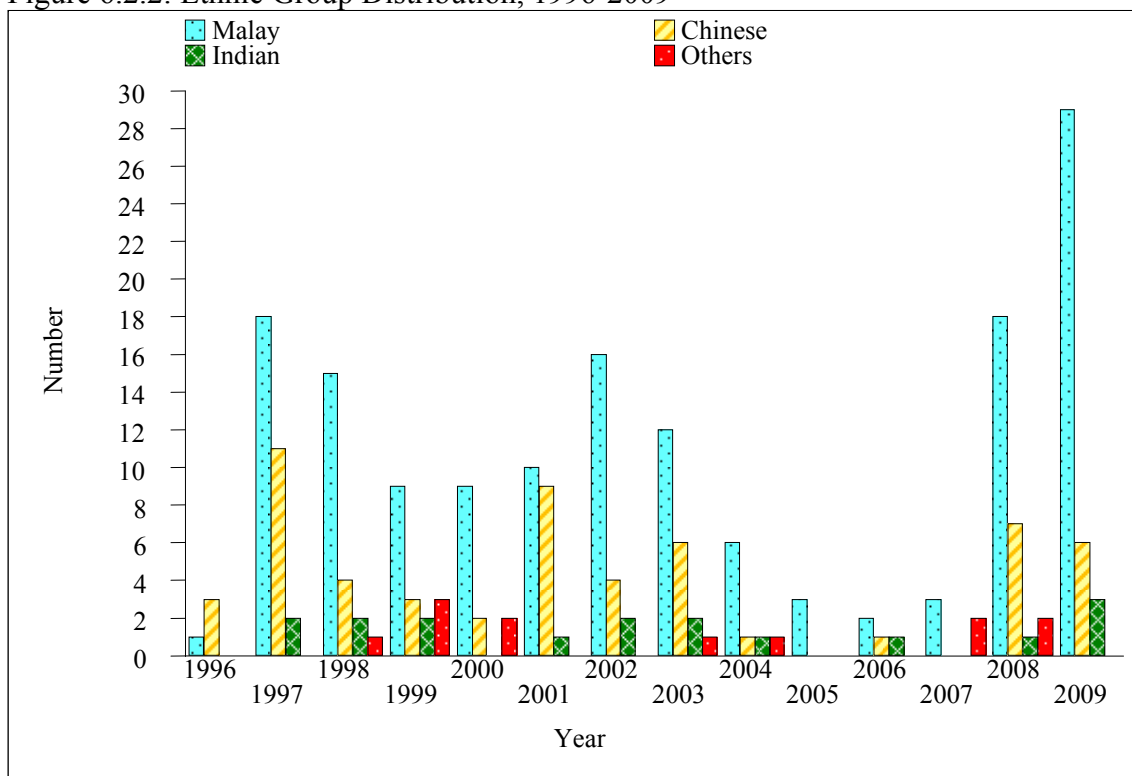
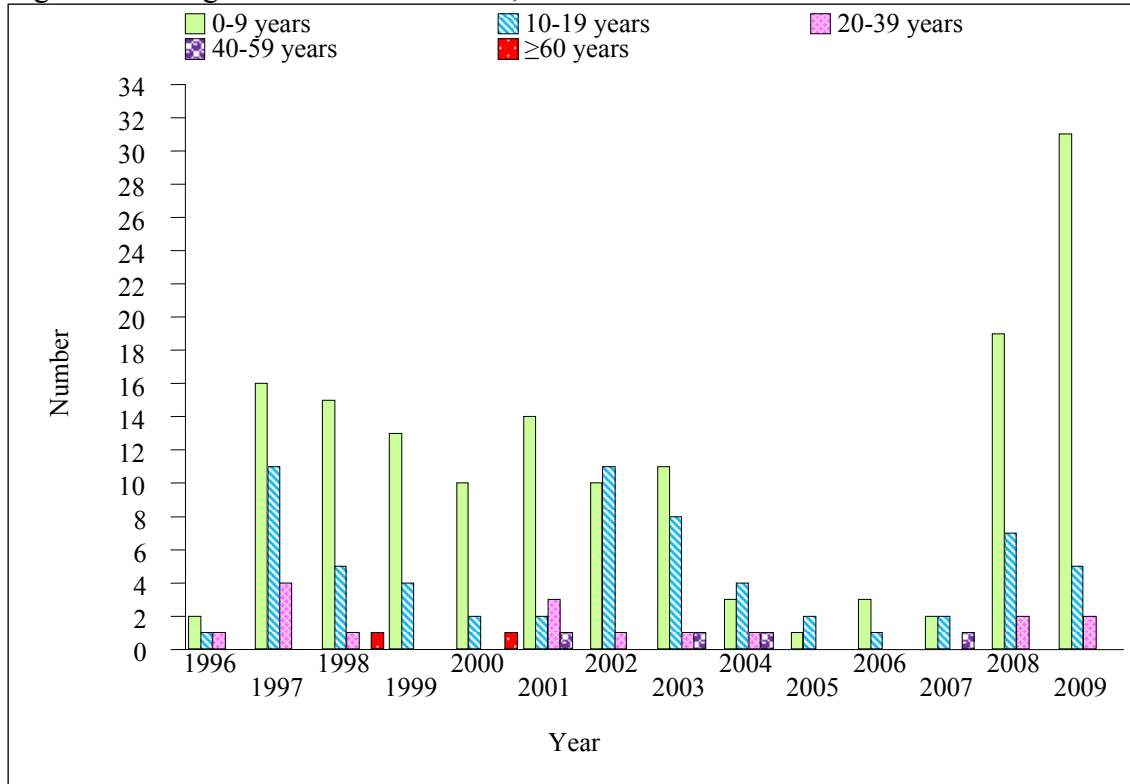


Table 6.2.3: Age Distribution in Years, 1996-2009

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	TOTAL
Age group	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
0-9	2	16	15	13	10	14	10	11	3	1	3	2	19	31	150
10-19	1	11	5	4	2	2	11	8	4	2	1	2	7	5	65
20-39	1	4	1	0	0	3	1	1	1	0	0	0	2	2	16
40-59	0	0	0	0	0	1	0	1	1	0	0	1	0	0	4
≥60	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
TOTAL	4	31	22	17	13	20	22	21	9	3	4	5	28	38	237
Mean	11.9	11.5	11	6.9	12.3	10.9	10.2	12.3	15.2	15	5.7	15.8	6.8	8.4	10.2
SD	6.6	6.7	14.5	4.1	17	14.2	6.1	11	11.4	7.8	4.6	18.4	6.2	6.9	10
Median	11.2	9.9	7.8	7	8.3	4.8	10.4	9	10.3	19.5	4.9	10.5	6.3	7.1	8
Min	4.9	2.4	2.4	7.2	1.6	4.8	2.6	1.8	4.9	6	1	2.4	1.2	2.4	1.2
Max	20.5	29.6	69.7	17.1	66.8	52.8	27.5	53.4	42	19.5	11.8	47.4	21.5	36	69.7

* Age=date of implantation – date birth

Figure 6.2.3: Age Distribution in Years, 1996-2009



6.3 TRANSPLANT PRACTICES

6.3.1 Donor Details

Table 6.3.1: Number of Valves Harvested by Type of Homograft, 1996-2009

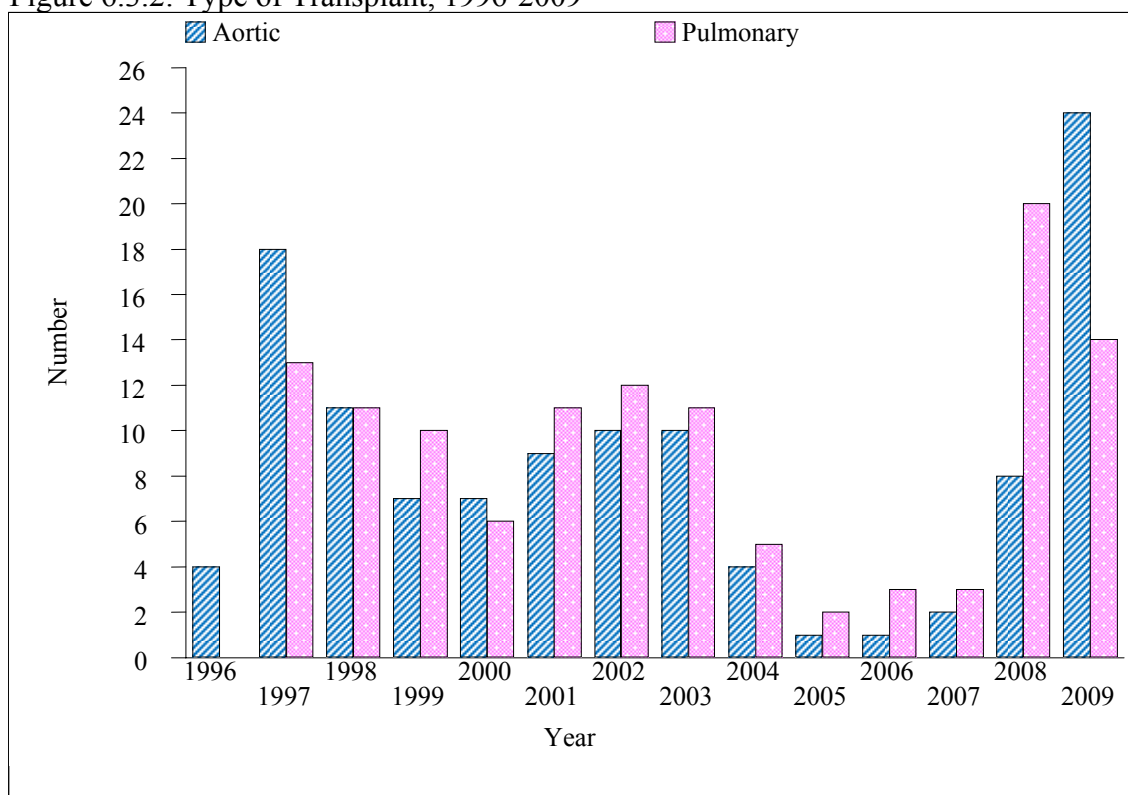
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	TOTAL
Type of homograft	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Aortic	8	17	10	8	11	14	10	8	7	5	14	9	15	17	153
Pulmonary	1	14	11	10	12	12	14	9	8	5	15	8	13	19	151
TOTAL	9	31	21	18	23	26	24	17	15	10	29	17	28	36	304

6.3.2 Transplant Details

Table 6.3.2: Type of Transplant, 1996-2009

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	TOTAL
Type of transplant	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Aortic	4	18	11	7	7	9	10	10	4	1	1	2	8	24	116
Pulmonary	0	13	11	10	6	11	12	11	5	2	3	3	20	14	121
TOTAL	4	31	22	17	13	20	22	21	9	3	4	5	28	38	237

Figure 6.3.2: Type of Transplant, 1996-2009



6.4 TRANSPLANT OUTCOMES

Table 6.4.1: Patient Survival by Gender, 1996-2009

Gender	Male		Female	
	% Survival	SE	% Survival	SE
1	90	3	90	3
3	88	3	86	3
5	86	4	86	3
7	86	4	86	3
9	86	4	83	4
11	86	4	83	4
13	86	4	83	4

SE=standard error

Figure 6.4.1: Patient Survival by Gender, 1996-2009

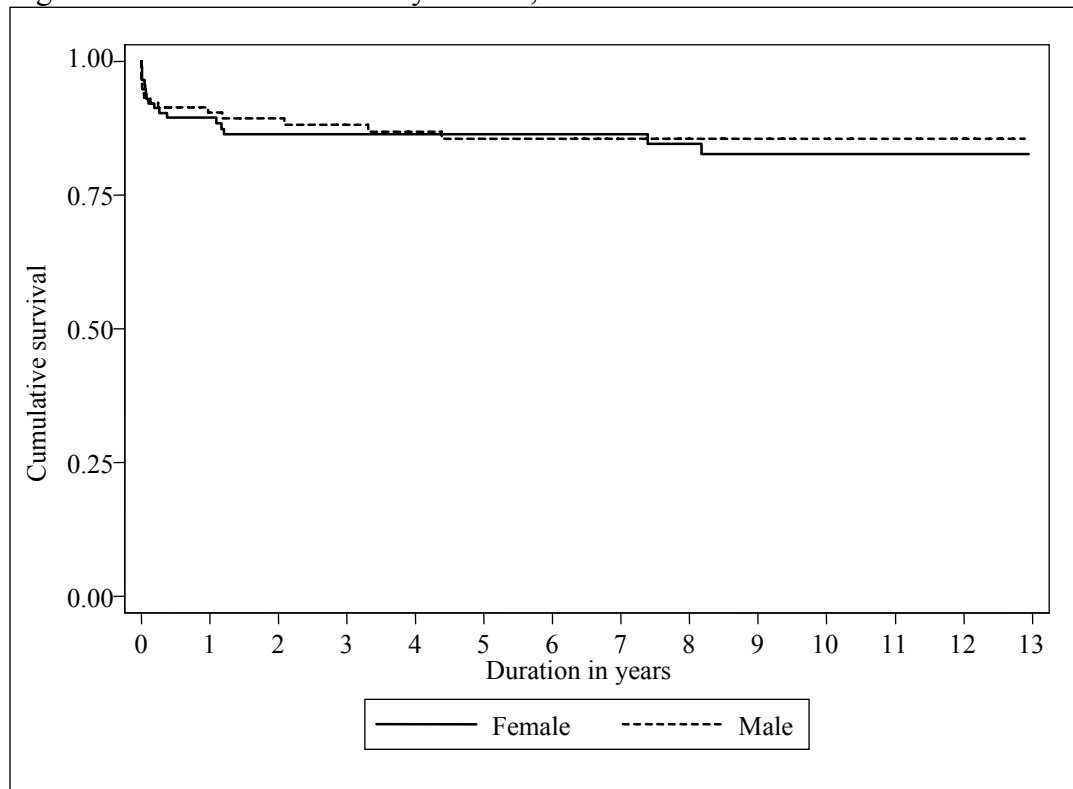


Table 6.4.2: Patient Survival by Age Group, 1996-2009

Age group Interval (months)	0-9 years		10-19 years		≥20 years	
	% Survival	SE	% Survival	SE	% Survival	SE
1	88	3	94	3	90	6
3	87	3	88	4	85	8
5	87	3	86	5	79	9
7	87	3	86	5	79	9
9	86	3	83	5	79	9
11	86	3	83	5	79	9
13	86	3	83	5	79	9

SE=standard error

Figure 6.4.2: Patient Survival by Age Group, 1996-2009

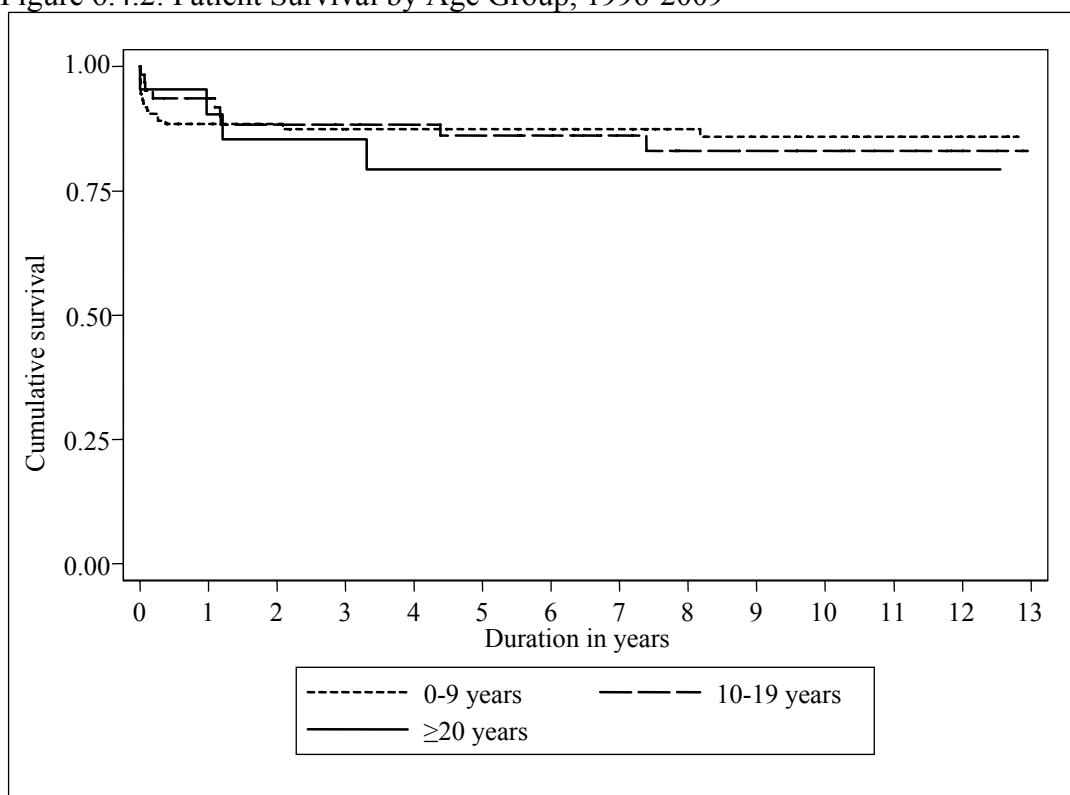


Table 6.4.3: Patient Survival by Type of Homograft, 1996-2009

Type of homograft Interval (years)	Aortic		Pulmonary	
	% Survival	SE	% Survival	SE
1	90	3	90	3
3	85	4	89	3
5	84	4	88	3
7	84	4	88	3
9	81	4	88	3
11	81	4	88	3
13	81	4	88	3

SE=standard error

Figure 6.4.3: Patient Survival by Type of Homograft, 1996-2009

