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.

The continued efforts by the Ministry of Health in promoting organ and tissue donation have helped to improve the availability of homografts in the country. The efficient and better streamlining of organisation structure has improved networking between various hospitals and transplant units with better public and medical staff awareness.

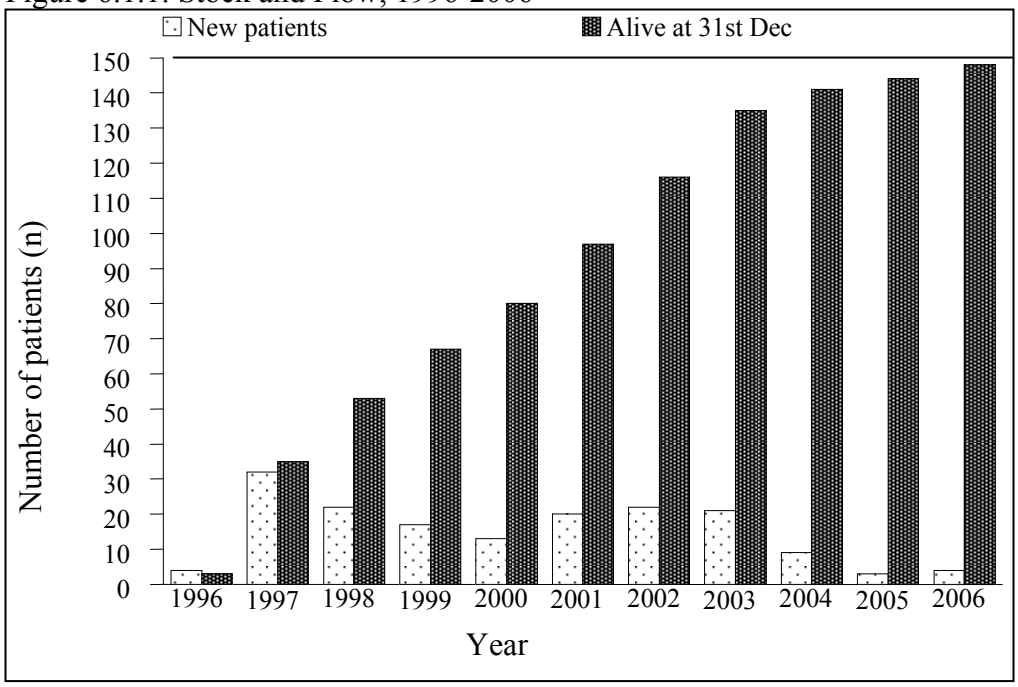
6.1 STOCK AND FLOW

Table 6.1.1: Stock and Flow, 1996-2006

Year	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
New transplant	4	32	22	17	13	20	22	21	9	3	4
Deaths*	1	0	4	3	0	3	3	2	3	0	0
Lost to follow up	0	0	0	0	0	0	0	0	0	0	0
Alive with functioning graft at 31st December	3	35	53	67	80	97	116	135	141	144	148

*based on year of death

Figure 6.1.1: Stock and Flow, 1996-2006



6.2 RECIPIENTS' CHARACTERISTICS

Table 6.2.1: Distribution of Patients by Gender, 1996-2006

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	TOTAL
Gender	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**
Male	2	19	9	9	10	6	9	14	3	0	4	85
Female	2	13	13	8	3	14	13	7	6	3	0	82
TOTAL	**4**	**32**	**22**	**17**	**13**	**20**	**22**	**21**	**9**	**3**	**4**	**167**

Figure 6.2.1: Distribution of Patients by Gender, 1996-2006

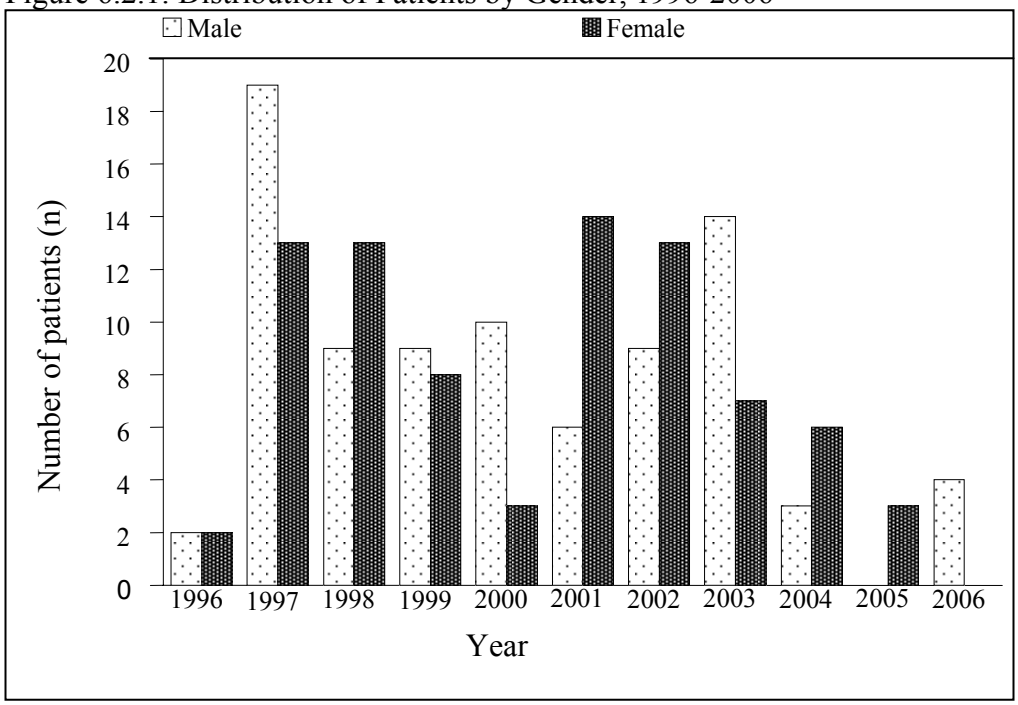


Table 6.2.2: Distribution of Patients by Ethnic Group, 1996-2006

Year	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**TOTAL**
Ethnic group	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**
Malay	1	19	15	9	9	10	16	12	6	3	2	102
Chinese	3	11	4	3	2	9	4	6	1	0	1	44
Indian	0	2	2	2	0	1	2	2	1	0	1	13
Others	0	0	1	3	2	0	0	1	1	0	0	8
TOTAL	**4**	**32**	**22**	**17**	**13**	**20**	**22**	**21**	**9**	**3**	**4**	**167**

Figure 6.2.2: Distribution of Patients by Ethnic Group, 1996-2006

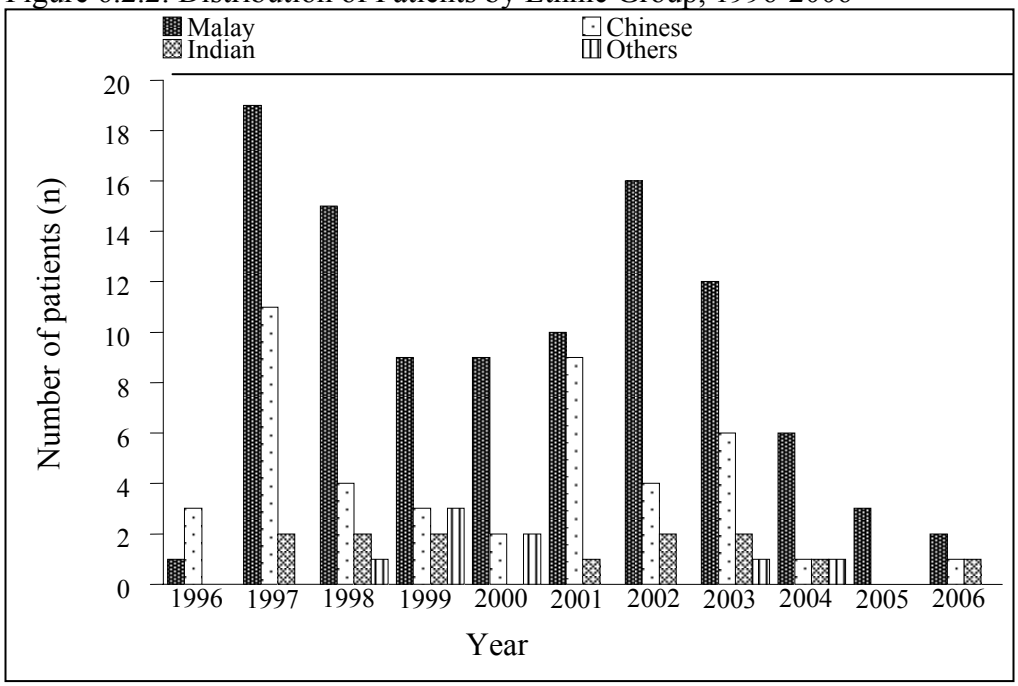
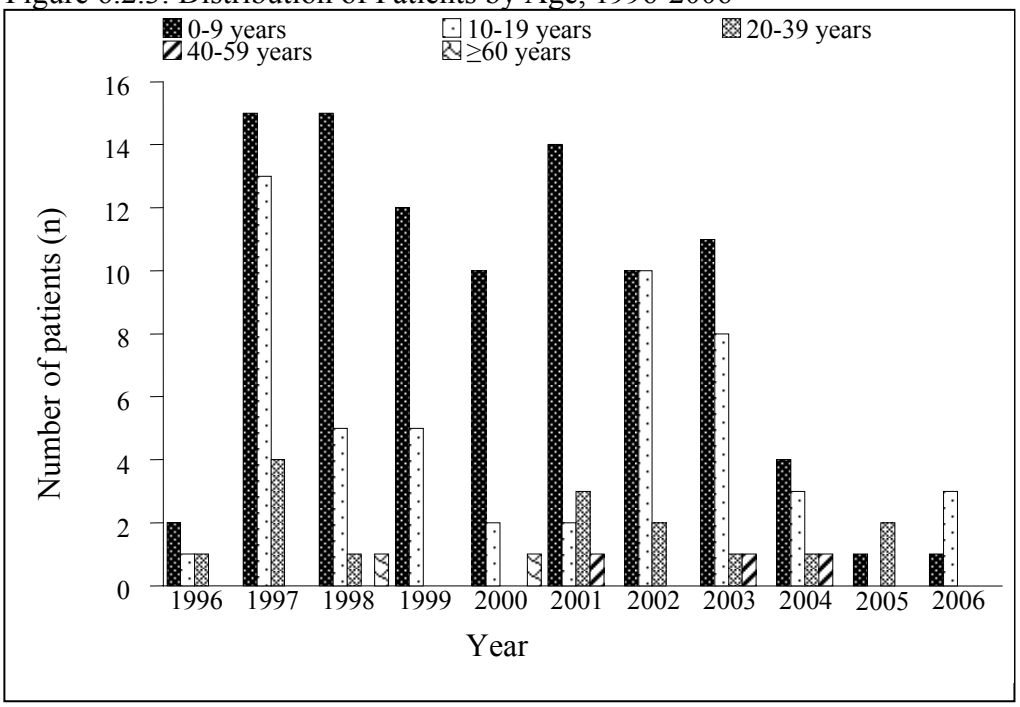


Table 6.2.3: Distribution of Patients by Age, 1996-2006

Year	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**TOTAL**
Age group	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**
0-9	2	15	15	12	10	14	10	11	4	1	1	95
10-19	1	13	5	5	2	2	10	8	3	0	3	52
20-39	1	4	1	0	0	3	2	1	1	2	0	15
40-59	0	0	0	0	0	1	0	1	1	0	0	3
≥60	0	0	1	0	1	0	0	0	0	0	0	2
TOTAL	**4**	**32**	**22**	**17**	**13**	**20**	**22**	**21**	**9**	**3**	**4**	**167**
Mean	12	11	11	7	12	11	10	12	15	15	10	11
SD	7	7	15	4	17	14	6	11	11	8	3	10
Median	11	10	8	7	8	5	10	9	10	20	11	9
Min	5	3 months	3 months	1	2	5 months	3	2	5	6	6	3 months
Max	21	30	70	17	67	53	28	53	42	20	11	70

* Age=date of implantation – date birth

Figure 6.2.3: Distribution of Patients by Age, 1996-2006



6.3 TRANSPLANT PRACTICES

6.3.1 Donor Details

Table 6.3.1: Number of Valves Harvested by Type of Homograft, 1996-2006

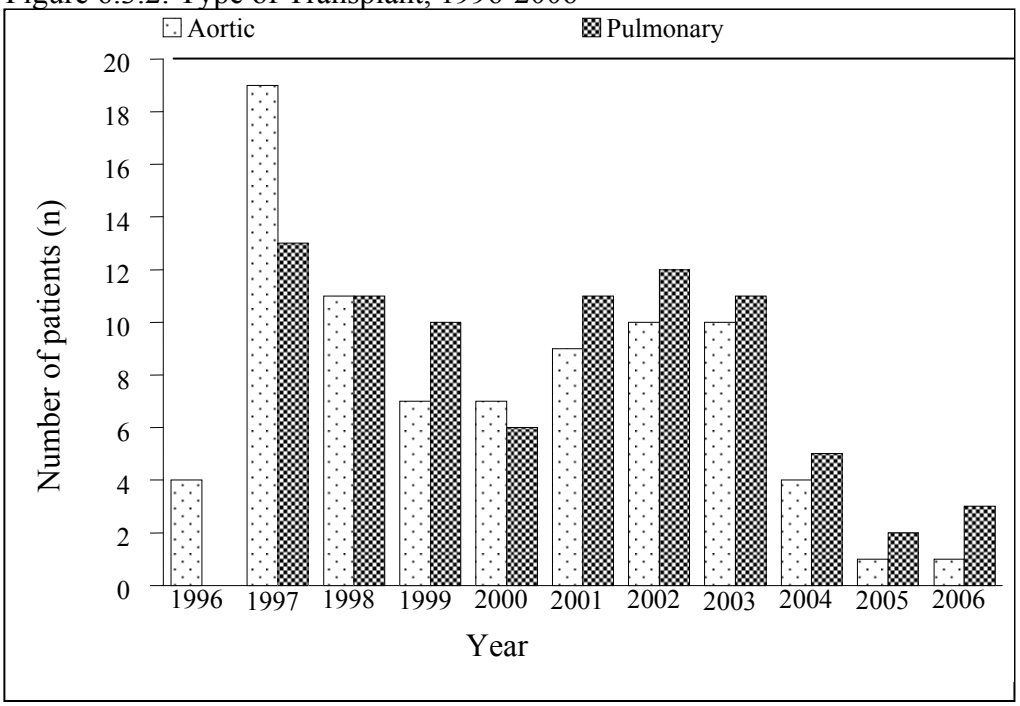
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	TOTAL
Type of homograft	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**
Aortic	8	17	10	8	11	14	10	8	7	4	15	112
Pulmonary	1	14	11	10	12	12	14	9	8	5	15	111
TOTAL	**9**	**31**	**21**	**18**	**23**	**26**	**24**	**17**	**15**	**9**	**30**	**223**

6.3.2 Transplant Details

Table 6.3.2: Type of Transplant, 1996-2006

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	TOTAL
Type of transplant	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**	**No.**
Aortic	4	19	11	7	7	9	10	10	4	1	1	83
Pulmonary	0	13	11	10	6	11	12	11	5	2	3	84
TOTAL	**4**	**32**	**22**	**17**	**13**	**20**	**22**	**21**	**9**	**3**	**4**	**167**

Figure 6.3.2: Type of Transplant, 1996-2006



6.4 TRANSPLANT OUTCOMES

Table 6.4.1: Patient Survival by Gender, 1996-2006

Gender	Male		Female	
Interval (years)	% Survival	SE	% Survival	SE
1	91	3	93	3
3	89	4	91	3
5	89	4	91	3

SE=standard error

Figure 6.4.1: Patient Survival by Gender, 1996-2006

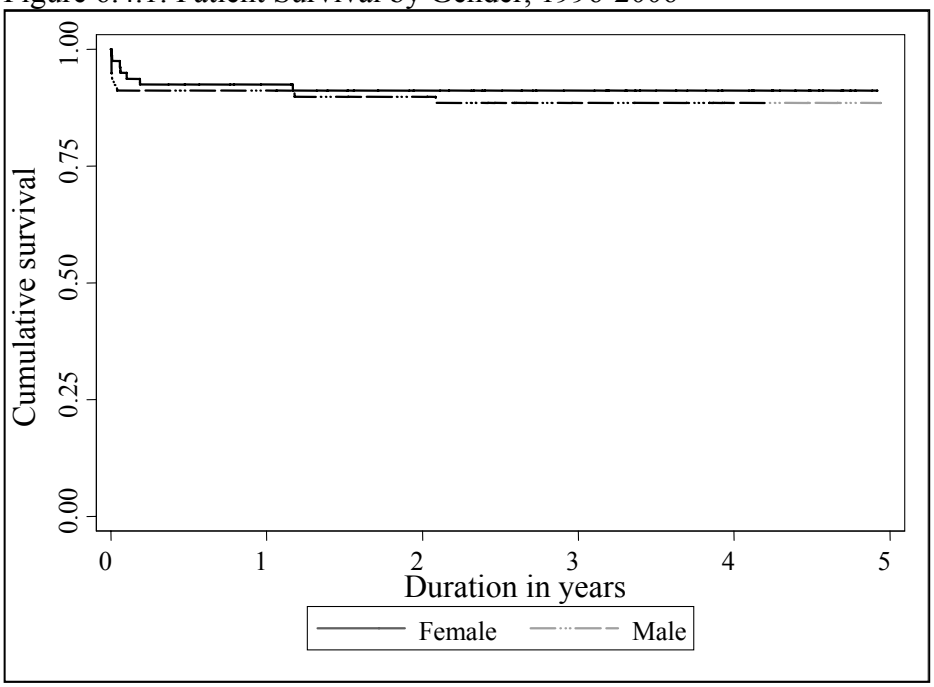


Table 6.4.2: Patient Survival by Age Group, 1996-2006

Age group	**0-9 years**		**10-19 years**		**≥20 years**	
Interval (months)	**% Survival**	**SE**	**% Survival**	**SE**	**% Survival**	**SE**
1	89	3	96	3	95	5
3	88	3	92	4	95	5
5	88	3	92	4	95	5

SE=standard error

Figure 6.4.2: Patient Survival by Age Group, 1996-2006

Table 6.4.3: Patient Survival by Type of Homograft, 1996-2006

Type of homograft	Aortic		Pulmonary	
Interval (years)	% Survival	SE	% Survival	SE
1	93	3	91	3
3	89	4	91	3
5	89	4	91	3

SE=Standard error

Figure 6.4.3: Patient Survival by Type of Homograft, 1996-2006