

## **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 outcome of patients that had been implanted with homografts has been encouraging and these patients have been having good quality of life.

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.

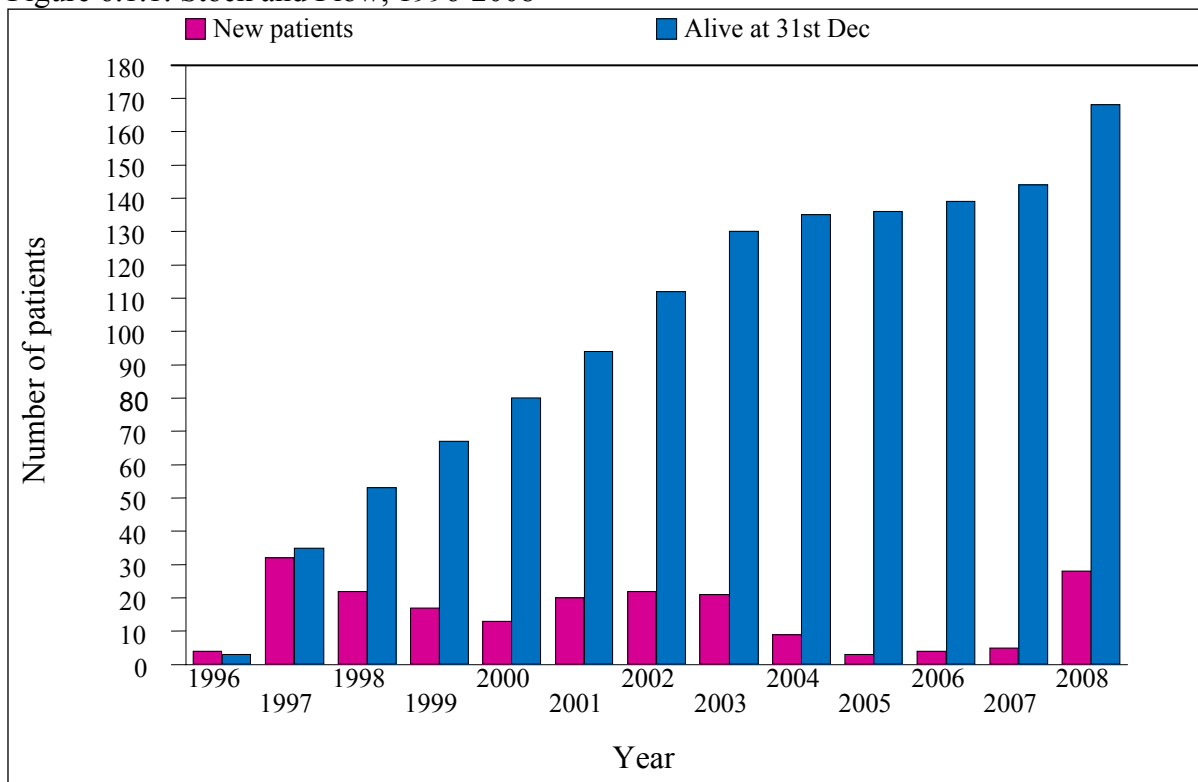
**6.1 STOCK AND FLOW**

Table 6.1.1: Stock and Flow, 1996-2008

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
New transplant	4	32	22	17	13	20	22	21	9	3	4	5	28
Deaths*	1	0	4	3	0	6	4	3	4	2	1	0	3
Lost to follow up	0	0	0	0	0	0	0	0	0	0	0	0	0
Alive with functioning graft at 31 <sup>st</sup> December	3	35	53	67	80	94	112	130	135	136	139	144	168

\*based on year of death

Figure 6.1.1: Stock and Flow, 1996-2008



**6.2 RECIPIENTS' CHARACTERISTICS**

Table 6.2.1: Distribution of Patients by Gender, 1996-2008

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTAL
Gender	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Male	2	19	9	9	10	6	9	14	3	0	4	2	13	100
Female	2	13	13	8	3	14	13	7	6	3	0	3	15	100
<b>TOTAL</b>	<b>4</b>	<b>32</b>	<b>22</b>	<b>17</b>	<b>13</b>	<b>20</b>	<b>22</b>	<b>21</b>	<b>9</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>28</b>	<b>200</b>

Figure 6.2.1: Distribution of Patients by Gender, 1996-2008

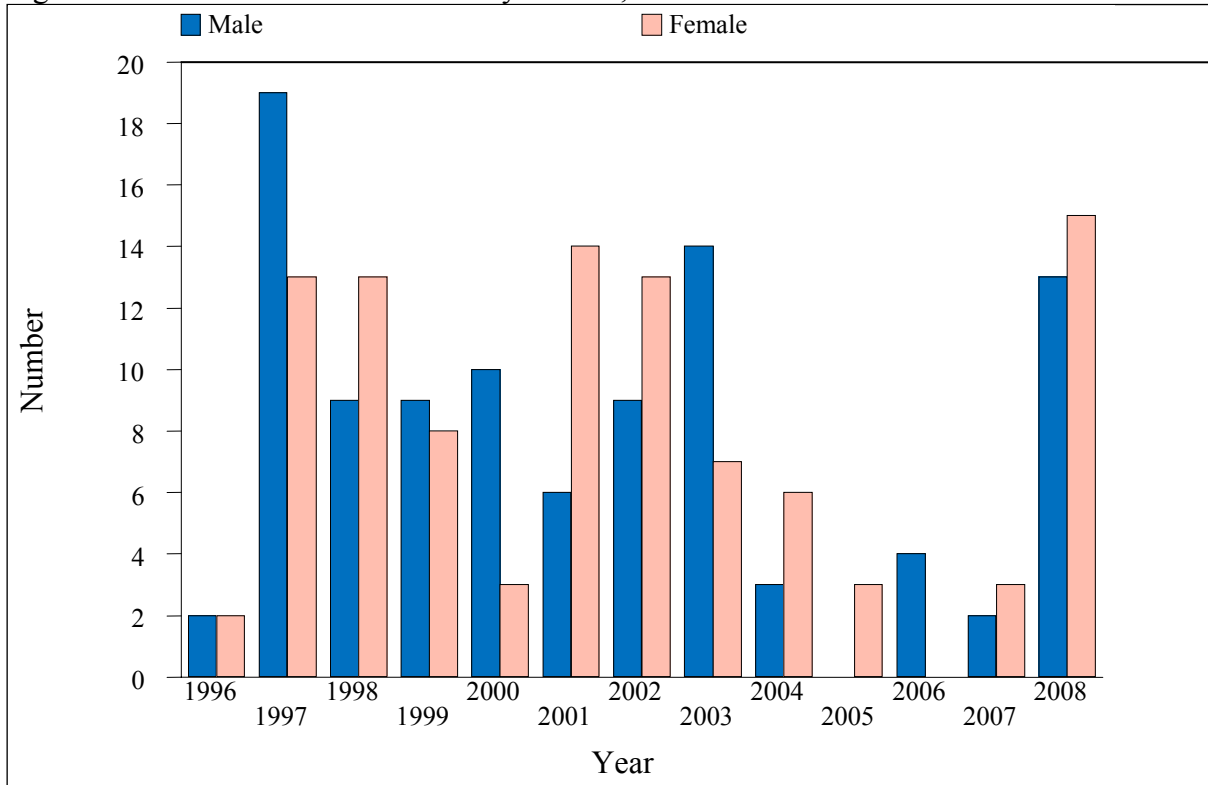


Table 6.2.2: Distribution of Patients by Ethnic Group, 1996-2008

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTAL
Ethnic group	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Malay	1	19	15	9	9	10	16	12	6	3	2	3	18	123
Chinese	3	11	4	3	2	9	4	6	1	0	1	0	7	51
Indian	0	2	2	2	0	1	2	2	1	0	1	0	1	14
Others	0	0	1	3	2	0	0	1	1	0	0	2	2	12
<b>TOTAL</b>	<b>4</b>	<b>32</b>	<b>22</b>	<b>17</b>	<b>13</b>	<b>20</b>	<b>22</b>	<b>21</b>	<b>9</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>28</b>	<b>200</b>

Figure 6.2.2: Distribution of Patients by Ethnic Group, 1996-2008

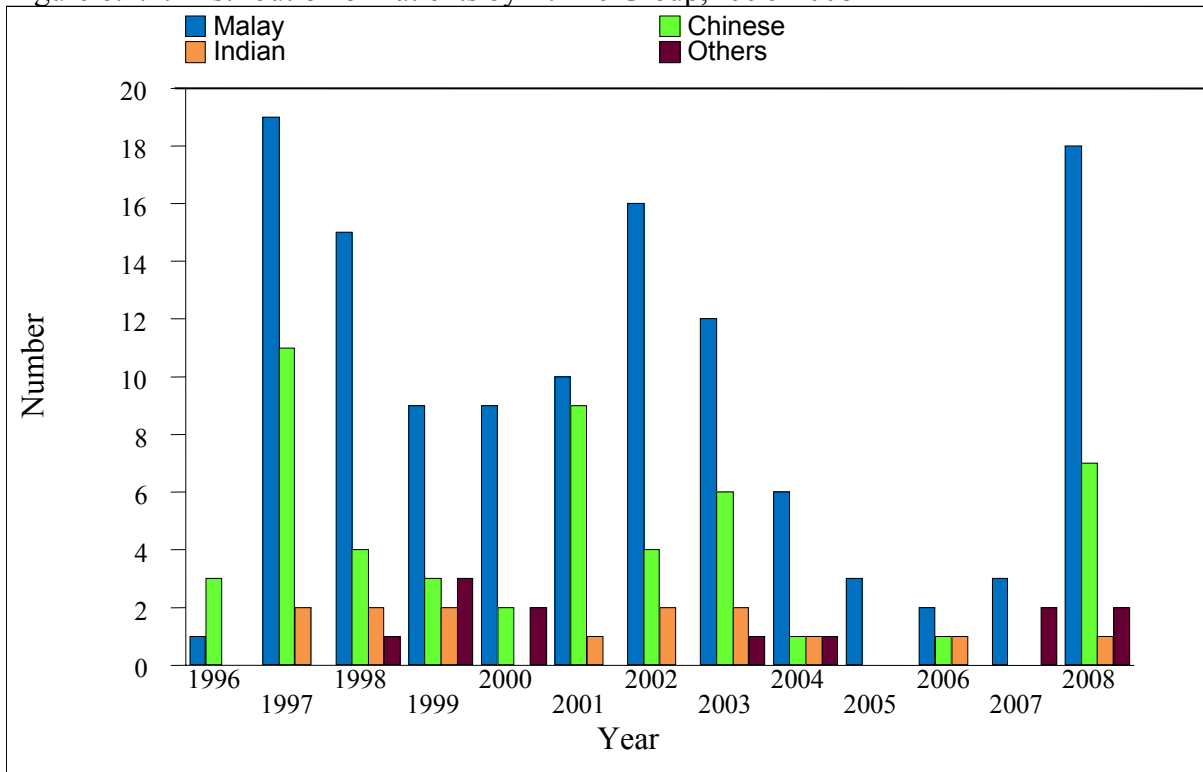
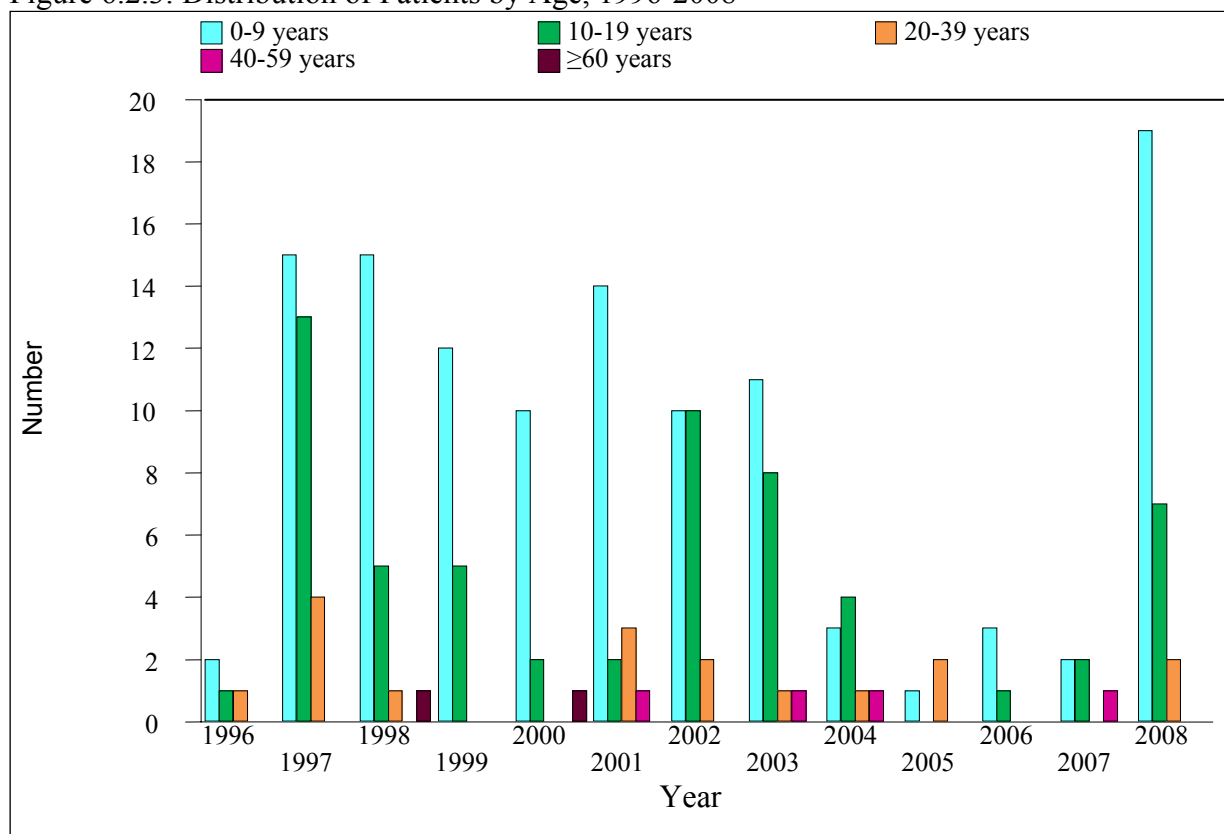


Table 6.2.3: Distribution of Patients by Age, 1996-2008

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTAL
Age group	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
0-9	2	15	15	12	10	14	10	11	3	1	3	2	19	117
10-19	1	13	5	5	2	2	10	8	4	0	1	2	7	60
20-39	1	4	1	0	0	3	2	1	1	2	0	0	2	17
40-59	0	0	0	0	0	1	0	1	1	0	0	1	0	4
≥60	0	0	1	0	1	0	0	0	0	0	0	0	0	2
<b>TOTAL</b>	<b>4</b>	<b>32</b>	<b>22</b>	<b>17</b>	<b>13</b>	<b>20</b>	<b>22</b>	<b>21</b>	<b>9</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>28</b>	<b>200</b>
Mean	12	11	11	7	12	11	10	12	15	15	6	16	7	11
SD	7	7	15	4	17	14	6	11	11	8	5	18	6	10
Median	11	10	8	7	8	5	10	9	10	20	5	11	7	8
Min	5	3 months	3 months	1	2	5 months	3	2	5	6	1	4 months	1 months	1 months
Max	21	30	70	17	67	53	28	53	42	20	12	47	21	70

\* Age=date of implantation – date of birth

Figure 6.2.3: Distribution of Patients by Age, 1996-2008



**6.3 TRANSPLANT PRACTICES**

6.3.1 Donor Details

Table 6.3.1: Number of Valves Harvested by Type of Homograft, 1996-2008

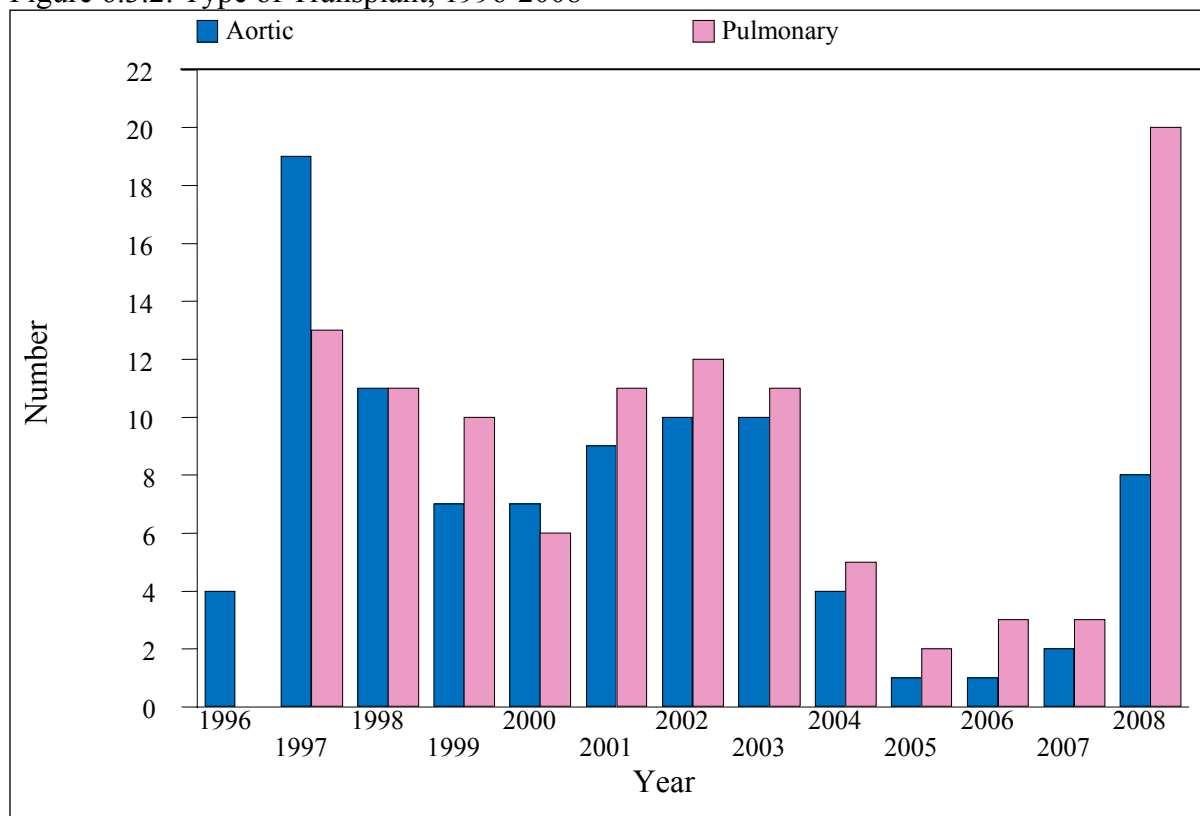
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTAL
<b>Type of homograft</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>
Aortic	8	17	10	8	11	14	10	8	7	5	14	9	15	136
Pulmonary	1	14	11	10	12	12	14	9	8	5	15	8	13	132
<b>TOTAL</b>	<b>9</b>	<b>31</b>	<b>21</b>	<b>18</b>	<b>23</b>	<b>26</b>	<b>24</b>	<b>17</b>	<b>15</b>	<b>10</b>	<b>29</b>	<b>17</b>	<b>28</b>	<b>268</b>

6.3.2 Transplant Details

Table 6.3.2: Type of Transplant, 1996-2008

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTAL
<b>Type of transplant</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>
Aortic	4	19	11	7	7	9	10	10	4	1	1	2	8	93
Pulmonary	0	13	11	10	6	11	12	11	5	2	3	3	20	107
<b>TOTAL</b>	<b>4</b>	<b>32</b>	<b>22</b>	<b>17</b>	<b>13</b>	<b>20</b>	<b>22</b>	<b>21</b>	<b>9</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>28</b>	<b>200</b>

Figure 6.3.2: Type of Transplant, 1996-2008



**6.4 TRANSPLANT OUTCOMES**

Table 6.4.1: Patient Survival by Gender, 1996-2008

Gender	Male		Female	
	% Survival	SE	% Survival	SE
Interval (years)				
1	92	3	89	3
3	89	3	86	4
5	87	4	86	4

SE=standard error

Figure 6.4.1: Patient Survival by Gender, 1996-2008

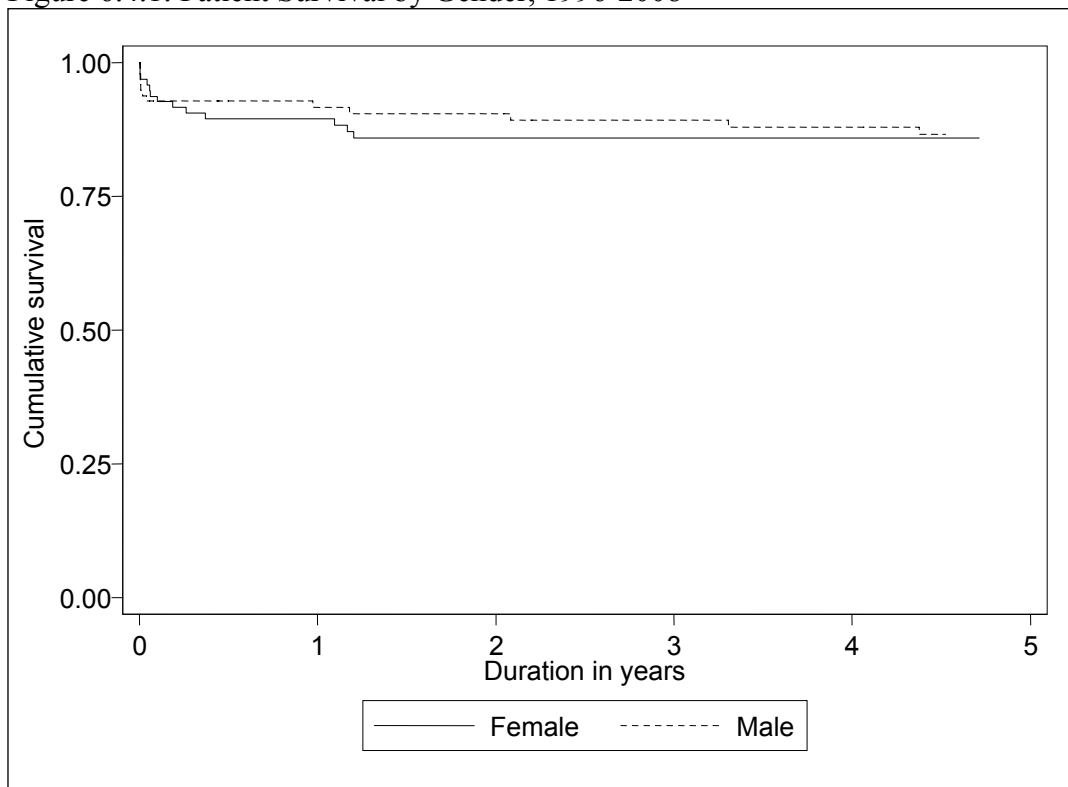


Table 6.4.2: Patient Survival by Age Group, 1996-2008

Age group Interval (months)	0-9 years		10-19 years		≥20 years	
	% Survival	SE	% Survival	SE	% Survival	SE
1	88	3	97	2	85	8
3	87	3	91	4	80	9
5	87	3	89	4	74	10

SE=standard error

Figure 6.4.2: Patient Survival by Age Group, 1996-2008

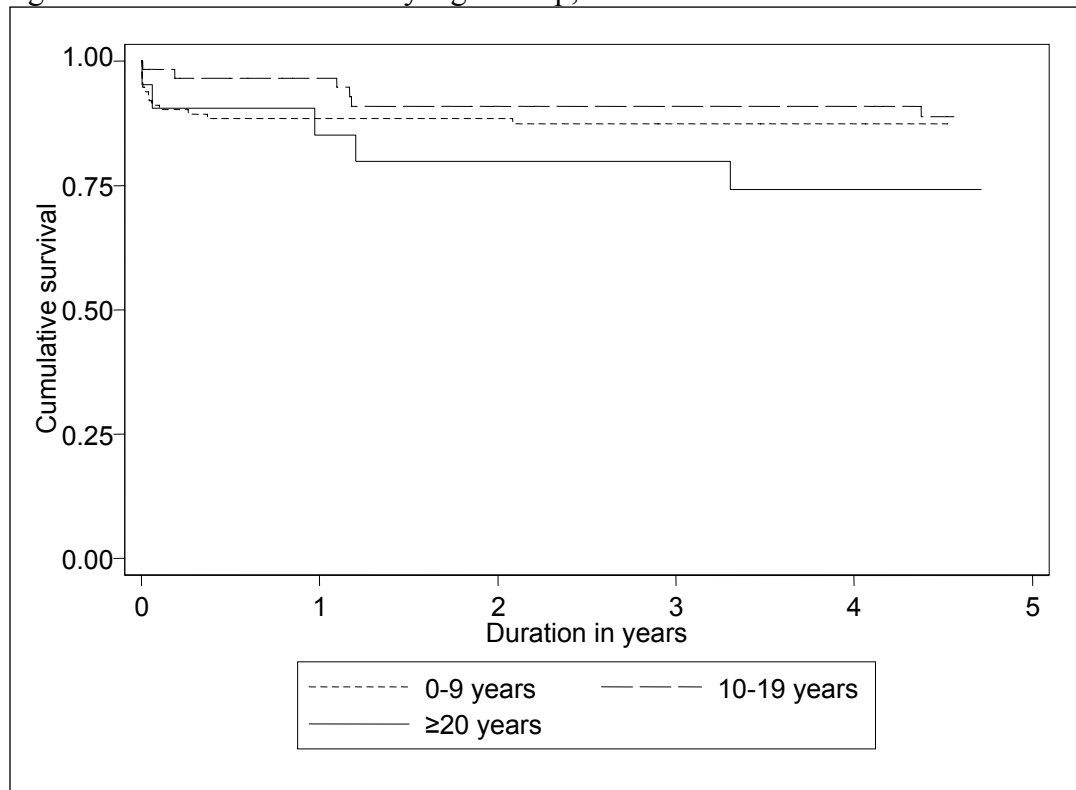


Table 6.4.3: Patient Survival by Type of Homograft, 1996-2008

Type of homograft Interval (years)	Aortic		Pulmonary	
	% Survival	SE	% Survival	SE
1	90	3	91	3
3	85	4	90	3
5	84	4	89	3

SE=standard error

Figure 6.4.3: Patient Survival by Type of Homograft, 1996-2008

