

7 CARDIOTHORACIC ACTIVITY

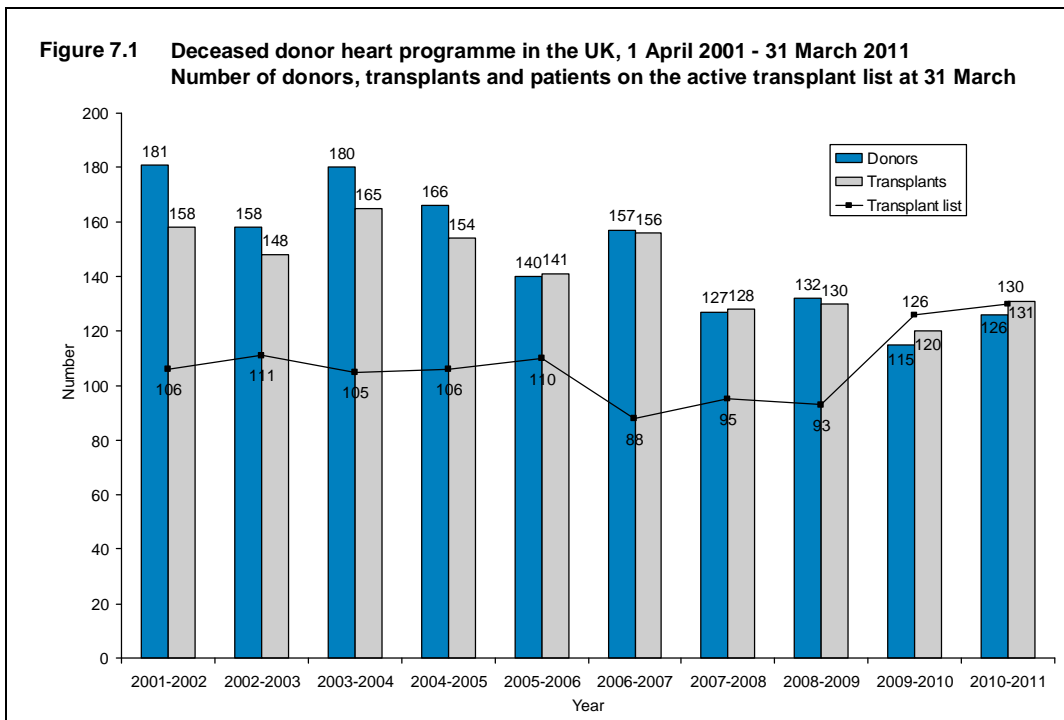
Key messages

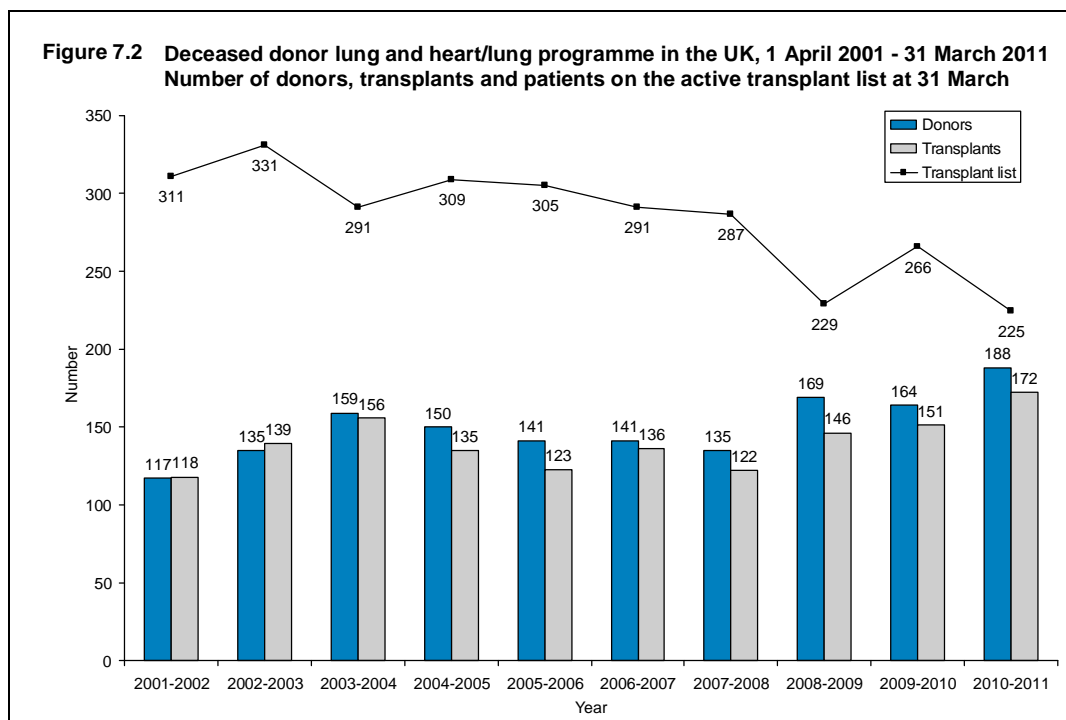
- At 31 March 2011, there were 130 patients on the active heart transplant list, 212 on the lung list and 13 on the heart/lung list
- Of the 637 organ donors after brain death, 227 (36%) were cardiothoracic organ donors
- The number of heart transplants from deceased donors increased by 9% to 131; over half of these were urgent heart transplants
- The number of lung and heart/lung transplants from deceased donors increased by 14% to 172.

7.1 Overview

Last year the number of heart transplants increased by 9% to 131 and the number of lung and heart/lung transplants increased by 14% to 172. The number of patients registered on the active transplant list for a heart has increased by 23% since 2002, while the number of patients registered for a lung or heart/lung transplant has decreased by 28% since 2002.

A summary of the deceased donor cardiothoracic activity from 1 April 2001 to 31 March 2011 is shown in **Figure 7.1** for heart activity and **Figure 7.2** for lung activity. Donors who donate both heart and lung(s) are included in both figures, but heart/lung block transplants and patients active on the transplant list for a heart/lung block are only included in **Figure 7.2**.





7.2 Transplant list

Table 7.1 shows the number of patients on the active transplant lists at 31 March 2011 by centre. The lung transplant list accounts for 60% of the patients waiting for a cardiothoracic transplant. Overall, Newcastle and Harefield have the largest cardiothoracic transplant lists.

During 2010-2011, 195 patients joined the heart transplant list while 11 joined the heart/lung list and 224 joined the lung transplant list. Outcomes for patients on the list at 1 April 2010 and those joining the list during the year are shown in **Table 7.2**.

An indication of longer term outcomes for adult patients listed for a cardiothoracic organ transplant is summarised in **Figure 7.3** and **Figure 7.4**. This shows the proportion of patients transplanted or still waiting six months, one year, two years and three years after joining the non-urgent heart list or the lung list, respectively. It also shows the proportion removed from the transplant list and those dying while on the transplant list. Within six months of listing, 42% of non-urgent heart patients are transplanted while 14% have died while waiting. For patients listed for a lung transplant, only 25% are transplanted within six months, rising to 56% after three years. The patients removed from these lists may also subsequently have died.

Table 7.1 Patients on the cardiothoracic transplant lists at 31 March 2011 (2010) in the UK, by centre

Centre	Active transplant lists								TOTAL	
	Heart		Urgent		Heart/lung		Lung			
	Non-urgent									
Birmingham	8	(14)	2	(0)	2	(3)	20	(21)	32	(38)
Glasgow	6	(7)	0	(0)	0	(0)	0	(1)	6	(8)
Great Ormond Street	9	(7)	3	(3)	2	(0)	10	(6)	24	(16)
Harefield	30	(31)	0	(0)	2	(2)	57	(77)	89	(110)
Manchester	10	(17)	1	(1)	0	(0)	34	(45)	45	(63)
Newcastle ¹	23	(18)	7	(3)	1	(1)	64	(78)	95	(100)
Papworth	30	(24)	1	(1)	6	(6)	27	(26)	64	(57)
TOTAL	116	(118)	14	(8)	13	(12)	212	(254)	355	(392)

¹ Adult and paediatric patients on the transplant list

Table 7.2 Cardiothoracic transplant lists and new registrations in the UK, 1 April 2010 - 31 March 2011

Outcome of patient at 31 March 2011	Active and suspended patients at 1 April 2010		New registrations in 2010-2011 ¹		TOTAL	
	N	%	N	%	N	%
	Heart transplant list					
Remained active/suspended	54	41	84	43	138	42
Transplanted	39	30	85	44	124	38
Removed	28	21	17	9	45	14
Died	10	8	9	5	19	6
TOTAL	131		195		326	
Heart/lung transplant list						
Remained active/suspended	6	46	8	73	14	58
Transplanted ²	1	8	2	18	3	13
Removed	5	38	0	0	5	21
Died	1	8	1	9	2	8
TOTAL	13		11		24	
Lung transplant list						
Remained active/suspended	96	40	110	49	206	44
Transplanted	85	35	84	38	169	36
Removed	27	11	6	3	33	7
Died	35	14	24	11	59	13
TOTAL	243		224		467	

¹ Includes re-registrations for second or subsequent transplants

² Heart, lung or heart/lung

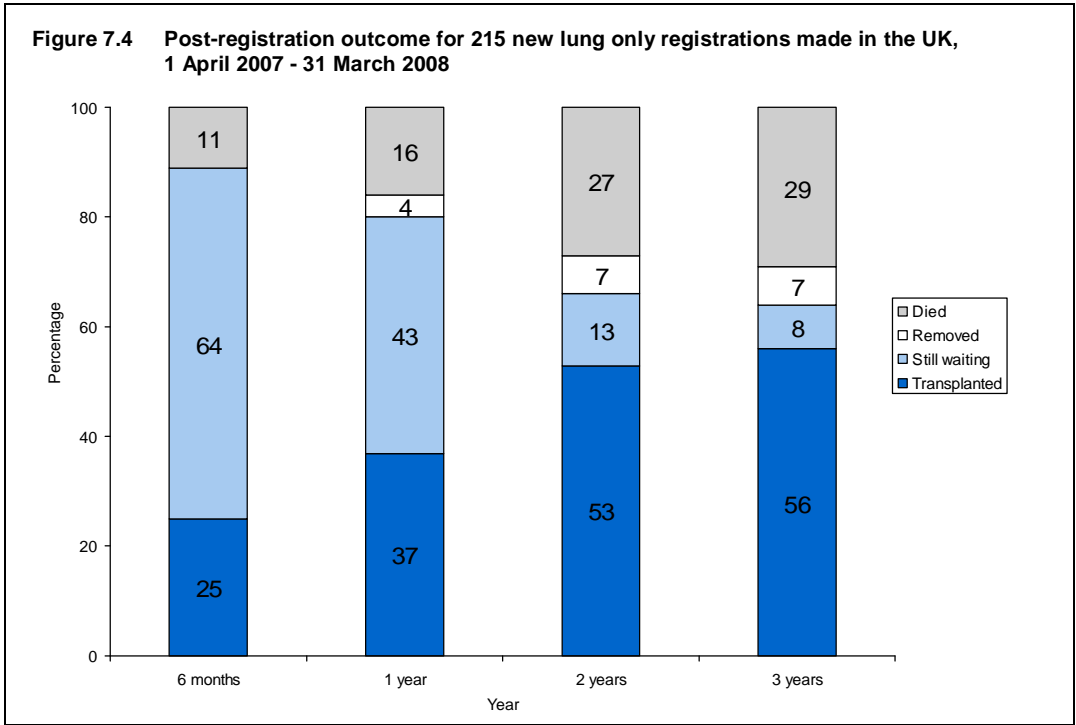
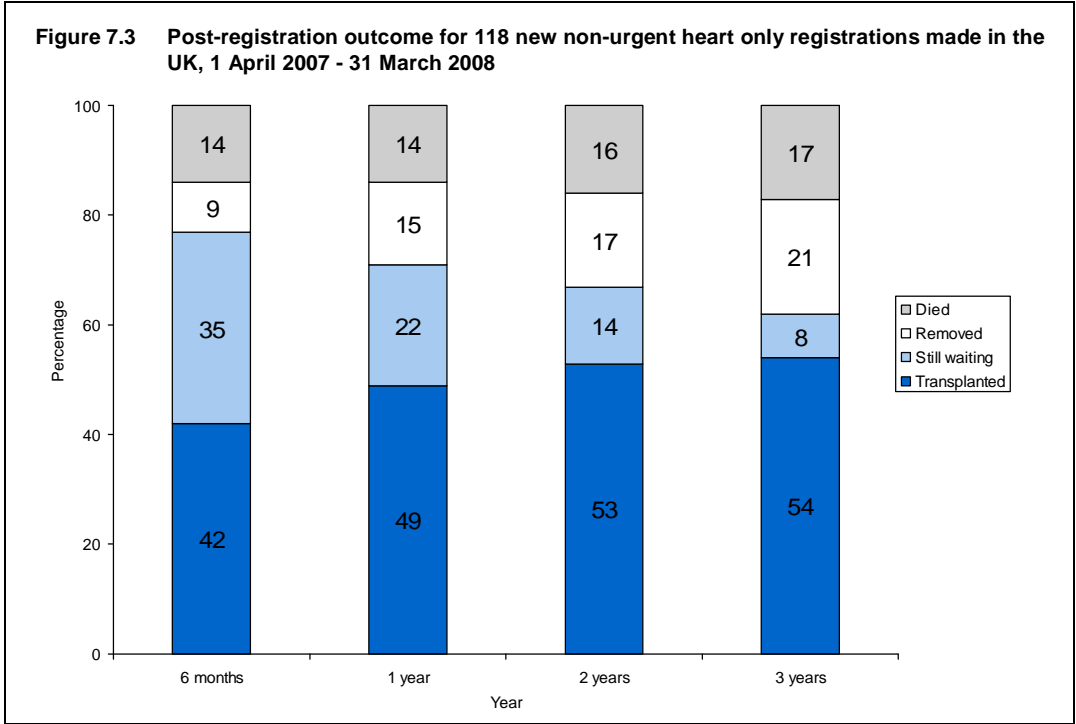


Table 7.3 shows the median waiting time to cardiothoracic transplant by blood group for patients registered between April 2006 and March 2009. Median waiting time for adult non-urgent heart patients is 184 days overall, compared with 511 days for adult lung patients. The median waiting time for paediatric non-urgent heart patients is 93 days; this is not broken down by blood group due to low numbers.

Table 7.3 Median waiting time to cardiothoracic transplant in the UK, for patients registered 1 April 2006 - 31 March 2009

Blood group	Number of patients registered	Waiting time (days)	
		Median	95% Confidence interval
Adult non-urgent heart			
O	112	477	164 - 790
A	127	110	53 - 167
B	35	82	0 - 194
AB	12	54	0 - 124
TOTAL	286	184	118 - 250
Paediatric non-urgent heart	59	93	66 - 120
Adult lung			
O	267	599	526 - 672
A	219	317	199 - 435
B	68	721	194 - 1248
AB	24	162	0 - 438
TOTAL	578	511	449 - 573

Table 7.4 Cardiothoracic organ donors in the UK, 1 April 2010 - 31 March 2011 (2009-2010), by age group and donation zone

Donation zone	Type of cardiothoracic donor						TOTAL	
	Heart only		Heart & lung		Lung(s) only			
Adult								
Birmingham	14	(9)	9	(7)	16	(8)	39	(24)
Glasgow	5	(8)	5	(4)	11	(8)	21	(20)
Harefield	7	(10)	8	(7)	37	(28)	52	(45)
Manchester	5	(4)	7	(5)	10	(18)	22	(27)
Newcastle	12	(10)	11	(13)	24	(20)	47	(43)
Papworth	13	(13)	14	(16)	28	(25)	55	(54)
TOTAL	56	(54)	54	(52)	126¹	(107²)	236¹	(213²)
Paediatric								
Birmingham	0	(1)	0	(1)	0	(0)	0	(2)
Glasgow	3	(0)	1	(0)	0	(0)	4	(0)
Harefield	1	(1)	1	(0)	0	(0)	2	(1)
Manchester	1	(1)	0	(2)	0	(1)	1	(4)
Newcastle	1	(1)	1	(0)	1	(0)	3	(1)
Papworth	3	(3)	4	(0)	0	(1)	7	(4)
TOTAL	9	(7)	7	(3)	1	(2³)	17	(12³)

Paediatric donors are aged 15 years or under

¹ Includes 26 donors after circulatory death

² Includes 17 donors after circulatory death

³ Includes 1 donor after circulatory death (aged 15)

7.3 Donor and organ supply

The number of cardiothoracic organ donors classified by cardiothoracic zone is summarised in **Table 7.4**. The numbers reflect the number of organs retrieved from within each zone (by any NORS team) rather than the number of retrievals made by that centre. 26 of the 126 adult lung only donors were donors after circulatory death and there were no living donors. Of the 210 adult cardiothoracic donors after brain death, 27% donated only the heart, 26% heart and lung and 47% lung only. Of the 17 paediatric cardiothoracic donors after brain death, 53% donated only the heart, 41% heart and lung and 6% lung only.

Table 7.5 shows the number of organ donors after brain death identified in each cardiothoracic zone, the number that donated cardiothoracic organs and the number of organs retrieved.

Of the 637 organ donors after brain death, 36% donated cardiothoracic organs. Overall, 92% of the 436 organs retrieved were transplanted: 97% of hearts and 90% of lungs.

Donation zone	Number of donors		Number of organs retrieved (used)				TOTAL retrieved (used)	
	DBD solid organ	Cardiothoracic	Hearts		Lungs			
Birmingham	107	33	23	(22)	33	(29)	56	(51)
Glasgow	49	24	14	(13)	30	(23)	44	(36)
Harefield	117	46	17	(16)	75	(67)	92	(83)
Manchester	79	21	13	(13)	29	(25)	42	(38)
Newcastle ¹	104	45	25	(25)	61	(58)	86	(83)
Papworth	181	58	34	(33)	82	(76)	116	(109)
TOTAL	637	227	126	(122)	310	(278)	436	(400)

¹ Newcastle transplant adult and paediatric patients

The rates per million population (pmp) for cardiothoracic donors are shown in **Table 7.6** by donor country/ Strategic Health Authority of residence. No adjustments have been made for potential demographic differences in populations. The overall cardiothoracic donor rate was 4.1 pmp in 2010-2011 and varied across the Strategic Health Authorities from 2.8 to 5.2 pmp.

Table 7.6 Cardiothoracic deceased donation rates per million population (pmp) in the UK, 1 April 2010 - 31 March 2011, by country/ Strategic Health Authority¹

Country/ Strategic Health Authority of residence	Heart (pmp)		Lungs (pmp)				Total (pmp)	
	DBD		DBD		DCD			
North East	7	(2.7)	11	(4.3)	0	(0.0)	13	(5.0)
North West	12	(1.7)	11	(1.6)	3	(0.4)	20	(2.9)
Yorkshire and The Humber	8	(1.5)	11	(2.1)	3	(0.6)	18	(3.4)
East Midlands	12	(2.7)	14	(3.1)	3	(0.7)	23	(5.2)
West Midlands	14	(2.6)	10	(1.8)	2	(0.4)	23	(4.2)
East of England	8	(1.4)	12	(2.1)	2	(0.3)	16	(2.8)
London	11	(1.4)	13	(1.7)	2	(0.3)	22	(2.8)
South East Coast	10	(2.3)	13	(3.0)	0	(0.0)	19	(4.4)
South Central	7	(1.7)	18	(4.4)	3	(0.7)	21	(5.1)
South West	5	(1.0)	14	(2.7)	3	(0.6)	20	(3.8)
England	94	(1.8)	127	(2.5)	21	(0.4)	195	(3.8)
Isle of Man	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Channel Islands	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Wales	6	(2.0)	6	(2.0)	3	(1.0)	12	(4.0)
Scotland	12	(2.3)	16	(3.1)	1	(0.2)	23	(4.4)
Northern Ireland	14	(7.8)	13	(7.3)	1	(0.6)	23	(12.8)
TOTAL	126	(2.0)	162	(2.6)	26	(0.4)	253	(4.1)

¹ Includes 4 donors where the hospital postcode was used in place of an unknown donor postcode

7.4 Transplants

The number of cardiothoracic transplants by recipient country/ Strategic Health Authority of residence are shown in **Table 7.7**. No adjustments have been made for potential demographic differences in populations. The transplant rate ranged from 2.2 to 7.5 pmp across the Strategic Health Authorities and overall was 4.7 pmp. Excluded are 12 recipients whose country of residence was the Republic of Ireland.

Table 7.7 Cardiothoracic transplant rates per million population (pmp) in the UK, 1 April 2010 - 31 March 2011, by Country/ Strategic Health Authority

Country/ Strategic Health Authority of residence	Heart (pmp)		Lungs (pmp)				Total (pmp)	
	DBD		DBD		DCD			
North East	4	(1.6)	6	(2.3)	1	(0.4)	11	(4.3)
North West	17	(2.5)	18	(2.6)	1	(0.1)	36	(5.2)
Yorkshire and The Humber	10	(1.9)	13	(2.5)	2	(0.4)	25	(4.8)
East Midlands	5	(1.1)	11	(2.5)	1	(0.2)	17	(3.8)
West Midlands	19	(3.5)	13	(2.4)	0	(0.0)	32	(5.9)
East of England	15	(2.6)	25	(4.3)	3	(0.5)	43	(7.5)
London	8	(1.0)	6	(0.8)	3	(0.4)	17	(2.2)
South East Coast	10	(2.3)	10	(2.3)	1	(0.2)	21	(4.8)
South Central	8	(2.0)	12	(2.9)	2	(0.5)	22	(5.4)
South West	6	(1.1)	8	(1.5)	5	(1.0)	19	(3.6)
England	102	(2.0)	122	(2.4)	19	(0.4)	243	(4.7)
Isle of Man	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Channel Islands	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Wales	6	(2.0)	9	(3.0)	1	(0.3)	16	(5.3)
Scotland	16	(3.1)	6	(1.2)	1	(0.2)	23	(4.4)
Northern Ireland	4	(2.2)	5	(2.8)	0	(0.0)	9	(5.0)
TOTAL¹	128	(2.1)	142	(2.3)	21	(0.3)	291	(4.7)

¹ Excludes 12 recipients who reside outside of the UK (3 DBD heart, 8 DBD lung, 1 DCD lung)

Table 7.8 shows cardiothoracic transplant activity for each centre. In 2010-2011, a total of 303 transplants were carried out, an increase of 11% on 2009-2010. Of these, 43% were deceased donor heart transplants. The 165 adult lung transplants include 22 (13%) from donors after circulatory death: 11 were performed by Harefield, 7 by Newcastle, 3 by Papworth and 1 by Manchester.

Table 7.8 Cardiothoracic transplants, 1 April 2010 - 31 March 2011 (2009-2010), by age group and centre

Transplant centre	Transplant type								TOTAL	
	Heart		Urgent		Heart/lung		Lung(s)			
	Non-urgent									
Adult										
Birmingham	12	(10)	9	(8)	0	(0)	11	(6)	32	(24)
Glasgow	5	(0)	4	(4)	0	(0)	0	(0)	9	(4)
Great Ormond Street	1	(1)	0	(0)	0	(0)	2	(0)	3	(1)
Harefield	3	(9)	6	(4)	0	(0)	58	(35)	67	(48)
Manchester	5	(6)	7	(4)	0	(0)	21	(24)	33	(34)
Newcastle	6	(10)	10	(7)	1	(0)	43	(44)	60	(61)
Papworth	10	(13)	14	(10)	2	(5)	30	(29)	56	(57)
TOTAL	42	(49)	50	(37)	3	(5)	165¹	(138²)	260¹	(229²)
Paediatric										
Great Ormond Street	2	(7)	16	(12)	0	(0)	3	(7)	21	(26)
Newcastle	4	(2 ³)	17	(14)	0	(0)	1	(1)	22	(17)
TOTAL	6	(9³)	33	(26)	0	(0)	4	(8)	43	(43)

Paediatric recipients are aged under 16 years at time of transplant

¹ Includes 22 DCD donor transplants

² Includes 15 DCD donor transplants

³ Includes one domino donor transplant

There were 50 adult urgent heart transplants in 2010-2011, representing 54% of all adult heart transplants (43% in 2009-2010). There were 33 paediatric urgent heart transplants in 2010-2011, representing 85% of all paediatric heart transplants (74% in 2009-2010).

At 31 March 2011 there were approximately 3,600 recipients with a functioning cardiothoracic organ transplant being followed-up, as reported to the UK Transplant Registry.

7.5 Demographic characteristics

The ethnicity of cardiothoracic donors, transplant recipients and patients on the transplant list is shown in **Table 7.9**. While 6% of donors in 2010-2011 were non-white, 6% of the transplant list at 31 March 2011 and 8% of transplant recipients in the year were non-white.

Ethnicity	Donors		Transplant recipients				Active transplant list patients					
	2009-2010		2010-2011		2009-2010		2010-2011		2010		2011	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
White	212	(94.2)	237	(93.7)	244	(89.7)	279	(92.1)	366	(93.4)	333	(93.8)
Asian	2	(0.9)	2	(0.8)	17	(6.3)	17	(5.6)	13	(3.3)	12	(3.4)
Black	5	(2.2)	4	(1.6)	4	(1.5)	3	(1.0)	9	(2.3)	8	(2.3)
Chinese	2	(0.9)	2	(0.8)	0	(0.0)	2	(0.7)	0	(0.0)	0	(0.0)
Other	4	(1.8)	8	(3.2)	7	(2.6)	2	(0.7)	4	(1.0)	2	(0.6)
TOTAL	225		253		272		303		392		355	

Of the 303 cardiothoracic organ transplant recipients, 52% were male compared with 51% of donors and 54% of the transplant list; see **Table 7.10**. Of the 253 cardiothoracic organ donors, 4% were aged ≥ 60 years compared with 11% of recipients and 17% of the transplant list.

Age group (years)	Donors		Transplant recipients		Active transplant list patients	
	N	(%)	N	(%)	N	(%)
0 - 17	19	(8)	50	(17)	35	(10)
18 - 34	67	(26)	57	(19)	85	(24)
35 - 49	101	(40)	73	(24)	85	(24)
50 - 59	55	(22)	90	(30)	91	(26)
60 - 69	11	(4)	33	(11)	59	(17)
TOTAL	253	(100)	303	(100)	355	(100)
% Male		(51)		(52)		(54)