

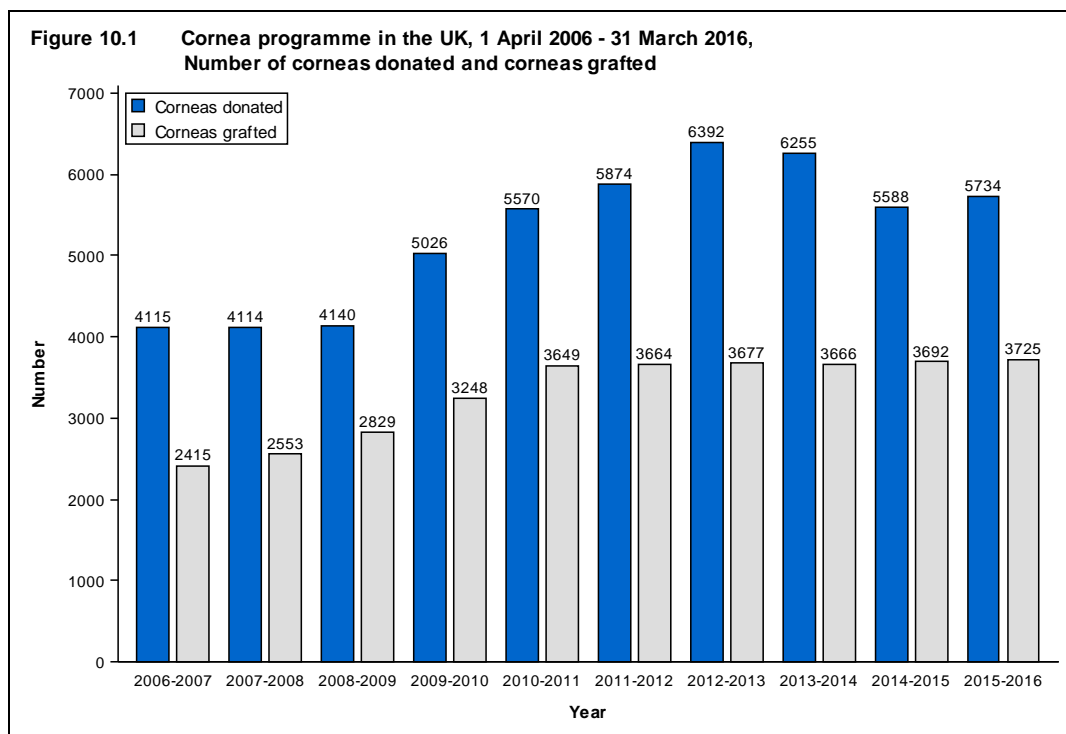
# Cornea Activity

## Key messages

- 5,251 corneas were supplied to the Corneal Transplant Service (CTS) Eye Banks
- The number of transplants remained stable at 3,779
- Corneas were retrieved from 25% of solid organ donors after brain death and 30% of solid organ donors after circulatory death
- 17% of cornea only donors were 80 years of age or over

## 10.1 Overview

The number of corneas donated in 2015-2016 was 5,734, representing an increase of 3% on last year, as shown in **Figure 10.1**. The number of corneas transplanted increased by 1% in 2015-2016. Additionally, 118 sclera were issued and used. **It should be noted that not all cornea donors and transplants in the UK are reported to the UK Transplant Registry and thus the data reported are not the full national data.**



In 2015-2016 there were 3,045 corneal donors, of whom 2,675 donated corneas only and 370 donated corneas and solid organs: see **Table 10.1**. Compared to 2014-2015, the number of cornea only donors increased by 9%, and the number of cornea and solid organ donors decreased by 8%. In 2014-2015, corneas were retrieved from 31% of organ donors after brain death, this fell to 25% in 2015-2016. Of the 579 organ donors after circulatory death in 2015-2016, 172 (30%) also donated corneas, lower than the rate in 2014-2015 (31%).

**Table 10.1** also shows the number and rate per million population (pmp) of donors in 2015-2016 by country and English Strategic Health Authority (SHA), with figures for 2014-2015 in parentheses. No adjustments have been made for potential demographic differences in populations. England had the highest cornea donor rate of countries in the UK in 2015-2016 (47.6 pmp). In 2015-2016, the cornea donor rate increased in England and Wales but fell in Scotland and Northern Ireland. Across the SHAs the cornea donor rate ranged from 6.8 pmp to 92.3 pmp, reflecting locations of the Eye Retrieval Scheme Trusts.

<b>Table 10.1 Cornea donation rates per million population, pmp, in the UK, 1 April 2015 - 31 March 2016 (2014 - 2015), by country/ Strategic Health Authority</b>								
<b>Country of residence/ Strategic Health Authority</b>	<b>Cornea only</b>		<b>Solid organ and cornea</b>		<b>TOTAL</b>		<b>TOTAL pmp</b>	
North East	171	(185)	19	(20)	190	(205)	72.5	(78.2)
North West	614	(643)	44	(28)	658	(671)	92.3	(94.1)
Yorkshire and The Humber	71	(60)	24	(35)	95	(95)	17.7	(17.7)
<b>North of England</b>	<b>856</b>	<b>(888)</b>	<b>87</b>	<b>(83)</b>	<b>943</b>	<b>(971)</b>	<b>62.4</b>	<b>(64.3)</b>
East Midlands	164	(188)	16	(23)	180	(211)	38.8	(45.5)
West Midlands	83	(67)	21	(19)	104	(86)	18.2	(15.1)
East of England	170	(201)	32	(50)	202	(251)	33.6	(41.7)
<b>Midlands and East</b>	<b>417</b>	<b>(456)</b>	<b>69</b>	<b>(92)</b>	<b>486</b>	<b>(548)</b>	<b>29.7</b>	<b>(33.5)</b>
<b>London</b>	<b>342</b>	<b>(191)</b>	<b>50</b>	<b>(66)</b>	<b>392</b>	<b>(257)</b>	<b>45.9</b>	<b>(30.1)</b>
South East Coast	22	(67)	9	(35)	31	(102)	6.8	(22.2)
South Central	244	(188)	26	(27)	270	(215)	62.9	(50.1)
South West	427	(400)	38	(49)	465	(449)	85.8	(82.8)
<b>South of England</b>	<b>693</b>	<b>(655)</b>	<b>73</b>	<b>(111)</b>	<b>766</b>	<b>(766)</b>	<b>53.6</b>	<b>(53.6)</b>
<b>England</b>	<b>2308</b>	<b>(2190)</b>	<b>279</b>	<b>(352)</b>	<b>2587</b>	<b>(2542)</b>	<b>47.6</b>	<b>(46.8)</b>
<b>Isle of Man</b>	<b>0</b>	<b>(0)</b>	<b>0</b>	<b>(0)</b>	<b>0</b>	<b>(0)</b>	<b>0</b>	<b>(0.0)</b>
<b>Channel Islands</b>	<b>0</b>	<b>(0)</b>	<b>0</b>	<b>(0)</b>	<b>0</b>	<b>(0)</b>	<b>0</b>	<b>(0.0)</b>
<b>Wales</b>	<b>89</b>	<b>(67)</b>	<b>18</b>	<b>(14)</b>	<b>107</b>	<b>(81)</b>	<b>34.6</b>	<b>(26.2)</b>
<b>Scotland</b>	<b>118</b>	<b>(123)</b>	<b>24</b>	<b>(24)</b>	<b>142</b>	<b>(147)</b>	<b>26.5</b>	<b>(27.5)</b>
<b>Northern Ireland</b>	<b>36</b>	<b>(46)</b>	<b>8</b>	<b>(11)</b>	<b>44</b>	<b>(57)</b>	<b>23.9</b>	<b>(31.0)</b>
<b>TOTAL<sup>1</sup></b>	<b>2675</b>	<b>(2463)</b>	<b>370<sup>2</sup></b>	<b>(401)</b>	<b>3045<sup>2</sup></b>	<b>(2864)</b>	<b>46.3</b>	<b>(47.0)</b>

<sup>1</sup> Includes UK recipients where the postcode was unspecified and non-UK recipients  
<sup>2</sup> Includes 40 cases not reported to UK Transplant Registry

## 10.2 Donor and corneal tissue supply

In 2015-2016, 91.6% (89.9% in 2014-2015) of retrieved corneas reported to the UK Transplant Registry were supplied to the Corneal Transplant Service (CTS) Eye Banks in Bristol and Manchester. **Table 10.2** shows the number of corneas supplied to, and taken from, the CTS Eye Banks for those centres that supplied more than 25 corneas in 2015-2016. The difference between the number supplied and number taken is also shown, together with the number of corneas that were deemed suitable for a penetrating keratoplasty (PK). Corneas that are not suitable for PK may be suitable for other types of corneal transplant. Centres with a negative balance have taken more corneas than they supplied to the CTS Eye Banks.

Of the 5,251 corneas supplied to the CTS Eye Banks, 3,711 (71%) were suitable for a PK. This was an increase compared with 2014-2015, when 69% of corneas supplied to the CTS Eye Banks were suitable for a PK.

**Table 10.2 Corneas supplied to and taken from the CTS Eye Banks,  
1 April 2015 - 31 March 2016**

<b>Centre</b>	<b>Corneas supplied</b>	<b>Suitable for PK (%)</b>		<b>Corneas taken</b>	<b>Balance</b>
ERS Royal Devon	394	261	(66)	49	345
ERS Preston	339	249	(73)	4	335
ERS Merseyside	332	223	(67)	115	217
ERS Southampton	327	231	(71)	95	232
ERS Newcastle	310	225	(73)	106	204
ERS Norfolk	300	218	(73)	45	255
ERS Nottingham	276	179	(65)	124	152
ERS Glasgow	215	159	(74)	159	56
Leeds Alliance	174	135	(78)	0	174
ERS Bereavement Alliance Supercentre	160	131	(82)	20	140
ERS Bristol Supercentre	157	108	(69)	127	30
Belfast, Royal Victoria Hospital	60	50	(83)	57	3
Portsmouth, Queen Alexandra Hospital	60	35	(58)	33	27
Barnstaple, North Devon District Hospital	58	41	(71)	0	58
Lancaster, Royal Lancaster Hospital	56	37	(66)	0	56
ERS Leeds Supercentre	50	33	(66)	74	-24
Cardiff, University of Wales Hospital	44	24	(55)	7	37
Taunton, Taunton & Somerset Hospital	32	24	(75)	0	32
Blackburn, Royal Infirmary	32	23	(72)	0	32
Middlesbrough, James Cook University Hospital	30	18	(60)	10	20
Oxford, John Radcliffe Hospital	30	23	(77)	32	-2
Northampton, General Hospital	27	18	(67)	11	16
Reading, Royal Berkshire Hospital	26	21	(81)	43	-17
Plymouth, Royal Eye Infirmary	26	18	(69)	51	-25
<b>Eye retrieval scheme centres</b>	<b>2860</b>	<b>2017</b>	<b>(71)</b>	<b>918</b>	<b>1942</b>
<b>Centres supplying more than 25 corneas</b>	<b>655</b>	<b>467</b>	<b>(71)</b>	<b>244</b>	<b>411</b>
<b>All other centres</b>	<b>1736</b>	<b>1227</b>	<b>(71)</b>	<b>2194</b>	<b>-458</b>
<b>TOTAL</b>	<b>5251</b>	<b>3711</b>	<b>(71)</b>	<b>3356</b>	<b>1895</b>

PK - Penetrating keratoplasty

### 10.3 CTS Eye Bank activity

The activity levels for the Bristol and Manchester Eye Banks are shown in **Table 10.3**. The numbers of corneas received by the CTS Eye Banks increased in 2015-2016 by 5%, and the number of corneas issued increased by 6%. In 2015-2016, 5,251 corneas were received into the CTS Eye Banks, of which 3,708 (71%) were subsequently issued for grafting. The remaining corneas were unsuitable for transplantation.

<b>Table 10.3 Corneas received into the Bristol and Manchester Eye Banks, 1 April 2015 - 31 March 2016 (2014-2015), by year</b>								
	Total received		Number issued <sup>1</sup>		% issued		Difference between number received and issued	
Bristol	2308	(2335)	1583	(1568)	69	(67)	725	(767)
Manchester	2943	(2682)	2125	(1917)	72	(71)	818	(765)
<b>Total</b>	<b>5251</b>	<b>(5017)</b>	<b>3708</b>	<b>(3485)</b>	<b>71</b>	<b>(69)</b>	<b>1543</b>	<b>(1532)</b>

<sup>1</sup> Number issued of those received in each year

The outcome of corneas received into the CTS Eye Banks is given in **Table 10.4**. Of the corneas supplied to the Eye Banks in 2015-2016, 64% were issued and used and 6% were issued but not used. Of the corneas supplied to the Eye Banks, 12% were unsuitable because of medication contraindications, 13% were unsuitable due to tissue quality and 3% were discarded because of bacterial or fungal contamination. Less than 1% of corneas became outdated, that is, they exceeded 28 days storage. Corneas that were unsuitable for transplantation were, where possible, used for research when permission had been given by the relatives.

**Table 10.4 Outcome of corneas received into the Bristol and Manchester Eye Banks, 1 April 2015 - 31 March 2016 (2014 - 2015), by year**

Outcome of cornea	Bristol				Manchester				TOTAL			
	N		%		N		%		N		%	
<b>Used</b>												
Suitable for PK/EK <sup>1</sup>	1458	(1405)	63	(60)	1917	(1781)	65	(66)	3375	(3186)	64	(63)
Unsuitable for PK/EK <sup>1</sup>	5	(28)	<1	(1)	4	(6)	<1	(<1)	9	(34)	<1	(1)
Other/ not reported	1	(1)	<1	(<1)	1	(0)	<1	(0)	2	(1)	<1	(<1)
<b>Total used</b>	<b>1464</b>	<b>(1434)</b>	<b>63</b>	<b>(61)</b>	<b>1922</b>	<b>(1787)</b>	<b>65</b>	<b>(67)</b>	<b>3386</b>	<b>(3221)</b>	<b>64</b>	<b>(64)</b>
<b>Not used</b>												
Issued, not used	119	(134)	5	(6)	203	(130)	7	(5)	322	(264)	6	(5)
Unsuitable - tissue quality	331	(388)	14	(17)	330	(420)	11	(16)	661	(808)	13	(16)
Medical reason - virology	115	(58)	5	(2)	100	(52)	3	(2)	215	(110)	4	(2)
Medical reason - other	153	(195)	7	(8)	249	(199)	8	(7)	402	(394)	8	(8)
Contaminated	79	(75)	3	(3)	78	(77)	3	(3)	157	(152)	3	(3)
Outdated	25	(36)	1	(2)	9	(1)	<1	(<1)	34	(37)	1	(1)
Other/not reported	22	(15)	1	(1)	52	(16)	2	(1)	74	(31)	1	(1)
<b>Total not used</b>	<b>844</b>	<b>(901)</b>			<b>1021</b>	<b>(895)</b>			<b>1865</b>	<b>(1796)</b>		
<b>TOTAL</b>	<b>2308</b>	<b>(2335)</b>	<b>100</b>	<b>(100)</b>	<b>2943</b>	<b>(2682)</b>	<b>100</b>	<b>(100)</b>	<b>5251</b>	<b>(5017)</b>	<b>100</b>	<b>(100)</b>

<sup>1</sup> PK=penetrating keratoplasty, EK=endothelial keratoplasty. In addition to PK and EK, these corneas would also have been allocated for DALK. Corneas unsuitable for PK/EK would have been allocated for anterior lamellar procedures other than DALK.

## 10.4 Transplants

Corneal transplant activity by country of residence and Strategic Health Authority in England for the years 2014-2015 and 2015-2016 is detailed in **Table 10.5** for corneas supplied through the CTS Eye Banks and others that have been reported to the UK Transplant Registry from Moorfields and East Grinstead Eye Banks. No adjustments have been made for potential demographic differences in populations. The overall transplant rate was 57.9 pmp in 2014-2015; this increased slightly to 58.3 pmp in 2015-2016. The transplant rates increased in all countries. England had the second highest transplant rate in the UK: 60.6 pmp, this ranged from 48.5 pmp to 68.1 pmp across the SHAs.

**Table 10.5 Cornea transplants performed per million population (pmp) in the UK, 1 April 2014 - 31 March 2016, by country/ Strategic Health Authority**

Country of residence/ Strategic Health Authority	Number of transplants (pmp)			
	2014-2015		2015-2016	
North East	130	(49.6)	127	(48.5)
North West	428	(60.0)	480	(67.3)
Yorkshire and The Humber	375	(70.0)	348	(64.9)
<b>North of England</b>	<b>933</b>	<b>(61.7)</b>	<b>955</b>	<b>(63.2)</b>
East Midlands	265	(57.1)	281	(60.6)
West Midlands	376	(65.8)	295	(51.7)
East of England	362	(60.1)	392	(65.1)
<b>Midlands and East</b>	<b>1003</b>	<b>(61.3)</b>	<b>968</b>	<b>(59.1)</b>
<b>London</b>	<b>534</b>	<b>(62.5)</b>	<b>481</b>	<b>(56.3)</b>
South East Coast	275	(59.9)	254	(55.3)
South Central	246	(57.3)	264	(61.5)
South West	287	(53.0)	369	(68.1)
<b>South of England</b>	<b>808</b>	<b>(56.5)</b>	<b>887</b>	<b>(62.0)</b>
<b>England</b>	<b>3278</b>	<b>(60.3)</b>	<b>3291</b>	<b>(60.6)</b>
Isle of Man	7	(87.5)	5	(62.5)
Channel Islands	3	(18.8)	3	(18.8)
<b>Wales</b>	<b>130</b>	<b>(42.1)</b>	<b>136</b>	<b>(44.0)</b>
<b>Scotland</b>	<b>251</b>	<b>(46.9)</b>	<b>255</b>	<b>(47.7)</b>
<b>Northern Ireland</b>	<b>63</b>	<b>(34.2)</b>	<b>64</b>	<b>(34.8)</b>
<b>TOTAL<sup>1</sup></b>	<b>3753</b>	<b>(57.9)</b>	<b>3779</b>	<b>(58.3)</b>

<sup>1</sup> Includes UK recipients where the postcode was unspecified and non-UK recipients



## 10.5 Demographic characteristics

The age group, sex and ethnicity of cornea donors and transplant recipients are shown in **Table 10.6**.

<b>Table 10.6 Demographic characteristics of deceased cornea donors and transplant recipients 1 April 2015 - 31 March 2016, in the UK</b>						
	<b>Cornea only donors</b>		<b>Solid organ and cornea donors</b>		<b>Transplant recipients</b>	
	<b>N</b>	<b>(%)</b>	<b>N</b>	<b>(%)</b>	<b>N</b>	<b>(%)</b>
<b>Age group (years)</b>						
0 - 17	9	(0)	6	(2)	54	(1)
18 - 34	44	(2)	27	(8)	505	(13)
35 - 49	161	(6)	61	(18)	438	(12)
50 - 59	367	(14)	81	(25)	362	(10)
60 - 69	727	(27)	96	(29)	642	(17)
70-79	919	(34)	58	(18)	993	(26)
80+	447	(17)	1	(0)	785	(21)
Not reported	1					
mean (SD)	68	(13)	56	(15)	62	(20)
<b>Sex</b>						
Male	1616	(61)	170	(52)	1951	(52)
Female	1042	(39)	160	(48)	1828	(48)
Not reported	17					
<b>Ethnicity</b>						
White	205	(99)	294	(97)	3077	(86)
Asian	2	(1)	4	(1)	346	(10)
Black	0	(0)	0	(0)	121	(3)
Chinese	0	(0)	1	(0)	7	(0)
Other	0	(0)	4	(1)	15	(0)
Not reported	2468		27		213	
<b>TOTAL</b>	<b>2675</b>	<b>(100)</b>	<b>330</b>	<b>(100)</b>	<b>3779</b>	<b>(100)</b>