

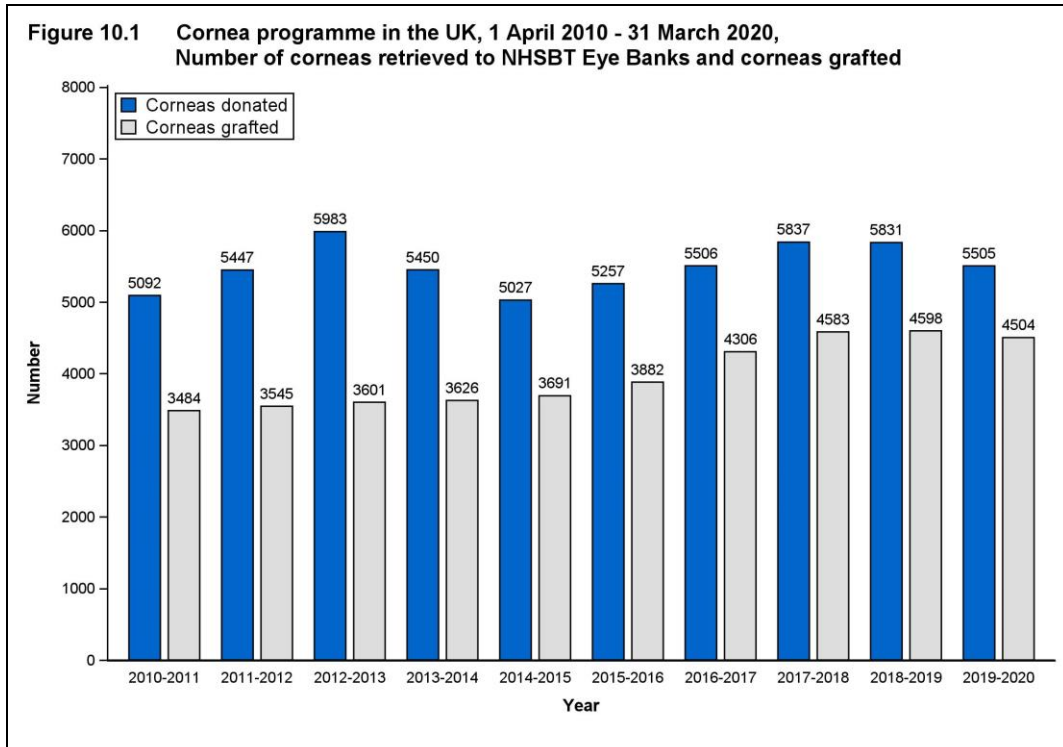
Cornea Activity

Key messages

- 5,505 corneas were supplied to NHSBT Eye Banks
- Corneas were retrieved from 2,329 cornea-only donors and from 446 solid organ donors
- The number of transplants remained stable at 4,504
- 13%, 35% and 13% of corneal transplants were for keratoconus, Fuchs endothelial dystrophy and pseudophakic bullous keratopathy patients, respectively
- Descemet membrane endothelial keratoplasty transplants have increased to 23% of all corneal transplants performed
- 566 eyes (corneas or globes) were supplied to support research or training

10.1 Overview

The number of corneas donated in 2019-2020 was 5,505, representing a decrease of 5.6% from last year, as shown in **Figure 10.1**. In the last financial year, the number of corneal transplants has decreased slightly to 4,504. The declines will be in part due to the impact of COVID-19 on donation and transplantation in March 2020. It should be noted that not all corneal donations in the UK are reported to NHSBT and thus the donation data reported are not the full national data.



In 2019-2020, of 2,775 donors whose corneas were retrieved to NHSBT Eye Banks, 2,329 were cornea-only donors and 446 were cornea and solid organ donors. Compared to 2018-2019, the number of cornea-only donors decreased by 5.9%, and the number of cornea and solid organ donors decreased by 4.5% (this does not account for the impact of COVID-19 in 2019-2020). In 2019-2020, corneas were retrieved from 271 organ donors after brainstem death and 175 organ donors after circulatory death.

10.2 NHSBT Eye Bank activity

NHSBT Eye Bank activity levels for Filton, David Lucas (in Liverpool) and Manchester Eye Banks are shown in **Table 10.1**. Manchester Eye Bank closed in July 2019 and David Lucas Eye Bank started to regularly process corneas in the northern regions in September 2019. The number of corneas retrieved by NHSBT Eye Banks decreased in 2019-2020 by 5.6% and the number of corneas issued decreased by 6.2% (partly due to the impact of COVID-19 in 2019-2020). In 2019-2020, 5,505 corneas were retrieved to NHSBT Eye Banks, of which 4,252 (77%) were subsequently issued for transplantation. A further 566 eyes (corneas or globes) were supplied to support research or training.

Table 10.1 Corneas retrieved into NHSBT Eye Banks, by year 1 April 2019 - 31 March 2020 (2018-2019)								
Eye bank	Total retrieved		Number issued¹		% issued		Difference between number retrieved and issued	
Filton	4115	(3168)	3308	(2567)	80	(81)	807	(601)
David Lucas	939	(4)	610	(0)	65	(0)	329	(4)
Manchester	451	(2659)	334	(1966)	74	(74)	117	(693)
Total	5505	(5831)	4252	(4533)	77	(78)	1253	(1298)

¹ Number issued of those retrieved in each year
Please note that Manchester Eye Bank closed in July 2019 and David Lucas Eye Bank started to regularly process corneas in September 2019

10.3 Transplants

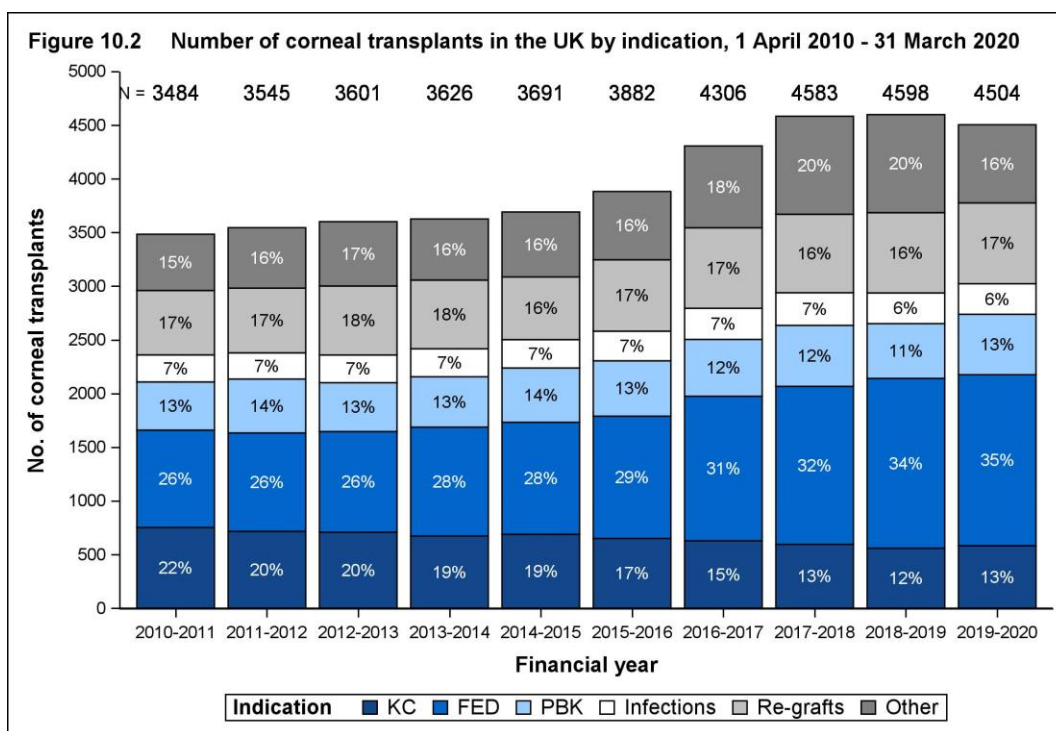
Corneal transplant activity in the UK by country of residence and NHS regions for the years 2018-2019 and 2019-2020 is detailed in **Table 10.2**. Corneas were supplied by NHSBT and non-NHSBT Eye Banks for corneal transplants in the UK. No adjustments have been made for potential demographic differences in populations. The overall transplant rate was 69.2 pmp in 2018-2019. This decreased slightly to 67.8 pmp in 2019-2020. Transplant rates decreased in Scotland and Wales but have increased slightly in England and Northern Ireland. England had the highest transplant rate in the UK: 67.6 pmp, this ranged from 58.7 pmp to 83.2 pmp across NHS regions.

Table 10.2 Cornea transplants performed per million population (pmp) in the UK, 1 April 2018 - 31 March 2020, by country/NHS region

Country of residence/ NHS region	Number of transplants (pmp)			
	2018-2019		2019-2020	
North East and Yorkshire	551	(64.3)	503	(58.7)
North West	505	(72.0)	583	(83.2)
Midlands	670	(63.6)	692	(65.7)
East of England	434	(66.9)	439	(67.6)
London	471	(52.9)	561	(63.0)
South East	666	(75.3)	651	(73.6)
South West	339	(60.4)	353	(62.9)
England	3636	(65.0)	3782	(67.6)
Isle of Man	3	(37.5)	4	(50.0)
Channel Islands	8	(50.0)	7	(43.8)
Wales	182	(58.0)	165	(52.5)
Scotland	303	(55.7)	280	(51.5)
Northern Ireland	58	(30.9)	63	(33.5)
TOTAL¹	4598	(69.2)	4504	(67.8)

¹ Includes UK recipients where the postcode was unspecified and non-UK recipients

Figure 10.2 shows the number of corneal transplants in the UK by indication for transplant from 1 April 2010 to 31 March 2020. For corneas transplanted in 2018-2019 and 2019-2020, a further breakdown by indication is shown in **Table 10.3**.

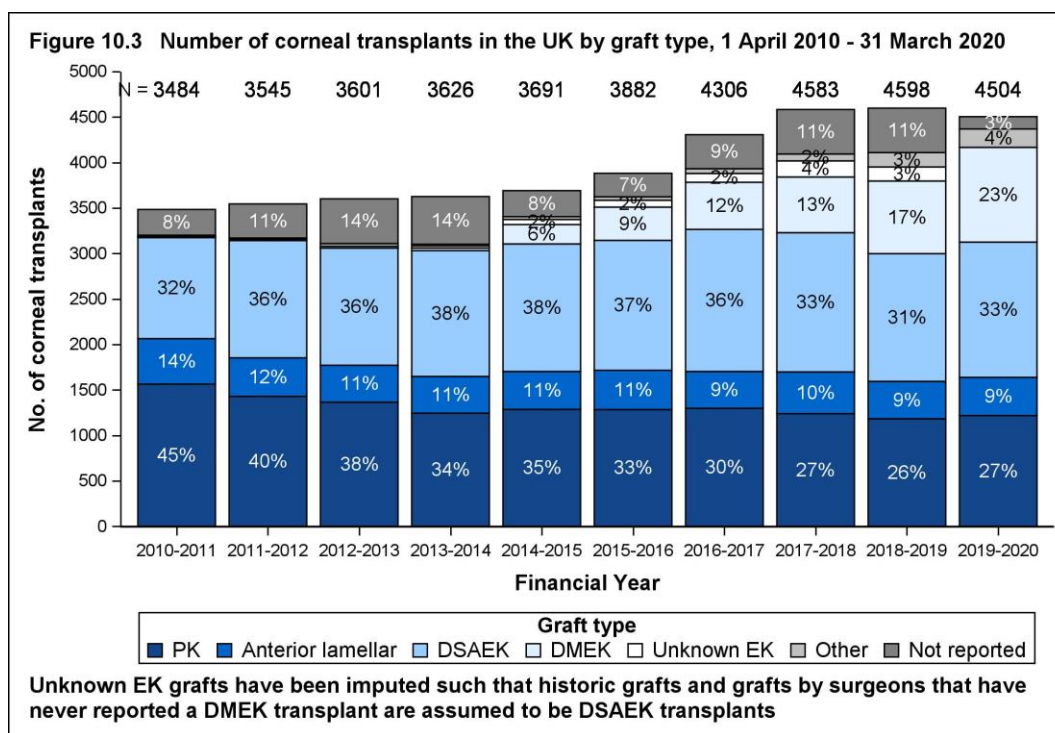


There has been an improvement in the reporting of indication in the latest financial year and as a result there has been a drop in other indications. There has been a slight increase in the number of corneal transplants for keratoconus (KC), Fuchs endothelial dystrophy (FED) and pseudophakic bullous keratopathy (PBK) patients as well as for re-grafts in 2019-2020. The number of patients with an infection has remained stable. The most common indication for transplantation is FED representing 35% of corneal transplants in 2019-2020.

Table 10.3 Corneal transplants in the UK by indication and financial year, 1 April 2018 - 31 March 2020				
Indication for transplant	2018 - 2019		2019 - 2020	
	N	%	N	%
Keratoconus (KC)	559	12.2	582	12.9
Fuchs endothelial dystrophy (FED)	1582	34.4	1593	35.4
Pseudophakic bullous keratopathy (PBK)	510	11.1	563	12.5
Infections	286	6.2	285	6.3
Re-grafts	748	16.3	753	16.7
Other (listed below)	913	19.9	728	16.2
Ectasias	23	0.5	15	0.3
Dystrophies	86	1.9	62	1.4
Previous ocular surgery	120	2.6	121	2.7
Injury	64	1.4	55	1.2
Ulcerative keratitis	46	1.0	44	1.0
Opacification	94	2.0	94	2.1
Miscellaneous	38	0.8	113	2.5
Not reported	442	9.6	224	5.0
Total	4598	100.0	4504	100.0

Figure 10.3 shows the number of corneal transplants in the UK by graft type from 1 April 2010 to 31 March 2020. Over the last 10 years, the proportion of penetrating keratoplasty (PK) grafts has reduced from 45% to 27%, whilst the proportion of endothelial keratoplasty (EK) grafts has almost doubled.

Since March 2014, the type of EK graft has been collected on the Ocular Tissue Outcome and Transplant Record form reported to the UK Transplant Registry. Unknown EK graft types have been imputed such that historic grafts and grafts by surgeons that have never reported a Descemet Membrane EK (DMEK) transplant are assumed to be Descemet Stripping Automated EK (DSAEK) transplants. A further breakdown by graft type for corneas transplanted in 2018-2019 and 2019-2020 is shown in **Table 10.4**.



There has been an improvement in the reporting of graft types in the last financial year. In 2019-2020, a third of grafts were DSAEK and 23% were DMEK grafts, representing a 30% increase for DMEK transplants compared to 2018-2019. PK grafts are still a popular choice for corneal transplantation accounting for 27% of transplants in 2019-2020.

Table 10.4 Corneal transplants in the UK by graft type and financial year, 1 April 2018 - 31 March 2020

Graft type	2018 - 2019		2019 - 2020	
	N	%	N	%
PK	1183	25.7	1218	27.0
Anterior lamellar	411	8.9	420	9.3
DSAEK	1404	30.5	1487	33.0
DMEK	799	17.4	1042	23.1
Unknown EK	154	3.3	0	0.0
Other	158	3.4	202	4.5
Not reported	489	10.6	135	3.0
All grafts	4598	100.0	4504	100.0

Unknown EK grafts have been imputed such that historic grafts and grafts by surgeons that have never reported a DMEK transplant are assumed to be DSAEK transplants

10.4 Demographic characteristics

The age, sex and ethnicity of cornea donors and transplant recipients are shown in **Table 10.5**.

Table 10.5 Demographic characteristics of donors whose corneas were retrieved to NHSBT Eye Banks and transplant recipients in the UK, 1 April 2019 - 31 March 2020						
	Cornea-only donors		Solid organ and cornea donors		Transplant recipients	
	N	%	N	%	N	%
Age group (years)						
0 - 17	4	0.2	4	0.9	43	1.0
18 - 34	29	1.2	30	6.7	433	9.9
35 - 49	128	5.5	85	19.1	426	9.7
50 - 59	272	11.7	110	24.7	468	10.7
60 - 69	509	21.9	121	27.1	798	18.2
70-79	893	38.3	88	19.7	1294	29.5
80+	494	21.2	8	1.8	918	21.0
Not reported	0		0		124	
Mean (SD)	69	(12)	57	(14)	64	(18)
Sex						
Male	1404	60.3	241	54.0	2287	52.2
Female	925	39.7	205	46.0	2093	47.8
Not reported	0		0		124	
Ethnicity						
White	831	99.0	421	95.0	3467	86.8
Asian	4	0.5	5	1.1	328	8.2
Black	2	0.2	5	1.1	145	3.6
Chinese	2	0.2	4	0.9	6	0.2
Other	0	0.0	8	1.8	49	1.2
Not reported	1490		3		509	
TOTAL	2329	100.0	446	100.0	4504	100.0