

Kidney Activity

Key messages

- On 11 September 2019, a new National Kidney Offering Scheme was introduced
- The number of patients registered on the kidney transplant list this year remained similar at 4,960
- The number of deceased kidney donors fell by 2% to 1,481
- Kidney transplants from living donors fell by 4% to 982, while transplants from deceased donors fell by 4% to 2,466
- 96 kidney transplants were made possible by the paired living kidney donation programme
- There were 95 non-directed altruistic living kidney donors, leading to 146 patients benefitting from a living donor transplant

5.1 Overview

Note that the COVID-19 pandemic has affected the number of offered, retrieved and transplanted organs in 2019-2020. To better reflect the number of patients waiting for a transplant at the end of this year, data as at 29 February 2020 have been used.

The number of deceased kidney donors fell by 2% in 2019-2020 compared to 2018-2019 and the number of deceased donor kidney transplants fell by 4%. There were 4,960 patients waiting for a kidney transplant at 29 February 2020, with the number of patients on the national list consistently declining year on year.

A summary of activity for deceased donor kidney transplants and the transplant list at year end for the last ten years is shown in **Figure 5.1**. The number of patients registered on the active transplant list at 29 February 2020 for a kidney only or multi-organ kidney transplant has fallen by 28% since 31 March 2011. These registrations include patients suspended on the kidney waiting list but active on the liver waiting list for a combined liver and kidney transplant.

On 11 September 2019, a new National Kidney Offering Scheme was introduced to offer kidneys from both donors after brain death and donors after circulatory death. This is a change from the previous system where kidneys from donors after circulatory death were offered under a different scheme than kidneys from donors after brain death. The scheme has two tiers with priority going to patients who are the most difficult to match or who have waited over 7 years for a transplant.

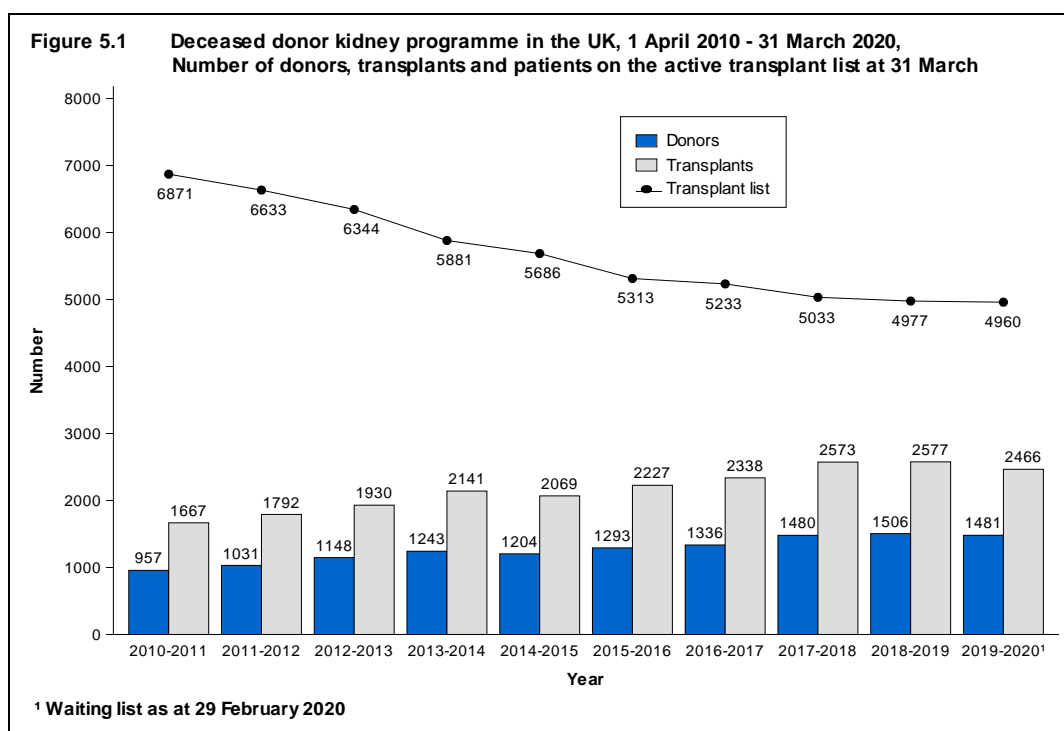


Table 5.1 shows the number of deceased and living donor kidney transplants carried out in 2019-2020 at each centre. As yet, very few kidneys from donors after circulatory death are transplanted in paediatric patients (<18 years). Donation figures for centres in London are not reported individually as they have shared designated areas and donor populations. Multi-organ transplants including a kidney are included in the table.

The total number of deceased kidney donors fell to 1,481 in 2019-2020 from 1,506 in 2018-2019 and the number of transplants fell from 2,577 to 2,466. The number of kidney donors after circulatory death fell to 618 from 625 in 2018-2019 and the number of transplants from such donors fell by 5% to 966.

Throughout this chapter, intestinal transplants involving a kidney are not included in the kidney transplant activity reported. Any kidneys retrieved and used for such transplants are however reported in the kidney donor activity. Intestinal transplant activity is reported in Chapter 9.

Table 5.1 Kidney donors and transplants, 1 April 2019 - 31 March 2020 (2018-2019) and transplant list at 29 February 2020 (2019)* in the UK, by centre

| Centre | Deceased kidney donors | | | | Deceased donor transplants | | | | Living donor transplants | | Active transplant list* | |
|-----------------------|------------------------|--------------|------------|--------------|----------------------------|---------------|------------|---------------|--------------------------|-----------------------------|-------------------------|---------------|
| | DBD | | DCD | | DBD | | DCD | | | | | |
| Belfast | 27 | (23) | 19 | (17) | 26 | (20) | 18 | (28) | 66 | (62) | 79 | (91) |
| Birmingham | 46 | (50) | 45 | (49) | 91 | (89) | 55 | (45) | 42 | (45) | 363 | (335) |
| Bristol | 28 | (45) | 21 | (28) | 53 | (69) | 27 | (42) | 28 | (36) | 153 | (165) |
| Cambridge | 35 | (46) | 58 | (51) | 76 | (79) | 96 | (98) | 40 | (27) | 168 | (190) |
| Cardiff | 40 | (33) | 19 | (29) | 41 | (42) | 33 | (42) | 30 | (35) | 159 | (139) |
| Coventry ¹ | 11 | (18) | 17 | (15) | 32 | (30) | 21 | (26) | 20 | (27) | 101 | (85) |
| Edinburgh | 24 | (30) | 15 | (17) | 72 | (70) | 30 | (22) | 48 | (60) | 194 | (231) |
| Glasgow | 46 | (35) | 19 | (13) | 63 | (63) | 42 | (34) | 47 | (47) | 251 | (251) |
| Leeds | 49 | (45) | 31 | (33) | 76 | (95) | 52 | (57) | 53 | (67) | 287 | (255) |
| Leicester | 25 | (16) | 13 | (14) | 48 | (57) | 46 | (44) | 45 | (28) | 175 | (172) |
| Liverpool | 34 | (61) | 23 | (35) | 48 | (54) | 24 | (36) | 26 | (41) | 141 | (134) |
| London ² | 238 | (218) | 162 | (141) | - | - | - | - | - | - | - | - |
| Great Ormond Street | - | - | - | - | 8 | (11) | 0 | (0) | 12 | (13) | 17 | (17) |
| Guy's | - | - | - | - | 122 | (128) | 89 | (73) | 85 | (77) | 275 | (285) |
| Royal Free | - | - | - | - | 56 | (56) | 31 | (21) | 34 | (42) | 238 | (251) |
| Royal London | - | - | - | - | 101 | (100) | 51 | (46) | 37 | (48) | 327 | (304) |
| St George's | - | - | - | - | 89 | (72) | 24 | (45) | 46 | (41) | 229 | (251) |
| WLRTC | - | - | - | - | 114 | (89) | 71 | (52) | 55 | (44) | 402 | (450) |
| Manchester | 65 | (57) | 49 | (32) | 111 | (119) | 71 | (97) | 84 | (74) | 463 | (377) |
| Newcastle | 54 | (62) | 28 | (33) | 62 | (59) | 25 | (23) | 54 | (58) | 211 | (257) |
| Nottingham | 28 | (26) | 17 | (30) | 30 | (32) | 20 | (42) | 23 | (8) | 130 | (126) |
| Oxford ¹ | 34 | (34) | 28 | (21) | 82 | (113) | 78 | (83) | 52 | (65) | 245 | (240) |
| Plymouth | 21 | (23) | 14 | (15) | 27 | (30) | 17 | (19) | 14 | (26) | 96 | (89) |
| Portsmouth | 33 | (32) | 25 | (33) | 37 | (43) | 22 | (31) | 24 | (28) | 144 | (165) |
| Sheffield | 25 | (27) | 15 | (19) | 35 | (35) | 23 | (16) | 15 | (19) | 112 | (117) |
| TOTAL | 863 | (881) | 618 | (625) | 1500 | (1555) | 966 | (1022) | 982^{3,5} | (1024^{4,6}) | 4960 | (4977) |

* Waiting list figures are as at 29 February 2020 and 31 March 2019

WLRTC - West London Renal and Transplant Centre

¹ As of 1 June 2016 Coventry and Oxford began working in partnership as a transplant network.

² Donor figures in this area cannot be linked to individual transplant centres due to shared retrieval areas.

³ Includes an additional 1 transplant performed at London, Cromwell Hospital and 1 transplant performed at London, London Bridge Hospital

⁴ Includes an additional 3 transplants performed at London, Cromwell Hospital and 3 transplants performed at London, London Bridge Hospital

⁵ Includes 2 domino donors

⁶ Includes 3 domino donors

5.2 Transplant list

The number of patients registered on the kidney or kidney and pancreas transplant list remained stable in the year: on 29 February 2020, 4,960 patients were registered as active, compared with 4,977 at the end of March 2019. The number of patients waiting for a kidney transplant represents 74.7 patients per million population (pmp).

Of the 4,960 patients on the active transplant list at 29 February 2020, 210 required a kidney and pancreas/islet transplant (212 at 31 March 2019).

The outcome of patients registered on the UK kidney and kidney/pancreas transplant list at 1 April 2019, or subsequently registered during the financial year, is shown in **Table 5.2**. A total of 4,208 patients joined the kidney transplant list last year, while a further 238 joined the kidney/pancreas transplant list.

| Table 5.2 Kidney transplant list and new registrations in the UK, 1 April 2019 - 31 March 2020 | | | | | | |
|---|--|----------|---|----------|--------------|----------|
| Outcome of patient at 31 March 2020 | Active and suspended patients at 1 April 2019 | | New registrations in 2019-2020¹ | | TOTAL | |
| | N | % | N | % | N | % |
| Kidney transplant list | | | | | | |
| Remained active/suspended | 4841 | 63 | 3227 | 77 | 8068 | 68 |
| Transplanted | 2240 | 29 | 934 | 22 | 3174 | 27 |
| Removed ² | 423 | 5 | 24 | 1 | 447 | 4 |
| Died | 208 | 3 | 23 | 1 | 231 | 2 |
| TOTAL | 7712 | | 4208 | | 11920 | |
| Kidney/pancreas transplant list | | | | | | |
| Remained active/suspended | 173 | 53 | 199 | 84 | 372 | 66 |
| Transplanted | 133 | 41 | 32 | 13 | 165 | 29 |
| Removed ³ | 12 | 4 | 3 | 1 | 15 | 3 |
| Died | 8 | 2 | 4 | 2 | 12 | 2 |
| TOTAL | 326 | | 238 | | 564 | |

¹ Includes re-registrations for second or subsequent patients
² Includes 5 patients removed from kidney list and made active on kidney/pancreas list
³ Includes 1 patient removed from kidney/pancreas list and made active on kidney/islet list

Table 5.3 shows the active transplant list in the UK at 29 February 2020 and 31 March 2019 by country/NHS region of patient's residence. In 2020, the overall kidney transplant list rate was 74.7 pmp with rates across NHS regions ranging from 51.6 pmp to 125.1 pmp.

| Table 5.3 Active kidney transplant list at 31 March, by Country/ NHS region of patient residence | | | | |
|---|-------------------------------------|---------------|-------------|---------------|
| Country/ NHS region of residence | Kidney transplant list (pmp) | | | |
| | 2020¹ | | 2019 | |
| North East and Yorkshire | 615 | (71.8) | 628 | (73.3) |
| North West | 535 | (76.3) | 461 | (65.8) |
| Midlands | 808 | (76.7) | 766 | (72.7) |
| East of England | 352 | (54.2) | 383 | (59.0) |
| London | 1115 | (125.1) | 1164 | (130.6) |
| South East | 457 | (51.6) | 483 | (54.6) |
| South West | 333 | (59.4) | 329 | (58.6) |
| England | 4215 | (75.3) | 4214 | (75.3) |
| Isle of Man | 5 | (62.5) | 2 | (25.0) |
| Channel Islands | 9 | (56.3) | 7 | (43.8) |
| Wales | 200 | (63.7) | 171 | (54.5) |
| Scotland | 444 | (81.6) | 482 | (88.6) |
| Northern Ireland | 79 | (42.0) | 92 | (48.9) |
| TOTAL² | 4960 | (74.7) | 4977 | (74.9) |

¹As at 29 February 2020
²Includes patients in 2020 (2019) residing in: Unspecified UK 7 (6); Overseas 1 (3)

An indication of outcomes for adult patients listed for a kidney only transplant is summarised in **Figure 5.2**. This shows the proportion of patients transplanted or still waiting one, three and five years after joining the list. It also shows the proportion removed from the transplant list (typically because they become too unwell for transplant) and those dying while on the transplant list. Only 27% of patients are transplanted within one year, while five years after listing 74% of patients have received a transplant.

The median (average) waiting time for a kidney only transplant has fallen from 706 days reported last year to 633 days for an adult patient and is shown by blood group in **Table 5.4** and patient ethnicity in **Table 5.5**. Because of the need to match donor and recipient blood groups and tissue types, waiting times to transplant differ according to patient blood groups and ethnicity due to differences between the donor pool and patients awaiting a kidney transplant. Note that these waiting times are not adjusted for other relevant factors which may be influential and which may differ across blood or ethnic groups.

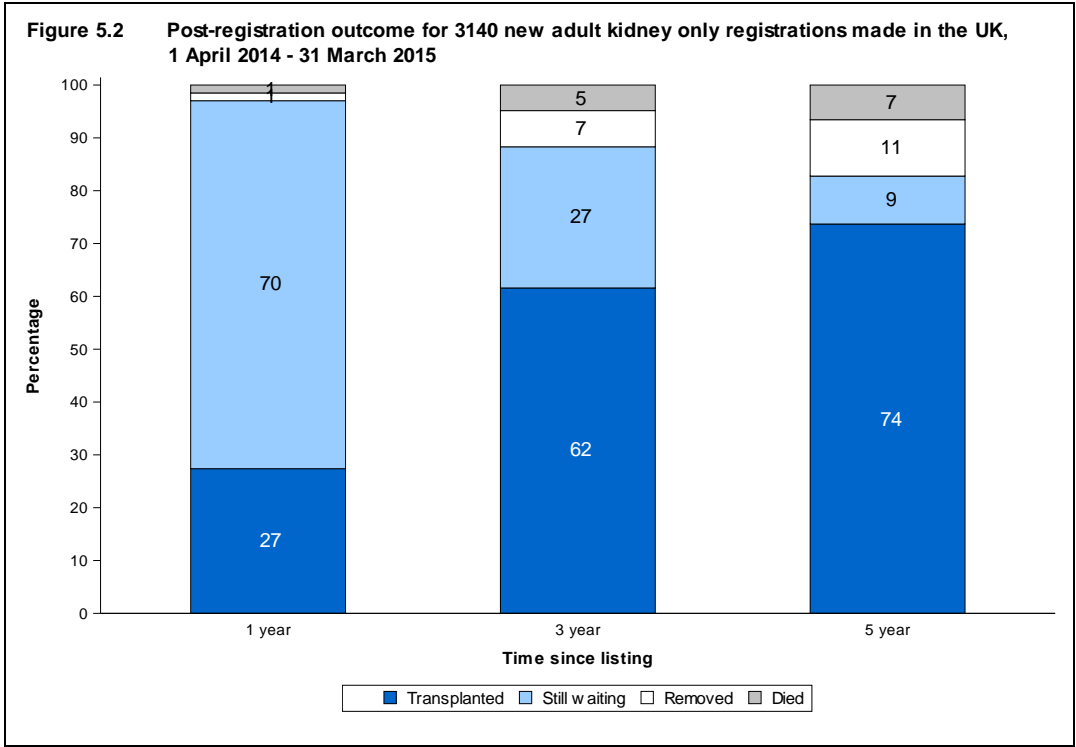


Table 5.4 Median waiting time to kidney only transplant in the UK, for patients registered 1 April 2013 - 31 March 2017, by blood group

| Blood group | Number of patients registered | Waiting time (days) | |
|-------------------|-------------------------------|---------------------|-------------------------|
| | | Median | 95% Confidence interval |
| Adult | | | |
| O | 4596 | 807 | 784 - 830 |
| A | 3627 | 438 | 422 - 454 |
| B | 1407 | 898 | 854 - 942 |
| AB | 452 | 188 | 167 - 209 |
| TOTAL | 10082 | 633 | 619 - 647 |
| Paediatric | | | |
| O | 112 | 367 | 205 - 529 |
| A | 101 | 251 | 198 - 304 |
| B | 38 | 353 | 244 - 462 |
| AB | 14 | 351 | 0 - 718 |
| TOTAL | 265 | 291 | 206 - 376 |

Table 5.5 Median waiting time to kidney only transplant in the UK, for patients registered 1 April 2013 - 31 March 2017, by ethnicity

| Ethnicity | Number of patients registered | Waiting time (days) | |
|--------------------------|-------------------------------|---------------------|-------------------------|
| | | Median | 95% Confidence interval |
| Adult | | | |
| White | 6957 | 573 | 557 - 589 |
| Asian | 1688 | 736 | 695 - 777 |
| Black | 982 | 900 | 845 - 955 |
| Other | 334 | 743 | 676 - 810 |
| TOTAL¹ | 10082 | 633 | 619 - 647 |
| Paediatric | | | |
| White | 151 | 222 | 170 - 274 |
| Asian | 78 | 384 | 260 - 508 |
| Black | 15 | 540 | 233 - 847 |
| Other | 18 | 560 | 448 - 672 |
| TOTAL² | 265 | 291 | 206 - 376 |

¹ Includes 121 patients whose ethnicity was not reported

² Includes 3 patients whose ethnicity was not reported

5.3 Donor and organ supply

Of the 946 organ donors after brain death in the UK in 2019-2020, 863 (91%) were kidney donors. From these donors, 1,693 kidneys were retrieved. There were 618 kidney donors after circulatory death in 2019-2020. From these donors, 1,223 kidneys were retrieved. **Table 5.6** shows this activity by donor country/NHS region of donor's residence. No adjustments have been made for potential demographic differences in populations.

The overall rate for kidney donors after brain death is 12.9 pmp, with rates across NHS regions ranging from 11.4 to 15.1 pmp. The number of kidneys retrieved from donors after brain death in the UK is 25.5 pmp and varies from 22.6 to 29.6 pmp.

The overall rate for kidney donors after circulatory death is 9.3 pmp, with rates across NHS regions ranging from 7.0 to 15.3 pmp. The number of kidneys retrieved from donors after circulatory death is 18.4 pmp and varies from 13.8 to 30.2 pmp.

| Table 5.6 Kidney donation and retrieval rates for deceased donors in the UK, 1 April 2019 - 31 March 2020, by Country/NHS region | | | | | | | | |
|---|----------------------------|---------------|------------|---------------|--------------------------------|---------------|-------------|---------------|
| Country/NHS region of residence | Kidney donors (pmp) | | | | Kidneys retrieved (pmp) | | | |
| | DBD | | DCD | | DBD | | DCD | |
| North East and Yorkshire | 129 | (15.1) | 78 | (9.1) | 254 | (29.6) | 155 | (18.1) |
| North West | 84 | (12.0) | 66 | (9.4) | 166 | (23.7) | 132 | (18.8) |
| Midlands | 122 | (11.6) | 85 | (8.1) | 240 | (22.8) | 168 | (15.9) |
| East of England | 76 | (11.7) | 99 | (15.3) | 152 | (23.4) | 196 | (30.2) |
| London | 107 | (12.0) | 62 | (7.0) | 211 | (23.7) | 123 | (13.8) |
| South East | 120 | (13.6) | 92 | (10.4) | 238 | (26.9) | 182 | (20.6) |
| South West | 64 | (11.4) | 51 | (9.1) | 127 | (22.6) | 100 | (17.8) |
| England | 702 | (12.5) | 533 | (9.5) | 1388 | (24.8) | 1056 | (18.9) |
| Isle of Man | 2 | (25.0) | 1 | (12.5) | 4 | (50.0) | 2 | (25.0) |
| Channel Islands | 3 | (18.8) | 0 | (0.0) | 6 | (37.5) | 0 | (0.0) |
| Wales | 54 | (17.2) | 28 | (8.9) | 106 | (33.8) | 56 | (17.8) |
| Scotland | 57 | (10.5) | 33 | (6.1) | 112 | (20.6) | 65 | (11.9) |
| Northern Ireland | 25 | (13.3) | 19 | (10.1) | 50 | (26.6) | 38 | (20.2) |
| TOTAL¹ | 857 | (12.9) | 617 | (9.3) | 1693 | (25.5) | 1223 | (18.4) |

¹ Includes 17 donors with unknown UK postcode and excludes 7 donors with overseas postcode

5.4 Transplants

The number of kidney transplants by recipient country/NHS region of residence is shown in **Table 5.7**. No adjustments have been made for potential demographic differences in populations. The deceased donor transplant rate ranged from 27.7 to 56.2 pmp across NHS regions and overall was 34.3 pmp. The living donor transplant rate ranged from 10.3 to 15.2 pmp across NHS regions and overall was 14.6 pmp.

| Table 5.7 Kidney only transplant rates per million population (pmp), in the UK, 1 April 2019 - 31 March 2020, by country and English NHS region | | | | | | | | |
|--|-------------|---------------|------------|---------------|--------------|---------------|---------------|---------------|
| Country/ NHS region of residence | DBD | | DCD | | TOTAL | | Living | |
| | N | (pmp) | N | (pmp) | N | (pmp) | N | (pmp) |
| North East and Yorkshire | 167 | (19.5) | 96 | (11.2) | 263 | (30.7) | 124 | (14.5) |
| North West | 114 | (16.3) | 83 | (11.8) | 197 | (28.1) | 99 | (14.1) |
| Midlands | 209 | (19.8) | 143 | (13.6) | 352 | (33.4) | 122 | (11.6) |
| East of England | 119 | (18.3) | 120 | (18.5) | 239 | (36.8) | 94 | (14.5) |
| London | 314 | (35.2) | 187 | (21.0) | 501 | (56.2) | 135 | (15.2) |
| South East | 145 | (16.4) | 100 | (11.3) | 245 | (27.7) | 132 | (14.9) |
| South West | 98 | (17.5) | 62 | (11.1) | 160 | (28.5) | 58 | (10.3) |
| England | 1166 | (20.8) | 791 | (14.1) | 1957 | (35.0) | 764 | (13.6) |
| Isle of Man | 1 | (12.5) | 0 | (0.0) | 1 | (12.5) | 2 | (25.0) |
| Channel Islands | 1 | (6.3) | 4 | (25.0) | 5 | (31.3) | 1 | (6.3) |
| Wales | 52 | (16.6) | 38 | (12.1) | 90 | (28.7) | 39 | (12.4) |
| Scotland | 112 | (20.6) | 68 | (12.5) | 180 | (33.1) | 94 | (17.3) |
| Northern Ireland | 25 | (13.3) | 18 | (9.6) | 43 | (22.9) | 64 | (34.0) |
| TOTAL^{1,2} | 1360 | (20.5) | 920 | (13.8) | 2280 | (34.3) | 970 | (14.6) |

¹ Excludes 12 recipients of a living donor kidney who reside outside of the UK
² Includes 10 recipients with an unknown UK postcode

The number of kidney only transplants at each transplant centre is shown in **Table 5.8** for adult patients only. Kidney transplants from donors after brain death include 5 en bloc kidneys and 16 double kidney transplants in 2019-2020 (7 and 17 in 2018-2019). Kidney transplants from donors after circulatory death include 3 en bloc and 21 double kidney transplants in 2019-2020 (6 and 19 in 2018-2019). This table excludes multi-organ transplants: 15 kidney and liver, 1 kidney and heart, 162 kidney and pancreas, 5 kidney and islets, and 4 kidney and bowel in 2019-2020.

**Table 5.8 Adult kidney only transplants in the UK,
1 April 2018 - 31 March 2020, by transplant centre**

| Transplant centre | 2018-2019 | | | TOTAL | 2019-2020 | | | TOTAL |
|-----------------------|-------------|------------|------------------------|-------------|-------------|------------|------------------------|-------------|
| | DBD | DCD | Living donor | | DBD | DCD | Living donor | |
| Belfast | 20 | 28 | 58 | 106 | 25 | 18 | 62 | 105 |
| Birmingham | 79 | 45 | 37 | 161 | 83 | 53 | 37 | 173 |
| Bristol | 62 | 42 | 31 | 135 | 49 | 27 | 25 | 101 |
| Cambridge | 66 | 89 | 27 | 182 | 64 | 84 | 40 | 188 |
| Cardiff | 37 | 40 | 35 | 112 | 34 | 30 | 30 | 94 |
| Coventry ¹ | 30 | 26 | 27 | 83 | 32 | 21 | 20 | 73 |
| Edinburgh | 53 | 22 | 60 | 135 | 50 | 27 | 48 | 125 |
| Glasgow | 60 | 32 | 37 | 129 | 63 | 42 | 45 | 150 |
| Guy's | 93 | 64 | 68 | 225 | 88 | 82 | 71 | 241 |
| Leeds | 88 | 57 | 61 | 206 | 74 | 52 | 46 | 172 |
| Leicester | 57 | 44 | 28 | 129 | 48 | 46 | 45 | 139 |
| Liverpool | 54 | 36 | 41 | 131 | 48 | 24 | 26 | 98 |
| Manchester | 103 | 78 | 55 | 236 | 89 | 64 | 70 | 223 |
| Newcastle | 51 | 23 | 55 | 129 | 54 | 24 | 52 | 130 |
| Nottingham | 25 | 41 | 7 | 73 | 28 | 20 | 17 | 65 |
| Oxford ¹ | 71 | 73 | 64 | 208 | 48 | 65 | 52 | 165 |
| Plymouth | 30 | 19 | 26 | 75 | 27 | 17 | 13 | 57 |
| Portsmouth | 43 | 31 | 28 | 102 | 37 | 22 | 24 | 83 |
| Sheffield | 35 | 16 | 19 | 70 | 35 | 23 | 15 | 73 |
| St George's | 72 | 45 | 41 | 158 | 89 | 24 | 46 | 159 |
| The Royal Free | 56 | 21 | 42 | 119 | 54 | 31 | 34 | 119 |
| The Royal London | 100 | 46 | 48 | 194 | 101 | 50 | 37 | 188 |
| WLRTC | 84 | 52 | 44 | 180 | 106 | 69 | 55 | 230 |
| TOTAL | 1369 | 970 | 945² | 3284 | 1326 | 915 | 912³ | 3153 |

WLRTC - West London Renal and Transplant Centre

¹ As of 1 June 2016 Coventry and Oxford began working in partnership as a transplant network

² Includes 3 transplants performed at London Cromwell Hospital and 3 transplants performed at London Bridge Hospital

³ Includes 1 transplant performed at London Cromwell Hospital and 1 transplant performed at London Bridge Hospital

Living donor kidney transplants fell by 4% to 982 in 2019-2020, representing 28% of the total kidney transplant programme. The total number of living donor adult transplants performed by each transplant centre is shown in **Table 5.9**. Also shown is the number as a percentage of patients listed at the end of the year, to indicate the size of the living donor programme relative to the centre's transplant list.

Most living donor transplants are 'directed'. This means that a kidney is donated to a specific recipient known to the donor - a close family member or friend. There has been a 12% decrease in these transplants. In addition there are now a number of 'non-directed' living donor transplants (also known as altruistic donor transplants). Last year 95 such donors donated a kidney to a recipient, 94 transplanted into an adult recipient and 1 transplanted into a paediatric recipient. Of the 95 non-directed altruistic donors, 47 went into an altruistic donor chain (19 short (2 transplants each) and 28 long chains (3 transplants each)) benefiting 73 adult and 2 paediatric patients in the paired/pooled scheme. The kidneys from the paired donors of these recipients led to 45 adult and 2 paediatric transplants for patients on the deceased donor transplant list. Thus 47 non-directed altruistic donors creating chains benefited 118 adult and 4 paediatric patients in total.

When a potential living donor and recipient are biologically incompatible (blood group or tissue type), they may consider joining a list of others in the same situation with the hope that an exchange of kidneys between them can lead to a compatible living donor transplant. The scheme also includes compatible pairs that would like a better match. This type of exchange is known as paired donation and most exchanges are between two pairs (i.e. two donors and their respective incompatible recipients), or between three pairs. In 2019-2020, there were 96 paired living kidney donor transplants (93 adult and 3 paediatric recipients).

As a percentage of the number of patients on the active transplant list at 29 February 2020, the number of living donor adult transplants in the year was 19% and ranged from 11% to 78% at individual transplant centres.

| Table 5.9 Adult living donor kidney transplants in the UK, 1 April 2019 - 31 March 2020, and percentage of active transplant list at 29 February, by transplant centre | | | | | | |
|---|------------------|--|--------------------------------|-------------------------------|--------------|---------------|
| Transplant centre | 2019-2020 | | | | TOTAL | |
| | Directed | Non-directed (altruistic) to waiting list | Paired/pooled exchanges | Altruistic donor chain | N | % list |
| Belfast | 40 | 2 | 12 | 8 | 62 | 78 |
| Birmingham | 29 | 3 | 1 | 4 | 37 | 11 |
| Bristol | 19 | 0 | 3 | 3 | 25 | 17 |
| Cambridge | 33 | 1 | 3 | 3 | 40 | 24 |
| Cardiff | 22 | 2 | 3 | 3 | 30 | 19 |
| Coventry ¹ | 11 | 2 | 3 | 4 | 20 | 20 |
| Edinburgh | 39 | 3 | 2 | 4 | 48 | 25 |
| Glasgow | 27 | 2 | 9 | 7 | 45 | 18 |
| Guy's | 46 | 6 | 7 | 12 | 71 | 28 |
| Leeds | 33 | 4 | 4 | 5 | 46 | 17 |
| Leicester | 35 | 1 | 4 | 5 | 45 | 26 |
| Liverpool | 24 | 2 | 0 | 0 | 26 | 18 |
| Manchester | 57 | 5 | 2 | 6 | 70 | 16 |
| Newcastle | 39 | 0 | 6 | 7 | 52 | 25 |
| Nottingham | 10 | 2 | 3 | 2 | 17 | 14 |
| Oxford ¹ | 30 | 3 | 8 | 11 | 52 | 21 |
| Plymouth | 9 | 1 | 2 | 1 | 13 | 14 |
| Portsmouth | 21 | 0 | 2 | 1 | 24 | 17 |
| Sheffield | 9 | 1 | 1 | 4 | 15 | 13 |
| St George's | 28 | 3 | 6 | 9 | 46 | 20 |
| The Royal Free | 26 | 1 | 3 | 4 | 34 | 14 |
| The Royal London | 26 | 5 | 3 | 3 | 37 | 11 |
| WLRTC | 37 | 0 | 6 | 12 | 55 | 14 |
| TOTAL² | 652 | 49³ | 93 | 118 | 912 | 19 |

WLRTC – West London Renal and Transplant Centre
¹ As of 1 June 2016 Coventry and Oxford began working in partnership as a transplant network
² Includes 1 transplant performed at London Cromwell Hospital and 1 transplant performed at London Bridge
³ Includes 2 domino donor transplants

Non-directed, altruistic donor kidneys are matched to a suitable recipient on a national basis and thus are rarely used in the transplant centre responsible for the 'work-up' of the donor. The number of non-directed donors according to donor hospital (rather than transplant hospital) and whether the altruistic donor donated as part of a chain within the paired/ pooled scheme or directly to the deceased donor list is shown in **Table 5.10**.

| Table 5.10 Non-directed altruistic kidney donors in the UK, 1 April 2018 - 31 March 2020, by donor centre | | | | | | | | |
|--|-----------------|-----------|-----------|------------|-----------------|-----------|-----------|------------|
| Donor centre | 2018-2019 | | | | 2019-2020 | | | |
| | Transplant list | Chain | Total | % | Transplant list | Chain | Total | % |
| Belfast | 2 | 3 | 5 | 8 | 6 | 7 | 13 | 14 |
| Birmingham | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Bristol | 3 | 1 | 4 | 6 | 1 | 2 | 3 | 3 |
| Cambridge | 0 | 2 | 2 | 3 | 1 | 2 | 3 | 3 |
| Cardiff | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| Coventry ¹ | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| Edinburgh | 1 | 5 | 6 | 9 | 4 | 5 | 9 | 9 |
| Glasgow | 2 | 0 | 2 | 3 | 2 | 2 | 4 | 4 |
| Guy's | 4 | 3 | 7 | 11 | 3 | 7 | 10 | 11 |
| Leeds | 5 | 2 | 7 | 11 | 3 | 2 | 5 | 5 |
| Leicester | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Liverpool | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 1 |
| Manchester | 2 | 2 | 4 | 6 | 4 | 2 | 6 | 6 |
| Newcastle | 1 | 2 | 3 | 5 | 1 | 1 | 2 | 2 |
| Nottingham | 1 | 1 | 2 | 3 | 2 | 1 | 3 | 3 |
| Oxford ¹ | 3 | 1 | 4 | 6 | 4 | 2 | 6 | 6 |
| Plymouth | 0 | 5 | 5 | 8 | 3 | 0 | 3 | 3 |
| Portsmouth | 2 | 4 | 6 | 9 | 4 | 6 | 10 | 11 |
| Sheffield | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 |
| St George's | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 |
| The Royal Free | 2 | 0 | 2 | 3 | 2 | 1 | 3 | 3 |
| The Royal London | 1 | 0 | 1 | 2 | 2 | 2 | 4 | 4 |
| WLRTC | 1 | 0 | 1 | 2 | 2 | 2 | 4 | 4 |
| Total donors | 31 | 33 | 64 | 100 | 48 | 47 | 95 | 100 |

WLRTC – West London Renal and Transplant Centre
¹ As of 1 June 2016 Coventry and Oxford began working in partnership as a transplant network

The number of deceased donor and living donor transplants in paediatric patients (<18 years) performed by each paediatric transplant centre is shown in **Table 5.11**. There were 70 living donor transplants and 42 deceased donor transplants in paediatric patients in 2019-2020. The paediatric transplant list has increased by 19% from 93 patients at 31 March 2019 to 111 at the end of February 2020.

Occasionally older paediatric patients are listed and/or transplanted at adult kidney transplant centres and these are indicated in **Table 5.11**.

| Table 5.11 Paediatric patient kidney transplants in the UK, 1 April 2018 - 31 March 2020, by transplant centre | | | | | | | | |
|---|------------------|----------|-----------------------|--------------|------------------|----------|-----------------------|--------------|
| Paediatric transplant centre | 2018-2019 | | | | 2019-2020 | | | |
| | DBD | DCD | Living donor | TOTAL | DBD | DCD | Living donor | TOTAL |
| Belfast | 0 | 0 | 4 | 4 | 1 | 0 | 4 | 5 |
| Birmingham | 7 | 0 | 8 | 15 | 7 | 2 | 5 | 14 |
| Bristol | 7 | 0 | 5 | 12 | 4 | 0 | 3 | 7 |
| Glasgow | 3 | 2 | 10 | 15 | 0 | 0 | 2 | 2 |
| Great Ormond Street | 11 | 0 | 13 | 24 | 8 | 0 | 12 | 20 |
| Guy's | 9 | 0 | 9 | 18 | 6 | 0 | 14 | 20 |
| Leeds | 7 | 0 | 6 | 13 | 2 | 0 | 7 | 9 |
| Manchester | 5 | 1 | 19 | 25 | 2 | 1 | 14 | 17 |
| Newcastle | 0 | 0 | 3 | 3 | 3 | 1 | 2 | 6 |
| Nottingham | 7 | 1 | 1 | 9 | 2 | 0 | 6 | 8 |
| Adult centres | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 4 |
| TOTAL | 56 | 4 | 79¹ | 139 | 36 | 6 | 70² | 112 |

¹ Includes 2 non-directed donor transplants, 3 paired living donor transplants and 1 altruistic donor chain (1 as a patient on transplant list at end of chain)

² Includes 1 non-directed donor transplant, 3 paired living donor transplants and 4 altruistic donor chain (1 as a patient on transplant list at end of chain)

At 31 March 2020, there were approximately 41,000 recipients with a functioning kidney transplant (including multi-organ transplants) being followed-up as reported to the UK Transplant Registry.

Rates of pre-emptive kidney only transplantation are shown in **Table 5.12**. Of the 3,265 kidney only transplant recipients in 2019-2020, dialysis status at time of transplant was reported for 3,184 (98%). Of these 3,184 transplants, 667 (21%) were carried out in pre-dialysis patients.

Pre-emptive transplants accounted for 21% of all paediatric kidney only transplants with reported dialysis status, compared with 21% of those in adults. Living donor transplants are more likely to be carried out before the need for dialysis than deceased donor transplants: 37% and 14% respectively. This is because a living donor transplant can often be carried out more quickly than a deceased donor kidney transplant as the latter often necessitates a long waiting time.

Table 5.12 Pre-emptive kidney only transplants in the UK, 1 April 2019 - 31 March 2020

| | Number of kidney only transplants | Number of transplants with known dialysis status at transplant (% of all) | Percentage of patients transplanted prior to the need for dialysis (of those with known status) |
|---------------------------|-----------------------------------|---|---|
| Adult | | | |
| Deceased donor transplant | 2241 | 2215 (98.8) | 14.0 |
| Living donor transplant | 912 | 901 (98.8) | 38.0 |
| Paediatric | | | |
| Deceased donor transplant | 42 | 42 (100.0) | 11.9 |
| Living donor transplant | 70 | 68 (97.1) | 26.5 |

The length of time that elapses between a kidney being removed from the donor to its transplantation into the recipient is called cold ischaemia time (CIT). Generally, the shorter this time, the more likely the kidney is to work immediately and the better the long-term outcome. The factors which determine CIT include a) transportation of the kidney from the retrieval hospital to the hospital where the transplant is performed, b) the need to tissue type the donor and cross-match the donor and potential recipients, c) the occasional necessity of moving the kidney to another hospital if a transplant cannot go ahead, d) contacting and preparing the recipient for the transplant and e) access to the operating theatre. Median CITs are shown in addition to inter-quartile ranges in **Table 5.13**.

Table 5.13 Median cold ischaemia time for kidney only transplants in the UK, 1 April 2019 - 31 March 2020

| | Number of kidney only transplants ¹ | Median (hours) | Inter-quartile range ² | |
|----------------------|--|----------------|-----------------------------------|-------------|
| | | | Q1 | Q3 |
| Adult | | | | |
| DBD donor transplant | 1326 | 12.7 | 10.1 | 16.3 |
| DCD donor transplant | 915 | 12.6 | 9.6 | 16.0 |
| Total | 2241 | 12.7 | 10.0 | 16.2 |
| Paediatric | | | | |
| DBD donor transplant | 36 | 11.0 | 9.1 | 14.4 |
| DCD donor transplant | 6 | 13.6 | 10.9 | 15.8 |
| Total | 42 | 11.2 | 9.5 | 15.0 |
| TOTAL | 2283 | 12.6 | 10.0 | 16.2 |

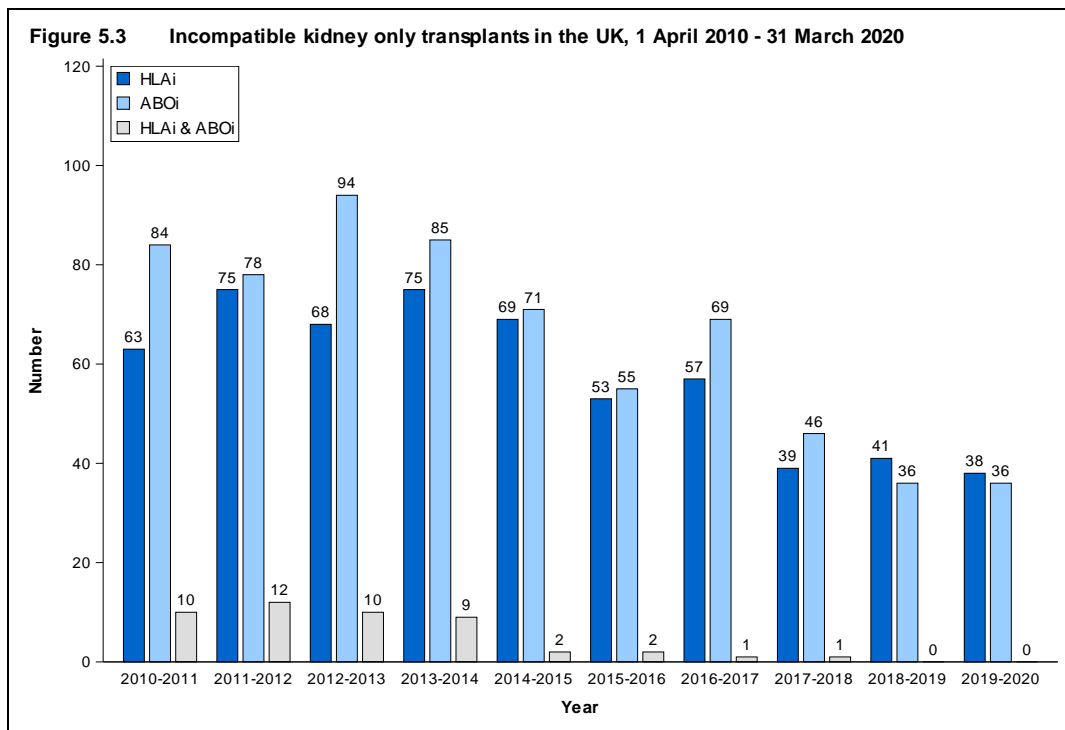
¹ Not all cold ischaemia times are reported
² 25% of times are shorter than Q1, 25% are longer than Q3

Kidneys from donors after brain death and some kidneys from donors after circulatory death are allocated on the basis of a national Kidney Offering Scheme which incorporates HLA matching between donor and recipient. These HLA matches are based on four levels which are described in **Table 5.14**. Prior to 11 September 2020, patients with 000 HLA-A, B, DR mismatch (Level 1) were prioritised in the scheme, whereas kidneys were rarely transplanted as a Level 4 match. Under the new scheme, Level 4 matches are only permitted for difficult to match patients. More information about the allocation scheme can be found at www.odt.nhs.uk. **Table 5.15** gives the HLA mismatch group for adult and paediatric patients for DBD donor transplants but also for DCD and living donor transplants. For living donor transplantation, many transplants have a poorer HLA match between donor and recipient than deceased donor transplantation. Very often there is no genetic relationship between donor and recipient.

| Table 5.14 HLA mismatch groups | | |
|---------------------------------------|------------------------------------|--|
| Level | HLA mismatch summary | HLA mismatch combinations included |
| 1 | 000 | 000 |
| 2 | [0 DR and 0/1 B] | 100, 010, 110, 200, 210, 001, 101, 201 |
| 3 | [0 DR and 2 B] or [1 DR and 0/1 B] | 020, 120, 220, 011, 111, 211 |
| 4 | [1 DR and 2 B] or [2 DR] | 021, 121, 221, 002, 102, 202, 012, 112, 212, 022, 122, 222 |

| Table 5.15 HLA matching for kidney only transplants in the UK, 1 April 2019 - 31 March 2020 | | | | | | |
|--|------------|------------|------------|------------|---------------|------------|
| | DBD | | DCD | | Living | |
| | N | (%) | N | (%) | N | (%) |
| Adult patients | | | | | | |
| Level 1 (Best match) | 87 | (7) | 29 | (3) | 75 | (9) |
| Level 2 | 455 | (34) | 277 | (30) | 179 | (22) |
| Level 3 | 497 | (38) | 400 | (44) | 333 | (41) |
| Level 4 | 286 | (22) | 209 | (23) | 229 | (28) |
| Not reported | 1 | | 0 | | 96 | |
| Paediatric patients | | | | | | |
| Level 1 (Best match) | 3 | (8) | 0 | (0) | 4 | (6) |
| Level 2 | 24 | (67) | 5 | (83) | 24 | (38) |
| Level 3 | 9 | (25) | 1 | (17) | 33 | (52) |
| Level 4 | 0 | (0) | 0 | (0) | 3 | (5) |
| Not reported | 0 | | 0 | | 6 | |

Often potential living donors and their recipients are HLA or blood group incompatible. Increasingly it is possible to proceed with transplantation across the incompatibilities with appropriate management. The number of HLA and ABO blood group incompatible transplants over the last ten years is shown in **Figure 5.3**. Of the 578 HLA incompatible (HLAi) transplants performed; 216 were deceased donor transplants and 362 were living donor transplants, whilst the vast majority of ABO incompatible (ABOi) transplants were living donor transplants (650 of 654). Due to the nature of reporting HLA incompatible transplants, the numbers presented may be subject to change over time.



5.5 Demographic characteristics

The age group, sex, ethnicity and blood group of deceased donors, transplant recipients and patients on the transplant list are shown in **Table 5.16** and for living donors and transplants in **Table 5.17**. Note that all percentages quoted are based only on data where relevant information was available.

| Table 5.16 Demographic characteristics of deceased kidney donors and transplant recipients, 1 April 2019 - 31 March 2020, and transplant list patients at 29 February | | | | | | |
|--|---------------|--------------|------------------------------|--------------|--|--------------|
| Age group (years) | Donors | | Transplant recipients | | Active transplant list patients | |
| | N | (%) | N | (%) | N | (%) |
| 0 - 17 | 44 | (3) | 42 | (2) | 111 | (2) |
| 18 - 34 | 208 | (14) | 307 | (12) | 550 | (11) |
| 35 - 49 | 334 | (23) | 605 | (25) | 1302 | (26) |
| 50 - 59 | 360 | (24) | 707 | (29) | 1429 | (29) |
| 60 - 69 | 320 | (22) | 537 | (22) | 1161 | (23) |
| 70+ | 215 | (15) | 268 | (11) | 407 | (8) |
| Mean (SD) | 52 | (17) | 52 | (15) | 51 | (14) |
| Male | 854 | (58) | 1492 | (61) | 2985 | (60) |
| Female | 627 | (42) | 974 | (39) | 1969 | (40) |
| Not reported | 0 | | 0 | | 6 | |
| White | 1367 | (93) | 1594 | (65) | 3139 | (64) |
| Asian | 39 | (3) | 419 | (17) | 955 | (20) |
| Black | 27 | (2) | 312 | (13) | 569 | (12) |
| Chinese | 10 | (1) | 26 | (1) | 45 | (1) |
| Other | 25 | (2) | 87 | (4) | 178 | (4) |
| Not reported | 13 | | 28 | | 74 | |
| O | 665 | (45) | 973 | (39) | 2744 | (55) |
| A | 627 | (42) | 1034 | (42) | 1161 | (23) |
| B | 143 | (10) | 339 | (14) | 946 | (19) |
| AB | 46 | (3) | 120 | (5) | 109 | (2) |
| First graft | | | 2031 | (82) | 3889 | (78) |
| Re-graft | | | 435 | (18) | 1071 | (22) |
| TOTAL | 1481 | (100) | 2466 | (100) | 4960 | (100) |

Table 5.17 Demographic characteristics of living kidney donors and transplant recipients, 1 April 2019 - 31 March 2020

| Age group (years) | Donors | | Transplant recipients | |
|-------------------|------------|--------------|-----------------------|--------------|
| | N | (%) | N | (%) |
| 0 - 17 | 0 | (0) | 70 | (7) |
| 18 - 34 | 166 | (17) | 204 | (21) |
| 35 - 49 | 338 | (34) | 280 | (29) |
| 50 - 59 | 271 | (28) | 217 | (22) |
| 60 - 69 | 162 | (16) | 158 | (16) |
| 70+ | 45 | (5) | 53 | (5) |
| Mean (SD) | 48 | (13) | 45 | (17) |
| Male | 470 | (48) | 568 | (58) |
| Female | 512 | (52) | 414 | (42) |
| White | 846 | (86) | 796 | (83) |
| Asian | 81 | (8) | 92 | (10) |
| Black | 26 | (3) | 40 | (4) |
| Chinese | 7 | (1) | 7 | (1) |
| Other | 21 | (2) | 29 | (3) |
| Not reported | 1 | | 18 | |
| O | 567 | (58) | 447 | (46) |
| A | 296 | (30) | 351 | (36) |
| B | 107 | (11) | 143 | (15) |
| AB | 12 | (1) | 41 | (4) |
| First graft | | | 814 | (83) |
| Re-graft | | | 168 | (17) |
| TOTAL | 982 | (100) | 982 | (100) |