

NHS BLOOD AND TRANSPLANT

NATIONAL LIVER OFFERING SCHEME

SEVENTY-TWO MONTH REVIEW

SUMMARY

1. BACKGROUND

- 1.1. The new National Liver Offering Scheme (NLOS) was introduced on 20 March 2018 for donation after brain death (DBD) donors and mainly for liver offers to named patients. Offering of livers from donors after circulatory death (DCD) has not changed and remains on a centre-specific basis rather than on a patient specific basis. This report examines the impact of the new DBD scheme on patients on the waiting list, livers offered and transplant activity.
- 1.2. It should be noted that this report may not include all data due to delays in reporting.
- 1.3. Updated Kidney Offering Scheme and Pancreas Offering Scheme were introduced on 11 September 2019. Unfortunately, an unexpected and untested change was introduced to the NLOS at the same time which affected the number of patients that appeared as named elective patients on matching run. This change was removed on the 19 September 2019 and this report includes this period in all analyses apart from in the flow chart in **Figure 9B**.
- 1.4. Due to the impact of COVID-19, it was agreed by OTDT Medical team and the Liver Advisory Group chair on 27 March 2020 that liver centres should consider an elective named patient offer for any patient when offered and not just the named patient. It was also agreed that a kidney would not be held back if a liver/kidney patient was in the top 3 named elective patients. There were no changes to the DCD offering scheme and the changes to the DBD offering scheme ceased on 9 July 2020 when named patient offering recommenced. This period is excluded from part of the liver offering section.
- 1.5. The estimates used to calculate the Transplant Benefit Score (TBS) were updated on 4 October 2022 and the offering data has been presented separately for 2022/2023. One of the factors (inpatient status) identified as statistically significant in the non-cancer models was set to zero on 23rd May 2023 following discussion at the prior NLOS monitoring committee and LAG Core Group.

2. DATA AND METHODS

- 2.1. **Table S1** shows the time period and inclusion and exclusion criteria for the aspects of the offering scheme examined in this report. NHS Group 2 registrations and transplants were excluded throughout the report along with registrations, offers and transplants for intestinal patients not requiring a liver. Super-urgent and elective registrations were included in all aspects apart from the transplant list activity section as were adult and paediatric registrations and transplants. All full year time periods are 20 March to 19 March.

Table S1			
Inclusion and exclusion criteria for the aspects of NLOS examined in this report			
Section	Time period	Inclusions	Exclusions
Registration activity	<ul style="list-style-type: none"> 20 March 2017 to 19 March 2018 (<i>Year prior</i>, N=1169) 20 March 2018 to 19 March 2024 (<i>seventy-two months post</i>, N=7039) 	<ul style="list-style-type: none"> New active/suspended registrations 	<ul style="list-style-type: none"> Dublin registrations NHS Group 2 registrations
One and three month post-registration outcome	<ul style="list-style-type: none"> 20 December 2014 to 19 December 2017 (<i>Year prior</i>, N=2779) 20 March 2018 to 19 December 2023 (<i>sixty-nine months post</i>, N=5565) 	<ul style="list-style-type: none"> Active and suspended Adult elective liver and liver/kidney registrations 	<ul style="list-style-type: none"> Dublin registrations NHS Group 2 registrations Intestinal registrations
Six months post-registration outcome	<ul style="list-style-type: none"> 20 September 2014 to 19 September 2017 (<i>Year prior</i>, N=2781) 20 March 2018 to 19 September 2023 (<i>sixty-six months post</i>, N=5330) 	<ul style="list-style-type: none"> Active and suspended Adult elective liver and liver/kidney registrations 	<ul style="list-style-type: none"> Dublin registrations NHS Group 2 registrations Intestinal registrations
One-year post-registration outcome	<ul style="list-style-type: none"> 20 March 2014 to 19 March 2017 (<i>Year prior</i>, N=2808) 20 March 2018 to 19 March 2023 (<i>sixty months post</i>, N=4843) 	<ul style="list-style-type: none"> Active and suspended Adult elective liver and liver/kidney registrations 	<ul style="list-style-type: none"> Dublin registrations NHS Group 2 registrations Intestinal registrations
Two-year post-registration outcome	<ul style="list-style-type: none"> 20 March 2014 to 19 March 2016 (<i>Year prior</i>, N=1884) 20 March 2018 to 19 March 2022 (<i>forty-eight months post</i>, N=3827) 	<ul style="list-style-type: none"> Active and suspended Adult elective liver and liver/kidney registrations 	<ul style="list-style-type: none"> Dublin registrations NHS Group 2 registrations Intestinal registrations
Liver offering	<ul style="list-style-type: none"> <i>Year prior</i>, N=1914 (962 DBD and 952 DCD) <i>Seventy-two months post</i>, N=10467 (5156 DBD and 5311 DCD) 	<ul style="list-style-type: none"> UK deceased donors whose liver was offered for transplantation Offers to Dublin for super-urgent patients 	<ul style="list-style-type: none"> Intestinal offers regardless of whether patients required a liver Offers declined due to the patient accepting previously offered liver Offers to Dublin for elective patients
Transplant activity	<ul style="list-style-type: none"> 20 March 2017 to 19 March 2018 (<i>Year prior</i>, N=1017, 819 DBD and 198 DCD) <i>Seventy-two months post</i>, N=5274 (4084 DBD and 1190 DCD) 	<ul style="list-style-type: none"> UK transplants 	<ul style="list-style-type: none"> Transplants performed at Dublin Intestinal transplants for patients not requiring a liver NHS Group 2 transplants
Ninety-day post-transplant survival	<ul style="list-style-type: none"> 20 March 2017 to 19 March 2018 (<i>Year prior</i>, N=579 for DBD and 183 for DCD) <i>Sixty-nine months post</i>, N=2732 for DBD and 1057 for DCD) 	<ul style="list-style-type: none"> UK adult elective liver and liver/kidney transplants 	<ul style="list-style-type: none"> Txs performed at Dublin Intestinal transplants for patients not requiring a liver NHS Group 2 transplants
One-year post-transplant survival	<ul style="list-style-type: none"> 20 March 2017 to 19 March 2018 (<i>Year prior</i>, N=579 for DBD and 183 for DCD) 20 March 2018 to 19 March 2023 (<i>sixty-six months post</i>, N=2415 for DBD and 869 for DCD) 	<ul style="list-style-type: none"> UK adult elective liver and liver/kidney transplants 	<ul style="list-style-type: none"> Txs performed at Dublin Intestinal transplants for patients not requiring a liver NHS Group 2 transplants

3. RESULTS

REGISTRATION ACTIVITY

- 3.1. There were 7039 new NHS Group 1 liver registrations in the UK in the first seventy-two months of the scheme. (**Table 1**)
- 3.2. The proportion of elective liver registrations increased slightly from 88% to 90% between 2017/2018 and 2023/2024. The proportion of adult elective registrations with CLD has returned to 71% in 2023/2024, as in 2017/2018. The proportion of HCC registrations (including HCC downstaging) has decreased by 2%. The number of new variant syndrome registrations in 2017/18 and 2023/24 was 83 and 82 respectively. (**Table 3**)
- 3.3. Ninety-three percent of the new adult elective registrations in 2023/2024 were for first graft compared with 91% in 2017/2018. (**Table 4**)
- 3.4. The median age of new adult elective registrations was 55 in 2017/2018 and varies between 54 and 56 in the seventy-two months post-NLOS. (**Table 5**)

POST-REGISTRATION OUTCOME

- 3.5. There were 5565 adult elective registrations in the subset of patients registered in the first 69 months post-NLOS. The proportion of registrations who received a transplant within one year of registration ranged from 59% to 74% across the yearly time periods post NLOS. (**Table 6**)
- 3.6. The proportion of patients who either died on the list or were removed due to condition deterioration in the first year ranged from 6% to 12% in the time periods post NLOS compared to 10% to 11% in the time period prior. In the two-year registration outcome time periods, the proportion of patients who either died on the list or were removed due to condition deterioration ranged from 9% to 14% in the time periods post NLOS compared to 12% to 14% in the time period prior. (**Figures 6 and B4**)

LIVER OFFERING

- 3.7. Overall, 5156 DBD livers and 5311 DCD livers were offered in the first seventy-two months of the scheme. For DBD donors, the proportion retrieved ranged between 85% and 90% in the 72 months post and 88% in the year prior to NLOS. The equivalent proportion for DCD was 26% to 43% for the 72 months post and 32% in the year prior to NLOS. (**Table 8**)
- 3.8. **Figures 9a** and **9b** in the main paper show the number of DBD livers offered during the first seventy-two months at each stage of the liver offering pathway. Livers offered during COVID are included in **Figure 9a** but excluded at the elective stage of **Figure 9b**. Eight hundred and twenty-nine livers were either accepted and transplanted or declined and not offered on prior to the elective section of the offering pathway.

- 3.9. Of the 4112 DBD livers offered to the elective section that were not offered only to paediatric centres and not offered during the first wave of COVID-19 in 2020, 3696 (90%) were allocated to the elective CLD/HCC pathway while 416 (10%) were randomly allocated to the variant syndrome pathway which is consistent with the percentages used in the probabilistic prioritisation of the elective list.
- 3.10. 1998 livers (not accepted by higher tiers) offered to named elective CLD/HCC were accepted and transplanted while 167 livers offered to the named elective variant syndrome pathway were accepted and transplanted.
- 3.11. 1701 livers declined by all stages were fast-tracked and 650 were accepted and transplanted.
- 3.12. 8370 (35%) of the 24378 offers made in the first 72 months post NLOS were to named recipients. All offers between 27 March and 9 July 2020 are excluded as centres were offered livers for any clinically urgent patient rather than named patients. 5713 of the named patient offers involved livers that were ultimately retrieved and transplanted.
- 3.13. The number of named patient offers per donor ranged between 1 and 18 with a median of two named patient offers per donor. The number of named offers per patient ranged between 1 and 33 with a median of two offers per patient. Fifty six patients at 7 centres were offered 11 or more livers in the seventy-two month time period (18 were offered 11 livers, 14 were offered 12 livers, 6 were offered 13 livers, 6 were offered 14 livers, 2 were offered 15 livers, 1 was offered 16, 1 was offered 17, 2 were offered 18 livers, 1 was offered 19 livers, 1 was offered 21, 3 were offered 27 and 1 was offered 33 livers).

TRANSPLANT ACTIVITY

- 3.14. The proportion of super-urgent transplants performed has increased from prior to NLOS implementation to 2023/24 (11% vs 14% respectively). There were 109 DBD super-urgent transplants pre NLOS 2017/2018 and 93 DBD super-urgent transplants in 2023/2024 (19 March 2023 – 19 March 2024). (**Table 14**)
- 3.15. One hundred and forty of the 5077 adult elective liver and liver/kidney transplants were performed in the UK between 27 March 2020 and 9 July 2020. These transplants are **included** in the transplant section but note that DBD livers were not offered through the National Liver Offering Scheme due to COVID-19, and both DBD and DCD livers were offered to clinically urgent patients.
- 3.16. For DBD transplants, there was evidence of a statistically significant association between time period and age group ($p=0.0002$), disease group ($p=0.002$), transplant centre ($p=0.009$), zonal ($p<0.0001$), type of patient ($p<0.0001$), blood group compatibility ($p=0.0008$) and blood group matching ($p<0.0001$). (**Table 15**).

- 3.17. For DCD transplants, there was evidence of a statistically significant association between time period and disease group ($p=0.009$), transplant centre ($p<0.0001$) and type of patient ($p=0.02$). There was no significance for blood group compatibility ($p=0.12$) or zonal ($p=0.08$). (**Table 16**).
- 3.18. There was a statistically significant difference in cold ischaemia time for both adult elective DBD ($p=0.002$) and DCD ($p=0.016$) transplants across the time periods of interest. However, this may be due to the inclusion of periods of machine perfusion which is not currently collected on the liver transplant record form. (**Figure 16-19**)
- 3.19. There was no significant difference in ninety-day DBD and DCD patient survival (p -value= 0.42 and 0.10 respectively). (**Figure 20**). There was no significant difference at a 5% significance level in ninety-day transplant survival for either DBD or DCD transplants (p -value= 0.47 and 0.14 respectively). (**Figure 21**).
- 3.20. There was no significant difference in one-year DBD and DCD patient survival (p -value= 0.45 and 0.41 respectively). (**Figure 22**). There was no significant difference at a 5% significance level in one-year transplant survival for either DBD or DCD transplants (p -value= 0.78 and 0.59 respectively). (**Figure 23**).

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- 1.2. It should also be noted that this report may not include all data due for the first seventy-two months due to delays in reporting.
- 1.3. The updated Kidney Offering Scheme and Pancreas Offering Scheme were introduced on 11 September 2019. Unfortunately, an unexpected and untested change was introduced to the NLOS at the same time which affected the number of patients that appeared as named elective patients on matching run. This change was removed on the 19 September 2019 and this report includes this period in all analyses apart from in the flow chart in **Figure 9B**.
- 1.4. Due to the impact of COVID-19, it was agreed by OTDT Medical team and the Liver Advisory Group chair on 27 March 2020 that liver centres should consider an elective named patient offer for any patient when offered and not just the named patient. It was also agreed that a kidney would not be held back if a liver/kidney patient was in the top 3 named elective patients. There were no changes to the DCD offering scheme and NLOS resumed on 9 July 2020.
- 1.5. Birmingham, Royal Free, Kings College and Cambridge temporarily closed for all adult transplants in December 2020/January 2021. Royal Free and Birmingham temporarily transferred some of their clinically urgent patients to other transplant centres who were open. Transplant centres reviewed their transplant lists in January 2021 and formally suspended non-urgent patients. Offering to named clinically urgent patients continued and centres could consider livers for non-urgent patients if declined for all clinically urgent patients.
- 1.6. All transplant centres other than Birmingham formally reactivated all non-urgent CLD and HCC patients on the 6th April 2021 while variant syndrome patients and patients at Birmingham were reactivated in late April 2021.

- 1.7. Birmingham closed for all DCD offers in January 2021 with Newcastle and Leeds receiving Birmingham's zonal and linked offers on a rota basis. Birmingham reopened for DCD offers in late April 2021.
- 1.8. The parameter estimates and baseline survivor functions used to calculate the TBS were updated on 4 October 2022. One of the factors (inpatient status) identified as statistically significant in the non-cancer models was set to zero on 23rd May 2023 following discussion at the prior NLOS monitoring committee and LAG Core Group.

2. DATA AND METHODS

2.1. REGISTRATION ACTIVITY AND POST-REGISTRATION OUTCOME

- 2.1.1. Data on 8208 new active/suspended NHS Group 1 registrations on the UK liver transplant list between 20 March 2017 and 19 March 2024 were obtained from the UK Transplant Registry on 10 April 2024. Patients registered in Dublin or as NHS Group 2 were excluded as such elective patients would only be offered a liver if all UK transplant centres declined the offer.
- 2.1.2. One and three month registration outcomes were examined, by year, for registrations either between 20 December 2014 and 19 December 2017 (N=2779) or between 20 March 2018 and 19 December 2023 (N=5565).
- 2.1.3. Six month registration outcome was examined for registrations either between 20 September 2014 and 19 September 2017 (N=2781) or between 20 March 2018 and 19 September 2023 (N=5330).
- 2.1.4. One-year registration outcome was examined for registrations either between 20 March 2014 and 19 March 2017 (N=2808) or between 20 March 2018 and 19 September 2022 (N=4843). Two-year registration outcome was examined for a subset registered either between 20 March 2014 and 19 September 2016 (N=1884) or between 20 March 2018 and 19 September 2021 (N=3827).

2.2. LIVER OFFERING

- 2.2.1. Data on 12381 deceased donors (6118 DBD and 6263 DCD) from the UK whose liver was offered for transplantation between 20 March 2017 and 19 March 2024 were obtained from the UK Transplant Registry on 26 April 2024. Intestinal offers were excluded regardless of whether they required a liver or not. The data was split into seven year periods.

2.3. TRANSPLANT ACTIVITY AND POST-TRANSPLANT SURVIVAL

- 2.3.1. Data on 6291 deceased donor liver transplants (4903 DBD and 1388 DCD) performed in the UK between 20 March 2017 and 19 March 2024 were also obtained from the UK Transplant Registry on 8 April 2024. Intestinal transplants involving the liver were included.

3. RESULTS

3.1. REGISTRATION ACTIVITY - OVERALL

3.1.1. **Figure 1** shows the number of new NHS Group 1 registrations on the UK liver transplant list between 20 March 2017 and 19 March 2024 by quarter and urgency status while **Table 1** compares the twelve months pre the introduction of NLOS and the seventy-two months post the introduction of NLOS. There was no statistically significant association between the time of registration and registration type (Chi-squared p-value =0.25). It should be noted that there was an increase in the number of paediatric acute liver failure patients in the first two quarters of 2022.

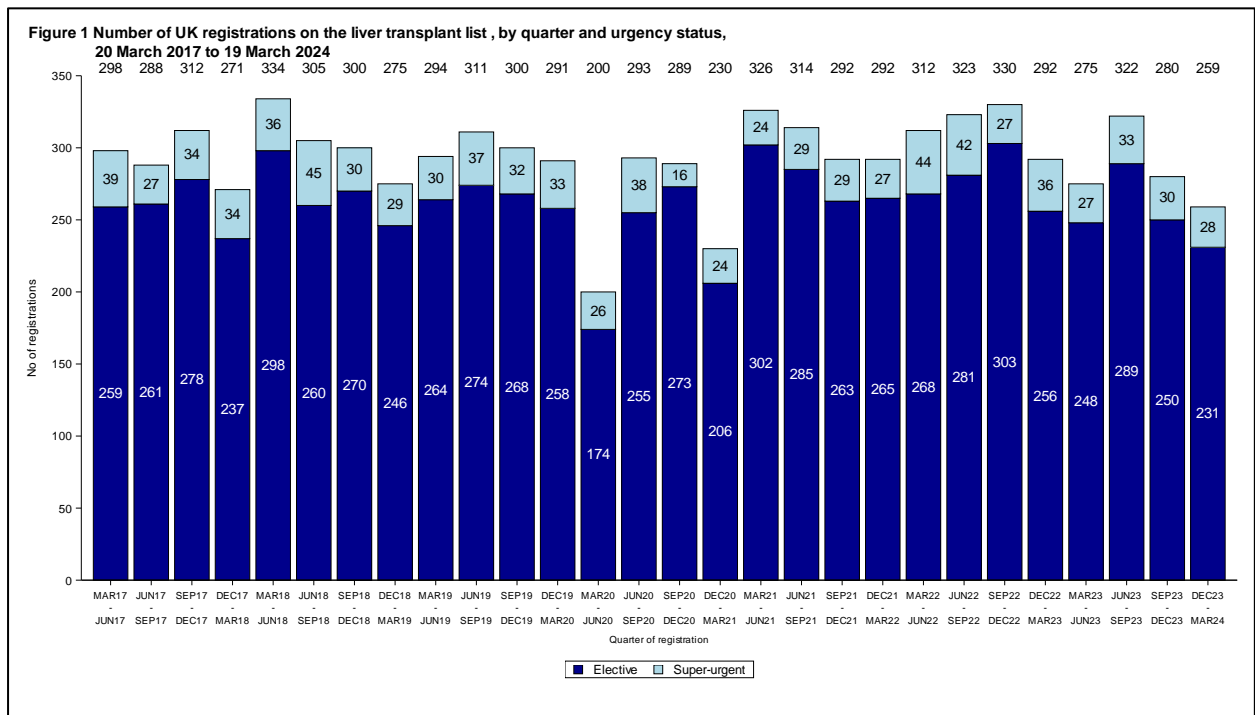


Table 1 Urgency status by time period for all NHS Group 1 liver registrations in the UK, 20 March 2017 to 19 March 2024

Urgency status	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
Elective	1035 (89)	1074 (88)	1064 (89)	908 (90)	1115 (91)	1108 (88)	1018 (90)	7322 (89)
Super-urgent	134 (11)	140 (12)	132 (11)	104 (10)	109 (9)	149 (12)	118 (10)	886 (11)
Total	1169 (100)	1214 (100)	1196 (100)	1012 (100)	1224 (100)	1257 (100)	1136 (100)	8208 (100)

3.2. REGISTRATION ACTIVITY - SUPER-URGENT

3.2.1. **Table 2** compares the twelve months pre the introduction of NLOS and the seventy-two months post the introduction of NLOS by super-urgent category. The proportion of patients registered as either category 8 (HAT on days 0 to 21) or 9 (Early graft dysfunction on days 0 to 7) was 26% in the year prior and ranged between 18% and 28% in the years post NLOS. **Appendix A** shows the descriptions of each of the categories.

Super-urgent category	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24*	Total
1	2 (1)	3 (2)	4 (3)	3 (3)	5 (5)	5 (3)	3 (3)	25 (3)
2	11 (8)	10 (7)	11 (8)	5 (5)	5 (5)	14 (9)	11 (9)	67 (8)
3	4 (3)	9 (6)	6 (5)	9 (9)	7 (6)	8 (5)	5 (4)	48 (5)
4	2 (1)	2 (1)	2 (2)	3 (3)	4 (4)	1 (1)	8 (7)	22 (2)
5	11 (8)	5 (4)	3 (2)	4 (4)	8 (7)	10 (7)	2 (2)	43 (5)
6	54 (40)	56 (40)	50 (38)	41 (39)	40 (37)	59 (40)	36 (31)	336 (38)
7	6 (4)	3 (2)	9 (7)	8 (8)	10 (9)	10 (7)	10 (8)	56 (6)
8	22 (16)	19 (14)	14 (11)	9 (9)	8 (7)	19 (13)	19 (16)	110 (12)
9	13 (10)	20 (14)	15 (11)	11 (11)	12 (11)	10 (7)	12 (10)	93 (10)
10	4 (3)	4 (3)	6 (5)	0 (0)	0 (0)	1 (1)	2 (2)	17 (2)
20	3 (2)	5 (4)	7 (5)	6 (6)	5 (5)	5 (3)	5 (4)	36 (4)
88	2 (1)	4 (3)	5 (4)	5 (5)	5 (5)	7 (5)	5 (4)	33 (4)
Total	134 (100)	140 (100)	132 (100)	104 (100)	109 (100)	149 (100)	118 (100)	886 (100)

3.3. REGISTRATION ACTIVITY - ELECTIVE

3.3.1. **Table 3** compares the twelve months pre the introduction of NLOS and the seventy-two months post the introduction of NLOS for NHS Group 1 elective registrations by age and type of patient.

There was no statistically significant association between patient age group and time period (Chi-squared p-value =0.60).

Type of patient Overall	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
<i>Adult elective</i> ¹	951 (92)	989 (92)	980 (92)	825 (91)	1038 (93)	1016 (92)	927 (91)	6726 (92)
CLD	674 (71)	720 (73)	739 (75)	635 (77)	787 (76)	742 (73)	659 (71)	4956 (74)
HCC/ HCC downstaging Variant syndrome	193 (20)	195 (20)	178 (18)	147 (18)	168 (16)	169 (17)	164 (18)	1214 (18)
ACLF	83 (9)	71 (7)	56 (6)	39 (5)	63 (6)	83 (8)	82 (9)	477 (7)
Liver/ cardiothoracic	0 (0)	1 (0)	2 (0)	2 (0)	14 (1)	19 (2)	22 (2)	60 (1)
	1 (0)	2 (0)	5 (1)	2 (0)	6 (1)	3 (0)	0 (0)	19 (0)
<i>Paediatric elective</i> ²	84 (8)	85 (8)	84 (8)	83 (9)	77 (7)	92 (8)	91 (9)	596 (8)
Hepatoblastoma/ Prioritised Paediatric	3 (4)	10 (12)	10 (12)	21 (25)	16 (21)	20 (22)	13 (14)	93 (16)
Non hepatoblastoma	81 (96)	74 (87)	74 (88)	62 (75)	59 (77)	72 (78)	78 (86)	500 (84)
Liver/ cardiothoracic	0 (0)	1 (1)	0 (0)	0 (0)	2 (3)	0 (0)	0 (0)	3 (1)

¹ Includes 20 CLD, 1 HCC and 3 Variant syndrome patient aged 17 years or over and weighing 40kg or under (1 in the twelve months prior and 23 in the seventy-two months post); 17 were dual-listed as small adults (1 in the twelve months prior and 16 in the seventy-two months post)

² Includes 7 hepatoblastoma, 99 non hepatoblastoma and 2 liver/cardiothoracic patients aged less than 17 years and weighing 40kg or over (20 in the twelve months prior and 88 in the seventy-two months post); 84 were dual-listed as large paediatrics (5 in the twelve months prior and 79 in the seventy-two months post)

- 3.3.2. **Table 4** compares the twelve months pre and the seventy-two months post the introduction of NLOS for each type of adult patient registered over the last 84 months by transplant number. The majority of patients were registered for a first liver transplant and there were no statistically significant associations between whether patient was registered for a first transplant or not and the time period (Chi-squared p-value=0.29).
- 3.3.3. All but three of the HCC patients were registered for a first graft. All three patients registered for a second graft had a UKELD less than 49 and no current ascites; two patients had no encephalopathy and one had encephalopathy grade 1.
- 3.3.4. **Table 5** shows compares the median and interquartile age at registration for the twelve months pre and the seventy-two months post the introduction of NLOS for each type of adult patient registered over the last 84 months. There were no statistically significant differences in the median recipient age (Kruskal-Wallis p-value \geq 0.20).

Table 4 Transplant number by time period for adult elective registrations in the UK, 20 March 2017 to 19 March 2024

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
CLD¹ (Chi-squared p-value=0.33)								
1 st graft	597 (89)	651 (90)	655 (89)	567 (89)	721 (92)	675 (91)	597 (91)	4463 (90)
2 nd graft	64 (9)	57 (8)	71 (10)	58 (9)	48 (6)	56 (8)	57 (9)	411 (8)
3 rd graft	9 (1)	12 (2)	11 (1)	9 (1)	16 (2)	10 (1)	5 (1)	72 (1)
4 th graft	3 (0)	0 (0)	2 (0)	1 (0)	2 (0)	1 (0)	0 (0)	9 (0)
6 th graft	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)
HCC/HCC downstaging² (Fishers exact p-value=0.98)								
1 st graft	192 (99)	194 (99)	178 (100)	147 (100)	168 (100)	168 (99)	164 (100)	1211 (100)
2 nd graft	1 (1)	1 (1)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	3 (0)
Variant syndrome³ (Fishers exact p-value=0.06)								
1 st graft	73 (88)	61 (86)	55 (98)	36 (92)	59 (94)	80 (96)	78 (95)	442 (93)
2 nd graft	10 (12)	10 (14)	0 (0)	3 (8)	3 (5)	3 (4)	3 (4)	32 (7)
3 rd graft	0 (0)	0 (0)	1 (2)	0 (0)	1 (2)	0 (0)	1 (1)	3 (1)
Overall adult elective⁴ (Chi-squared p-value=0.29)								
1 st graft	863 (91)	909 (92)	895 (91)	754 (91)	967 (93)	945 (93)	861 (93)	6194 (92)
2 nd graft	75 (8)	68 (7)	71 (7)	61 (7)	51 (5)	60 (6)	60 (6)	446 (7)
3 rd graft	9 (1)	12 (1)	12 (1)	9 (1)	18 (2)	10 (1)	6 (1)	76 (1)
4 th graft	3 (0)	0 (0)	2 (0)	1 (0)	2 (0)	1 (0)	0 (0)	9 (0)
6 th graft	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)
Total	951 (100)	989 (100)	980 (100)	825 (100)	1038 (100)	1016 (100)	927 (100)	6726 (100)

¹ One patient dual-listed was registered for a second graft in the twelve months prior whilst six were registered for a first graft, three for a second graft, three for a third graft and one for a fourth graft in the seventy-two months post.

² Includes HCC downstaging all of whom were registered for first graft.

³ Two patients dual-listed were registered for first graft and one for a second graft in the seventy-two months post.

⁴ Includes liver and cardiothoracic patients (all of whom were registered for first graft) and hepatoblastoma tier patients (all whom were registered for a first graft except for one registered for a third graft).

Table 5 Median (IQR) age by time period for adult elective NHS Group 1 registrations in the UK, 20 March 2017 to 19 March 2024

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
CLD¹ (Kruskal-Wallis p-value=0.27)								
N	674	720	739	635	787	742	659	4956
Median (IQR)	53 (44 - 61)	54 (44 - 61)	54 (45 - 61)	54 (43 - 61)	54 (43 - 60)	55 (44 - 61)	54 (44 - 61)	54 (44 - 61)
Range	17 - 76	17 - 73	17 - 74	17 - 71	17 - 74	17 - 71	17 - 71	17 - 76
HCC/HCC downstaging (Kruskal-Wallis p-value=0.44)								
N	193	195	178	147	168	169	164	1214
Median (IQR)	60 (55 - 65)	61 (56 - 65)	61 (55 - 66)	60 (56 - 64)	60 (56 - 65.5)	62 (57 - 65)	61 (57 - 65)	61 (56 - 65)
Range	20 - 75	21 - 73	21 - 72	19 - 73	43 - 73	37 - 72	27 - 72	19 - 75
Variant syndrome (Kruskal-Wallis p-value=0.85)								
N	83	71	56	39	63	83	82	477
Median (IQR)	49 (38 - 55)	51 (41 - 58)	48.5 (37.5 - 57.5)	48 (39 - 58)	48 (36 - 56)	48 (37 - 58)	50 (38 - 58)	49 (38 - 58)
Range	17 - 71	18 - 70	18 - 70	19 - 66	17 - 71	17 - 72	17 - 69	17 - 72
Overall adult elective² (Kruskal-Wallis p-value=0.20)								
N	951	989	980	825	1038	1016	927	6726
Median (IQR)	55 (46 - 62)	56 (47 - 62)	55 (47 - 62)	55 (45 - 61)	54.5 (45 - 61)	56 (46 - 62)	55 (45 - 62)	55 (46 - 62)
Range	17 - 76	17 - 73	17 - 74	17 - 73	17 - 74	17 - 72	17 - 72	17 - 76

¹ There was one patient dual-listed in the twelve months prior and 16 in the seventy-two months post

² Includes liver and cardiothoracic patients and hepatoblastoma tier patients

3.4. POST-REGISTRATION OUTCOME

3.4.1. **Table 6** shows the one and three-month registration outcome for adult elective NHS Group 1 liver patients registered during the sixty-nine months since the implementation of the NLOS, 20 March 2018 -19 December 2023, along with the prior thirty-six month period, 20 December 2014 – 19 December 2017. Note that the 2023/2024 period covers 9 months due to time to follow-up.

3.4.2. There were 722 adult elective registrations in the 9-month period of 2023/2024 period post NLOS and 270 (37%) received a transplant within 3 months of registration. The corresponding three-month transplant rate for patients registered during the twelve months in 2016/2017 is 49%. There were statistically significant differences between the time periods and registration outcome at one month and three month (Chi-squared p -value <0.0001).

3.4.3. **Table 6** also shows the six-month registration outcome for adult elective patients registered during the sixty-six months since the implementation of the NLOS, 20 March 2018 -19 September 2023, along with the prior thirty-six month period, 20 September 2014 – 19 September 2017. There were statistically significant differences between the time periods and registration outcome at six months (Chi-squared p -value <0.0001). For the period 20 March 2023 to 19 September 2023, 238 (49%) of the 487 registrations were transplanted within 6 months compared with 62% in 2016/2017. The proportion of patients who either died on the list or were removed due to condition deterioration within six months was 6% compared with 8% in the 2016/2017 period prior.

3.4.4. **Table 6** also shows the one-year and two-year registration outcomes. Whilst the proportion of adults transplanted within one-year has decreased to 60% in 2022/23, the proportion of adults who either died on the list or were removed due to condition deterioration within six months remains around 10%.

Table 6 Registration outcome for adult elective NHS Group 1 registrations on the UK liver transplant list, 20 March 2014 to 19 December 2023									
Registration outcome	2014/2015¹	2015/2016¹	2016/2017¹	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023²	2023/2024²
One-month outcome (Chi-squared p-value<0.0001)									
Remained active/suspended	759 (82)	704 (77)	657 (70)	625 (63)	647 (66)	568 (69)	750 (72)	738 (73)	548 (76)
Died/ removed due to CD ³	26 (3)	19 (2)	21 (2)	14 (1)	10 (1)	20 (2)	17 (2)	23 (2)	8 (1)
Removed due to other reasons	3 (0)	4 (0)	4 (0)	10 (1)	7 (1)	15 (2)	16 (2)	17 (2)	9 (1)
Transplanted	137 (15)	183 (20)	262 (28)	337 (34)	314 (32)	222 (27)	255 (25)	238 (23)	157 (22)
Total	925 (100)	910 (100)	944 (100)	986 (100)	978 (100)	825 (100)	1038 (100)	1016 (100)	722 (100)
Three-month outcome (Chi-squared p-value<0.0001)									
Remained active/suspended	539 (58)	470 (52)	410 (43)	419 (42)	458 (47)	426 (52)	577 (56)	583 (57)	416 (58)
Died/ removed due to CD ³	56 (6)	44 (5)	55 (6)	32 (3)	27 (3)	39 (5)	35 (3)	42 (4)	23 (3)
Removed due to other reasons	11 (1)	9 (1)	12 (1)	18 (2)	15 (2)	23 (3)	20 (2)	22 (2)	13 (2)
Transplanted	319 (34)	387 (43)	467 (49)	517 (52)	478 (49)	337 (41)	406 (39)	369 (36)	270 (37)
Total	925 (100)	910 (100)	944 (100)	986 (100)	978 (100)	825 (100)	1038 (100)	1016 (100)	722 (100)
Six-month outcome (Chi-squared p-value<0.0001)									
Remained active/suspended	367 (39)	312 (33)	242 (27)	275 (28)	319 (33)	288 (35)	421 (41)	429 (42)	198 (41)
Died/ removed due to CD ³	81 (9)	86 (9)	68 (8)	44 (4)	48 (5)	73 (9)	62 (6)	67 (7)	28 (6)
Removed due to other reasons	23 (2)	20 (2)	30 (3)	29 (3)	21 (2)	37 (4)	27 (3)	32 (3)	23 (5)
Transplanted	462 (50)	525 (56)	565 (62)	638 (65)	590 (60)	427 (52)	528 (51)	488 (48)	238 (49)
Total	933 (100)	943 (100)	905 (100)	986 (100)	978 (100)	825 (100)	1038 (100)	1016 (100)	487 (100)
One-year outcome (Chi-squared p-value<0.0001)									
Remained active/suspended	181 (19)	168 (18)	132 (14)	153 (16)	187 (19)	167 (20)	282 (27)	255 (25)	
Died/ removed due to CD ³	109 (11)	97 (10)	101 (11)	64 (6)	76 (8)	95 (12)	89 (9)	96 (9)	
Removed due to other reasons	50 (5)	40 (4)	38 (4)	42 (4)	33 (3)	56 (7)	53 (5)	58 (6)	
Transplanted	619 (65)	620 (67)	653 (71)	727 (74)	682 (70)	507 (61)	614 (59)	607 (60)	
Total	959 (100)	925 (100)	924 (100)	986 (100)	978 (100)	825 (100)	1038 (100)	1016 (100)	
Two-year outcome (Chi-squared p-value<0.0001)									
Remained active/suspended	54 (6)	50 (5)		64 (6)	78 (8)	70 (8)	108 (10)		
Died/ removed due to CD ³	130 (14)	113 (12)		85 (9)	91 (9)	113 (14)	117 (11)		
Removed due to other reasons	81 (8)	63 (7)		54 (5)	59 (6)	74 (9)	104 (10)		
Transplanted	694 (72)	699 (76)		783 (79)	750 (77)	568 (69)	709 (68)		
Total	959 (100)	925 (100)		986 (100)	978 (100)	825 (100)	1038 (100)		

¹20 December 20XX to 19 December 20XY for one and three-month outcomes, 20 September 20XX to 19 September 20XY for six-month outcome and 20 March 20XX to 19 March 20XY for one-year and two-year outcomes

²20 March 2023 - December 2023 for one and three-month outcomes, 20 March 2023 to 19 September 2023 for six-month outcome

³ Includes patients removed as registered onto super-urgent list

3.4.5. **Figure 3a** and **Figure 3b** show the one-year and two-year registration outcome by quarter and type of adult elective patient. HCC downstaging registrations are included with HCC registrations. The proportion of CLD patients registered post NLOS and transplanted in the first year post-registration ranged between 56 and 80% compared with 58 and 78% of registrations in the three years prior. From December 2019 to June 2021, the proportion of CLD patients registered post NLOS and transplanted within a year of registration was decreasing and has since stabilised around 61%. There was a statistically significant association between one-year transplant rate and time period of registration for CLD patients and HCC/HCC downstaging patients (Chi-squared p -value <0.05). For Variant syndrome patients, 26% of one-year outcomes contained less than 5 patients so the p -value should be observed with caution.

3.4.6. Equivalent charts for three-month and six-month are presented in **Figure B1** and **Figure C1** in **Appendix B** and **Appendix C**.

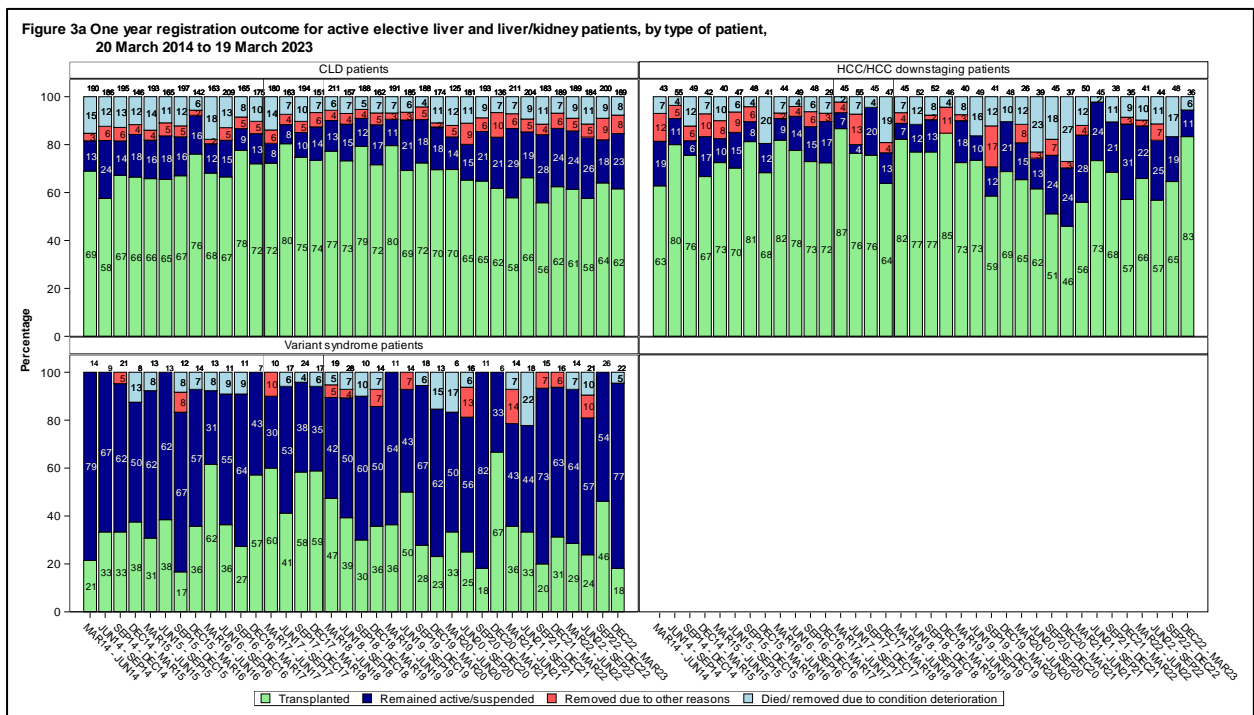
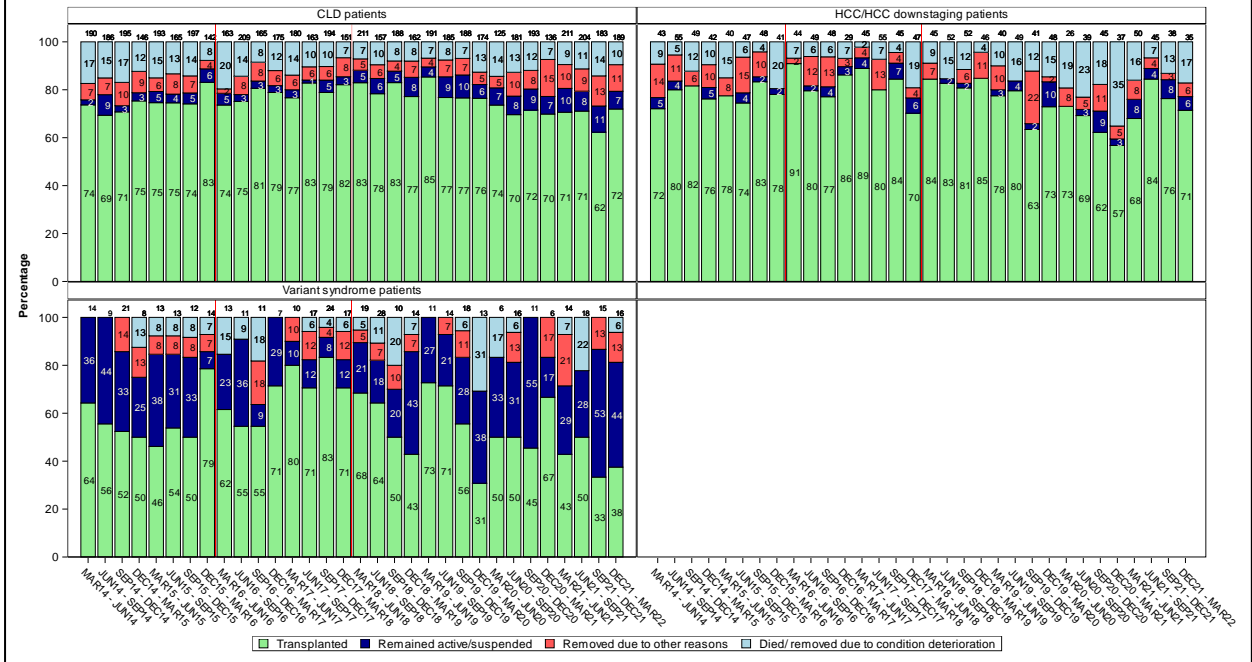
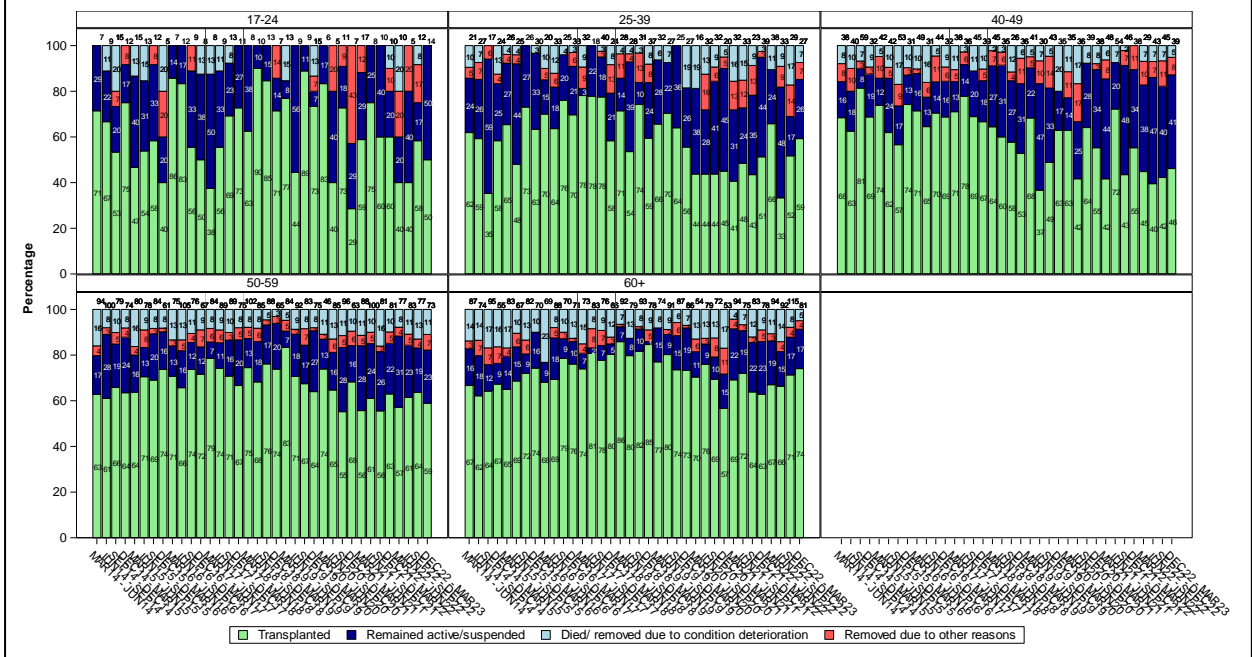


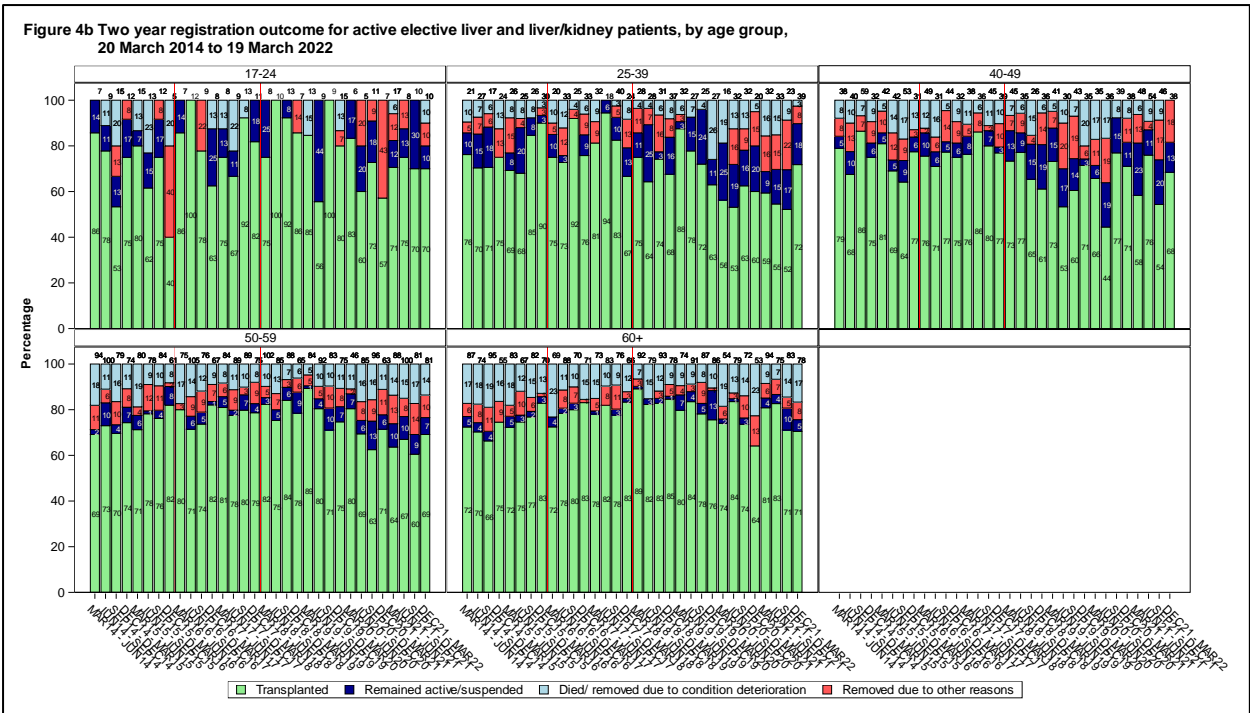
Figure 3b Two year registration outcome for active elective liver and liver/kidney patients, by type of patient, 20 March 2014 to 19 March 2022



3.4.7. **Figure 4a** and **Figure 4b** show the one-year and two-year registration by quarter and age group. There was a statistically significant association (Chi-squared p-value<0.01) between one-year transplant rate and time period of registration for all age groups except for 17-24 years. For patients aged 17-24 years, 54% of one-year outcomes contained less than 5 patients so the p-value should be observed with caution. Equivalent charts for three-month and six-month are presented in **Figure B2** and **Figure C2** in **Appendix B** and **Appendix C**.

Figure 4a One year registration outcome for active elective liver and liver/kidney patients, by age group, 20 March 2014 to 19 March 2023





3.4.8. **Figure 5a and Figure 5b** show the one-year and two-year registration outcome by quarter and whether the patient was registered for a first graft or re-graft. The proportion of first graft patients registered post NLOS and transplanted in the first year post-registration ranges between 57 and 79% compared with 62 and 74% of registrations in the three years prior. The proportion of re-graft patients registered post NLOS and transplanted in the first year post-registration ranged between 27 and 71% compared with 50 and 78% of registrations in the three years prior. There was a statistically significant association between one-year transplant rate and time period of registration for patients registered for a first graft but not for re-graft patients (Chi-squared p-value <0.01 and 0.35 respectively). Equivalent charts for three-month and six-month are presented in **Figure B3** and **Figure C3** in **Appendix B** and **Appendix C** and show consistent results with the one-year outcome chart.

Figure 5a One year registration outcome for active elective liver and liver/kidney patients, by first transplant or re-graft, 20 March 2014 to 19 March 2023

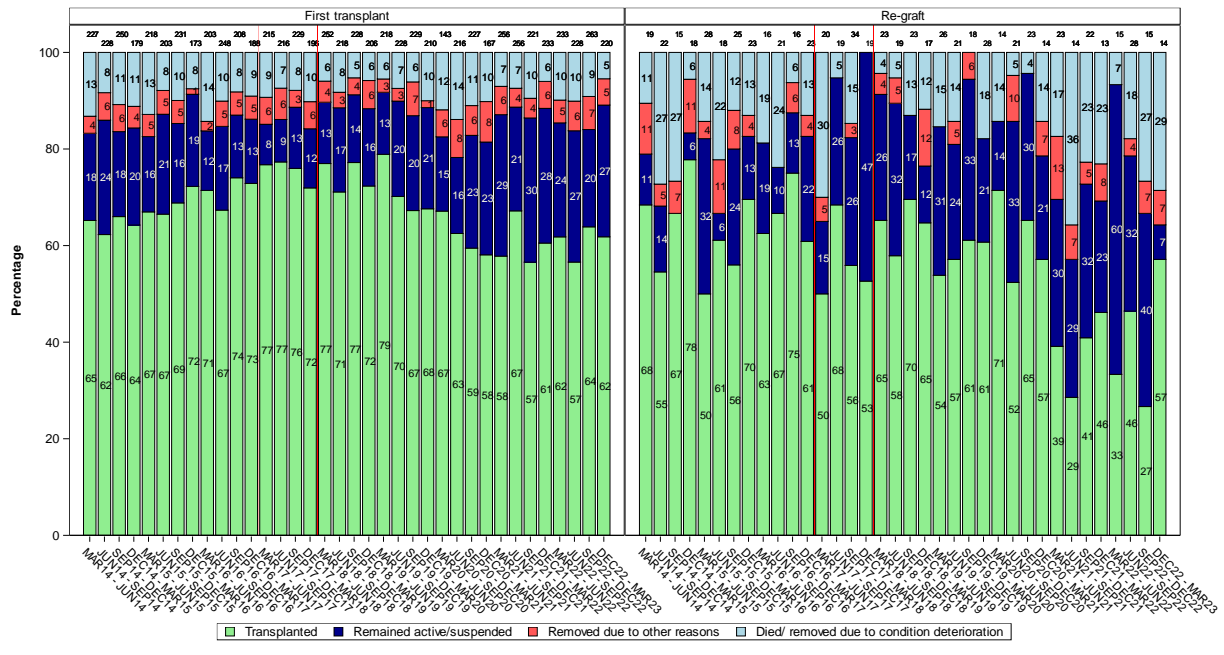
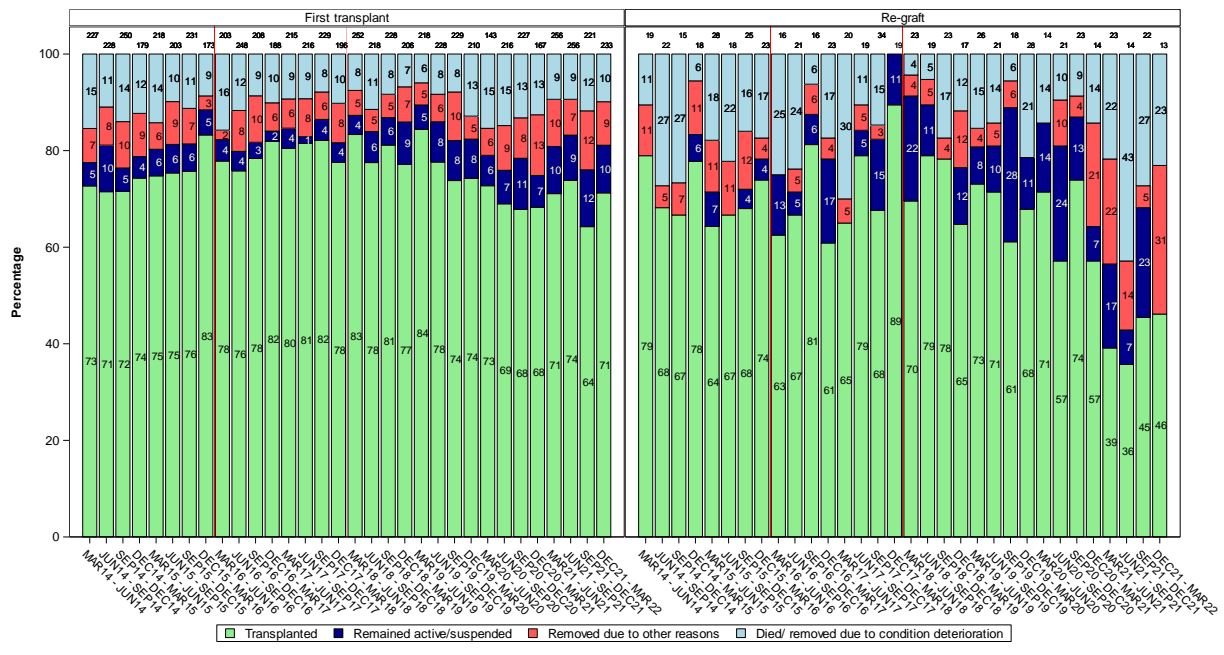


Figure 5b Two year registration outcome for active elective liver and liver/kidney patients, by first transplant or re-graft, 20 March 2014 to 19 March 2022



3.4.9. **Figure 6a and Figure 6b** shows the one-year and two-year registration outcome by quarter and sex. There was a statistically significant association between transplant rate and time period of registration for male and female patients (Chi-squared p-value <0.01). Equivalent charts for three-month and six-month are presented in **Figure B4** and **Figure C4** in **Appendix B** and **Appendix C** and show consistent results with the one-year outcome chart.

Figure 6a One year registration outcome for active elective liver and liver/kidney patients, by sex, 20 March 2014 to 19 March 2023

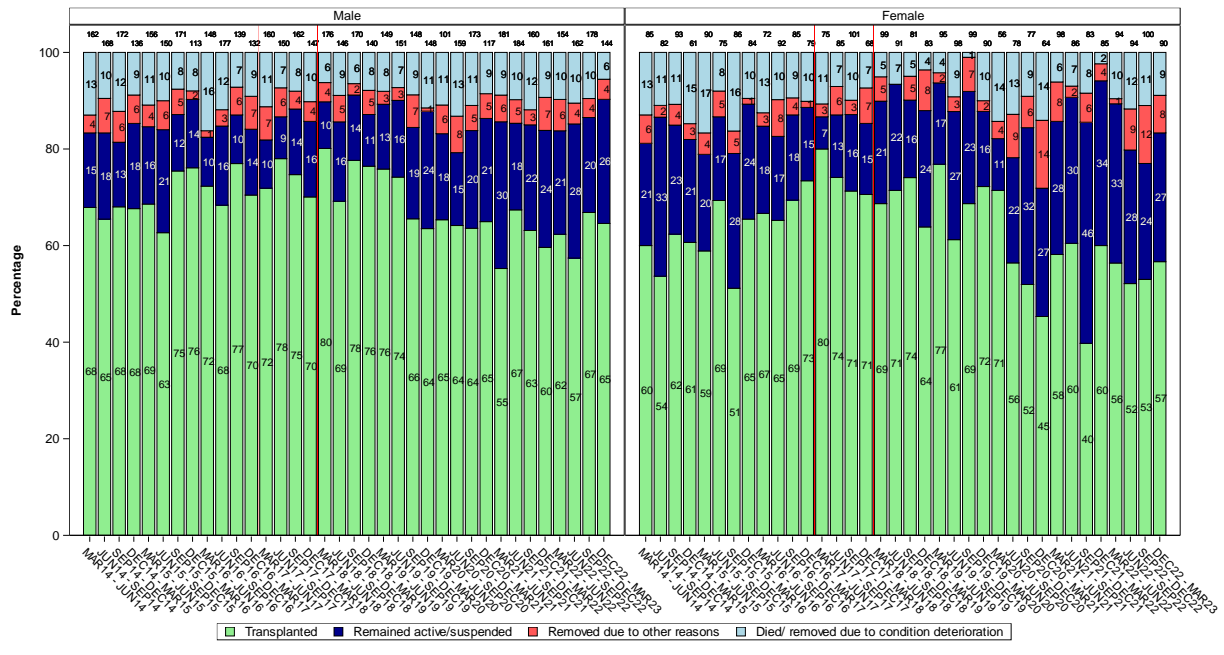
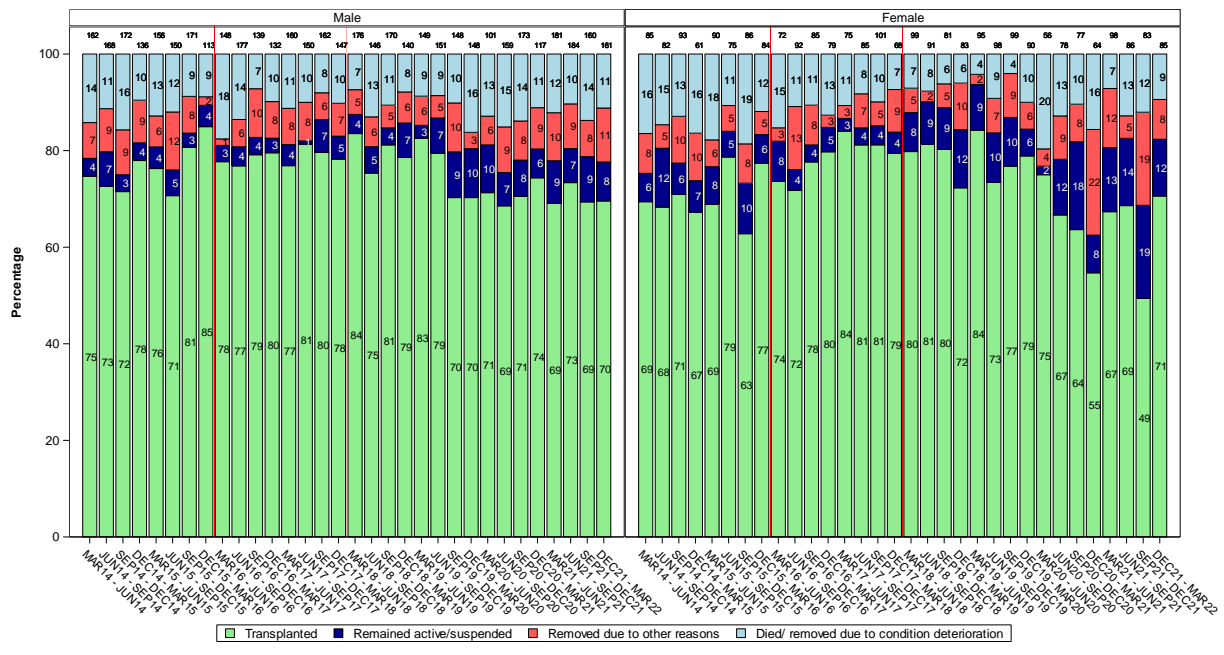
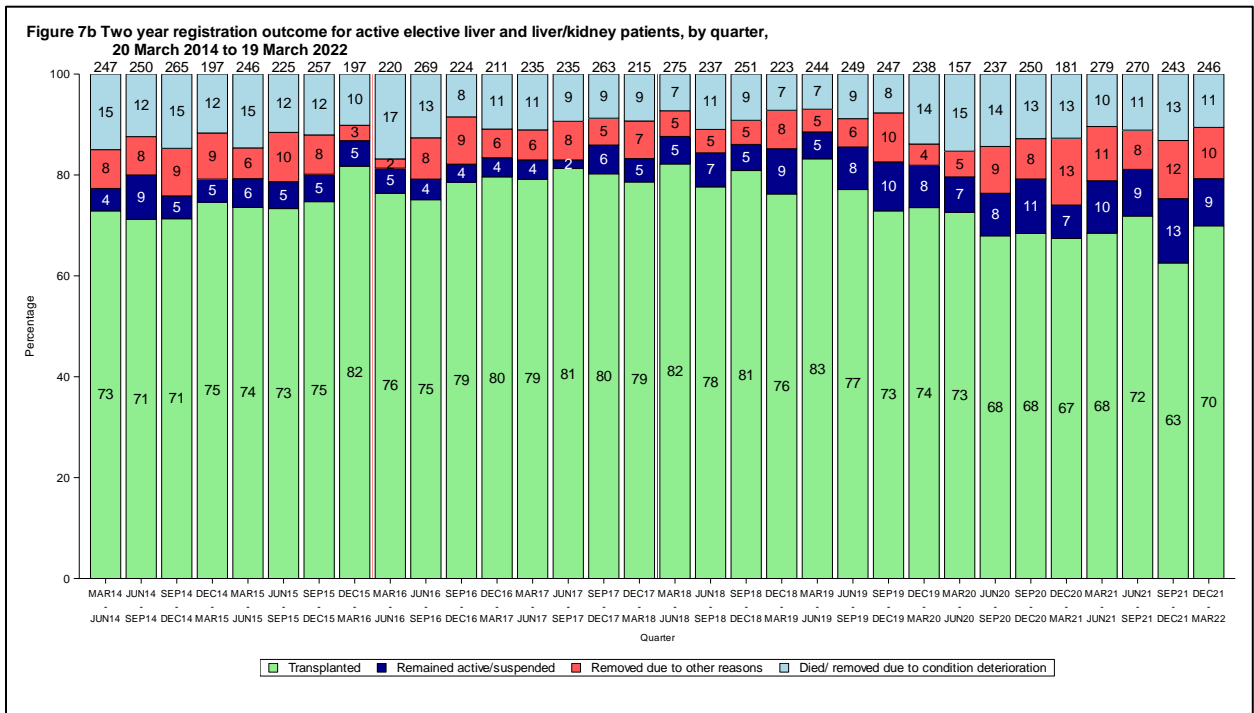
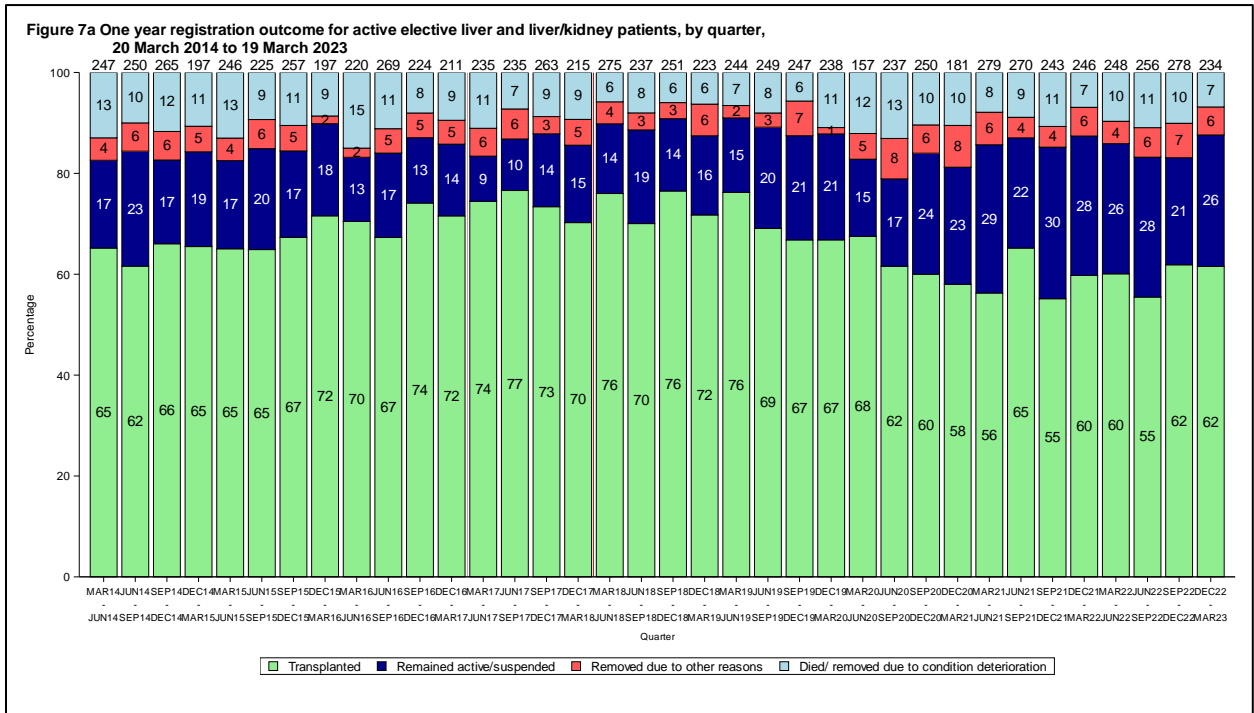


Figure 6b Two year registration outcome for active elective liver and liver/kidney patients, by sex, 20 March 2014 to 19 March 2022



3.4.10. **Figure 7a and Figure 7b** shows the one-year and two-year registration outcome by quarter. The mortality rate in the first year ranged between 6% and 13% in the quarters since the introduction of NLOS compared with between 9% and 15% in the quarters prior. Equivalent charts for three-month and six-month outcome are presented in **Figure B5** and **Figure C5** in **Appendix B** and **Appendix C**.



3.4.11. Eighty-seven patients listed for a regrant, either on the list on 20 March 2018 or registered during the seventy-two months post NLOS, were removed from the transplant list (regardless of reason). **Table 7** shows the other reasons for removal from the transplant list for each of the 87 patients.

Table 7 Reasons for removal for 87 regrant patients removed from the transplant list						
Patient number	Centre	Month removed	Time from previous tx	Time on the list	Reason for removal	Other reasons given
1	6	March 2018	1940	2562	Condition deteriorated	Deterioration of Hocum therefore not fit for OLTX
2	6	April 2018	1245	2	Other	At patient's request
3	5	May 2018	527	212	Condition deteriorated	
4	5	May 2018	1178	266	Condition improved	
5	6	July 2018	1106	247	Condition improved	
6	5	August 2018	480	596	Condition deteriorated	
7	6	September 2018	1220	55	Condition deteriorated	Patient has developed lung cancer
8	6	December 2018	2799	24	Condition deteriorated	Has extra hepatic collections, needs addressing
9	3	February 2019	1903	337	Condition deteriorated	Further investigations required for anaemia and cardiac function
10	4	March 2019	2220	392	Condition improved	
11	5	April 2019	2736	6	Condition deteriorated	Patient has deteriorated and is no longer a transplant candidate.
12	6	June 2019	2564	74	Condition improved	
13	3	September 2019	158	150	Condition deteriorated	HCC in nodes outside liver
14	5	October 2019	3351	66	Condition deteriorated	Patient has developed multi-organ failure, rising lactate in the context of sepsis.
15	6	November 2019	5275	879	Condition deteriorated	Pt requires full assessment for retransplant now, after a long period of suspension on the waiting list since Aug 2018. Deemed medically too high risk to receive a transplant
16	3	December 2019	49	13	Condition improved	Clinically improving. No longer has an indication for transplant
17	7	January 2020	179	117	Condition deteriorated	HCC metastases
18	5	February 2020	7655	164	Condition deteriorated	super urgent request sent through via National appeal.
19	5	February 2020	808	604	Condition deteriorated	
20	4	February 2020	103	30	Condition improved	
21	3	February 2020	645	93	Condition improved	
22	1	March 2020	6929	10	Condition deteriorated	
23	5	July 2020	2907	609	Condition deteriorated	
24	6	July 2020	5537	764	Other	Patient now for palliative care in their local hospital
25	3	September 2020	56	1	Condition improved	
26	5	March 2021	11009	927	Condition deteriorated	
27	2	April 2021	62	15	Other	Moved to su waiting list
28	6	April 2021	710	3	Condition improved	
29	6	May 2021	5498	74	Condition deteriorated	
30	7	May 2021	10069	654	Condition deteriorated	Patient pyrexial; patient died
31	4	May 2021	26	0	Registered onto the super-urgent list	
32	4	June 2021	545	381	Condition deteriorated	Admitted to ITU. Aim to get patient off ITU and to discharge with palliative care
33	5	June 2021	6249	84	Condition improved	Clinical condition improved since listing
34	6	August 2021	128	11	Condition deteriorated	Patient went for transplant found to have malignancy therefore abandoned
35	6	October 2021	198	739	Condition improved	
36	7	October 2021	168	103	Condition deteriorated	Patient too sick for liver transplant
37	2	October 2021	468	82	Patient/non-compliant	Following MDT - majority of the team do not support transplant due to concerns with compliance
38	5	October 2021	320	90	Condition deteriorated	

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39	5	November 2021	1642	62	Condition deteriorated	Deteriorated and patient not keen on transplant
40	3	November 2021	1617	6	Condition deteriorated	
41	5	November 2021	1866	1256	Condition deteriorated	New PLTD diagnosis
42	2	November 2021	6606	42	Condition improved	Patient transferred and under assessment at new centre
43	6	December 2021	2649	457	Other	Drinking alcohol whilst on the waiting list
44	1	December 2021	53	4	Condition deteriorated	
45	6	January 2022	876	113	Condition improved	
46	6	March 2022	5352	32	Condition deteriorated	End of life care. Frailty. Refractory leg abscess. MOF.
47	2	April 2022	1463	185	Patient/non-compliant	
48	6	April 2022	1404	241	Condition improved	
49	4	May 2022	245	283	Condition improved	No indication for transplant-improved
50	5	June 2022	5910	698	Condition deteriorated	
51	3	July 2022	5802	65	Condition improved	
52	4	September 2022	513	448	Patient/non-compliant	Drinking alcohol whilst on the waiting list.
53	1	October 2022	271	58	Condition deteriorated	
54	6	October 2022	1014	396	Other	Dwindling indication
55	3	November 2022	3707	481	Condition deteriorated	
56	5	November 2022	9577	481	Patient/non-compliant	
57	1	December 2022	47	156	Condition improved	No longer meets listing criteria
58	5	January 2023	6133	1069	Condition deteriorated	
59	6	January 2023	1620	187	Condition improved	
60	6	February 2023	661	40	Condition improved	
61	6	February 2023	2297	30	Condition improved	
62	6	February 2023	748	540	Condition improved	
63	2	March 2023	1585	76	Patient/Non-compliant	Non-compliant
64	3	April 2023	2395	699	Condition deteriorated	
65	7	April 2023	6700	1817	Other (please specify)	Patient stable, does not require transplant at this time.
66	6	April 2023	170	211	Condition improved	
67	3	May 2023	1624	4	Condition deteriorated/patient unfit/medical contra-indication	
68	2	May 2023	2394	413	Other (please specify)	No further episodes of cholangitis since removal of phytobezoar
69	5	September 2023	2000	30	Condition deteriorated	Nutritionally depleted and severely deconditioned.
70	6	September 2023	9232	808	Condition deteriorated	
71	7	September 2023	9211	118	Registered onto Super-Urgent list	
72	5	September 2023	308	339	Condition improved	
73	4	October 2023	994	162	Condition improved	
74	3	October 2023	6783	804	Condition deteriorated	
75	6	October 2023	10617	1752	Condition deteriorated	
76	1	November 2023	280	494	Condition improved	
77	5	December 2023	1164	821	Condition deteriorated	De-list on co-morbidity profile.
78	3	December 2023	2832	430	Condition improved	
79	5	December 2023	1246	4	Patient/Non-compliant	
80	5	January 2024	1463	429	Patient/Non-compliant	
81	6	January 2024	147	39	Condition deteriorated	
82	5	February 2024	785	1785	Condition deteriorated	
83	3	February 2024	21	16	Registered onto Super-Urgent list	
84	5	March 2024	5299	336	Condition deteriorated	HCC outside criteria
85	6	March 2024	111	1018	Condition improved	Too well - recolltarised
86	3	March 2024	2408	1126	Condition improved	
87	6	March 2024	2797	439	Condition deteriorated	Now too high risk

3.5. LIVER OFFERING

- 3.5.1. **Table 8** shows the overall UK deceased donor liver offering outcome between 20 March 2017 and 19 March 2024, by donor type and time period. 5156 DBD and 5311 DCD livers were offered for transplantation in the first seventy-two months of the scheme. Of the DBD livers offered, 4503 (87%) were retrieved for the purposes of transplantation and 3862 (86%) were transplanted (all but 27 were transplanted in the UK). The proportion of DBD livers offered and retrieved is very similar to the percentage for the 12 months prior to the introduction of the new scheme. **Table 8** also shows the liver offering outcome for donors where at least one solid organ was retrieved for the purposes of transplantation.
- 3.5.2. **Table 9A, 9B and 9C** shows, separately, the reasons for not offering, not retrieving and not transplanting livers by donor type and time period. The number in brackets are the corresponding values for solid organ donors where at least one organ was retrieved for the purposes of transplantation.

Table 8 Overall deceased donor liver offering outcome, 20 March 2017 to 19 March 2024, as at 18 April 2024

	DBD							DCD						
	17/18	18/19	19/20	20/21	21/22	22/23	23/24	17/18	18/19	19/20	20/21	21/22	22/23	23/24
1A. ALL DONORS														
Number donors	1067	1072	1070	875	882	830	859	1164	1224	1275	717	1033	1059	1141
Liver not offered for donation	105	72	69	84	80	59	68	212	225	237	140	187	163	186
Liver offered for donation	962	1000	1001	791	802	771	791	952	999	1038	577	846	896	955
Liver not retrieved (% offered)	118 (12%)	143 (14%)	134 (13%)	117 (15%)	88 (11%)	75 (10%)	96 (12%)	652 (68%)	741 (74%)	751 (72%)	407 (71%)	533 (63%)	529 (59%)	546 (57%)
Liver retrieved (% offered)	844 (88%)	857 (86%)	867 (87%)	674 (85%)	714 (89%)	696 (90%)	695 (88%)	300 (32%)	258 (26%)	287 (28%)	170 (29%)	313 (37%)	367 (41%)	409 (43%)
Livers transplanted overseas (% retrieved)	4 (0%)	9 (1%)	3 (0%)	2 (0%)	6 (1%)	2 (0%)	5 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Livers transplanted in the UK (% retrieved)	765 (91%)	754 (88%)	735 (85%)	580 (86%)	604 (85%)	599 (86%)	563 (81%)	198 (66%)	191 (74%)	176 (61%)	114 (67%)	195 (62%)	243 (66%)	263 (64%)
Liver not transplanted (% retrieved)	75 (9%)	94 (11%)	129 (15%)	92 (14%)	104 (15%)	95 (14%)	127 (18%)	102 (34%)	67 (26%)	111 (39%)	56 (33%)	118 (38%)	124 (34%)	146 (36%)
Liver used for research (% not transplanted)	44 (59%)	52 (55%)	70 (54%)	22 (24%)	47 (45%)	41 (43%)	44 (35%)	63 (62%)	39 (58%)	63 (57%)	23 (41%)	54 (46%)	57 (46%)	58 (40%)
2. SOLID ORGAN DONORS														
Number donors	949	965	965	752	788	770	777	616	643	655	388	623	653	733
Liver not offered for donation	45	28	23	23	27	24	26	44	51	41	31	51	40	47
Liver offered for donation	904	937	942	729	761	746	751	572	592	614	357	572	613	686
Liver not retrieved (% offered)	60 (7%)	80 (9%)	75 (8%)	55 (8%)	48 (6%)	50 (7%)	56 (7%)	272 (48%)	334 (56%)	327 (53%)	187 (52%)	259 (45%)	246 (40%)	277 (40%)
Liver retrieved (% offered)	844 (93%)	857 (91%)	867 (92%)	674 (92%)	713 (94%)	696 (93%)	695 (93%)	300 (52%)	258 (44%)	287 (47%)	170 (48%)	313 (55%)	367 (60%)	409 (60%)
Livers transplanted overseas (% retrieved)	4 (0%)	9 (1%)	3 (0%)	2 (0%)	6 (1%)	2 (0%)	5 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Livers transplanted in the UK (% retrieved)	765 (91%)	754 (88%)	735 (85%)	580 (86%)	604 (85%)	599 (86%)	563 (81%)	198 (66%)	191 (74%)	176 (61%)	114 (67%)	195 (62%)	243 (66%)	263 (64%)
Liver not transplanted (% retrieved)	75 (9%)	94 (11%)	129 (15%)	92 (14%)	103 (14%)	95 (14%)	127 (18%)	102 (34%)	67 (26%)	111 (39%)	56 (33%)	118 (38%)	124 (34%)	146 (36%)
Liver used for research (% not transplanted)	44 (59%)	52 (55%)	70 (54%)	22 (24%)	47 (46%)	41 (43%)	44 (35%)	63 (62%)	39 (58%)	63 (57%)	23 (41%)	54 (46%)	57 (46%)	58 (40%)

**Table 9A Reasons for non-offering of livers from deceased donors (solid organ donors),
20 March 2017 to 19 March 2024, as at 18 April 2024**

	DBD							DCD						
	17/18	18/19	19/20	20/21	21/22	22/23	23/24	17/18	18/19	19/20	20/21	21/22	22/23	23/24
REASONS NOT OFFERED														
Family permission not sought	1 (1)	0 (0)	0 (0)	1 (1)	2 (2)	1 (0)	1 (0)	2 (2)	2 (2)	1 (1)	0 (0)	1 (0)	2 (1)	2 (2)
Family permission refused	20 (11)	10 (3)	8 (5)	3 (3)	7 (3)	2 (2)	9 (4)	26 (6)	18 (6)	3 (1)	9 (2)	9 (4)	14 (3)	12 (0)
Permission refused by coroner	18 (9)	7 (4)	0 (0)	5 (3)	7 (4)	6 (4)	5 (2)	5 (0)	9 (5)	10 (3)	4 (3)	8 (4)	6 (3)	9 (4)
Offer withdrawn	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Donor unsuitable - age	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (4)	5 (2)	10 (6)	26 (11)	7 (5)	5 (3)	11 (7)
Donor unsuitable - past history	30 (20)	17 (14)	21 (16)	19 (13)	18 (15)	14 (14)	20 (17)	51 (23)	54 (27)	48 (18)	27 (12)	52 (29)	39 (23)	48 (25)
Donor unstable	1 (0)	1 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	4 (1)	1 (1)	2 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Donor unsuitable - size	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (1)	3 (3)	3 (3)
Donor arrested	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	1 (0)
No suitable recipients	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)
Centre already transplanting	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)
Poor function	1 (0)	7 (6)	2 (2)	2 (2)	3 (2)	1 (1)	3 (2)	13 (5)	16 (7)	12 (6)	2 (1)	10 (6)	5 (4)	8 (1)
Infection	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (0)	1 (0)	0 (0)	0 (0)	0 (0)	1 (0)	1 (0)
Other disease, please specify	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
HLA/ABO type	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Ischaemia time too long - warm	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)
Ischaemia time too long - cold	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)
No response to fast track/group offer	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)
Donor unsuitable - virology	4 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Other, please specify	8 (1)	2 (1)	3 (0)	7 (1)	2 (1)	3 (3)	1 (1)	26 (2)	18 (0)	26 (4)	7 (1)	12 (2)	6 (0)	6 (1)
Other, please specify - donor unsuitable	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (0)
Other, please specify - logistic issues	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)
Not reported	21 (1)	28 (0)	35 (0)	46 (0)	41 (0)	32 (0)	28 (0)	72 (1)	98 (0)	122 (0)	65 (1)	87 (0)	81 (0)	76 (0)
Total not offered	105 (45)	72 (28)	69 (23)	84 (23)	80 (27)	59 (24)	68 (26)	212 (44)	225 (51)	237 (41)	140 (31)	187 (51)	163 (40)	186 (47)

Table 9B Reasons for non-retrieval of livers from deceased donors (solid organ donors), 20 March 2017 to 19 March 2024, as at 18 April 2024

	DBD							DCD						
	17/18	18/19	19/20	20/21	21/22	22/23	23/24	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Donor unsuitable - cause of death	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	1 (1)	0 (0)	0 (0)
Donor unsuitable - age	5 (3)	5 (4)	2 (2)	1 (0)	2 (0)	1 (0)	2 (0)	142 (55)	198 (93)	181 (82)	59 (28)	133 (65)	113 (64)	70 (33)
Donor unsuitable - past history	44 (21)	49 (25)	48 (28)	50 (30)	40 (21)	26 (19)	32 (18)	141 (75)	186 (99)	176 (89)	117 (64)	154 (91)	144 (84)	173 (100)
Donor recovered	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Donor unstable	2 (0)	2 (1)	0 (0)	0 (0)	0 (0)	1 (0)	3 (0)	2 (0)	3 (0)	0 (0)	0 (0)	1 (0)	5 (0)	2 (1)
Donor unsuitable - size	1 (0)	9 (4)	3 (3)	2 (0)	3 (3)	1 (1)	4 (4)	17 (12)	21 (15)	26 (18)	13 (8)	15 (9)	17 (14)	19 (13)
Donor arrested	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	3 (0)	0 (0)	1 (0)	0 (0)	0 (0)	1 (0)	2 (0)	0 (0)
No suitable recipients	6 (4)	8 (4)	10 (5)	4 (2)	7 (3)	6 (6)	5 (5)	26 (14)	30 (18)	41 (18)	27 (16)	24 (15)	14 (8)	35 (24)
No time	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)
Centre already transplanting	1 (1)	0 (0)	0 (0)	2 (0)	0 (0)	1 (0)	1 (1)	1 (1)	0 (0)	8 (5)	5 (2)	3 (1)	7 (4)	4 (2)
Poor function	17 (11)	16 (12)	16 (9)	16 (8)	7 (6)	6 (3)	6 (5)	49 (32)	49 (32)	51 (31)	30 (17)	32 (24)	28 (15)	45 (31)
Infection	0 (0)	3 (0)	1 (0)	1 (0)	0 (0)	1 (0)	0 (0)	2 (0)	3 (3)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)
Donor unsuitable - Tumour, please specify	2 (0)	0 (0)	3 (0)	1 (0)	2 (0)	1 (0)	1 (0)	1 (0)	0 (0)	1 (0)	1 (0)	0 (0)	0 (0)	2 (0)
Anatomical anomaly, please specify	0 (0)	0 (0)	1 (1)	2 (1)	4 (3)	4 (4)	9 (7)	0 (0)	0 (0)	1 (1)	0 (0)	4 (4)	2 (2)	4 (4)
Poor perfusion	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)
Other disease, please specify	0 (0)	1 (1)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	1 (1)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
HLA/ABO type	2 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Organ damaged	0 (0)	0 (0)	2 (2)	1 (1)	0 (0)	0 (0)	2 (2)	1 (1)	2 (1)	1 (1)	2 (2)	1 (1)	3 (3)	2 (2)
Contamination - organ unsuitable	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Ischaemia time too long - warm	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	2 (0)	13 (10)	22 (9)	32 (12)	30 (18)
Ischaemia time too long - cold	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	3 (3)	4 (3)	1 (0)	2 (2)
No beds	0 (0)	0 (0)	1 (1)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (0)	5 (3)	0 (0)	0 (0)
Transport difficulties	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
No response to fast track/group offer	1 (1)	2 (2)	1 (1)	1 (0)	1 (1)	0 (0)	0 (0)	11 (2)	4 (1)	6 (4)	11 (5)	3 (2)	1 (0)	3 (2)
Steatosis (Fatty organ) - organ unsuitable	10 (8)	14 (12)	12 (10)	7 (5)	7 (7)	10 (8)	8 (6)	12 (10)	7 (7)	9 (6)	1 (1)	2 (2)	11 (10)	6 (5)
Donor unsuitable - virology	9 (0)	7 (1)	13 (3)	1 (0)	1 (0)	3 (1)	3 (1)	8 (0)	10 (0)	13 (3)	4 (1)	6 (1)	0 (0)	3 (1)
Organ/tissue unsuitable for transplant	0 (0)	0 (0)	0 (0)	2 (2)	1 (1)	3 (1)	2 (2)	0 (0)	0 (0)	0 (0)	1 (1)	2 (2)	1 (1)	3 (2)
Fibrosis	1 (1)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	1 (1)	1 (1)	1 (1)	0 (0)
Prolonged time to asystole	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	29 (3)
Poor function - initial assessment	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)
Poor function at retrieval	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)
Organ failed viability assessment, please specify	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Renal tumour, please specify - organ unsuitable	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Other, please specify	17 (8)	27 (14)	21 (10)	22 (4)	12 (2)	11 (7)	10 (4)	237 (69)	222 (64)	234 (69)	117 (28)	117 (24)	146 (28)	110 (30)
Total	118 (60)	143 (80)	134 (75)	117 (55)	88 (48)	75 (50)	96 (56)	652 (272)	741 (334)	751 (327)	407 (187)	533 (259)	529 (246)	546 (277)

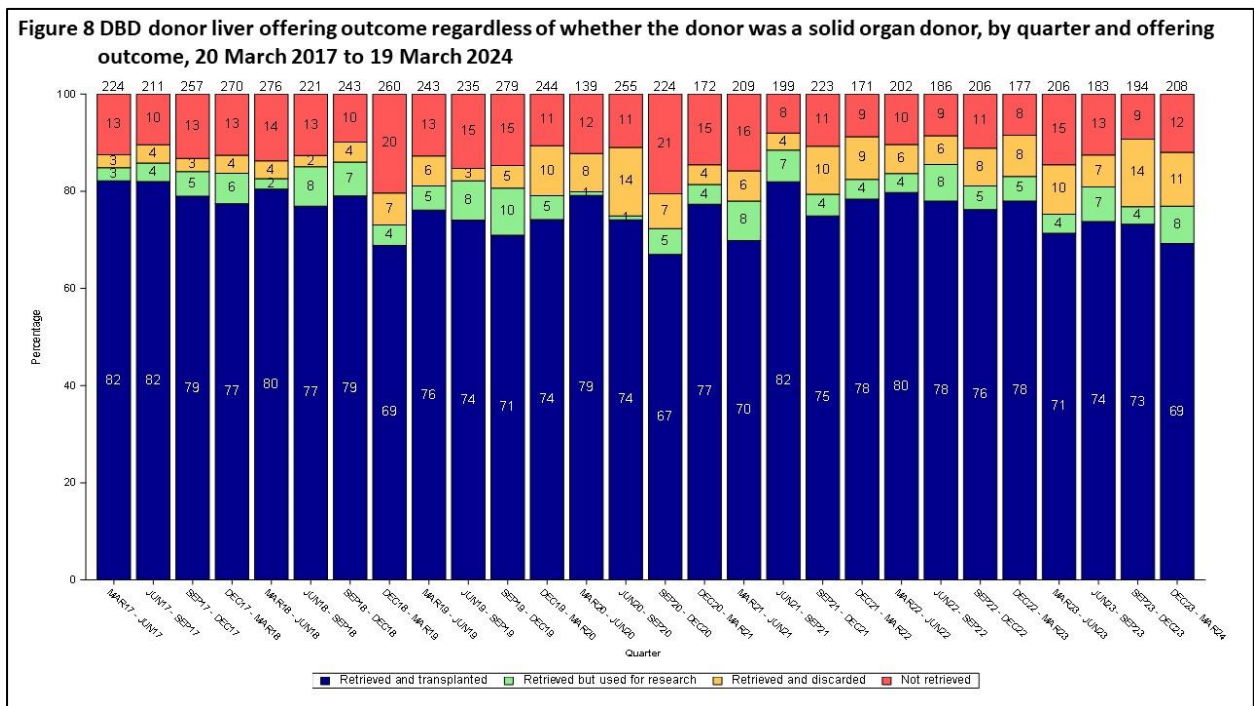
Table 9C Reasons for non-use of livers from deceased donors (solid organ donors), 20 March 2017 to 19 March 2024, as at 18 April 2024

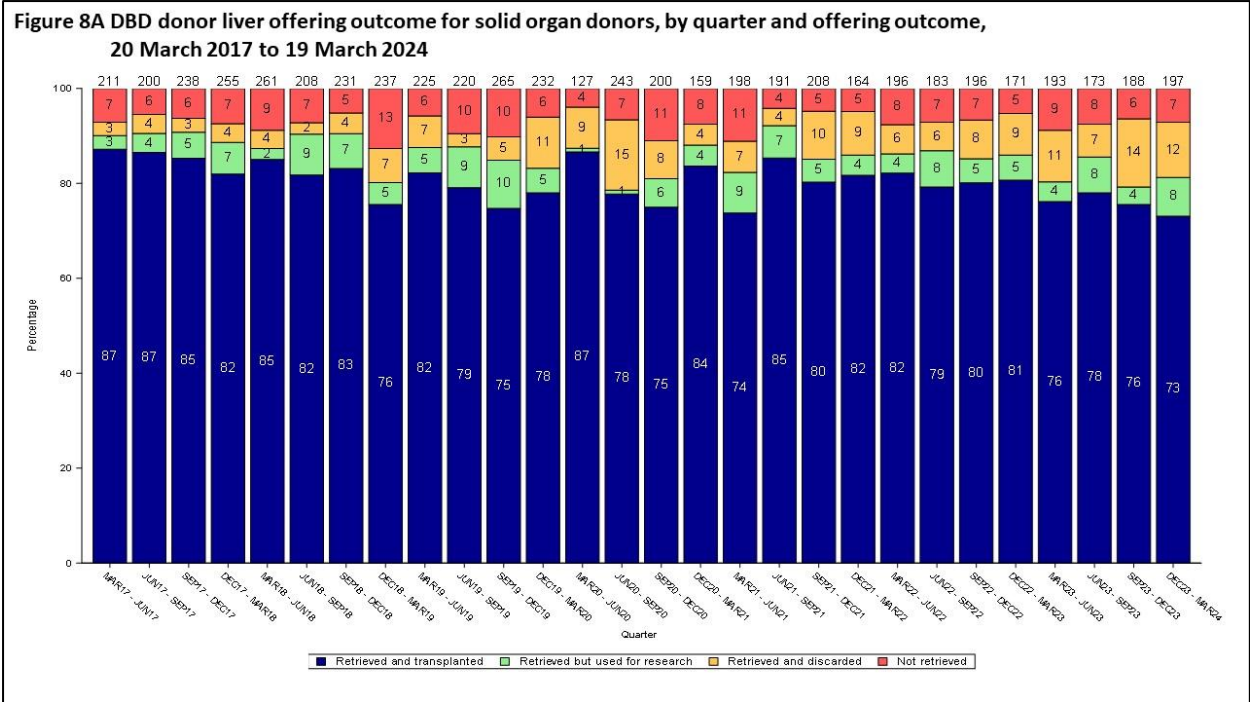
	DBD							DCD						
	17/18	18/19	19/20	20/21	21/22	22/23	23/24	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Donor unsuitable - age	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)	6 (6)	2 (2)
Donor unsuitable - past history	0 (0)	0 (0)	1 (1)	6 (6)	3 (3)	5 (5)	7 (7)	0 (0)	1 (1)	2 (2)	2 (2)	4 (4)	0 (0)	6 (6)
Donor unsuitable - size	1 (1)	0 (0)	1 (1)	1 (1)	7 (7)	3 (3)	5 (5)	0 (0)	1 (1)	1 (1)	3 (3)	6 (6)	4 (4)	12 (12)
No suitable recipients	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	1 (1)
Poor function	0 (0)	1 (1)	1 (1)	4 (4)	10 (10)	9 (9)	11 (11)	0 (0)	0 (0)	1 (1)	5 (5)	15 (15)	19 (19)	22 (22)
Infection	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (1)	1 (1)
Donor unsuitable - Tumour, please specify	3 (3)	0 (0)	2 (2)	0 (0)	2 (2)	2 (2)	2 (2)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	3 (3)
Anatomical anomaly, please specify	3 (3)	4 (4)	3 (3)	10 (10)	20 (20)	9 (9)	21 (21)	1 (1)	0 (0)	5 (5)	6 (6)	10 (10)	11 (11)	14 (14)
Poor perfusion	0 (0)	0 (0)	2 (2)	0 (0)	0 (0)	2 (2)	1 (1)	2 (2)	2 (2)	2 (2)	1 (1)	2 (2)	1 (1)	5 (5)
HLA/ABO type	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)
Organ damaged	0 (0)	0 (0)	3 (3)	4 (4)	3 (3)	2 (2)	7 (7)	1 (1)	0 (0)	3 (3)	2 (2)	3 (3)	6 (6)	5 (5)
Contamination - organ unsuitable	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Ischaemia time too long - warm	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (4)	3 (3)	3 (3)	4 (4)	6 (6)	3 (3)	12 (12)
Ischaemia time too long - cold	4 (4)	4 (4)	3 (3)	5 (5)	4 (4)	1 (1)	2 (2)	3 (3)	6 (6)	4 (4)	2 (2)	7 (7)	5 (5)	10 (10)
Recipient unfit	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Recipient died	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Recipient unavailable	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Recipient refused	0 (0)	0 (0)	0 (0)	1 (1)	1 (1)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Taken for hepatocytes	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)	2 (2)	1 (1)	1 (1)	0 (0)
No response to fast track/group offer	3 (3)	2 (2)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Used for research after declined by centres	42 (42)	49 (49)	64 (64)	5 (5)	5 (5)	5 (5)	1 (1)	60 (60)	36 (36)	57 (57)	5 (5)	7 (7)	2 (2)	2 (2)
Steatosis (Fatty organ) - organ unsuitable	8 (8)	14 (14)	16 (16)	30 (30)	30 (30)	30 (30)	42 (42)	7 (7)	5 (5)	5 (5)	4 (4)	22 (22)	33 (33)	14 (14)
Organ/tissue unsuitable for transplant	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (1)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)	1 (1)
Other, please specify	11 (11)	19 (19)	32 (32)	24 (24)	18 (18)	22 (22)	11 (11)	22 (22)	12 (12)	25 (25)	18 (18)	32 (32)	29 (29)	21 (21)
Fibrosis	0 (0)	1 (1)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	1 (1)
Organ damage (retrieval injury), please specify	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Organ damage (at transplant centre), please specify	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Renal tumour, please specify - organ unsuitable	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Not reported	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)
Poor function following machine perfusion	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (3)
Other, please specify - donor unsuitable	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Other, please specify - organ unsuitable	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)
Other, please specify - research/disposed of	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)
TOTAL ORGANS RETRIEVED, NOT TRANSPLANTED	75 (75)	94 (94)	129 (129)	92 (92)	104 (104)	95 (95)	127 (127)	102 (102)	67 (67)	111 (111)	56 (56)	118 (118)	124 (124)	146 (146)

3.5.3. **Figure 8** shows the DBD liver offering outcome for all livers offered regardless of whether any solid organs were retrieved for the purposes of transplantation. **Figure 8** shows that 276 livers were offered during the first quarter of NLOS which was the second highest number of livers offered during the 72 month period.

3.5.4. The percentage of organs retrieved and transplanted per quarter ranged from 77% to 82% in the year prior and 67% to 82% in the sixty-six months post the introduction of NLOS. The percentage of livers retrieved and used for research ranged between 3% and 6% in the year prior and 1% to 10% for the seventy-two months post the introduction of NLOS.

3.5.5. **Figure 8A** shows the equivalent information for all solid organ donors where the liver was offered for transplantation and at least one organ (not necessarily the liver) was retrieved for the purposes of transplantation.





3.5.6. **Figure 9a** show the number of livers offered during the first seventy-two months of the new scheme at each stage of the liver offering pathway up to and including the liver and cardiothoracic section. Livers offered during COVID are included in **Figure 9a** but excluded at the elective stage of **Figure 9b**. 42 of the 5156 donors did not meet the DBD criteria at the start of the offering process and 36 were retrieved and transplanted. These livers are hence excluded from the offering pathway.

3.5.7. Livers from 603 donors meeting the DBD criteria were accepted and transplanted into super-urgent patients (including 20 super-urgent patients in Dublin). 1187 livers were offered to hepatoblastoma/prioritised paediatric/ACLF patients and 122 were accepted and transplanted. 506 livers were offered to the liver and intestinal list and 48 were accepted and transplanted. Please note that a liver accepted and used at any stage may have been provisionally offered on to elective patients or fast-tracked before being accepted and used. These have not been included in the number of livers offered in later stages along with livers that may have been accepted, split and transplanted into two patients.

3.5.8. 977 livers were offered to liver and cardiothoracic patients and nine were accepted and transplanted combined liver and cardiothoracic patients. It should be noted that offers may be made when the cardiothoracic organs are unavailable.

- 3.5.9. **Figure 9b** shows the number of livers that were offered to elective patients and hadn't been accepted and used for super-urgent, hepatoblastoma, liver/intestinal and liver/cardiothoracic patients. Of the 4327 livers offered to elective patients, 4260 were adult donors and 67 were paediatric donors (aged less than 16 years or weighing 40 kg or less). 768 adult donors met the split criteria and 713 livers were offered to paediatric centres for paediatric/small adult patients. 221 of the 713 livers were accepted and transplanted. Fifty-two livers were only offered to paediatric patients and not offered to elective adult patient or fast-tracked.
- 3.5.10. 163 livers were offered to elective patients between 27 March and 9 July 2020.
- 3.5.11. Ninety percent of livers offered to elective patients were randomly allocated to the elective CLD/HCC pathway while ten percent were allocated to the variant syndrome pathway. 3356 were offered to named CLD/HCC patients and 1998 (60%) were accepted and transplanted. 349 were offered to the VS pathway and 167 (48%) were accepted and transplanted.

Figure 9A Liver offering flow chart for UK DBD donors offered between 20 March 2018 and 19 March 2024

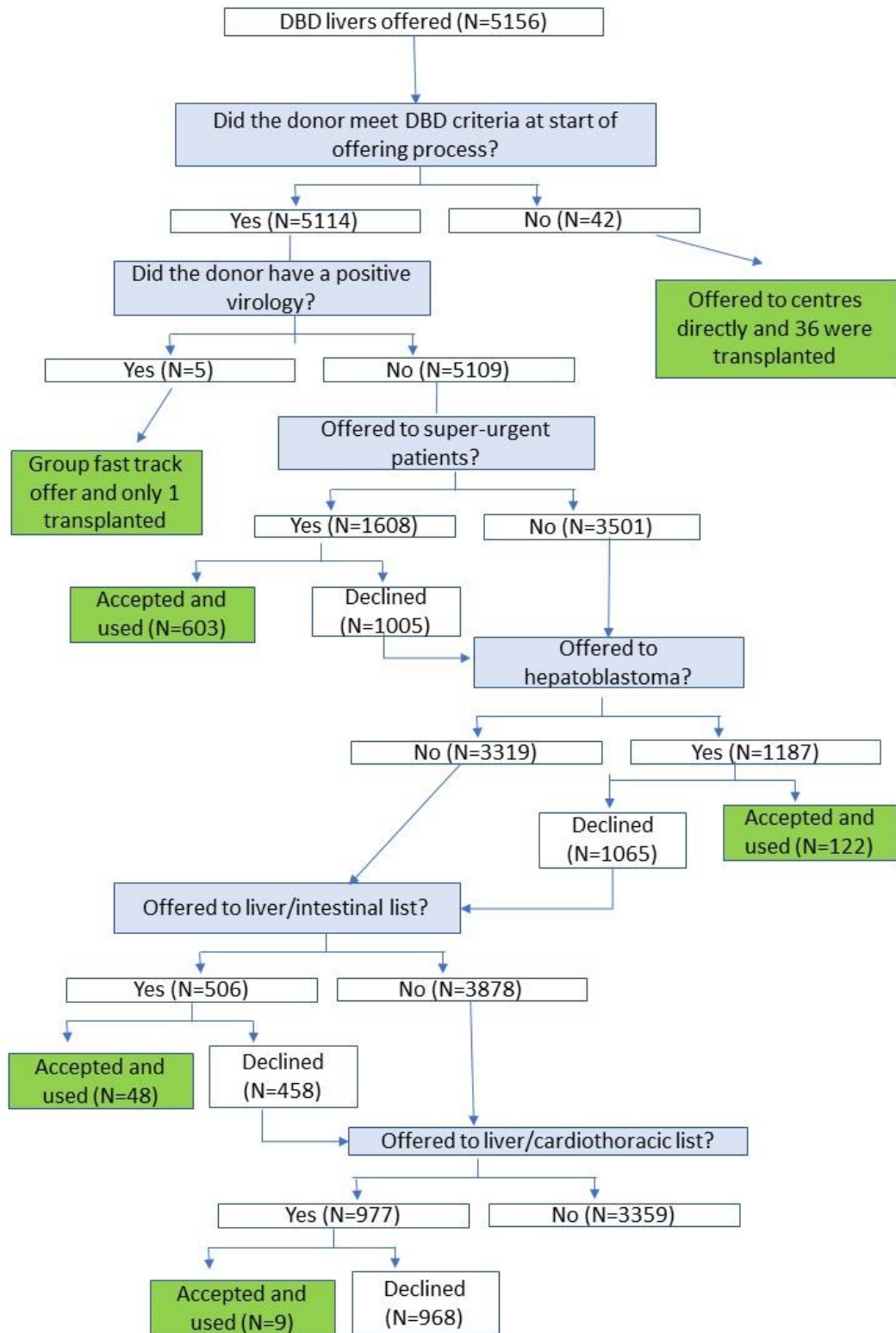
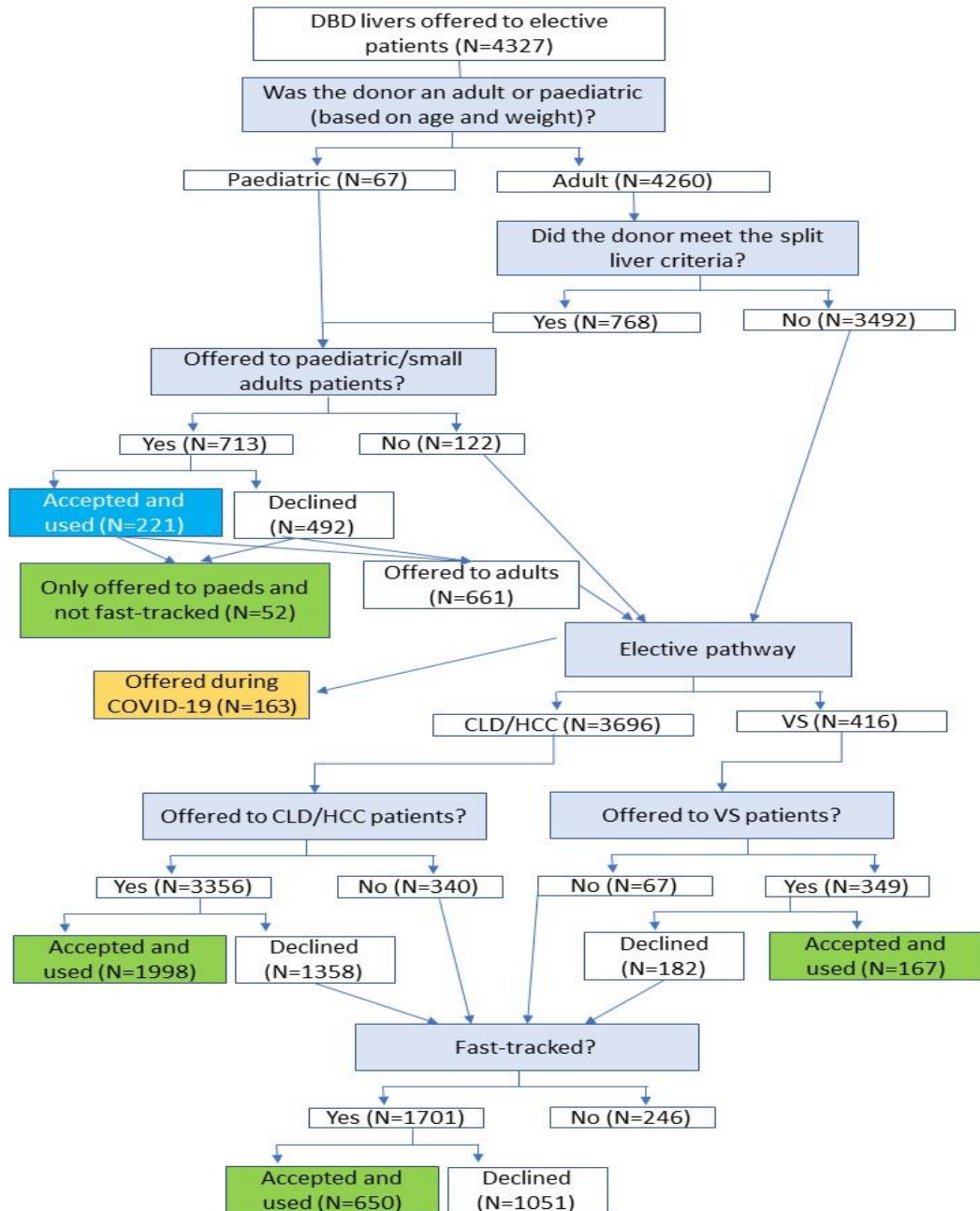


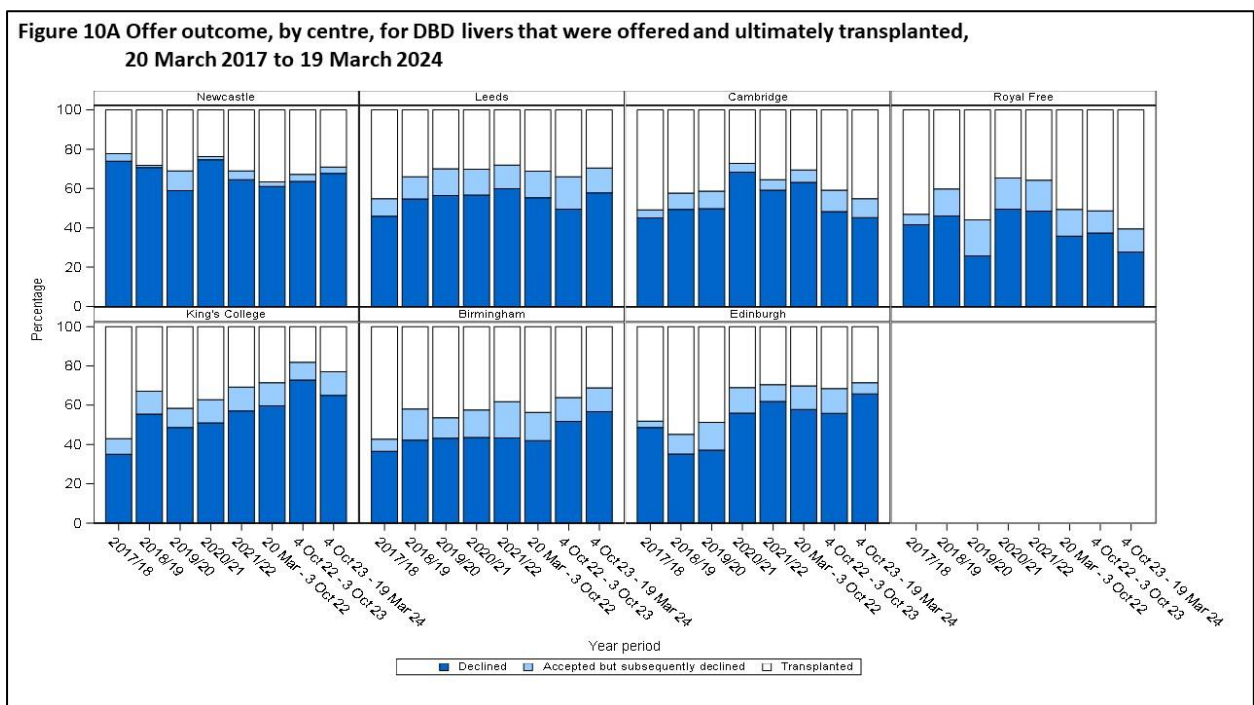
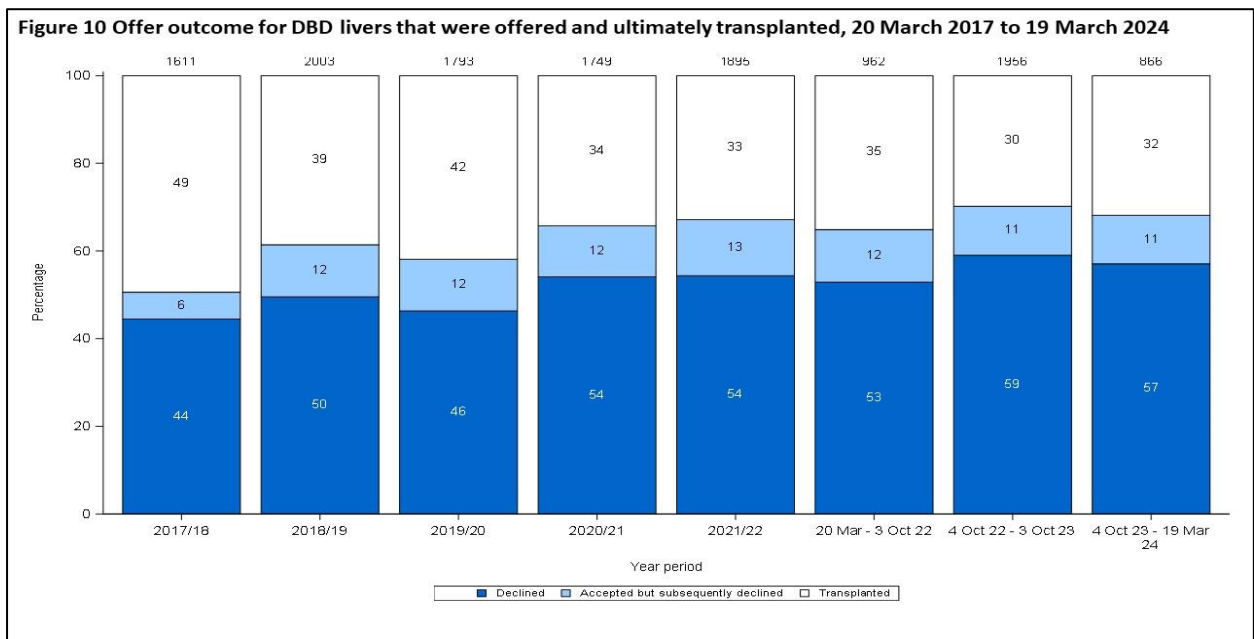
Figure 9B Liver offering flow chart for UK DBD donors offered between 20 March 2018 and 19 March 2024



3.5.12. **Table 10** shows the number of liver offers made to each UK liver transplant centre in either the twelve months prior to the new scheme or during the first seventy-two months of the new scheme. Livers offered to intestinal or liver/cardiothoracic patients have been excluded. The number of offers made to UK liver transplant centres has increased compared with the 12 months prior.

Table 10 Number of DBD liver only offers (excludes intestinal and liver/cardiothoracic offers) per UK transplant centre, 20 March 2017 to 19 March 2024																
	2017/18		2018/19		2019/20		2020/21		2021/22		20 March – 3 October 2022		4 October 2022 – 3 October 2023		4 October 2023 – 19 March 2024	
	No. of offers (no. of donors)	Median (IQR) offers per donor	No. of offers (no. of donors)	Med. (IQR) offers per donor	No. of offers (no. of donors)	Median (IQR) offers per donor	No. of offers (no. of donors)	No. of offers (no. of donors)	No. of offers (no. of donors)	Med. (IQR) offers per donor	No. of offers (no. of donors)	Median (IQR) of offers per donor	No. of offers (no. of donors)	Median (IQR) of offers per donor	No. of offers (no. of donors)	Median (IQR) of offers per donor
A. All liver offers																
Newcastle	344 (323)	1 (1, 1)	431 (378)	1 (1, 1)	432 (386)	1 (1, 1)	402 (343)	1 (1, 1)	315 (285)	1 (1, 1)	162 (141)	1 (1, 1)	282 (258)	1 (1, 1)	149 (130)	1 (1, 1)
Leeds	501 (435)	1 (1, 1)	645 (481)	1 (1, 2)	733 (545)	1 (1, 2)	632 (443)	1 (1, 2)	611 (444)	1 (1, 2)	303 (228)	1 (1, 1)	575 (422)	1 (1, 2)	294 (216)	1 (1, 2)
Cambridge	348 (323)	1 (1, 1)	480 (391)	1 (1, 1)	455 (386)	1 (1, 1)	434 (352)	1 (1, 1)	400 (347)	1 (1, 1)	212 (187)	1 (1, 1)	358 (299)	1 (1, 1)	210 (164)	1 (1, 1.5)
Royal Free	384 (352)	1 (1, 1)	566 (459)	1 (1, 1)	489 (420)	1 (1, 1)	463 (368)	1 (1, 1)	479 (375)	1 (1, 1)	195 (152)	1 (1, 1)	381 (324)	1 (1, 1)	198 (160)	1 (1, 1)
Kings College	516 (455)	1 (1, 1)	1019 (638)	1 (1, 2)	902 (629)	1 (1, 2)	809 (531)	1 (1, 2)	919 (564)	1 (1, 2)	417 (262)	1 (1, 2)	1238 (602)	2 (1, 3)	465 (274)	1 (1, 2)
Birmingham	495 (417)	1 (1, 1)	867 (582)	1 (1, 2)	829 (591)	1 (1, 2)	673 (468)	1 (1, 2)	730 (487)	1 (1, 2)	382 (253)	1 (1, 2)	744 (466)	1 (1, 2)	413 (254)	1 (1, 2)
Edinburgh	374 (351)	1 (1, 1)	511 (426)	1 (1, 1)	470 (415)	1 (1, 1)	509 (395)	1 (1, 1)	406 (345)	1 (1, 1)	203 (175)	1 (1, 1)	373 (325)	1 (1, 1)	213 (168)	1 (1, 1)
Total	2962 (944)	2 (1, 5)	4519 (982)	3 (2, 7)	4310 (986)	3 (1, 7)	3922 (777)	4 (1, 8)	3860 (785)	4 (1, 8)	1874 (415)	3 (1, 7)	3951 (763)	4 (2, 8)	1942 (373)	4 (2, 8)
B. All liver offers for livers ultimately transplanted																
Newcastle	174 (161)	1 (1, 1)	211 (192)	1 (1, 1)	208 (184)	1 (1, 1)	205 (176)	1 (1, 1)	157 (139)	1 (1, 1)	85 (75)	1 (1, 1)	117 (109)	1 (1, 1)	63 (57)	1 (1, 1)
Leeds	324 (277)	1 (1, 1)	367 (276)	1 (1, 2)	429 (320)	1 (1, 2)	376 (263)	1 (1, 2)	377 (273)	1 (1, 2)	207 (157)	1 (1, 1)	342 (255)	1 (1, 2)	164 (122)	1 (1, 2)
Cambridge	191 (173)	1 (1, 1)	264 (221)	1 (1, 1)	240 (203)	1 (1, 1)	231 (188)	1 (1, 1)	205 (182)	1 (1, 1)	132 (115)	1 (1, 1)	191 (154)	1 (1, 1)	98 (76)	1 (1, 1.5)
Royal Free	209 (193)	1 (1, 1)	320 (263)	1 (1, 1)	237 (199)	1 (1, 1)	250 (196)	1 (1, 1)	265 (208)	1 (1, 1)	106 (82)	1 (1, 1)	191 (163)	1 (1, 1)	92 (77)	1 (1, 1)
Kings College	327 (287)	1 (1, 1)	655 (421)	1 (1, 2)	546 (397)	1 (1, 2)	512 (343)	1 (1, 2)	607 (386)	1 (1, 2)	298 (188)	1 (1, 2)	814 (411)	2 (1, 3)	288 (177)	1 (1, 2)
Birmingham	313 (261)	1 (1, 1)	539 (379)	1 (1, 2)	507 (368)	1 (1, 2)	409 (294)	1 (1, 2)	477 (318)	1 (1, 2)	251 (175)	1 (1, 2)	440 (292)	1 (1, 2)	236 (152)	1 (1, 2)
Edinburgh	209 (192)	1 (1, 1)	273 (231)	1 (1, 1)	221 (192)	1 (1, 1)	283 (217)	1 (1, 1)	211 (177)	1 (1, 1)	122 (103)	1 (1, 1)	189 (160)	1 (1, 1)	104 (81)	1 (1, 1)
Total	1747 (755)	1 (1, 3)	2629 (748)	2 (1, 5)	2388 (726)	2 (1, 5)	2266 (575)	3 (1, 6)	2299 (595)	3 (1, 6)	1201 (330)	3 (1, 5)	2284 (562)	3 (2, 6)	1045 (266)	3 (2, 5)

3.5.13. **Figure 10** shows, for livers that were ultimately transplanted, the outcome of liver offers made in either the last year prior to the new scheme or during the first seventy-two months of the new scheme. The last time period has been split as the parameter estimates and baseline survivor functions were updated on 4 October 2022. Fast-track offers that were not accepted and transplanted (i.e. declined or accepted and not used fast-track offers) as well as livers offered from either DCD or positive virology donors were excluded. It should be noted that offers of left and right lobes are included. The proportion of offers accepted and not used has increased compared with the 12 months prior. **Figure 10A** shows the equivalent for each transplant centre.



- 3.5.14. 8370 (35%) of the 24378 offers made in the first 72 months post NLOS were to named recipients. All offers between 27 March and 9 July 2020 are excluded as centres were offered livers for any clinically urgent patient rather than named patients. 5713 of the named patient offers involved livers that were ultimately retrieved and transplanted.
- 3.5.15. The number of named patient offers per donor ranged between 1 and 18 with a median of two named patient offers per donor. The number of named offers per patient ranged between 1 and 33 with a median of two offers per patient. Fifty six patients at 7 centres were offered 11 or more livers in the seventy-two month time period (18 were offered 11 livers, 14 were offered 12 livers, 6 were offered 13 livers, 6 were offered 14 livers, 2 were offered 15 livers, 1 was offered 16, 1 was offered 17, 2 were offered 18 livers, 1 was offered 19 livers, 1 was offered 21, 3 were offered 27 and 1 was offered 33 livers).
- 3.5.16. **Table 11** shows the outcome of named patient liver offers made during the first seventy-two months of the new scheme by type of patient. It also shows the offer outcome after excluding named patients offers for livers that were ultimately not transplanted. Overall, forty-five percent of named patient offers were accepted and 26% were accepted and transplanted. The number of transplants will not agree with the flow chart in **Figure 9A** as **Table 11** includes all elective named patient offers and will include livers that were offered as a right lobe after being accepted for super-urgent and hepatoblastoma patients.
- 3.5.17. **Figures 11A, 11B and 11C** shows the outcome of named CLD patient liver offers made during the first seventy-two months of the new scheme for livers ultimately transplanted by aetiology, transplant centre and blood group respectively. There were statistically significant differences at a 5% significance level in the outcomes for patients with ALD ($p=0.02$), PSC ($p=0.049$) and AID ($p=0.017$).
- 3.5.18. **Figures 12A and 12B** for shows the outcome of named HCC patient liver offers made during the first seventy-two months of the new scheme for livers ultimately transplanted by transplant centre and blood group respectively. **Figures 13A and 13B** show equivalent information for variant syndrome patients.

Table 11 Offer outcome for named elective patient offers made between 20 March 2018 and 19 March 2024 (excluding 27 March 2020 to 9 July 2020), by type of patient

Type of patient	Disease group	Offer outcome for all named patient offers				Offer outcome for all named patient offers for livers that were ultimately transplanted			
		Declined	Accepted but not used	Transplanted	Total	Declined	Accepted but not used	Transplanted	Total
Chronic Liver Disease (CLD)	2018/2019	789 (55)	246 (17)	409 (28)	1444	491 (47)	142 (14)	409 (39)	1042
	2019/2020	613 (50)	250 (20)	361 (29)	1224	346 (42)	118 (14)	361 (44)	825
	2020/2021 ¹	544 (59)	162 (17)	223 (24)	929	315 (51)	78 (13)	223 (36)	616
	2021/2022	796 (58)	252 (18)	336 (24)	1384	493 (51)	131 (14)	336 (35)	960
	20 Mar – 3 Oct 22	290 (51)	110 (19)	169 (30)	569	202 (47)	57 (13)	169 (39)	428
	4 Oct 22 – 3 Oct 23	505 (51)	193 (20)	285 (29)	983	264 (41)	88 (14)	285 (45)	637
	4 Oct 23 – 19 Mar 24	273 (54)	113 (22)	119 (24)	505	149 (48)	45 (14)	119 (38)	313
	Total	3810 (54)	1326 (19)	1902 (27)	7038	2260 (47)	659 (14)	1902 (39)	4821
HCC	2018/2019	31 (53)	12 (20)	16 (27)	59	24 (53)	5 (11)	16 (36)	45
	2019/2020	29 (44)	12 (18)	25 (38)	66	11 (24)	9 (20)	25 (56)	45
	2020/2021 ¹	31 (57)	13 (24)	10 (19)	54	25 (61)	6 (15)	10 (24)	41
	2021/2022	39 (58)	11 (16)	17 (25)	67	17 (44)	5 (13)	17 (44)	39
	20 Mar – 3 Oct 22	27 (60)	8 (18)	10 (22)	45	22 (61)	4 (11)	10 (28)	36
	4 Oct 22 – 3 Oct 23	59 (53)	26 (23)	26 (23)	111	24 (43)	6 (11)	26 (46)	56
	4 Oct 23 – 19 Mar 24	38 (51)	15 (20)	21 (28)	74	19 (45)	2 (5)	21 (50)	42
	Total	254 (53)	97 (20)	125 (26)	476	142 (47)	37 (12)	125 (41)	304
Variant syndrome	2018/2019	80 (56)	27 (19)	35 (25)	142	55 (53)	14 (13)	35 (34)	104
	2019/2020	92 (58)	28 (18)	39 (25)	159	66 (55)	16 (13)	39 (32)	121
	2020/2021 ¹	58 (64)	19 (21)	13 (14)	90	22 (50)	9 (20)	13 (30)	44
	2021/2022	132 (68)	38 (19)	25 (13)	195	94 (65)	26 (18)	25 (17)	145
	20 Mar – 3 Oct 22	49 (65)	13 (17)	13 (17)	75	30 (60)	7 (14)	13 (26)	50
	4 Oct 22 – 3 Oct 23	68 (63)	16 (15)	24 (22)	108	43 (59)	6 (8)	24 (33)	73
	4 Oct 23 – 19 Mar 24	52 (60)	17 (20)	18 (21)	87	22 (43)	11 (22)	18 (35)	51
	Total	531 (62)	158 (18)	167 (20)	856	332 (56)	89 (15)	167 (28)	588
Total named patient offers	4595 (55)	1581 (19)	2194 (26)	8370	2734 (48)	785 (14)	2194 (38)	5713	

¹ Offers between 27 March 2020 and 9 July excluded

Figure 11A Named CLD patient offer outcome, by year and disease group, for DBD livers that were offered and ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding offers between 27 March and 9 July 2020)

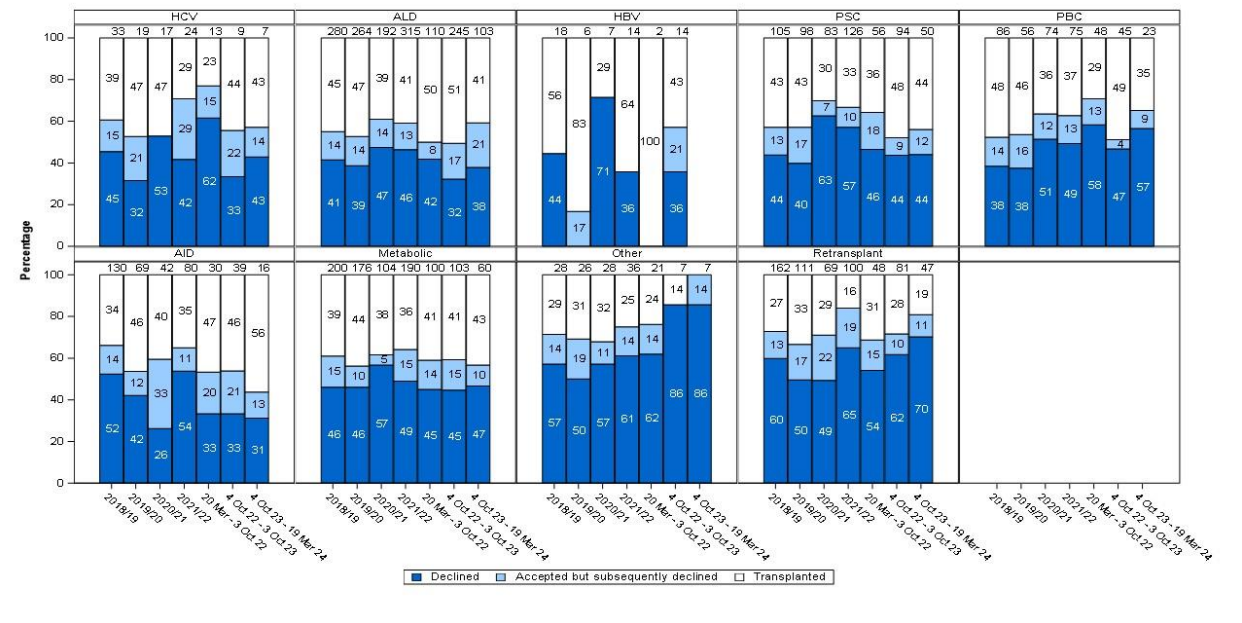


Figure 11B Named CLD patient offer outcome, by year and transplant centre, for DBD livers that were offered and ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding offers between 27 March and 9 July 2020)

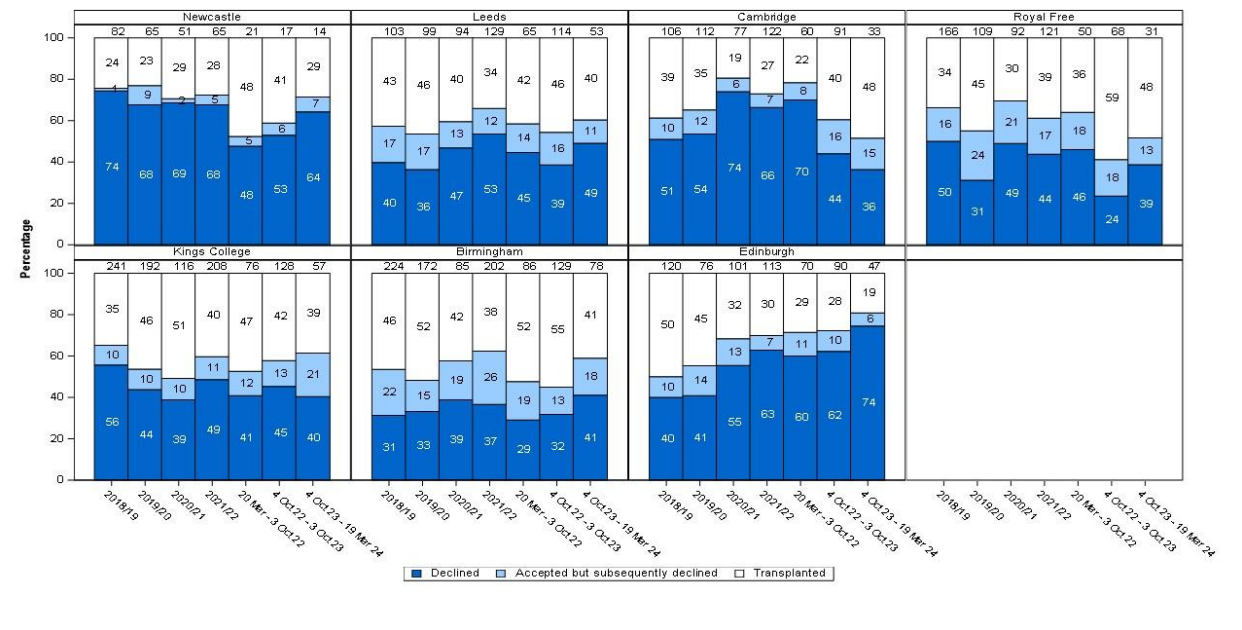


Figure 11C Named CLD patient offer outcome, by year and blood group, for DBD livers that were offered and ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding offers between 27 March and 9 July 2020)

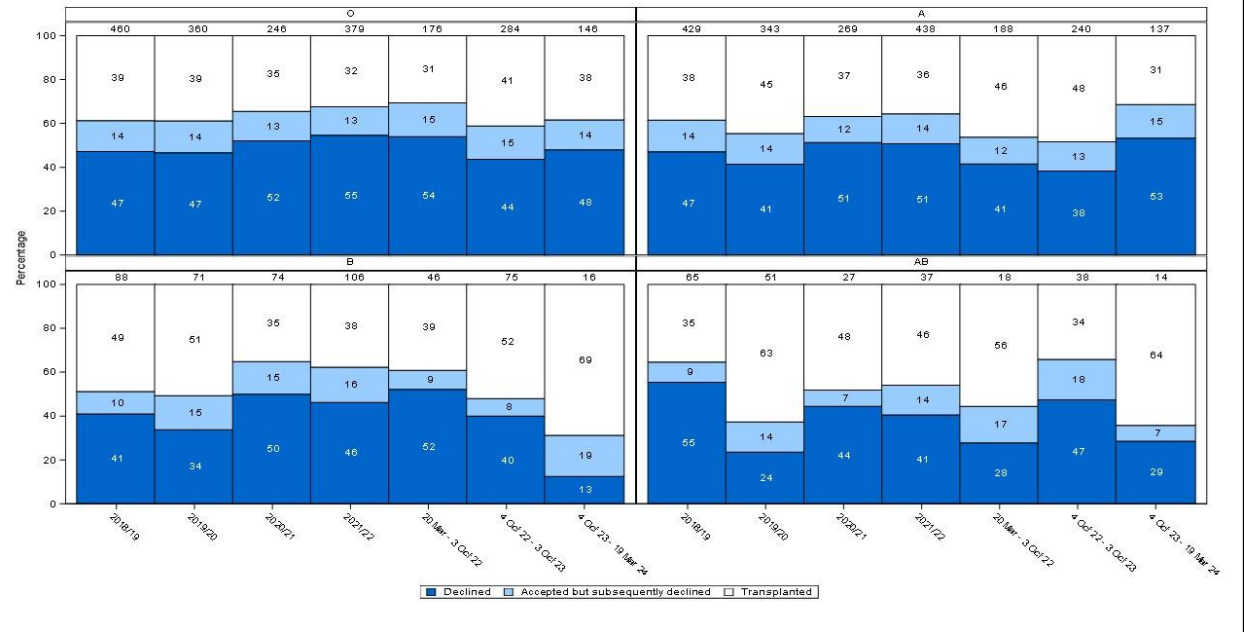


Figure 12A Named HCC patient offer outcome, by year and transplant centre, for DBD livers that were offered and ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding offers between 27 March and 9 July 2020)

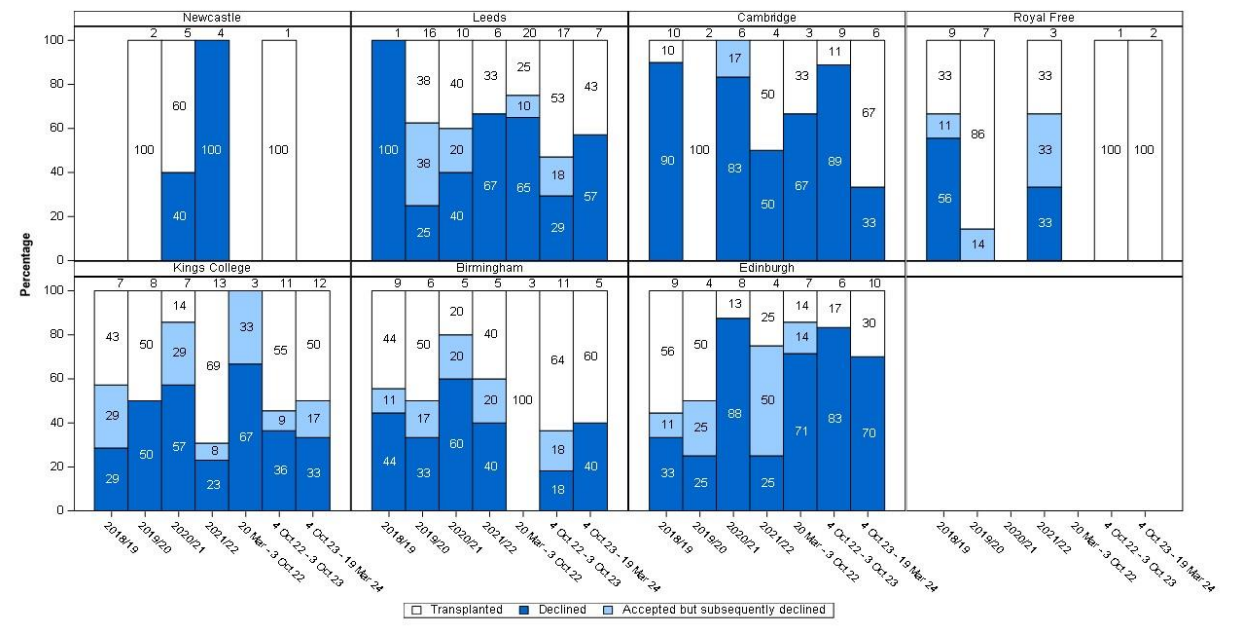


Figure 12B Named HCC patient offer outcome, by year and blood group, for DBD livers that were offered and ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding offers between 27 March and 9 July 2020)

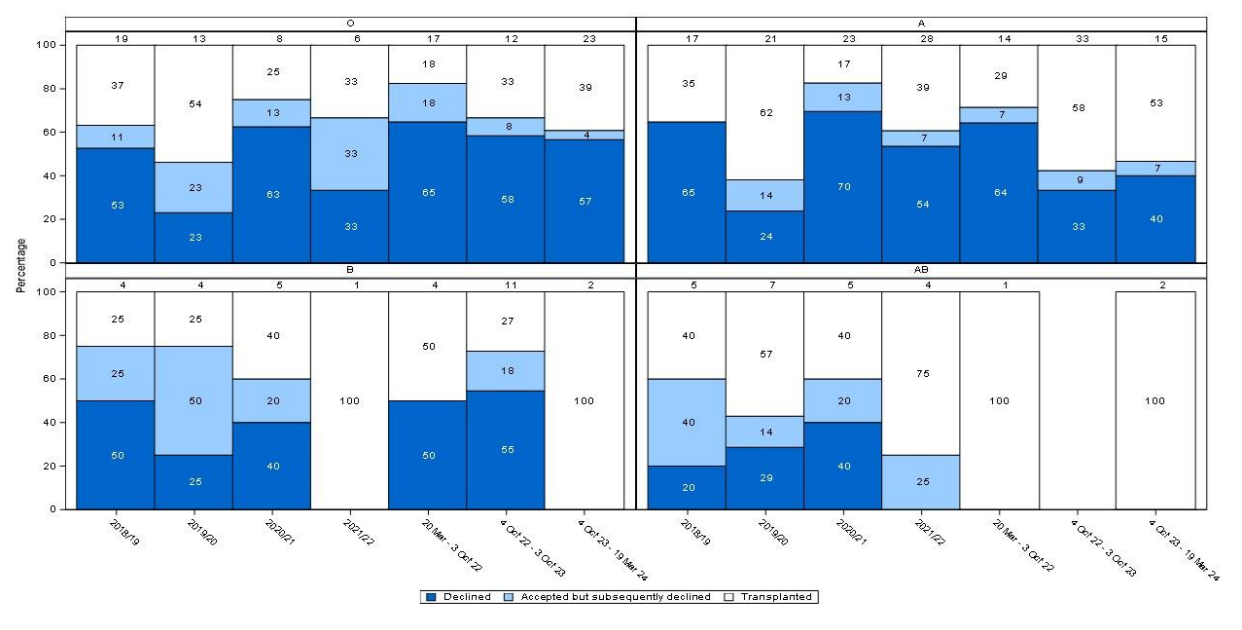


Figure 13A Named VS patient offer outcome, by year and transplant centre, for DBD livers that were offered and ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding offers between 27 March and 9 July 2020)

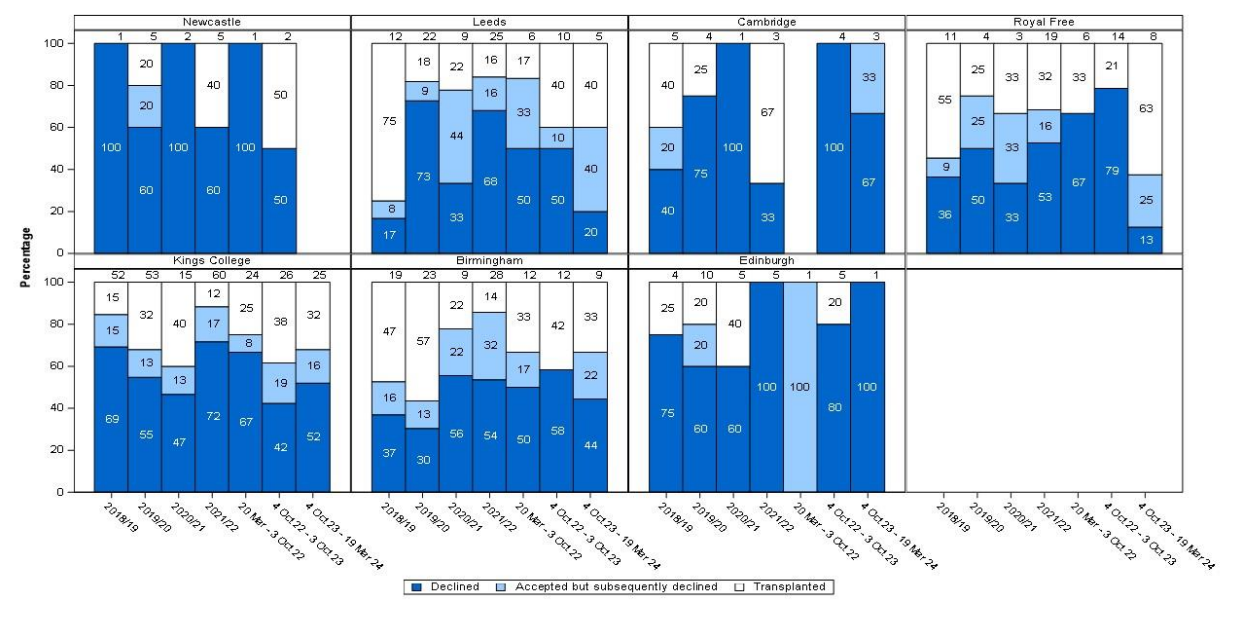
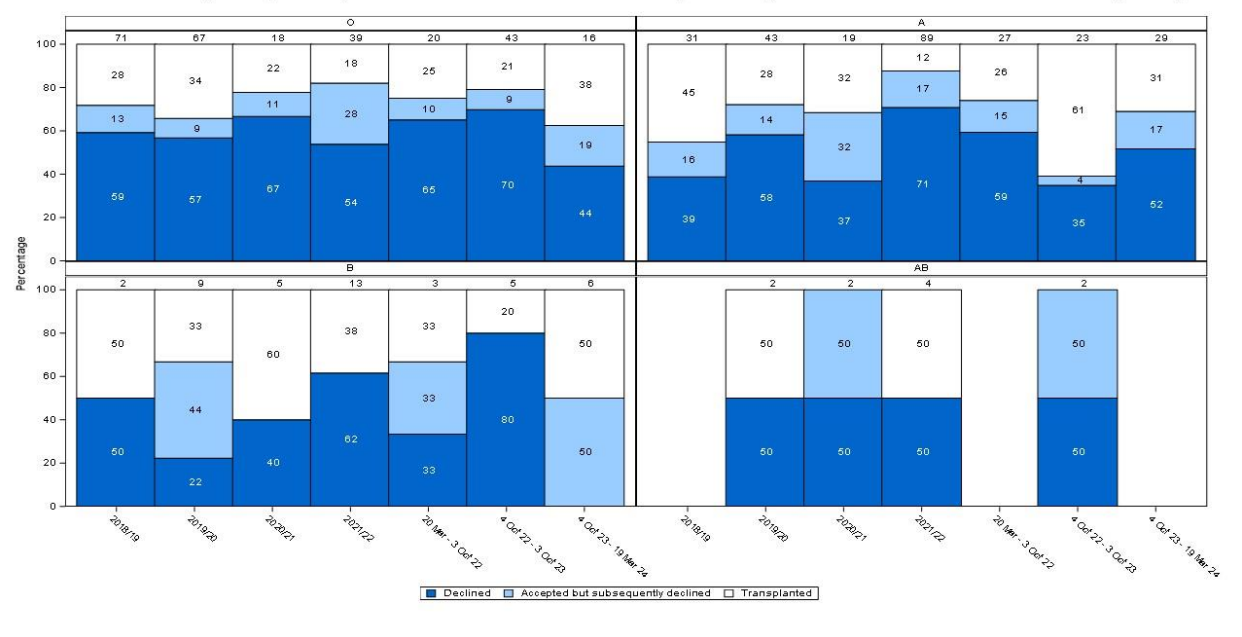


Figure 13B Named VS patient offer outcome, by year and blood group, for DBD livers that were offered and ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding offers between 27 March and 9 July 2020)



3.5.19. **Table 12, Figures 14A, 14B and 14C** show the median Transplant Benefit Score (TBS) at time of offer for named elective CLD patient offers for *livers ultimately transplanted* by, separately, aetiology, centre and blood group. Overall, the median TBS ranged between 1124 and 1227 days by year for the original NLOS.

3.5.20. **Table 13** shows equivalent information for HCC named patient offers.

Table 12 Median (IQR) Transplant Benefit Score (TBS) for named elective CLD patient offers for livers ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding 27 March 2020 to 9 July 2020)

	2018/19		2019/20		2020/21		2021/22		20 March – 3 October 2022		4 October 2022 – 3 October 2023		4 October 2023 – 19 March 2024	
	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)
Disease group														
Hepatitis C	33	1057 (920 - 1251)	19	1170 (926 - 1392)	17	1107 (994 - 1304)	24	1239 (1056 - 1376)	13	1185 (1097 - 1288)	9	1177 (1097 - 1199)	7	1004 (803 - 1053)
ALD	280	1246 (1032 - 1348)	264	1230 (1080 - 1353)	192	1185 (976 - 1307)	315	1212 (1026 - 1348)	110	1236 (1103 - 1367)	245	1226 (1087 - 1382)	103	1256 (1003 - 1449)
Hepatitis B	18	1062 (971 - 1380)	6	1182 (998 - 1406)	7	1370 (1261 - 1555)	14	971 (833 - 1221)	2	1216 (1165 - 1267)	14	1135 (988 - 1238)	0	-
PSC	105	1199 (1017 - 1316)	98	1179 (1092 - 1281)	83	1084 (838 - 1221)	126	1167 (968 - 1258)	56	1187 (989 - 1303)	94	1078 (909 - 1211)	50	1052 (975 - 1251)
PBC	86	1081 (1007 - 1223)	56	1089 (1015 - 1212)	74	1091 (949 - 1256)	75	1037 (870 - 1227)	48	1237 (1081 - 1262)	45	1108 (998 - 1209)	23	1115 (824 - 1340)
AID	130	1263 (1109 - 1379)	69	1202 (1005 - 1332)	42	1284 (1202 - 1354)	80	1215 (994 - 1432)	30	1290 (1234 - 1442)	39	1314 (1158 - 1450)	16	1154 (951 - 1447)
Metabolic	200	1215 (1050 - 1326)	176	1169 (1041 - 1310)	104	1157 (1032 - 1265)	190	1243 (1082 - 1350)	100	1258 (1168 - 1338)	103	1082 (954 - 1195)	60	1097 (1027 - 1209)
Other	28	992 (797 - 1080)	26	996 (939 - 1163)	28	1042 (678 - 1168)	36	1062 (885 - 1246)	21	1176 (1149 - 1203)	7	1045 (223 - 1094)	7	1236 (1179 - 1260)
Retransplant	162	1117 (1011 - 1236)	111	1074 (984 - 1199)	69	1011 (878 - 1122)	100	1103 (921 - 1238)	48	1154 (1087 - 1205)	81	1098 (1004 - 1210)	47	1035 (909 - 1110)
Centre														
Newcastle	82	1255 (1085 - 1340)	65	1128 (1064 - 1280)	51	1068 (952 - 1264)	65	1259 (1184 - 1352)	21	1169 (983 - 1257)	17	1236 (1055 - 1346)	14	1027 (897 - 1247)
Leeds	103	1097 (923 - 1289)	99	1183 (1031 - 1309)	94	1094 (932 - 1235)	129	1186 (1064 - 1288)	65	1250 (1158 - 1353)	114	1165 (1073 - 1255)	53	1146 (990 - 1222)
Cambridge	106	1205 (997 - 1306)	112	1223 (1084 - 1310)	77	1122 (994 - 1224)	122	1158 (978 - 1313)	60	1260 (1177 - 1332)	91	1121 (1041 - 1303)	33	1209 (1044 - 1364)
Royal Free	166	1190 (996 - 1342)	109	1154 (1037 - 1255)	92	1102 (930 - 1276)	121	1176 (1027 - 1308)	50	1183 (1153 - 1319)	68	1154 (953 - 1316)	31	1355 (1142 - 1458)
Kings College	241	1169 (1025 - 1310)	192	1147 (1006 - 1336)	116	1165 (1011 - 1254)	208	1153 (965 - 1266)	76	1206 (1089 - 1272)	128	1167 (1027 - 1306)	57	1097 (980 - 1339)
Birmingham	224	1198 (1057 - 1318)	172	1153 (1016 - 1297)	85	1162 (917 - 1350)	202	1127 (958 - 1300)	86	1172 (1054 - 1303)	129	1132 (992 - 1284)	78	1053 (972 - 1266)
Edinburgh	120	1132 (1008 - 1283)	76	1175 (1041 - 1315)	101	1147 (1032 - 1270)	113	1258 (1120 - 1345)	70	1253 (1175 - 1328)	90	1131 (998 - 1323)	47	1060 (1006 - 1146)
Blood group														
O	460	1189 (1057 - 1329)	360	1234 (1113 - 1346)	246	1210 (1071 - 1306)	379	1253 (1152 - 1346)	176	1268 (1217 - 1349)	284	1189 (1097 - 1346)	146	1200 (1057 - 1364)
A	429	1190 (997 - 1313)	343	1082 (976 - 1233)	269	1063 (905 - 1211)	438	1081 (919 - 1259)	188	1164 (1051 - 1256)	240	1102 (976 - 1277)	137	1032 (909 - 1197)
B	88	1140 (963 - 1291)	71	1193 (1061 - 1285)	74	1107 (972 - 1344)	106	1190 (971 - 1293)	46	1182 (1057 - 1299)	75	1066 (947 - 1239)	16	1238 (1146 - 1411)
AB	65	978 (640 - 1269)	51	1046 (876 - 1363)	27	1045 (765 - 1126)	37	813 (460 - 1137)	18	1188 (906 - 1284)	38	1074 (853 - 1148)	14	916 (672 - 990)
Total	1042	1178 (1017 - 1314)	825	1169 (1031 - 1303)	616	1124 (965 - 1274)	960	1179 (988 - 1304)	428	1227 (1121 - 1319)	637	1147 (1018 - 1303)	313	1115 (985 - 1302)

Table 13 Median (IQR) Transplant Benefit Score (TBS) for named elective HCC patient offers for livers ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding 27 March 2020 to 9 July 2020)

	2018/19		2019/20		2020/21		2021/22		20 March – 3 October 2022		4 October 2022 – 3 October 2023		4 October 2023 – 19 March 2024	
	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)
Centre														
Newcastle	0	-	2	1161 (1034 - 1289)	5	-14 (-55 - 570)	4	564 (254 - 697)	0	-	1	1314 (1314 - 1314)	0	-
Leeds	1	668 (668 - 668)	16	971 (901 - 1090)	10	516 (-2 - 854)	6	993 (968 - 1036)	20	1179 (1129 - 1410)	17	1126 (1025 - 1249)	7	1062 (956 - 1149)
Cambridge	10	1322 (1265 - 1458)	2	867 (297 - 1437)	6	292 (137 - 705)	4	1196 (553 - 1254)	3	1518 (1212 - 1530)	9	884 (858 - 899)	6	962 (915 - 1049)
Royal Free	9	1313 (676 - 1409)	7	507 (242 - 943)	0	-	3	1116 (643 - 1152)	0	-	1	1405 (1405 - 1405)	2	1249 (1221 - 1278)
Kings College	7	598 (515 - 1104)	8	1060 (1051 - 1105)	7	463 (415 - 1318)	13	1075 (910 - 1371)	3	1190 (1000 - 1339)	11	1194 (1121 - 1262)	12	1132 (860 - 1205)
Birmingham	9	1026 (642 - 1179)	6	923 (549 - 1062)	5	1090 (1051 - 1103)	5	448 (-103 - 582)	3	1203 (766 - 1365)	11	1012 (925 - 1080)	5	584 (507 - 1113)
Edinburgh	9	1081 (1052 - 1120)	4	784 (470 - 1020)	8	339 (236 - 831)	4	651 (331 - 1063)	7	1405 (1359 - 1424)	6	716 (670 - 948)	10	1022 (982 - 1122)
Blood group														
O	19	1285 (1105 - 1381)	13	1062 (474 - 1164)	8	914 (704 - 1305)	6	1134 (904 - 1187)	17	1385 (1339 - 1425)	12	1122 (1021 - 1178)	23	1118 (1026 - 1175)
A	17	1256 (855 - 1329)	21	1034 (920 - 1164)	23	402 (130 - 915)	28	953 (646 - 1196)	14	1144 (1025 - 1186)	33	1076 (890 - 1249)	15	982 (851 - 1073)
B	4	672 (629 - 698)	4	958 (851 - 990)	5	355 (192 - 1028)	1	943 (943 - 943)	4	1485 (1415 - 1524)	11	1068 (858 - 1195)	2	1096 (914 - 1278)
AB	5	545 (515 - 598)	7	549 (348 - 899)	5	276 (-55 - 415)	4	373 (144 - 515)	1	232 (232 - 232)			2	572 (406 - 738)
UKELD group														
<49	1	591 (591 - 591)	9	297 (182 - 507)	15	137 (-6 - 415)	4	9 (-57 - 163)	1	232 (232 - 232)	7	758 (670 - 884)	7	632 (475 - 982)
49-53	8	607 (497 - 695)	9	916 (810 - 980)	12	730 (232 - 1070)	13	643 (448 - 1036)	1	766 (766 - 766)	27	1068 (939 - 1139)	18	1022 (914 - 1167)
≥ 54	36	1261 (1059 - 1358)	27	1054 (943 - 1227)	14	914 (767 - 1289)	22	1029 (910 - 1254)	34	1343 (1159 - 1424)	22	1145 (1079 - 1305)	17	1113 (1062 - 1192)
Total	45	1106 (676 - 1315)	45	980 (775 - 1089)	41	463 (192 - 973)	39	938 (543 - 1152)	36	1276 (1137 - 1417)	567	1079 (894 - 1195)	42	1056 (914 - 1173)

Figure 14A Median Transplant Benefit Score (TBS) for named elective chronic liver disease patient offers for livers ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding 27 March 2020 to 9 July 2020), by aetiology

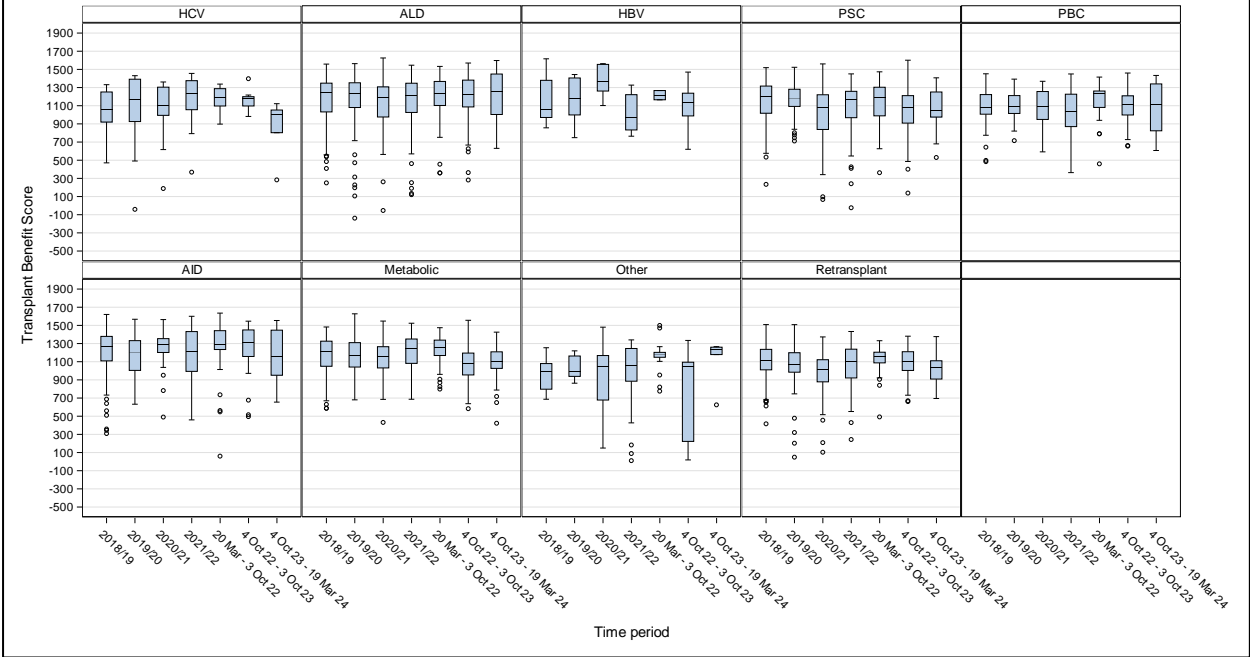
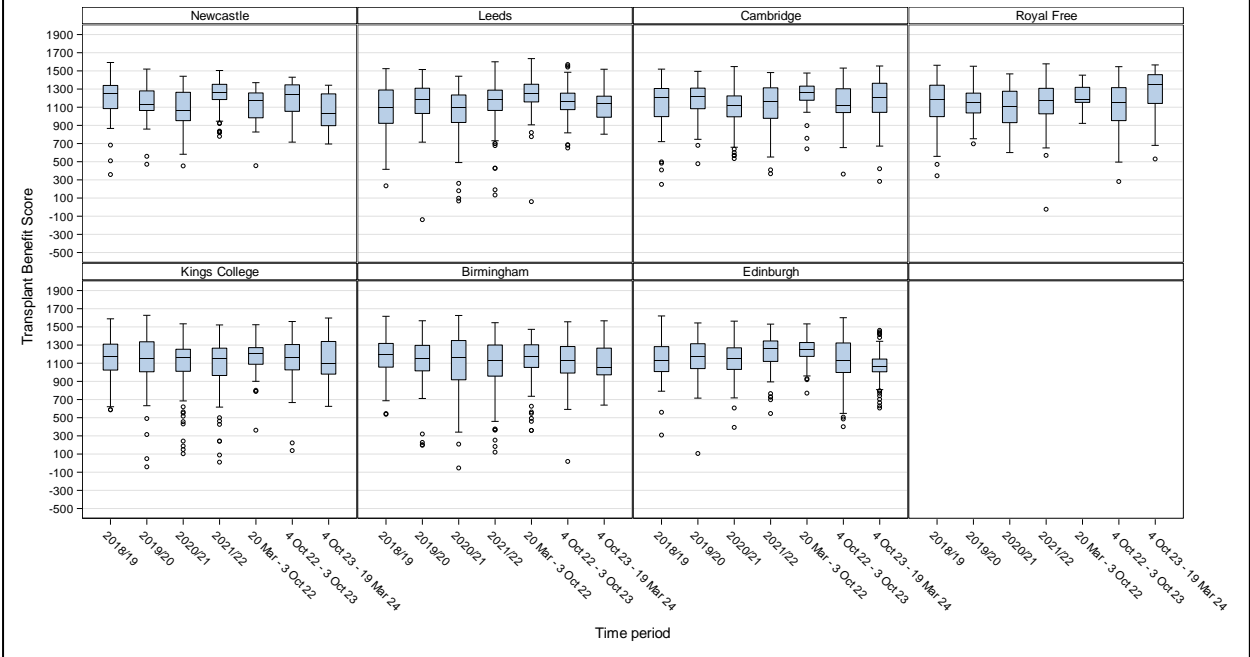
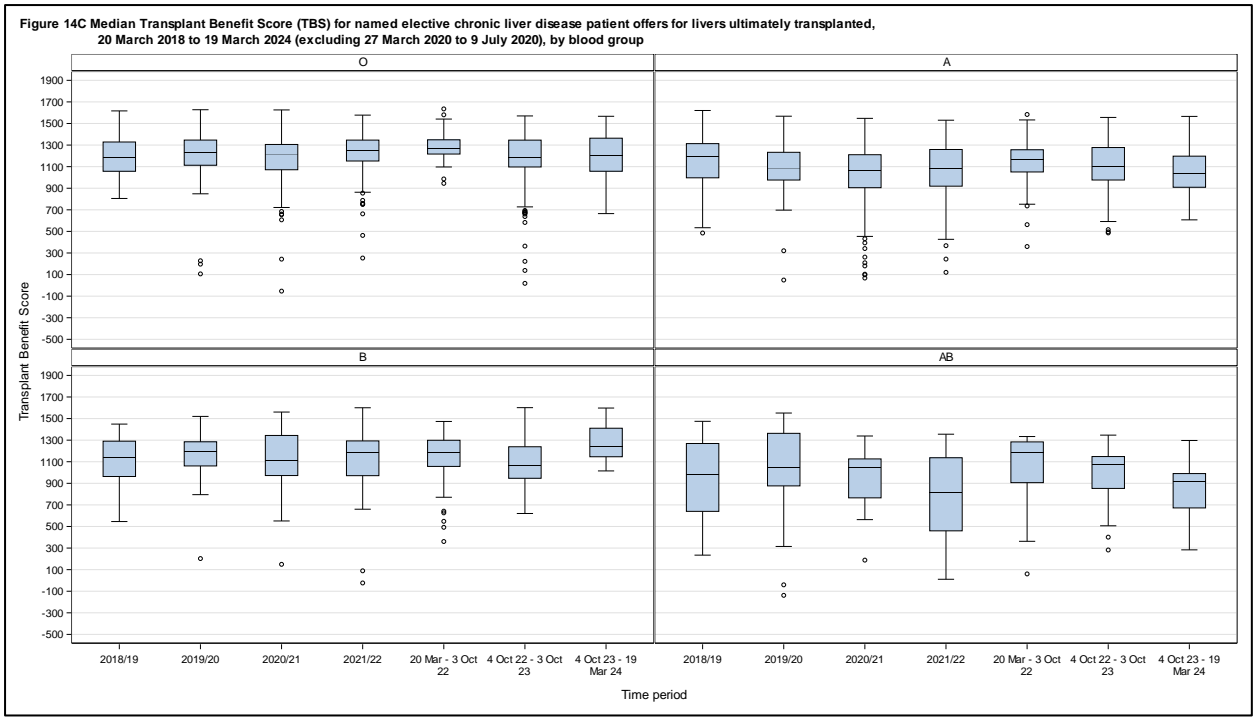


Figure 14B Median Transplant Benefit Score (TBS) for named elective chronic liver disease patient offers for livers ultimately transplanted, 20 March 2018 to 19 March 2024 (excluding 27 March 2020 to 9 July 2020), by transplant centre





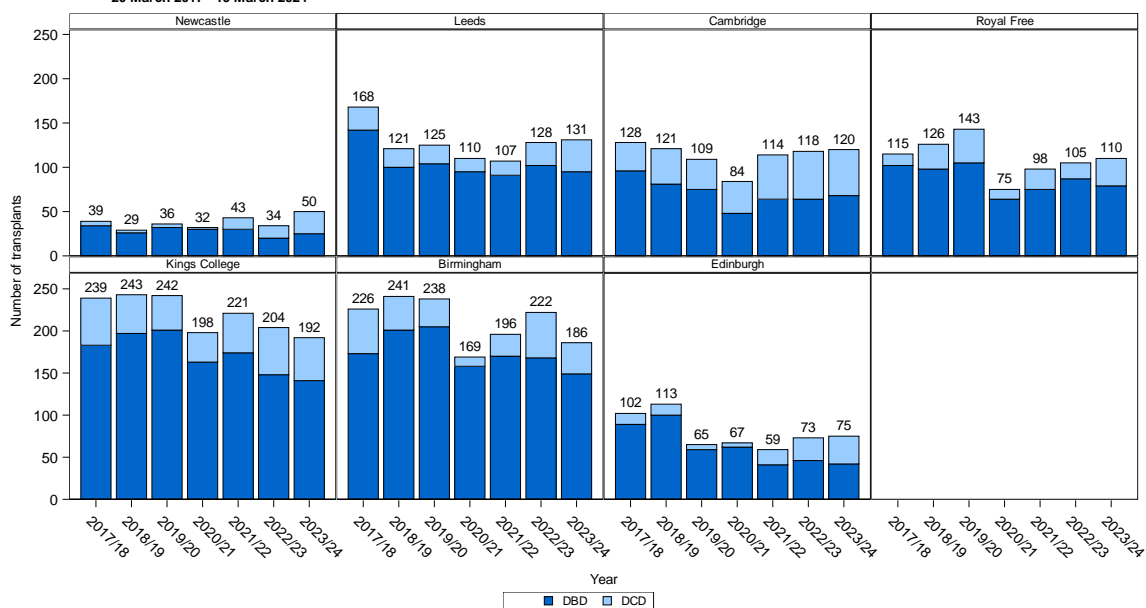
3.6. TRANSPLANT ACTIVITY

3.6.1. **Table 14** shows the urgency status and age group of DBD and DCD liver transplants performed in the UK between 20 March 2017 and 19 March 2024. The proportion of super-urgent transplants performed has increased from prior to NLOS implementation to 2023/24 (11% vs 14% respectively). Between 20 March 2023 and 19 March 2024, only 11% of transplants were super-urgent. There was some evidence of a statistically significant difference for adult DBD liver and adult liver/kidney transplants (overall Chi-squared p-value=0.06) but not for paediatric transplants (overall Chi-squared p-value=0.25). Highlighted in red are the transplants that will be analysed further in the rest of the section.

Table 14 Urgency status and age group for deceased donor liver transplants performed in the UK, 20 March 2017 to 19 March 2024, as at 8 April 2024							
	2017/18 N (%)	2018/19 N (%)	2019/20 N (%)	2020/21 N (%)	2021/22 N (%)	2022/23 N (%)	2023/24 N (%)
DBD liver							
Adult elective liver and liver/kidney	640 (78.1)	623 (77.6)	608 (77.8)	477 (76.8)	481 (74.6)	449 (70.7)	451 (75.3)
Adult elective multivisceral	6 (0.7)	5 (0.6)	6 (0.8)	1 (0.2)	9 (1.4)	8 (1.3)	4 (0.7)
Adult elective liver/ cardiothoracic	2 (0.2)	0 (0)	2 (0.3)	3 (0.5)	3 (0.5)	1 (0.2)	0 (0)
Adult super-urgent liver and liver/kidney	94 (11.5)	100 (12.5)	83 (10.6)	61 (9.8)	75 (11.6)	96 (15.1)	77 (12.9)
Adult super-urgent multivisceral	1 (0.1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.2)	0 (0)
Paediatric elective liver and liver/kidney	57 (7)	55 (6.8)	64 (8.2)	63 (10.1)	53 (8.2)	53 (8.3)	48 (8.0)
Paediatric elective multivisceral	6 (0.7)	3 (0.4)	2 (0.3)	4 (0.6)	2 (0.3)	3 (0.5)	3 (0.5)
Paediatric super-urgent liver and liver/kidney	13 (1.6)	17 (2.1)	16 (2.0)	12 (1.9)	22 (3.4)	24 (3.8)	16 (2.7)
Total UK DBD transplants	819 (80.5)	803 (80.8)	781 (81.5)	621 (84.4)	645 (77.0)	635 (71.8)	599 (69.3)
DCD liver							
Adult elective liver and liver/kidney	190 (96)	185 (96.9)	173 (97.7)	110 (95.7)	189 (97.9)	243 (97.6)	258 (97.4)
Adult elective liver/cardiothoracic	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.4)
Adult super-urgent liver and liver/kidney	1 (0.5)	1 (0.5)	3 (1.7)	2 (1.7)	2 (1.0)	1 (0.4)	2 (0.8)
Paediatric elective liver and liver/kidney	7 (3.5)	4 (2.1)	1 (0.6)	2 (1.7)	2 (1.0)	5 (2.0)	4 (1.5)
Paediatric super-urgent liver and liver/kidney	0 (0)	1 (0.5)	0 (0)	1 (0.9)	0 (0)	0 (0)	0 (0)
Total UK DCD transplants	198 (19.5)	191 (19.2)	177 (18.5)	115 (15.6)	193 (23.0)	249 (28.2)	265 (30.7)
Total UK transplants	1017 (100)	994 (100)	958 (100)	736 (100)	838 (100)	884 (100)	864 (100)

3.6.2. **Figure 15** shows the number of transplants over the time periods of interest, by transplant centre and donor type.

Figure 15 Number of deceased donor liver transplants performed in the UK by transplant centre and donor type, 20 March 2017 - 19 March 2024



3.6.3. One hundred and forty of the 5,077 adult elective liver and liver/kidney transplants were performed in the UK between 27 March 2020 and 9 July 2020. These transplants are **included** in the rest of the section but note that DBD livers were not offered through the National Liver Offering Scheme due to COVID-19, and both DBD and DCD livers were offered to clinically urgent patients. Sixteen NHS group 2 transplants (1 performed at London Bridge and 15 performed at King's College) and three intestinal liver only transplants performed at Cambridge between August 2017 and September 2018 have been excluded from the rest of this section.

3.6.4. **Table 15** and **Table 16** show the demographics of adult elective liver and liver/kidney DBD and DCD transplants performed in the UK during the time periods of interest.

**Table 15 Adult elective liver and liver/kidney transplants performed in the UK using livers from DBD donors,
20 March 2017 to 19 March 2024, as at 8 April 2024**

	2017/18 N (%)	2018/19 N (%)	2019/20 N (%)	2020/21 N (%)	2021/22 N (%)	2022/23 N (%)	2023/24 N (%)
Total	635	621	607	476	481	449	451
Offer type							
Named patient		491 (79.1)	441 (72.7)	344 (72.3)	395 (82.1)	378 (84.2)	361 (80.0)
Fast-track		127 (20.7)	161 (26.8)	125 (26.4)	85 (17.9)	71 (16.0)	90 (20.0)
Rank on matching run							
Median (IQR) (Range)		2 (1 – 4) (1 - 187)	2 (1 – 4) (1 – 191)	2 (1 – 5) (1 – 204)	2 (1 – 4) (1 – 362)	2 (1 - 3) (1 - 415)	2 (1 – 4) (1 – 317)
Transplant Benefit Score							
Median (IQR) (Range)		1131.98 (881 – 1301) (-493 – 1617)	1096.12 (885 – 1289) (-549 – 1616)	1090.12 (838 – 1281) (-1535 - 1563)	1155.10 (923 – 1314) (-289 – 1600)	1170.78 (1014 – 1317) (-215 – 1635)	1141.14 (951 – 1315) (-52 – 1601)
Transplant Type							
Liver only	615 (96.9)	609 (97.9)	593 (97.7)	469 (98.5)	475 (98.8)	443 (98.7)	444 (98.4)
Liver & kidney	20 (3.1)	13 (2.1)	14 (2.3)	7 (1.5)	6 (1.2)	6 (1.3)	7 (1.6)
Type of Liver Transplanted							
Whole liver	596 (93.9)	581 (93.6)	569 (93.7)	443 (93.1)	447 (92.9)	419 (93.3)	421 (93.3)
Split liver	39 (6.1)	40 (6.4)	37 (6.1)	33 (6.9)	34 (7.1)	28 (6.2)	29 (6.4)
Reduced liver	0 (0)	0 (0)	1 (0.2)	0 (0)	0 (0)	2 (0.4)	1 (0.2)
Recipient Age Group							
17-25 years	27 (4.3)	37 (6.0)	35 (5.8)	34 (7.1)	25 (5.2)	22 (4.9)	21 (4.7)
26-39 years	95 (15.0)	68 (11.0)	64 (10.5)	41 (8.6)	49 (10.2)	47 (10.5)	58 (12.9)
40-49 years	98 (15.4)	75 (12.1)	68 (11.2)	78 (16.4)	85 (17.7)	53 (11.8)	55 (12.2)
50-59 years	208 (32.8)	202 (32.5)	213 (35.1)	170 (35.7)	133 (27.7)	131 (29.2)	125 (27.7)
60-69 years	193 (30.4)	231 (37.2)	212 (34.9)	144 (30.3)	174 (36.2)	187 (41.6)	182 (40.4)
70+ years	14 (2.2)	8 (1.3)	15 (2.5)	9 (1.9)	15 (3.1)	9 (2.0)	10 (2.2)

**Table 15 Adult elective liver and liver/kidney transplants performed in the UK using livers from DBD donors,
20 March 2017 to 19 March 2024, as at 8 April 2024**

	2017/18 N (%)	2018/19 N (%)	2019/20 N (%)	2020/21 N (%)	2021/22 N (%)	2022/23 N (%)	2023/24 N (%)
Total	635	621	607	476	481	449	451
Recipient Sex							
Male	395 (62.2)	395 (63.6)	369 (60.8)	297 (62.4)	318 (66.1)	275 (61.2)	287 (63.6)
Female	240 (37.8)	226 (36.4)	238 (39.2)	179 (37.6)	163 (33.9)	174 (38.8)	164 (36.4)
Type of Patient							
CLD	477 (75.1)	485 (78.1)	471 (77.6)	398 (83.6)	401 (83.4)	362 (80.6)	337 (74.7)
HCC	104 (16.4)	72 (11.6)	80 (13.2)	54 (11.3)	39 (8.1)	45 (10.0)	57 (12.6)
VS	49 (7.7)	59 (9.5)	51 (8.4)	21 (4.4)	28 (5.8)	29 (6.5)	35 (7.8)
HCC downstaging	5 (0.8)	5 (0.8)	5 (0.8)	3 (0.6)	3 (0.6)	0 (0)	1 (0.2)
ACLF	0 (0)	0 (0)	0 (0)	0 (0)	10 (2.1)	13 (2.9)	21 (4.7)
Robert's Disease Group							
HCC	109 (17.2)	78 (12.5)	85 (14.0)	57 (12.0)	45 (9.4)	51 (11.4)	58 (12.9)
HCV	23 (3.6)	12 (1.9)	16 (2.6)	9 (1.9)	6 (1.2)	4 (0.9)	7 (1.6)
ALD	139 (21.9)	169 (27.2)	153 (25.2)	127 (26.7)	149 (31.0)	136 (30.3)	128 (28.4)
HBV	8 (1.3)	13 (2.1)	6 (1.0)	2 (0.4)	11 (2.3)	7 (1.6)	5 (1.1)
PSC	86 (13.5)	72 (11.6)	63 (10.4)	47 (9.9)	56 (11.6)	57 (12.7)	71 (15.7)
PBC	37 (5.8)	49 (7.9)	47 (7.7)	43 (9.0)	37 (7.7)	33 (7.3)	29 (6.4)
AID	44 (6.9)	51 (8.2)	48 (7.9)	38 (8.0)	38 (7.9)	26 (5.8)	33 (7.3)
NAFLD	67 (10.6)	72 (11.6)	71 (11.7)	54 (11.3)	68 (14.1)	69 (15.4)	56 (12.4)
Metabolic (excl. NAFLD)	8 (1.3)	13 (2.1)	23 (3.8)	7 (1.5)	9 (1.9)	9 (2.0)	8 (1.8)
Other	58 (9.1)	40 (6.4)	44 (7.2)	38 (8.0)	35 (7.3)	26 (5.8)	30 (6.7)
Retransplant	56 (8.8)	53 (8.5)	51 (8.4)	54 (11.3)	27 (5.6)	31 (6.9)	26 (5.8)
Liver Transplant Number							
First liver transplant	579 (91.2)	567 (91.3)	556 (91.6)	421 (88.4)	454 (94.4)	418 (93.1)	425 (94.2)
Second	46 (7.2)	51 (8.2)	40 (6.6)	45 (9.5)	18 (3.7)	26 (5.8)	24 (5.3)
Third	7 (1.1)	3 (0.5)	8 (1.3)	9 (1.9)	8 (1.7)	4 (0.9)	2 (0.4)
Fourth	2 (0.3)	0 (0)	3 (0.5)	1 (0.2)	1 (0.2)	1 (0.2)	0 (0)
Sixth	1 (0.2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

**Table 15 Adult elective liver and liver/kidney transplants performed in the UK using livers from DBD donors,
20 March 2017 to 19 March 2024, as at 8 April 2024**

	2017/18 N (%)	2018/19 N (%)	2019/20 N (%)	2020/21 N (%)	2021/22 N (%)	2022/23 N (%)	2023/24 N (%)
Total	635	621	607	476	481	449	451
Blood Group Compatibility*							
Identical	628 (98.9)	607 (97.7)	574 (94.6)	451 (94.7)	460 (95.8)	426 (94.9)	435 (96.7)
Compatible	6 (0.9)	14 (2.3)	33 (5.4)	25 (5.3)	20 (4.2)	23 (5.1)	15 (3.3)
Incompatible	1 (0.2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Zonal Transplants							
Non zonal	167 (26.3)	487 (78.4)	486 (80.1)	398 (83.6)	389 (80.9)	360 (80.2)	364 (80.7)
Zonal	468 (73.7)	134 (21.6)	121 (19.9)	78 (16.4)	92 (19.1)	89 (19.8)	87 (19.3)
Blood group matching* (D=donor, R=recipient)							
DO, RO	297 (46.8)	294 (47.3)	262 (43.2)	182 (38.2)	171 (35.6)	156 (34.7)	211 (46.9)
DO, RA	1 (0.2)	0 (0)	3 (0.5)	5 (1.1)	8 (1.7)	7 (1.6)	7 (1.6)
DO, RB	1 (0.2)	1 (0.2)	5 (0.8)	5 (1.1)	5 (1.0)	6 (1.3)	3 (0.7)
DA, RO	1 (0.2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
DA, RA	245 (38.6)	236 (37.9)	235 (38.7)	203 (42.6)	213 (44.4)	217 (48.3)	156 (34.7)
DA, RAB	4 (0.6)	11 (1.8)	20 (3.3)	10 (2.1)	6 (1.3)	9 (2.0)	5 (1.1)
DB, RB	70 (11.0)	55 (8.8)	59 (9.7)	55 (11.6)	52 (10.8)	43 (9.6)	50 (11.1)
DB, RAB	0 (0)	2 (0.3)	5 (0.8)	5 (1.1)	1 (0.2)	1 (0.2)	0 (0)
DAB, RAB	16 (2.5)	23 (3.7)	18 (3.0)	11 (2.3)	24 (5.0)	10 (2.2)	18 (4)

*1 transplant performed with unknown donor blood group in 2021/22

Table 16 Adult elective liver and liver/kidney transplants performed in the UK using livers from DCD donors, 20 March 2017 to 19 March 2024, as at 8 April 2024

	2017/18 N (%)	2018/19 N (%)	2019/20 N (%)	2020/21 N (%)	2021/22 N (%)	2022/23 N (%)	2023/24 N (%)
Total	186	182	170	110	189	243	256
Transplant Type							
Liver only	186 (100)	182 (100)	169 (99.4)	110 (100)	189 (100)	241 (99.2)	255 (98.8)
Liver & kidney	0 (0)	0 (0)	1 (0.6)	0 (0)	0 (0)	2 (0.8)	3 (1.2)
Recipient Age Group							
17-25 years	4 (2.2)	5 (2.8)	5 (2.9)	1 (0.9)	1 (0.5)	5 (2.1)	1 (0.4)
26-39 years	10 (5.4)	17 (9.3)	16 (9.4)	14 (12.7)	19 (10.1)	30 (12.3)	31 (12)
40-49 years	24 (12.9)	23 (12.6)	25 (14.7)	17 (15.5)	35 (18.5)	39 (16.0)	36 (14)
50-59 years	76 (40.9)	73 (40.1)	55 (32.4)	36 (32.7)	83 (43.9)	82 (33.7)	84 (32.6)
60-69 years	66 (35.5)	58 (31.9)	68 (40.0)	39 (35.5)	48 (25.4)	82 (33.7)	101 (39.1)
70+ years	6 (3.2)	6 (3.3)	1 (0.6)	3 (2.7)	3 (1.6)	5 (2.1)	5 (1.9)
Recipient Sex							
Male	119 (64.0)	130 (71.4)	106 (62.4)	76 (69.1)	132 (69.8)	180 (74.1)	187 (72.5)
Female	67 (36.0)	52 (28.6)	64 (37.6)	34 (30.9)	57 (30.2)	63 (25.9)	71 (27.5)
Type of Patient							
CLD	123 (66.1)	87 (47.8)	107 (62.9)	72 (65.5)	104 (55.0)	145 (59.7)	165 (64.0)
HCC	52 (28.0)	83 (45.6)	58 (34.1)	33 (30.0)	73 (38.6)	84 (34.6)	75 (29.1)
VS	9 (4.8)	5 (2.7)	1 (0.6)	2 (1.8)	8 (4.2)	12 (4.9)	13 (5.0)
HCC downstaging	2 (1.1)	7 (3.8)	4 (2.4)	3 (2.7)	3 (1.6)	2 (0.8)	4 (1.6)
ACLF	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.5)	0 (0)	1 (0.4)
Liver Transplant Number							
First liver transplant	183 (98.4)	177 (97.3)	167 (98.2)	103 (93.6)	183 (96.8)	239 (98.4)	250 (96.9)
Second	3 (1.6)	5 (2.7)	3 (1.8)	7 (6.4)	4 (2.1)	3 (1.2)	7 (2.7)
Third	0 (0)	0 (0)	0 (0)	0 (0)	2 (1.1)	1 (0.4)	1 (0.4)
Blood Group Compatibility*							
Identical	185 (99.5)	175 (96.2)	161 (94.7)	109 (99.1)	182 (96.3)	234 (96.3)	252 (97.7)
Compatible	1 (0.5)	7 (3.8)	9 (5.3)	1 (0.9)	7 (3.7)	9 (3.7)	6 (2.3)

Table 16 Adult elective liver and liver/kidney transplants performed in the UK using livers from DCD donors, 20 March 2017 to 19 March 2024, as at 8 April 2024

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Total	186	182	170	110	189	243	256
Robert's Disease Group							
HCC	55 (29.6)	91 (50.0)	62 (36.5)	36 (32.7)	76 (40.2)	88 (36.2)	80 (31.0)
HCV	4 (2.2)	3 (1.6)	3 (1.8)	2 (1.8)	6 (3.2)	3 (1.2)	4 (1.6)
ALD	43 (23.1)	35 (19.2)	43 (25.3)	20 (18.2)	41 (21.7)	57 (23.5)	48 (18.6)
HBV	3 (1.6)	1 (0.5)	2 (1.2)	1 (0.9)	3 (1.6)	6 (2.5)	6 (2.3)
PSC	19 (10.2)	12 (6.6)	17 (10)	16 (14.5)	15 (7.9)	29 (11.9)	29 (11.2)
PBC	24 (12.9)	7 (3.8)	18 (10.6)	9 (8.2)	10 (5.3)	14 (5.8)	16 (6.2)
AID	10 (5.4)	7 (3.8)	5 (2.9)	4 (3.6)	10 (5.3)	14 (5.8)	20 (7.8)
NAFLD	21 (11.3)	13 (7.1)	8 (4.7)	8 (7.3)	10 (5.3)	17 (7.0)	28 (10.9)
Metabolic (excluding NAFLD)	4 (2.2)	2 (1.1)	1 (0.6)	3 (2.7)	1 (0.5)	2 (0.8)	3 (1.2)
Other	0 (0)	6 (3.3)	8 (4.7)	4 (3.6)	11 (5.8)	9 (3.7)	16 (6.2)
Retransplant	3 (1.6)	5 (2.7)	3 (1.8)	7 (6.4)	6 (3.2)	4 (1.6)	8 (3.1)
Zonal Transplants							
Non zonal	65 (34.9)	75 (41.2)	65 (38.2)	42 (38.2)	77 (40.7)	86 (35.4)	73 (28.3)
Zonal	121 (65.1)	107 (58.8)	105 (61.8)	68 (61.8)	112 (59.3)	157 (64.6)	185 (71.7)
Blood group matching* (D=donor, R=recipient)							
DO, RO	95 (51.1)	79 (43.4)	68 (40.0)	52 (47.3)	88 (46.6)	115 (47.3)	126 (48.8)
DO, RA	0 (0)	0 (0)	3 (1.8)	1 (0.9)	4 (2.1)	2 (0.8)	0 (0)
DO, RB	0 (0)	5 (2.7)	5 (2.9)	0 (0)	2 (1.1)	6 (2.5)	5 (1.9)
DO, RAB	0 (0)	1 (0.5)	0 (0)	0 (0)	1 (0.5)	0 (0)	0 (0)
DA, RA	70 (37.6)	75 (41.2)	77 (45.3)	48 (43.6)	73 (38.6)	88 (36.2)	94 (36.4)
DA, RAB	1 (0.5)	1 (0.5)	0 (0)	0 (0)	0 (0)	1 (0.4)	0 (0)
DB, RB	18 (9.7)	16 (8.8)	13 (7.6)	7 (6.4)	21 (11.1)	27 (11.1)	28 (10.9)
DB, RAB	0 (0)	0 (0)	1 (0.6)	0 (0)	0 (0)	0 (0)	1 (0.4)
DAB, RAB	2 (1.1)	5 (2.7)	3 (1.8)	2 (1.8)	0 (0)	4 (1.6)	4 (1.6)

*1 transplant performed with unknown donor blood group in 2021/22

3.6.5. **Table 17(a&b)** and **Table 18(a&b)** show the median waiting time to transplant for the adult elective transplants performed in the UK by transplant centre, blood group and type of patient, for DBD and DCD transplants respectively. Overall, the median time to transplant was statistically significantly different across the time periods of interest for both DBD and DCD transplants (both with a Kruskal-Wallis p-value<0.0001).

Table 17a Median (IQR; range) time to transplant (days) for adult elective liver and liver/kidney transplants performed in the UK using livers from DBD donors, 20 March 2017 to 19 March 2024, as at 8 April 2024 LAG24(5.2)

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Overall (N)	635	622	607	476	481	449	451
Median (IQR)	71 (23 - 198)	39 (10 - 138)	43 (10 - 144)	43 (9 - 164.5)	33 (9 - 105)	40 (9 - 156)	58 (14 - 193)
Range	0 -1835	1 -1711	0 -1620	0 -1814	0 - 1470	1 - 2223	1 - 1420
Type of patient							
CLD (N)	477	485	471	398	401	362	337
Median (IQR)	65 (20 - 186)	30 (8 - 96)	25 (8 - 93)	32 (8 - 150)	25 (8 - 82)	28.5 (8 - 123)	40 (12 - 147)
Range	0 -1519	1 -1518	0 - 1450	0 -1814	0 - 1470	1 - 2223	1 - 915
HCC (N)	104	72	80	54	39	45	57
Median (IQR)	57 (23 - 184)	55 (22.5 - 145)	79 (33.5 - 167.5)	62 (24 - 128)	53 (21 - 107)	77 (27 - 179)	109 (40 - 238)
Range	2 -1030	1 - 568	1 - 739	0 - 664	2 - 1400	1 - 769	8 - 1420
VS (N)	49	59	51	21	28	29	35
Median (IQR)	187 (79 - 543)	296 (100 -836)	365 (174 - 613)	367 (261 -585)	385 (200 - 612)	570 (264 - 879)	369 (129 - 833)
Range	2 -1835	2 -1711	16 -1620	3 -1260	17 - 1326	20 - 2099	5 - 1401
ACLF (N)	0	0	0	0	10	13	21
Median (IQR)	-	-	-	-	11.5 (5 - 42)	10 (7 - 63)	12 (4 - 46)
Range	-	-	-	-	2 - 968	2 - 1014	1 - 333
HCC downstaging (N)	5	5	5	3	3	0	1
Median (IQR)	93 (63 - 131)	14 (10 - 27)	58 (22 - 128)	44 (4 - 240)	42 (31 - 115)	-	71 (-)
Range	16 -384	6 - 65	17 - 204	4 - 240	31 - 115	-	-

Table 17b Median (IQR; range) time to transplant (days) for adult elective liver and liver/kidney transplants performed in the UK using livers from DBD donors, 20 March 2017 to 19 March 2024, as at 8 April 2024

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Centre							
Newcastle (N)	30	22	26	27	23	14	17
Median (IQR)	47 (17 - 111)	43 (17 - 96)	28.5 (14 - 85)	52 (20 - 190)	45 (13 - 110)	8.5 (5 - 45)	22 (12 - 164)
Range	1 - 377	2 - 318	1 - 517	2 - 607	2 - 760	4 - 998	4 - 1233
Leeds (N)	108	66	79	70	60	74	71
Median (IQR)	64.5(26-228.5)	41.5 (9 - 145)	33 (9 - 136)	52.5 (14 - 159)	27.5 (9 - 113)	22.5 (7 - 133)	41 (12 - 137)
Range	1 -1402	1 -1341	1 - 1405	1 -1260	1 - 1187	1 - 1058	1 - 873
Cambridge (N)	71	65	60	35	50	40	52
Median (IQR)	74 (21 - 200)	36 (10 - 88)	17 (8.5 - 67)	23 (9 - 76)	37 (9 - 90)	15 (7 - 62.5)	20 (7 - 73.5)
Range	0 -1343	1 - 760	1 - 656	0 - 679	0 - 633	1 - 407	1 - 753
Royal Free (N)	84	83	91	57	65	68	67
Median (IQR)	99.5 (29.5-236.5)	33 (7 - 133)	37 (11 - 96)	39 (8 - 95)	28 (8 - 154)	50 (11 - 241)	55 (11 - 241)
Range	0 - 945	1 -1261	1 - 971	0 - 699	2 - 592	2 - 1453	2 - 1004
Kings College (N)	128	143	145	115	117	98	103
Median (IQR)	125 (45 - 374)	54 (11 - 252)	54 (11 - 164)	32 (8 - 140)	33 (9 - 98)	85.5 (11 - 288)	93 (26 - 265)
Range	1 -1813	1 -1711	1 - 1620	0 -1687	1 - 968	2 - 2099	1 - 1286
Birmingham (N)	133	155	154	114	127	115	110
Median (IQR)	48 (15 - 137)	42.5 (11 - 105)	58.5 (9 - 204)	71.5 (8 - 262)	34 (9 - 146)	65 (16 - 286)	89 (22 - 235)
Range	0 -1519	1 -1657	0 - 976	1 -1814	1 - 1470	1 - 2223	1 - 1420
Edinburgh (N)	81	88	52	58	39	40	31
Median (IQR)	42 (12 - 109)	24.5 (6 - 115.5)	46.5 (19 - 140)	45.5 (9 - 239)	17 (7 - 39)	22.5 (8 - 58)	76 (30 - 191)
Range	0 -1835	1 -1124	2 - 640	1 - 749	1 - 452	2 - 218	3 - 1401
Recipient blood group							
O (N)	298	294	262	182	171	156	211
Median (IQR)	113.5 (32-280)	60 (14 - 218)	56.5 (12 - 188)	52.5 (11 - 216)	37 (10 - 132)	58 (11.5 - 204)	61 (13 - 230)
Range	0 -1835	1 -1711	1 - 1620	0 -1814	0 - 1470	1 - 1453	1 - 1420
A (N)	246	235	238	208	221	224	163
Median (IQR)	40 (16 - 93)	23 (7 - 77)	33 (9 - 100)	27 (7 - 138)	27 (8 - 100)	30 (9 - 148)	61 (14 - 181)
Range	0 -1109	1 -1056	0 - 758	0 - 786	1 - 918	1 - 2223	2 - 1004
B (N)	71	56	64	60	57	49	53
Median (IQR)	168 (49 - 384)	57 (15 - 132)	66 (18.5 - 167.5)	66 (21.5-279.5)	33 (9 - 103)	50 (23 - 173)	64 (31 - 162)
Range	0 -1813	2 -1518	2 - 865	2 -1335	2 - 592	2 - 2099	1 - 1233
AB (N)	20	36	43	26	32	20	24
Median (IQR)	25.5 (7.5 - 66)	39.5 (13 - 93)	19 (4 - 43)	34 (15 - 83)	24 (8 - 57)	11 (5.5 - 25.5)	32.5 (15 - 73.5)
Range	0 - 148	1 - 466	1 - 201	5 - 340	2 - 388	1 - 63	2 - 302

Table 18a Median (IQR; range) time to transplant (days) for adult elective liver and liver/kidney transplants performed in the UK using livers from DCD donors, 20 March 2017 to 19 March 2024, as at 8 April 2024

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Overall (N)	186	182	170	110	189	243	258
Median (IQR)	41.5 (14 - 142)	53 (20 - 128)	52 (19 - 142)	90.5 (29 - 205)	98 (38 - 163)	132 (50 - 306)	136.5 (43 - 294)
Range	0 - 875	0 - 607	2 - 693	2 - 1278	1 - 923	1 - 1242	1 - 1395
Type of patient							
CLD (N)	123	87	107	72	104	145	165
Median (IQR)	41 (13 - 143)	55 (19 - 125)	50 (15 - 147)	104.5 (35 - 205.5)	102 (29.5 - 178)	139 (49 - 328)	143 (49 - 307)
Range	0 - 875	0 - 561	2 - 693	2 - 1101	1 - 923	1 - 1242	1 - 1395
HCC (N)	52	83	58	33	73	84	75
Median (IQR)	39.5 (16.5 - 110)	49 (20 - 148)	66.5 (35 - 135)	73 (29 - 144)	95 (45 - 157)	122 (47 - 269.5)	110 (29 - 244)
Range	1 - 691	2 - 607	4 - 322	5 - 1278	2 - 822	2 - 868	2 - 787
VS (N)	9	5	1	2	8	12	13
Median (IQR)	222 (32 - 347)	98 (72 - 300)	559	218 (215 - 221)	154 (103.5 - 254.5)	191.5 (68 - 238)	163 (79 - 381)
Range	7 - 870	5 - 306	599	215 - 221	70 - 396	51 - 636	25 - 905
ACLF (N)	0	0	0	0	1	0	1
Median (IQR)	-	-	-	-	2	-	1
Range	-	-	-	-	2	-	1
HCC downstaging (N)	2	7	4	3	3	2	4
Median (IQR)	53 (51 - 55)	47 (17 - 84)	21 (12 - 35.5)	72 (27 - 216)	52 (24 - 143)	102.5 (94 - 111)	70.5 (12.5 - 200)
Range	51-55	11 - 323	12-41	27 - 216	24 - 143	94 - 111	8 - 276

Table 18b Median (IQR; range) time to transplant (days) for adult elective liver and liver/kidney transplants performed in the UK using livers from DCD donors, 20 March 2017 to 19 March 2024, as at 8 April 2024 LAG24(5.2)

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Centre							
Newcastle (N)	5	3	4	2	13	14	25
Median (IQR)	106 (85 - 304)	304 (22-452)	144.5 (119 -371)	110 (4 - 216)	152 (117 - 394)	173 (47 - 247)	42 (24 - 137)
Range	5 - 347	22 -452	103 -588	4 - 216	5 - 817	26 - 770	2 - 1169
Leeds (N)	26	21	21	15	16	26	36
Median (IQR)	77.5 (13 - 297)	36 (12 - 99)	36 (12 - 73)	56 (26 - 133)	115.5 (52 - 147)	118.5 (46 - 362)	234 (72 - 501.5)
Range	0 - 875	2 - 517	2 - 565	5 - 511	4 - 923	13 - 868	1 - 1128
Cambridge (N)	32	40	33	35	48	53	51
Median (IQR)	60 (28.5 - 151.5)	57.5 (21.5-128)	35 (14 - 78)	89 (46 - 211)	63 (21.5 - 142.5)	111 (29 - 213)	76 (43 - 213)
Range	0 - 870	2 - 355	2 - 479	5 - 625	1 - 822	1 - 832	6 - 779
Royal Free (N)	13	28	37	11	23	18	31
Median (IQR)	62 (24 - 234)	56.5 (29.5-144)	55 (23 - 135)	57 (23 - 205)	94 (27 - 148)	139.5 (67 - 388)	51 (18 - 136)
Range	3 - 369	2 - 323	4 - 693	11 - 227	8 - 327	5 - 911	3 - 740
Kings College (N)	46	38	37	31	46	51	49
Median (IQR)	67 (27 - 205)	72.5(34-180)	84 (38 - 198)	123 (54 - 189)	133.5 (52 - 162)	198 (92 - 341)	190 (94 - 375)
Range	4 - 691	4 - 607	3 - 559	8 - 1101	1 - 342	1 - 716	1 - 1093
Birmingham (N)	52	39	33	11	25	54	34
Median (IQR)	22.5 (13 - 42.5)	34 (14 -80)	50 (30 - 125)	115 (7 - 221)	94 (60 - 218)	111 (42 - 258)	145 (69 - 381)
Range	0 - 511	0 - 487	2 - 267	2 - 259	12 -418	2 - 1039	1 - 987
Edinburgh (N)	12	13	5	5	18	27	32
Median (IQR)	41.5 (10 - 94.5)	71 (38 - 333)	51 (44 - 151)	42 (30 - 777)	52.5 (16 - 151)	137 (38 - 471)	228 (44 - 304.5)
Range	0 - 783	6 - 383	40 -224	27 - 1278	2 - 738	2 - 1242	4 - 1395
Recipient blood group							
O (N)	95	79	68	52	88	115	126
Median (IQR)	62 (16 - 245)	69 (28 - 175)	69 (19 - 163.5)	115.5 (28 - 222)	117 (45.5-182.5)	117 (45.5-182.5)	166.5 (56 - 334)
Range	0 - 875	0 - 561	2 - 693	7 - 1278	1 - 822	1 - 1242	1 - 1169
A (N)	70	75	80	49	77	90	94
Median (IQR)	29 (10 - 65)	37 (17 -78)	50 (19 - 100.5)	78 (26 - 189)	93 (28 - 143)	104.5 (42 - 236)	114 (39 - 272)
Range	0 - 351	2 - 457	2 - 588	2 - 530	2 - 476	2 - 911	1 - 1395
B (N)	18	21	18	7	23	33	33
Median (IQR)	55 (19 - 262)	103 (30-171)	87 (43 - 183)	92 (57 - 119)	86 (40 - 271)	147 (64 - 258)	67 (38 - 277)
Range	4 - 783	4 - 607	2 - 479	29 - 446	1 - 923	4 - 868	6 - 787
AB (N)	3	7	4	2	1	5	5
Median (IQR)	27 (9 - 111)	23 (9 - 94)	7.5 (6.5 - 22)	60.5 (48 - 73)	77 (77 - 77)	2 (2 - 41)	14 (9 - 22)
Range	9 - 111	6 - 111	6-36	48 - 73	77 - 77	1 - 60	1 - 79

3.6.6. **Figure 16** show the overall cold ischaemia time for the time periods of interest for DBD transplants while **Figure 17** shows the cold ischaemia time for each centre. **Figures 18** and **Figure 19** show the equivalent information for DCD donor transplants.

3.6.7. There were statistically significant differences in the cold ischaemia time for adult elective DBD and DCD transplants over the time periods of interest ($p=0.002$ for DBD and $p=0.016$ for DCD). However, it should be noted that these results will change as NHSBT has not received all the first week transplant record forms which collect the cold ischaemia time. It should also be noted that this analysis does not adjust for whether machine perfusion was used.

Figure 16 Median cold ischaemia time in all adult elective DBD donor liver transplants, by time period, 20 March 2017 to 19 March 2024

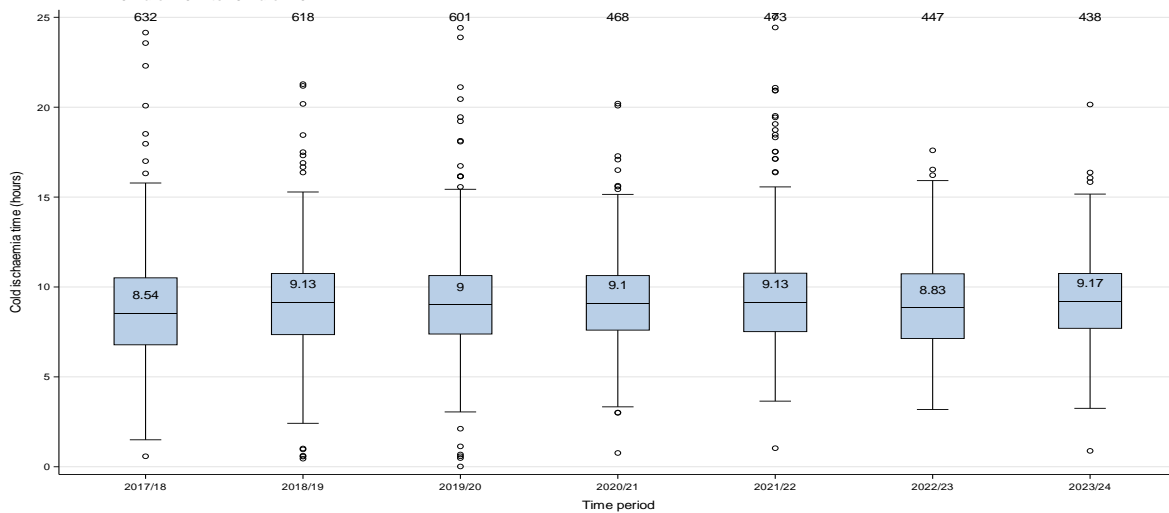


Figure 17 Median cold ischaemia time in all adult elective DBD donor liver transplants, by transplant centre, 20 March 2017 - 19 March 2024

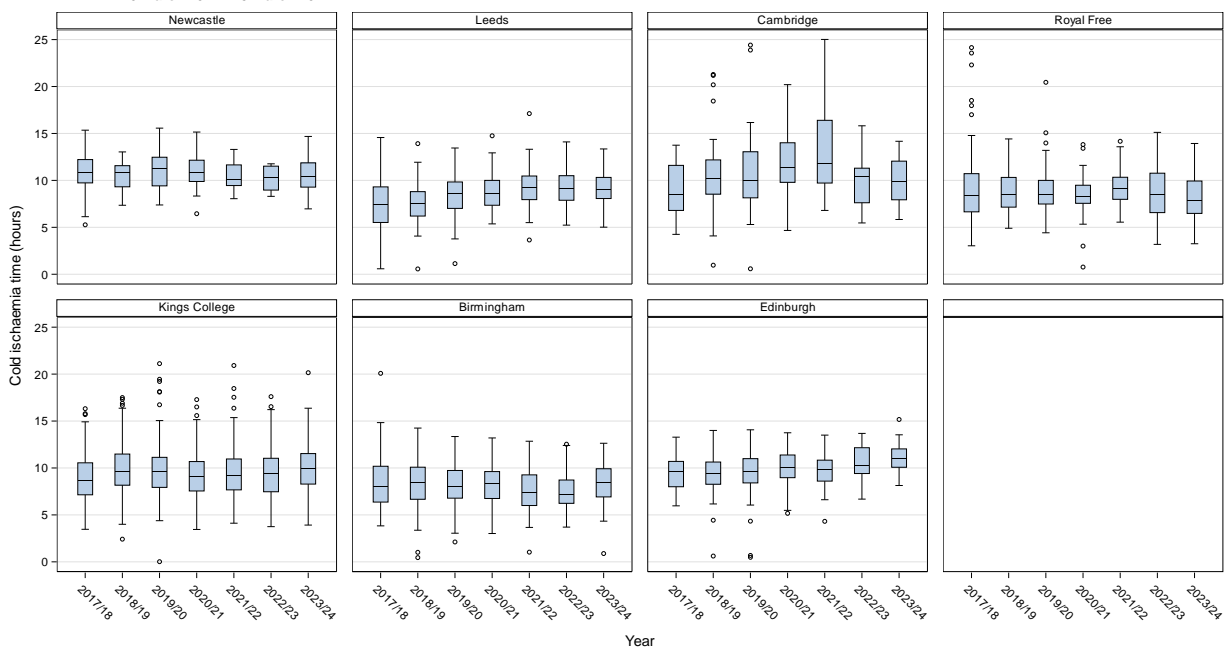


Figure 18 Median cold ischaemia time in all adult elective DCD donor liver transplants, by time period, 20 March 2017 to 19 March 2024

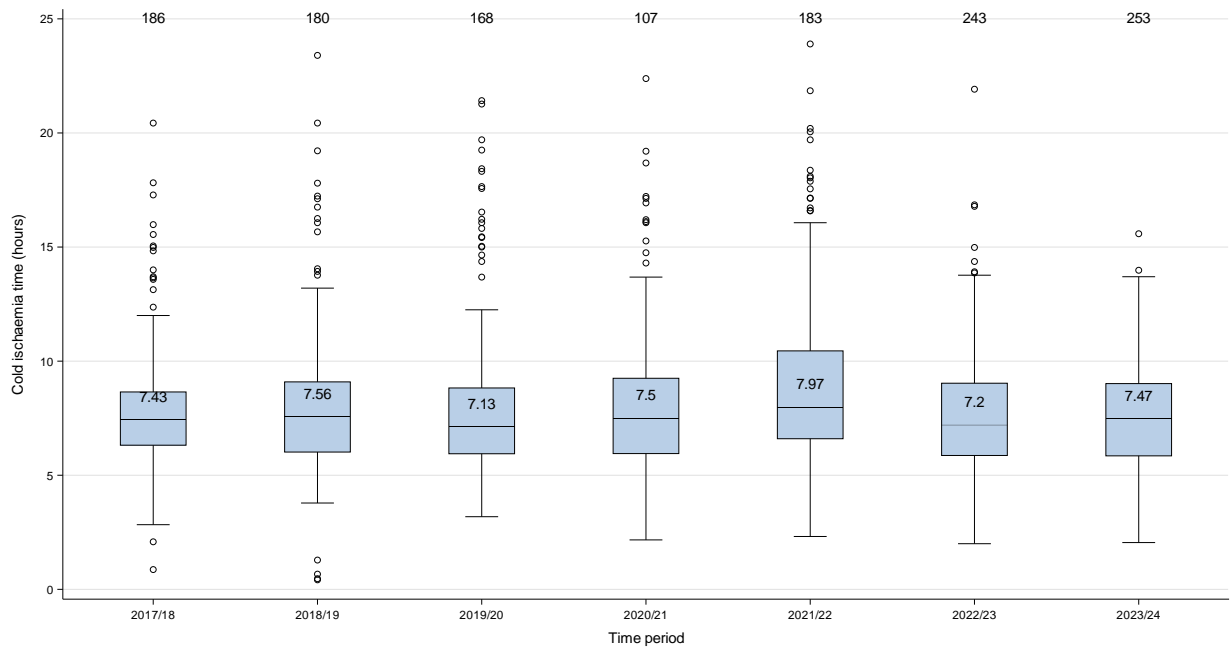
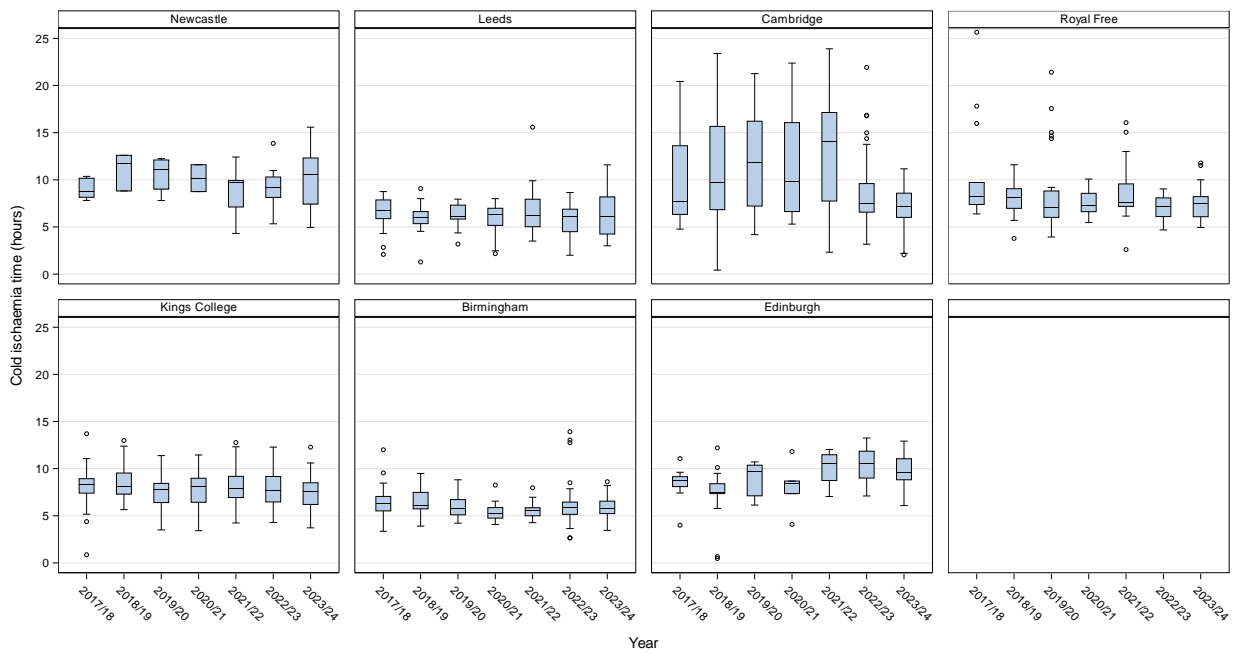


Figure 19 Median cold ischaemia time in all adult elective DCD donor liver transplants, by transplant centre, 20 March 2017 - 19 March 2024



3.7. NINETY-DAY POST-TRANSPLANT SURVIVAL

3.7.1. **Figure 20** shows the unadjusted ninety-day patient survival by time period and donor type for transplants performed in either the twelve months prior to NLOS or in the first sixty-nine months of NLOS. **Table 20a** and **Table 20b** shows the survival estimates and confidence intervals by blood group and type of patient for DBD and DCD transplants respectively. Patient survival was defined as the time from first transplant to death or last known survival reported to NHSBT irrespective of whether the patient received a retransplant after their first transplant.

3.7.2. For DBD transplants, there was no overall statistically significant difference between the time periods of interest in ninety-day patient survival (log-rank p-value=0.47). There was a statistically significant difference in ninety-day survival for HCC patients (log-rank p-value=0.04). There were no statistically significant differences between the time periods for the individual centres (log-rank p-value \geq 0.17) and blood groups (log-rank p-value \geq 0.38), apart from blood group B patients which had significance (p=0.01) and Edinburgh patients (p=0.05).

3.7.3. For DCD transplants, there was no overall statistically significant difference at a 5% significance level overall between the time periods in ninety-day patient survival (log-rank p-value=0.14). There were no statistically significant differences between the time periods for CLD and HCC ((log rank p-value \geq 0.07), blood groups (log rank p-value \geq 0.37) and for the individual centres (log rank p-value \geq 0.07).

Figure 20 Unadjusted ninety day patient survival after first adult elective liver transplant from deceased donor, 20 March 2017 to 19 December 2023

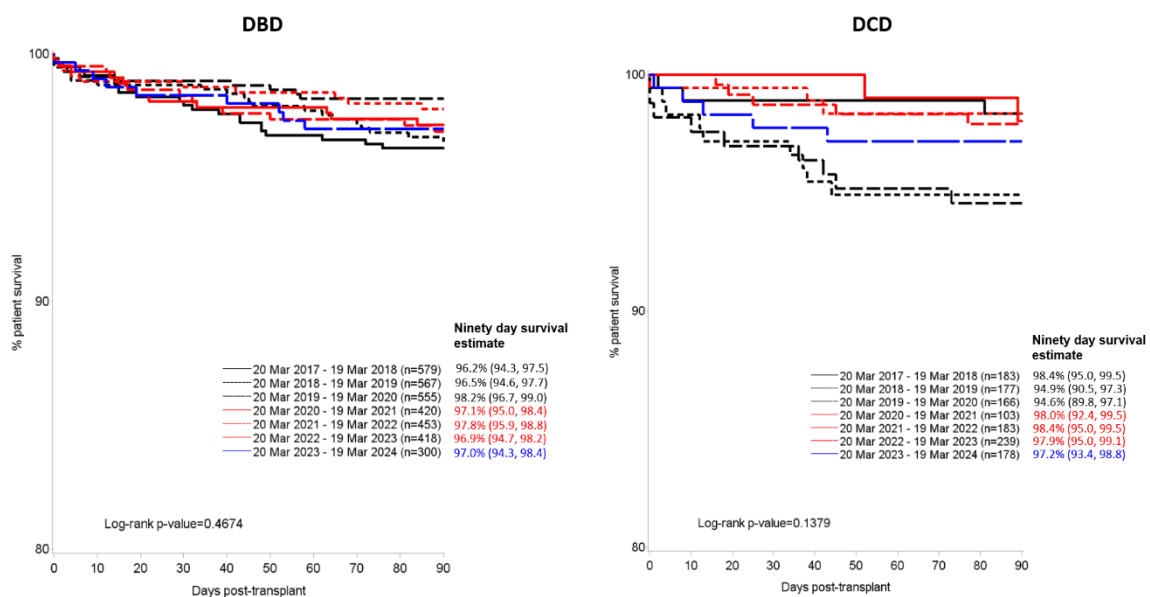


Table 19	Median hospital stay post-transplant for adult elective liver and liver/kidney transplants performed in the UK using livers from deceased donors, 20 March 2017 to 19 March 2024, as at 8 April 2024						
	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
DBD							
N	579	567	555	420	453	418	300
No. (%) with discharge date reported	542 (93.6)	524 (92.4)	530 (95.5)	401 (95.5)	432 (95.4)	389 (93.1)	281 (93.7)
Median (range) time from transplant to hospital discharge	14 (10 - 20)	13 (10 - 18)	13 (10 - 19)	14 (11 - 21)	15 (11 - 23)	14 (10 - 21)	13 (11 - 22)
No. (%) with no discharge date but a death date reported	23 (4.0)	24 (4.2)	12 (2.2)	12 (2.9)	11 (2.4)	16 (3.8)	10 (3.3)
Median (range) time from tx to death date	32 (14 - 62)	52 (7 - 194)	27.5 (1.5 - 119)	18 (8.5 - 48.5)	30 (2 - 85)	32.5 (14.5 - 141.5)	29.5 (9 - 53)
No. (%) with no discharge or death date reported	14 (2.4)	19 (3.4)	13 (2.3)	7 (1.7)	10 (2.2)	13 (3.1)	9 (3.0)
DCD							
N	183	177	166	103	183	239	178
No. (%) with discharge date reported	176 (96.2)	160 (90.4)	151 (91.0)	98 (95.1)	169 (92.3)	223 (93.3)	164 (92.1)
Median (range) time from transplant to hospital discharge	12.5 (9 - 17)	14 (10 - 19)	13 (9 - 20)	14 (10 - 19)	14 (10 - 20)	13 (10 - 21)	15 (11 - 22)
No. (%) with no discharge date but a death date reported	3 (1.6)	9 (5.1)	10 (6.0)	2 (1.9)	6 (3.3)	5 (2.1)	7 (3.9)
Median (range) time from tx to death date	8 (2 - 81)	13 (4 - 37)	27 (1 - 45)	85.5 (52 - 119)	105.5 (38 - 183)	25 (19 - 45)	25 (8 - 139)
No. (%) with no discharge or death date reported	4 (2.2)	8 (4.5)	5 (3.0)	3 (2.9)	8 (4.4)	11 (4.6)	7 (3.9)

Table 20a 90-day patient survival (95% confidence interval) for first adult elective liver and liver/kidney transplants performed in the UK using livers from DBD donors, 20 March 2017 to 19 December 2023								
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Log-rank p-value
Overall (No at risk) % (95% CI)	579 96.2 (94.3, 97.5)	567 96.5 (94.6, 97.7)	555 98.2 (96.7, 99)	420 97.1 (95, 98.4)	453 97.8 (95.9, 98.8)	418 96.9 (94.7, 98.2)	300 97.0 (94.3, 98.4)	0.4674
Type of patient								
CLD (No at risk) % (95% CI)	425 95.5 (93.1, 97.1)	436 95.9 (93.5, 97.4)	423 98.1 (96.3, 99)	346 98.3 (96.2,99.2)	374 98.1 (96.1,99.1)	333 97.9 (95.6,99)	221 97.7 (94.6,99)	0.06
HCC (No at risk) % (95% CI)	104 98.1 (92.5, 99.5)	71 97.2 (89.2, 99.3)	80 98.8 (91.5, 99.8)	53 90.6 (78.8,96)	39 97.4 (83.2,99.6)	45 88.9 (75.3,95.2)	35 97.1 (81.4,99.6)	0.035
VS (No at risk) % (95% CI)	45 97.8 (85.3, 99.7)	55 100 (-)	47 97.9 (85.8, 99.7)	18 94.4 (66.6, 99.2)	27 96.3 (76.5, 99.5)	27 100 (-)	25 100 (-)	0.6
HCC downstaging (No at risk) % (95% CI)	5 100 (-)	5 100 (-)	5 100 (-)	3 100 (-)	3 100 (-)	0 100 (-)	1 100 (-)	-
ACLF (No at risk) % (95% CI)	0 100 (-)	0 100 (-)	0 100 (-)	0 100 (-)	10 90.0 (47.3, 98.5)	13 92.3 (56.6,98.9)	18 83.3 (56.8,94.3)	0.59
Recipient blood group								
O (No at risk) % (95% CI)	272 95.2 (91.9,97.2)	266 97.4 (94.6,98.7)	241 98.8 (96.2,99.6)	162 97.5 (93.6,99.1)	162 97.5 (93.5,99.1)	149 97.3 (93,99)	135 97.7 (93.1,99.3)	0.369
A (No at risk) % (95% CI)	224 96.4 (93,98.2)	214 96.3 (92.7,98.1)	215 97.7 (94.5,99)	182 96.2 (92.1,98.1)	204 98 (94.9,99.3)	205 98 (94.9,99.3)	116 98.3 (93.3,99.6)	0.732
B (No at risk) % (95% CI)	66 100 (-)	53 92.5 (81.1, 97.1)	59 98.3 (88.6, 99.8)	52 98.1 (87.1, 99.7)	55 100 (-)	45 88.8 (75.2, 95.2)	36 91.7 (76.3, 97.2)	0.010
AB (No at risk) % (95% CI)	17 94.1 (65.0, 99.1)	34 97.1 (80.9, 99.6)	40 97.5 (83.5, 99.6)	24 100 (-)	32 93.8 (77.3, 98.4)	19 100 (-)	13 92.3 (56.6, 98.9)	0.737

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Centre								
Newcastle (No at risk)	26	22	24	24	23	13	14	0.554
% (95% CI)	92.3 (72.6, 98.0)	95.5 (71.9, 99.3)	95.8 (73.9, 99.4)	100 (-)	100 (-)	100 (-)	100 (-)	
Leeds (No at risk)	101	59	73	63	59	68	50	0.464
% (95% CI)	93.1 (86, 96.6)	91.5 (80.8, 96.4)	98.6 (90.7, 99.8)	95.2 (86, 98.4)	94.9 (85, 98.3)	97.1 (88.7, 99.3)	92 (80, 96.9)	
Cambridge (No at risk)	67	61	58	28	50	39	28	0.152
% (95% CI)	97.0 (88.6, 99.2)	100 (-)	94.8 (84.8, 98.3)	100 (-)	100 (-)	100 (-)	100 (-)	
Royal Free (No at risk)	82	80	88	50	61	64	38	0.444
% (95% CI)	96.3 (89.1, 98.8)	93.8 (85.6, 97.3)	100 (-)	98.0 (86.6, 99.7)	96.7 (87.5, 99.2)	96.9 (88.1, 99.2)	97.4 (82.8, 99.6)	
Kings College (No at risk)	111	128	132	104	110	88	65	0.910
% (95% CI)	98.2 (92.9, 99.5)	99.2 (94.6, 99.9)	98.5 (94.1, 99.6)	99.0 (93.4, 99.9)	98.2 (92.9, 99.5)	100 (-)	98.5 (89.6, 99.8)	
Birmingham (No at risk)	117	133	135	96	113	108	86	0.540
% (95% CI)	95.7 (90.0, 98.2)	96.2 (91.2, 98.4)	99.3 (94.9, 99.9)	95.8 (89.3, 98.4)	97.3 (92.0, 99.1)	96.3 (90.4, 98.6)	98.8 (92.0, 99.8)	
Edinburgh (No at risk)	75	84	45	55	37	38	19	0.054
% (95% CI)	98.7 (90.9, 99.8)	96.4 (89.3, 98.8)	95.6 (83.4, 98.9)	94.5 (84.0, 98.2)	100 (-)	86.8 (71.2, 94.3)	89.5 (64.1, 97.3)	

Table 20b 90-day patient survival (95% confidence interval) for first adult elective liver and liver/kidney transplants performed in the UK using livers from DCD donors, 20 March 2017 to 19 December 2023								
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Log-rank p-value
Overall (No at risk) % (95% CI)	183 98.4 (95.0, 99.5)	177 94.9 (90.5, 97.3)	166 94.6 (89.8, 97.1)	103 98.0 (92.3, 99.5)	183 98.4 (95.0, 99.5)	239 97.9 (95,99.1)	178 98 (92.4,99.5)	0.1379
Type of patient								
CLD (No at risk)	120	83	103	65	98	141	113	0.603
% (95% CI)	98.3 (93.5, 99.6)	95.1 (87.5, 98.1)	97.1 (91.2, 99.1)	98.5 (89.6, 99.8)	99.0 (93.0, 99.9)	98.6 (94.4, 99.6)	98.2 (93.1, 99.6)	
HCC (No at risk)	52	83	58	33	73	84	56	0.072
% (95% CI)	98.1 (87.1, 99.7)	95.2 (87.7, 98.2)	89.7 (78.4, 95.2)	97.0 (80.4,99.6)	100 (-)	97.6 (90.6,99.4)	96.4 (86.5, 99.1)	
VS (No at risk)	9	4	1	2	8	12	6	0.869
% (95% CI)	100 (-)	100 (-)	100 (-)	100 (-)	87.5 (38.7, 98.1)	91.7 (53.9, 98.8)	100 (-)	
HCC downstaging (No at risk)	2	7	4	3	3	2	3	0.622
% (95% CI)	100 (-)	85.7 (33.4, 97.9)	100 (-)	100 (-)	100 (-)	100 (-)	66.7 (5.4, 94.5)	
ACLF (No at risk)	0	0	0	0	1	0	0	0.869
% (95% CI)	100 (-)	100 (-)	100 (-)	100 (-)	100 (-)	100 (-)	100 (-)	
Recipient blood group								
O (No at risk)	95	78	67	48	86	111	91	0.371
% (95% CI)	97.9 (91.8, 99.5)	93.6 (85.3, 97.3)	94.0 (84.9, 97.7)	95.6 (83.6, 98.9)	98.8 (92,99.8)	98.2 (93.0, 99.5)	96.7 (90.1, 98.9)	
A (No at risk)	67	72	78	46	74	90	58	0.615
% (95% CI)	98.5 (89.9, 99.8)	98.6 (90.5,99.8)	94.9 (86.9, 98.0)	100 (-)	97.3 (89.6,99.3)	97.8 (91.4, 99.4)	98.3 (88.4, 99.8)	
B (No at risk)	18	20	18	7	22	33	25	0.600
% (95% CI)	100 (-)	90.0 (65.6, 97.4)	94.4 (66.6, 99.2)	100 (-)	100 (-)	97.0 (80.4,99.6)	96.0 (74.8, 99.4)	
AB (No at risk)	3	7	3	2	1	5	4	0.860
% (95% CI)	100 (-)	85.7 (33.4, 97.9)	100 (-)	100 (-)	100 (-)	100 (-)	100 (-)	

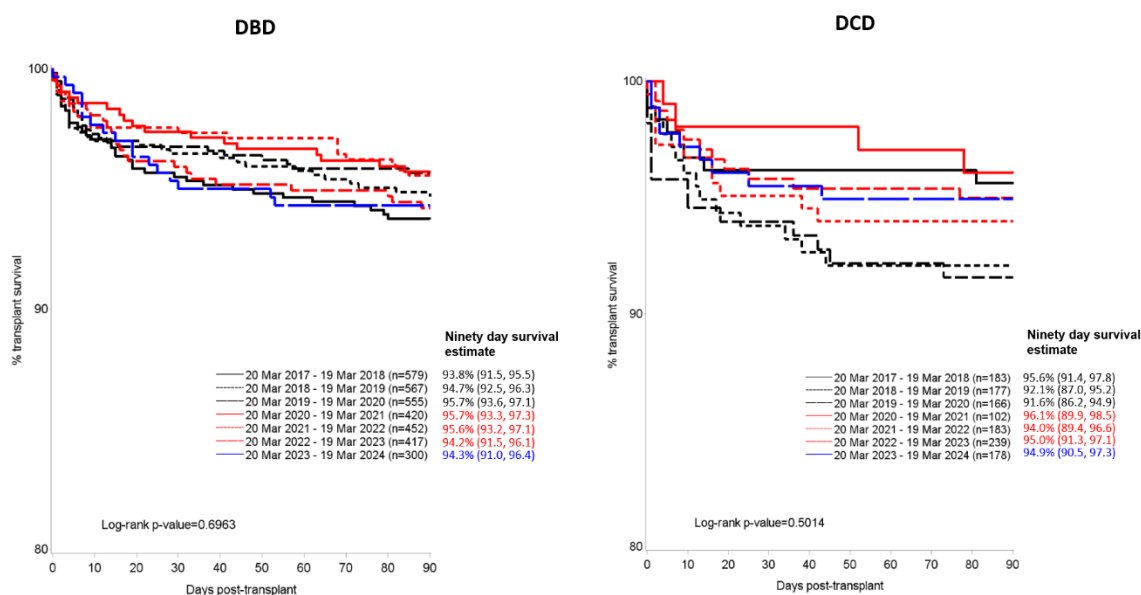
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Centre								
Newcastle (No at risk)	4	3	4	2	13	14	17	0.800
% (95% CI)	100 (-)	100 (-)	100 (-)	100 (-)	100 (-)	92.9 (59.1, 99.0)	100 (-)	
Leeds (No at risk)	26	20	21	15	16	26	29	0.412
% (95% CI)	96.2 (75.7, 99.4)	95.0 (69.5, 99.3)	90.5 (67.0, 97.5)	100 (-)	100 (-)	100 (-)	89.7 (71.3, 96.5)	
Cambridge (No risk)	30	37	31	29	43	52	29	0.687
% (95% CI)	96.7 (78.6, 99.5)	97.3 (82.3, 99.6)	93.5 (76.6, 98.3)	100 (-)	95.3 (82.7,98.8)	98.1 (87.1,99.7)	100 (-)	
Royal Free (No risk)	13	28	36	11	22	18	26	0.415
% (95% CI)	100 (-)	92.9 (74.3, 98.2)	94.4 (79.6, 98.6)	80.8 (42.3, 94.9)	100 (-)	88.9 (62.4,97.1)	96.2 (75.7,99.4)	
Kings College (No at risk)	46	37	36	30	46	48	30	0.334
% (95% CI)	100 (-)	94.6 (80.1, 98.6)	97.2 (81.9, 99.6)	100 (-)	100 (-)	97.9 (86.1,99.7)	100 (-)	
Birmingham (No at risk)	52	39	33	11	25	54	27	0.325
% (95% CI)	98.1 (87.1, 99.7)	92.3 (78.0,97.5)	97.0 (80.4, 99.6)	100 (-)	100 (-)	100 (-)	96.3 (76.5, 99.5)	
Edinburgh (No at risk)	12	13	5	5	18	27	20	0.066
% (95% CI)	100 (-)	100 (-)	80.0 (20.4, 96.9)	-	94.4 (66.6, 99.2)	100 (-)	100 (-)	

3.7.4. **Figure 21** shows the unadjusted ninety-day transplant survival by time period and donor type for transplants performed in either the twelve months prior to NLOS or in the first sixty-nine months of NLOS. Transplant survival was defined as the time from first transplant to retransplant, death or last known survival reported to NHSBT. Patients who received a second transplant or who died post-transplant were treated as events while patients who were alive with a functioning first transplant were censored at 90 days.

3.7.5. There were no statistically significant differences in the unadjusted ninety-day transplant survival between the time periods for DBD and DCD transplants (log-rank p-value=0.70 and 0.50).

Figure 21 Unadjusted ninety day transplant survival after first adult elective liver transplant from deceased donor, 20 March 2017 to 19 December 2023



3.8 ONE-YEAR POST-TRANSPLANT SURVIVAL

3.8.1 **Figure 22** shows the unadjusted one-year patient survival by time period and donor type for transplants performed in either the twelve months prior to NLOS or in the first sixty months of NLOS. **Table 21** and **Table 22** shows the survival estimates and confidence intervals by blood group and type of patient, for DBD and DCD transplants respectfully. Patient survival was defined as the time from first transplant to death or last known survival reported to NHSBT irrespective of whether the patient received a retransplant after their first transplant.

3.8.2 For DBD transplants, there was no overall statistically significant difference between the time periods of interest in one-year patient survival (log-rank p-value=0.45). There were no statistically significant difference between the two time periods for CLD and HCC (log rank

p-value \geq 0.15) and for the individual centres (log-rank p-value \geq 0.14). There was a statistically significant difference in one-year patient survival for blood group B patients (log-rank p-value=0.04).

3.8.3 For DCD transplants, there was no overall statistically significant difference at a 5% significance level overall between the time periods in one-year patient survival (log-rank p-value=0.41). There were no statistically significant differences between the two time periods for CLD and HCC (log rank p-value \geq 0.32), blood groups (log rank p-value \geq 0.55) and for the individual centres (log rank p-value \geq 0.20).

Figure 22 Unadjusted one year patient survival after first adult elective liver transplant from deceased donor, 20 March 2017 to 19 March 2023

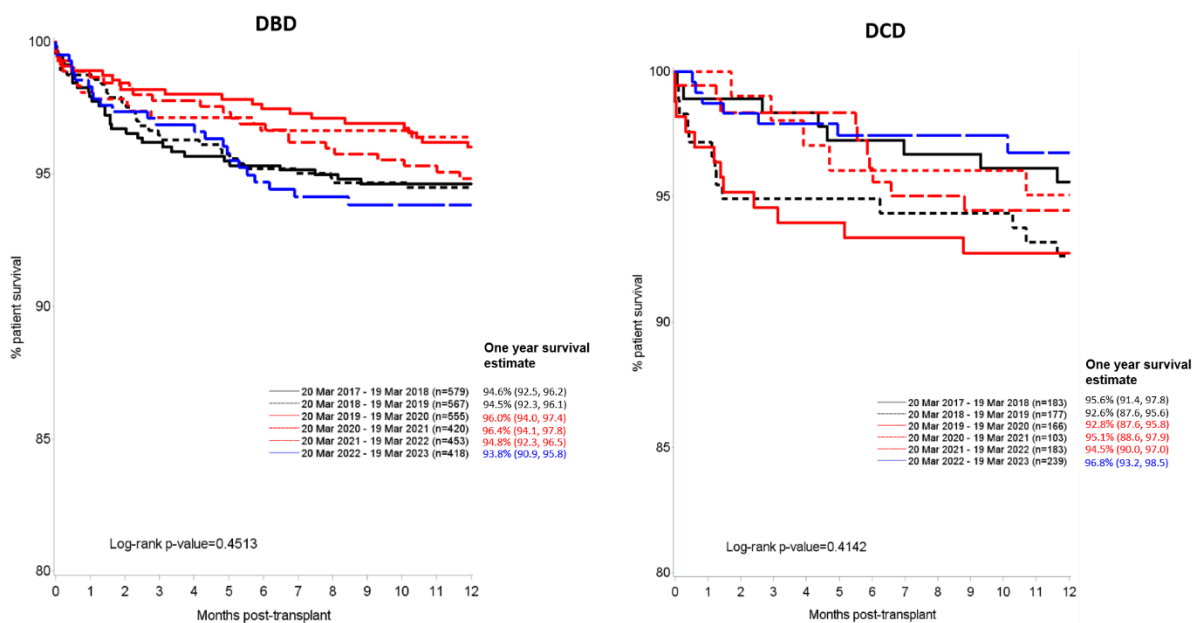


Table 21 1-year patient survival (95% confidence interval) for first adult elective liver and liver/kidney transplants performed in the UK using livers from DBD donors, 20 March 2017 to 19 March 2023							
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Log-rank p-value
Overall	579	567	555	420	453	418	0.4513
(No at risk) % (95% CI)	94.6 (92.5, 96.2)	94.5 (92.3, 96.1)	96 (94.0, 97.4)	96.4 (94.1, 97.8)	94.8 (92.3, 96.5)	93.8 (90.9, 95.8)	
Type of patient							
CLD (No at risk)	425	436	423	346	374	333	0.1504
% (95% CI)	93.9 (91.1, 95.8)	94.5 (91.9, 96.3)	96.7 (94.4, 98.0)	97.4 (95.0, 98.6)	95.4 (92.7, 97.1)	94.8 (91.7, 96.8)	
HCC (No at risk)	104	71	80	53	39	45	0.5344
% (95% CI)	96.1 (89.9, 98.5)	93 (83.9, 97.0)	93.8 (85.6, 97.3)	90.6 (78.8, 96.0)	92.2 (77.6, 97.4)	88.9 (75.3, 95.2)	
VS (No at risk)	45	55	47	18	27	27	0.9482
% (95% CI)	97.8 (85.3, 99.7)	96.3 (86.1, 99.1)	93.6 (81.5, 97.9)	94.4 (66.6, 99.2)	96.3 (76.5, 99.5)	95.2 (70.7, 99.3)	
HCC downstaging (No at risk)	5	5	5	3	3	0	-
% (95% CI)	100 (-)	100 (-)	100 (-)	100 (-)	100 (-)	-	
Recipient blood group							
O (No at risk)	272	266	241	162	162	149	0.4343
% (95% CI)	93.7 (90.1, 96.1)	93.9 (90.3, 96.2)	96.7 (93.4, 98.3)	96.9 (92.7, 98.7)	95.0 (90.2, 97.5)	93.2 (87.4, 96.4)	
A (No at risk)	224	214	215	182	204	205	0.9975
% (95% CI)	95.1 (91.3, 97.3)	95.8 (92.1, 97.8)	94.8 (90.9, 97.1)	95.0 (90.7, 97.4)	95.0 (91.0, 97.3)	95.9 (91.9, 97.9)	
B (No at risk)	66	53	59	52	55	45	0.0380
% (95% CI)	97 (88.4, 99.2)	92.5 (81.1, 97.1)	96.6 (87.1, 99.1)	98.1 (87.1, 99.7)	98.1 (87.4, 99.7)	86.4 (72.2, 93.7)	
AB (No at risk)	17	34	40	24	32	19	0.4035
% (95% CI)	94.1 (65.0, 99.1)	94.0 (78.2, 98.5)	97.5 (83.5, 99.6)	100 (-)	87.4 (69.8, 95.1)	94.4 (66.6, 99.2)	

Centre							
Newcastle (No at risk) % (95% CI)	26 92.3 (72.6,98)	22 95.5 (71.9,99.3)	24 91.7 (70.6,97.8)	24 100 (-)	23 95.7 (72.9, 99.4)	13 100 (-)	0.6829
Leeds (No at risk) % (95% CI)	101 91.1 (83.6,95.3)	59 89.8 (78.8,95.3)	73 95.9 (87.8,98.7)	63 95.2 (86.0, 98.4)	59 91.4 (80.5, 96.3)	68 93.3 (83.1, 97.5)	0.6810
Cambridge (No at risk) % (95% CI)	67 95.5 (86.8,98.5)	61 100 (-)	58 93.1 (82.7,97.4)	28 100 (-)	50 98 (86.6, 99.7)	39 100 (-)	0.1361
Royal Free (No at risk) % (95% CI)	82 95.1 (87.5, 98.1)	80 91.3 (82.5, 95.7)	88 96.6 (89.7, 98.9)	50 98 (86.6, 99.7)	61 96.7 (87.5, 99.2)	64 91.8 (81.4, 96.5)	0.3840
Kings College (No at risk) % (95% CI)	111 98.2 (92.9,99.5)	128 96.8 (91.7,98.8)	132 98.5 (94.1,99.6)	104 96.0 (89.8, 98.5)	110 96.2 (90.3, 98.6)	88 95.5 (86.6, 98.5)	0.8029
Birmingham (No at risk) % (95% CI)	117 93.2 (86.8, 96.5)	133 94.7 (89.2, 97.4)	135 95.5 (90.3, 98.0)	96 95.8 (89.3, 98.4)	113 92 (85.3, 95.8)	108 93.5 (86.8, 96.8)	0.8074
Edinburgh (No at risk) % (95% CI)	75 96 (88.1, 98.7)	84 92.8 (84.7, 96.7)	45 95.6 (83.4, 98.9)	55 94.5 (84.0, 98.2)	37 97.2 (81.9, 99.6)	38 86.8 (71.2, 94.3)	0.3643

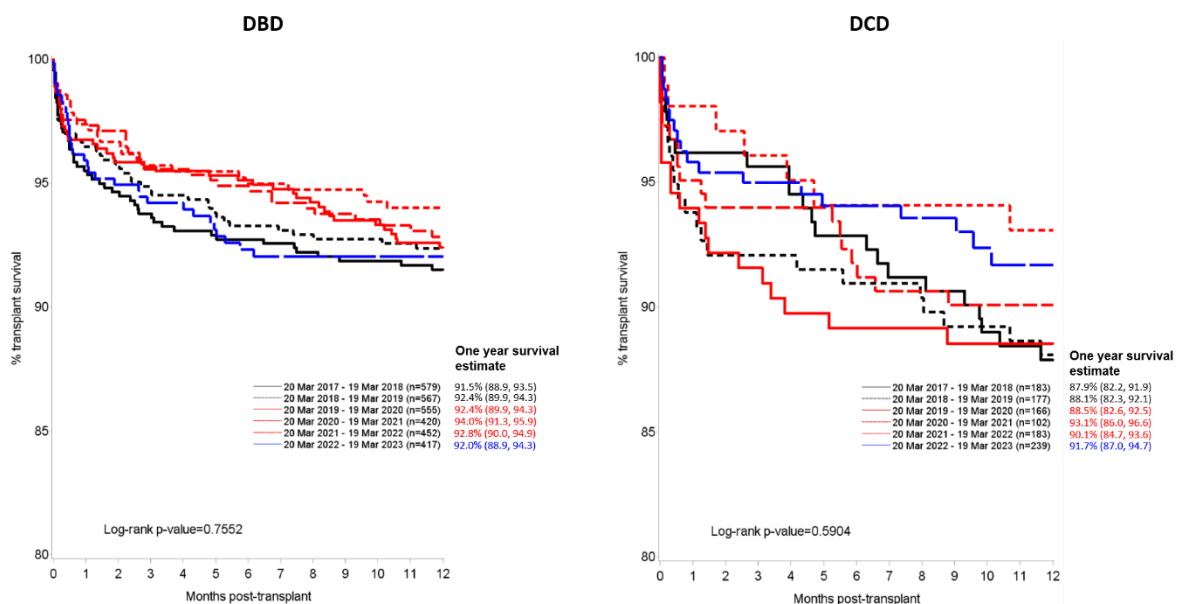
Table 22	1-year patient survival (95% confidence interval) for first adult elective liver and liver/kidney transplants performed in the UK using livers from DCD donors, 20 March 2017 to 19 March 2023						
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Log-rank p-value
Overall (No at risk) % (95% CI)	183 95.6 (91.4,97.8)	177 92.6 (87.6,95.6)	166 92.8 (87.6,95.8)	103 95.1 (88.6, 97.9)	183 94.5 (90.0, 97.0)	239 96.8 (93.2, 98.5)	0.4142
Type of patient							
CLD (No at risk) % (95% CI)	120 96.7 (91.3, 98.7)	83 92.8 (84.6, 96.7)	103 95.1 (88.7, 97.9)	65 95.3 (86.1, 98.5)	98 94.9 (88.1,97.8)	141 97.8 (93.3, 99.3)	0.6148
HCC (No at risk) % (95% CI)	52 92.2 (80.5, 97.0)	83 92.7 (84.4, 96.6)	58 87.9 (76.3, 94.1)	33 93.9 (77.9, 98.4)	73 95.8 (87.5, 98.6)	84 97.6 (90.8, 99.4)	0.3235
VS (No at risk) % (95% CI)	9 100 (-)	4 100 (-)	1 100 (-)	2 100 (-)	8 87.5 (38.7, 98.1)	12 91.7 (53.9, 98.8)	0.8697
HCC downstaging (No at risk) % (95% CI)	2 100 (-)	7 85.7 (33.4, 97.9)	4 100 (-)	3 100 (-)	3 100 (-)	2 50 (0.6, 91.0)	0.4534
Recipient blood group							
O (No at risk) % (95% CI)	95 96.8 (90.5, 99.0)	78 92.3 (83.6, 96.5)	67 94.0 (84.9,97.7)	48 95.7 (84.0, 98.9)	86 94.1 (86.3, 97.5)	111 96.6 (89.5, 99.0)	0.6533
A (No at risk) % (95% CI)	67 95.4 (86.5, 98.5)	72 95.8 (87.6, 98.6)	78 91.0 (82, 95.6)	46 95.7 (83.7, 98.9)	74 94.6 (86.1, 97.9)	90 97.8 (91.4, 99.4)	0.5510
B (No at risk) % (95% CI)	18 94.4 (66.6, 99.2)	20 90 (65.6, 97.4)	18 94.4 (66.6, 99.2)	7 85.7 (33.4, 97.9)	22 95.5 (71.9, 99.3)	33 93.6 (76.8, 98.4)	0.9388
AB (No at risk) % (95% CI)	3 66.7 (5.4, 94.5)	7 71.4 (25.8, 92.0)	3 100 (-)	2 100 (-)	1 100 (-)	5 100 (-)	0.6317

Centre							
Newcastle (No at risk) % (95% CI)	4 100 (-)	3 100 (-)	4 100 (-)	2 100 (-)	13 100 (-)	14 92.9 (59.1, 99.0)	0.8685
Leeds (No at risk) % (95% CI)	26 92.3 (72.6, 98)	20 90 (65.6, 97.4)	21 85.7 (62.0, 95.2)	15 100 (-)	16 93.3 (61.3, 99.0)	26 100 (-)	0.4071
Cambridge (No at risk) % (95% CI)	30 96.7 (78.6,99.5)	37 94.6 (80.1,98.6)	31 90.3 (72.9,96.8)	29 100 (-)	43 93.0 (79.9, 97.7)	52 98.1 (87.1, 99.7)	0.4481
Royal Free (No at risk) % (95% CI)	13 92.3 (56.6, 98.9)	28 85.7 (66.3, 94.4)	36 91.6 (76.1, 97.2)	11 72.7 (37.1, 90.3)	22 90.9 (68.3, 97.6)	18 88.9 (62.4, 97.1)	0.6027
Kings College (No at risk) % (95% CI)	46 95.5 (83.0, 98.8)	37 94.6 (80.1, 98.6)	36 97.2 (81.9, 99.6)	30 93.0 (74.7,98.2)	46 100 (-)	48 94.9 (80.9, 98.7)	0.7142
Birmingham (No at risk) % (95% CI)	52 96.2 (85.5, 99.0)	39 92.3 (78.0, 97.5)	33 97.0 (80.4, 99.6)	11 100 (-)	25 96.0 (74.8, 99.4)	54 100 (-)	0.4451
Edinburgh (No at risk) % (95% CI)	12 100 (-)	13 100 (-)	5 80 (20.4,96.9)	5 100 (-)	18 83.3 (56.8, 94.3)	27 96.3 (76.5, 99.5)	0.2046

3.8.4 **Figure 23** shows the unadjusted one-year transplant survival by time period and donor type for transplants performed in either the twelve months prior to NLOS or in the first sixty months of NLOS. Transplant survival was defined as the time from first transplant to retransplant, death or last known survival reported to NHSBT. Patients who received a second transplant or who died post-transplant were treated as events while patients who were alive with a functioning first transplant were censored at 1 year.

3.8.5 There were no statistically significant differences in the unadjusted one-year transplant survival between the time periods for DBD and DCD transplants (log-rank p-value=0.78 and 0.59).

Figure 23 Unadjusted one year transplant survival after first adult elective liver transplant from deceased donor, 20 March 2017 to 19 March 2023



4 CONCLUSIONS

The new National Liver Offering Scheme was implemented on the 20th March 2018 and updated on 4th October 2022. 5156 DBD livers and 5311 DCD livers were offered in the first seventy-two months of the scheme. For DBD donors, the proportion retrieved ranged between 85% and 90% in the 72 months post and 88% in the year prior to NLOS. The equivalent proportion for DCD was 26% to 43% for the 72 months post and 32% in the year prior to NLOS.

APPENDIX A: SUPER-URGENT CATEGORIES

INDICATION FOR REGISTRATION

- 1 - Category 1: Aetiology: Paracetamol poisoning: pH <7.25 more than 24 hours after overdose and after fluid resuscitation
- 2 - Category 2: Aetiology: Paracetamol poisoning: Co-existing prothrombin time >100 seconds or INR >6.5, and serum creatinine >300 µmol/l or anuria, and grade 3-4 encephalopathy
- 3 - Category 3: Aetiology: Paracetamol poisoning: Significant liver injury and coagulopathy following exclusion of other causes of hyperlactatemia (e.g. pancreatitis, intestinal ischemia) after adequate fluid resuscitation: arterial lactate >5 mmol/l on admission and >4 mmol/l 24 hours later in the presence of clinical hepatic encephalopathy
- 4 - Category 4: Aetiology: Paracetamol poisoning: Two of the three criteria from category 2 with clinical evidence of deterioration (eg increased ICP, FiO₂ >50%, increasing inotrope requirements) in the absence of clinical sepsis
- 5 - Category 5: Aetiology: Favourable non-paracetamol aetiologies such as acute viral hepatitis or ecstasy/cocaine induced ALF: the presence of clinical hepatic encephalopathy is mandatory and: prothrombin time >100 seconds, or INR >6.5, or any three from the following: age >40 or <10 years; prothrombin time >50 seconds or INR >3.5; any grade of hepatic encephalopathy with jaundice to encephalopathy time >7 days; serum bilirubin >300 µmol/l
- 6 - Category 6: Aetiology: Unfavourable non-paracetamol aetiologies such as seronegative or idiosyncratic drug reactions: a) prothrombin time >100 seconds, or INR >6.5, or b) in the absence of clinical hepatic encephalopathy then INR >2 after vitamin K repletion is mandatory and any two from the following: age >40 or <10 years; prothrombin time >50 seconds or INR >3.5; if hepatic encephalopathy is present then jaundice to encephalopathy time >7 days; serum bilirubin >300 µmol/l
- 7 - Category 7: Aetiology: Acute presentation of Wilson's disease or Budd-Chiari syndrome. A combination of coagulopathy and any grade of encephalopathy
- 8 - Category 8: Hepatic artery thrombosis on days 0 to 21 after liver transplantation
- 9 - Category 9: Early graft dysfunction on days 0 to 7 after liver transplantation with at least two of the following: AST >10,000; INR >3.0; arterial lactate >3 mmol/l; absence of bile production
- 10 - Category 10: The total absence of liver function (eg after total hepatectomy)
- 11 - Category 11: Any patient who has been a live liver donor (NHS entitled) who develops severe liver failure within 4 weeks of the donor operation
- 20 - Category 20: Acute liver failure in children under two years of age: INR >4 or grade 3-4 encephalopathy. Definition: Multisystem disorder in which severe acute impairment of liver function with or without encephalopathy occurs in association with hepatocellular necrosis in a child with no recognised underlying chronic liver disease. Children with leukaemia/lymphoma, haemophagocytosis and disseminated intra-vascular coagulopathy are excluded

APPENDIX B: THREE MONTH REGISTRATION OUTCOME

Figure B1 Three month registration outcome for active elective liver and liver/kidney patients, by type of patient, 20 December 2014 to 19 December 2023

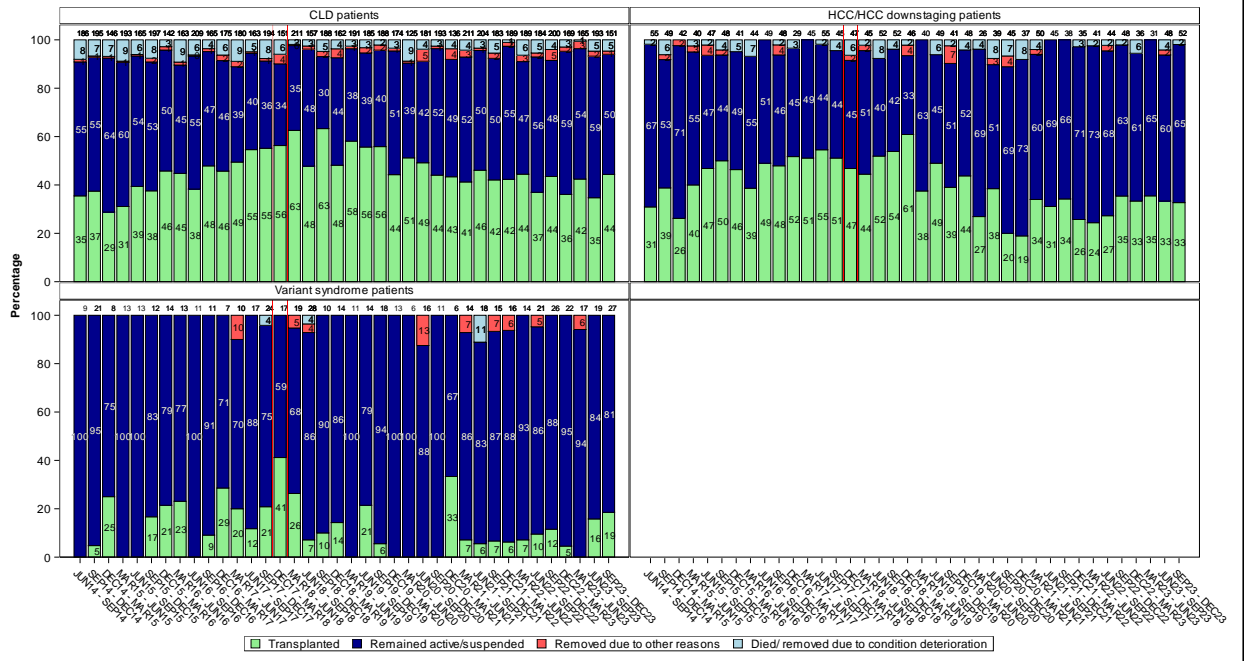


Figure B2 Three month registration outcome for active elective liver and liver/kidney patients, by age group, 20 December 2014 to 19 December 2023

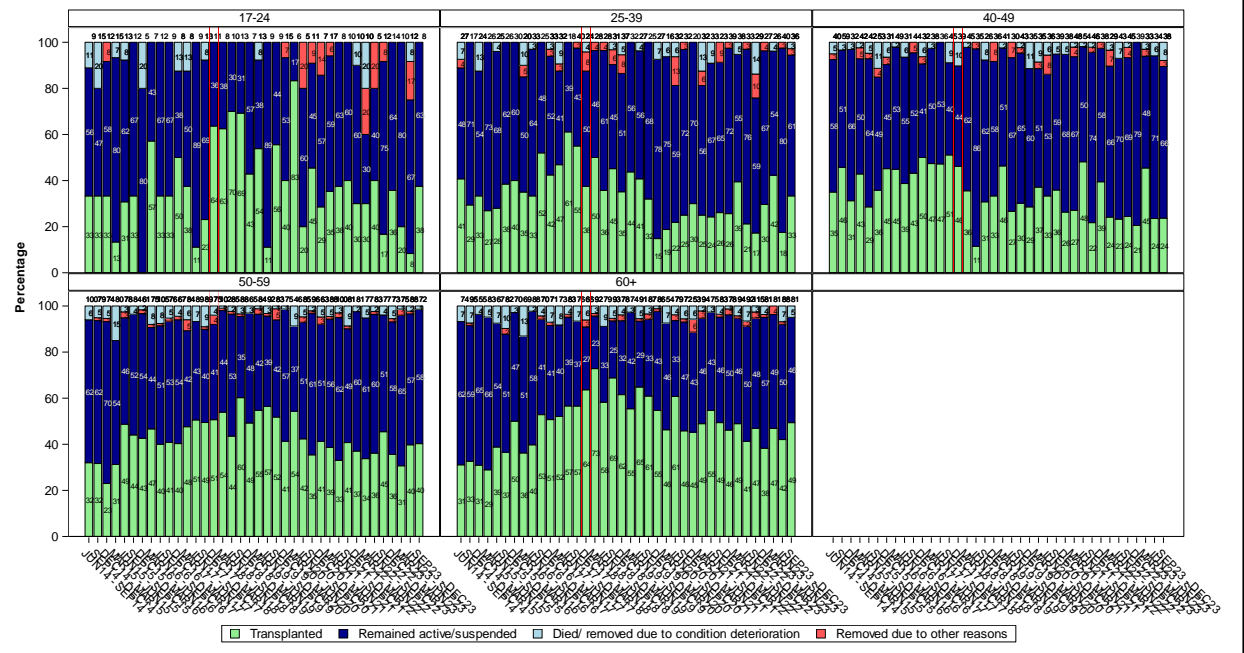


Figure B3 Three month registration outcome for active elective liver and liver/kidney patients, by first transplant or re-graft, 20 December 2014 to 19 December 2023

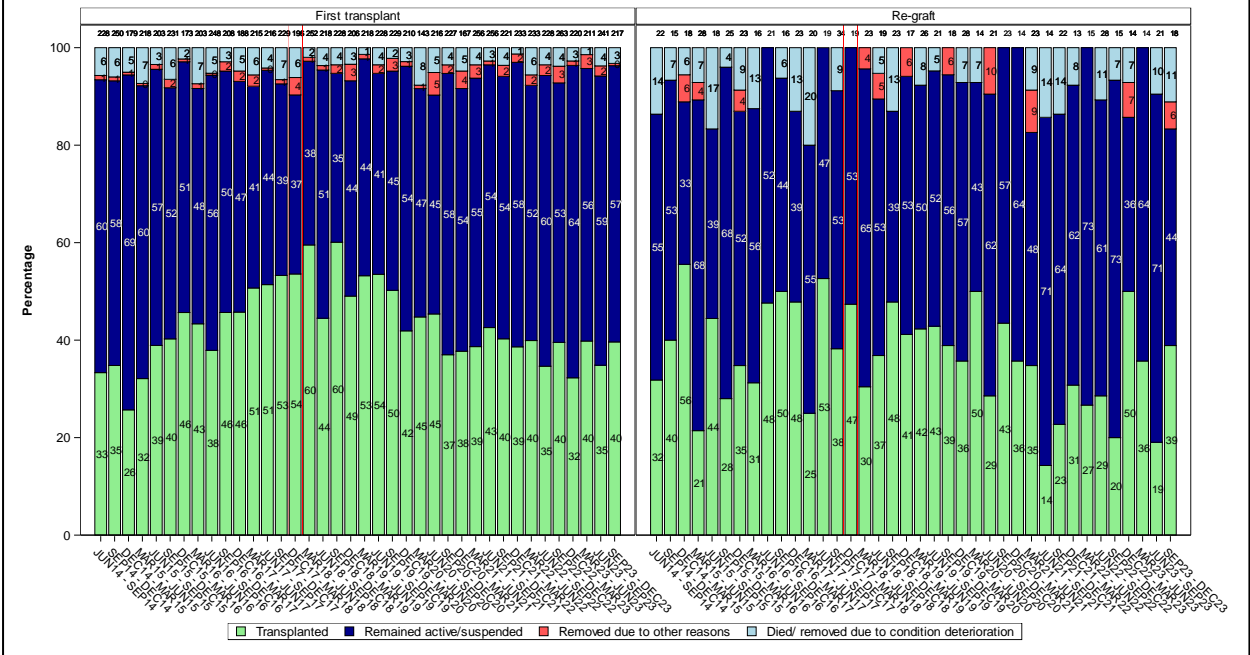


Figure B4 Three month registration outcome for active elective liver and liver/kidney patients, by sex, 20 December 2014 to 19 December 2023

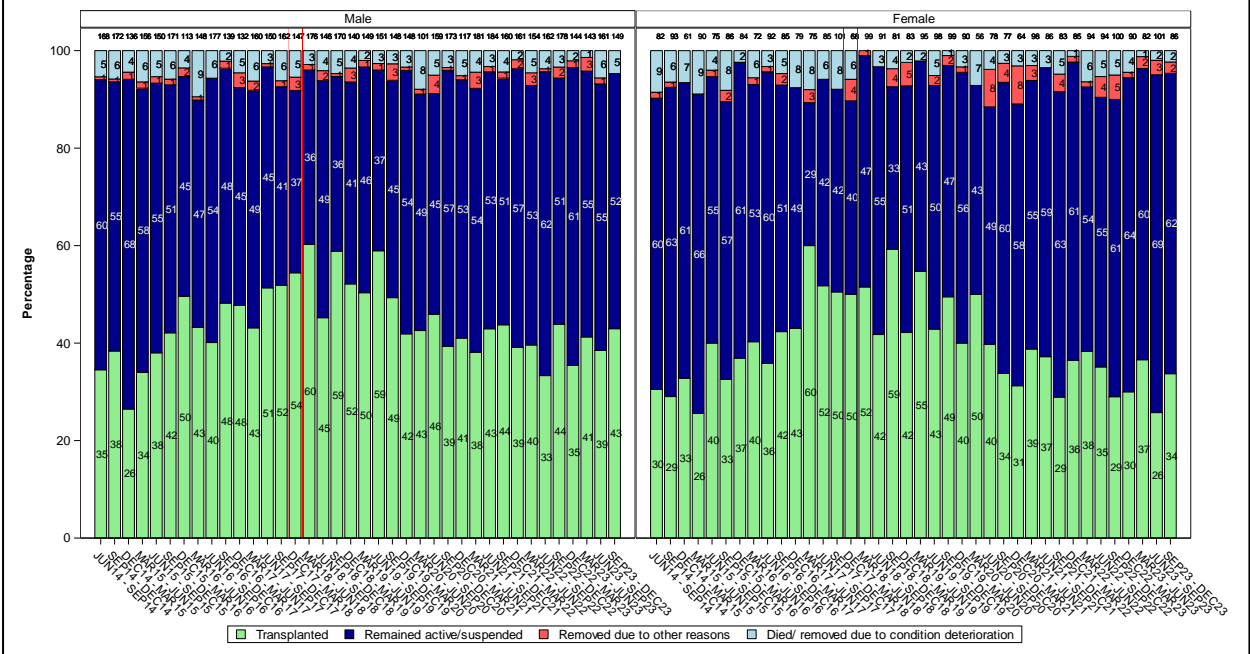
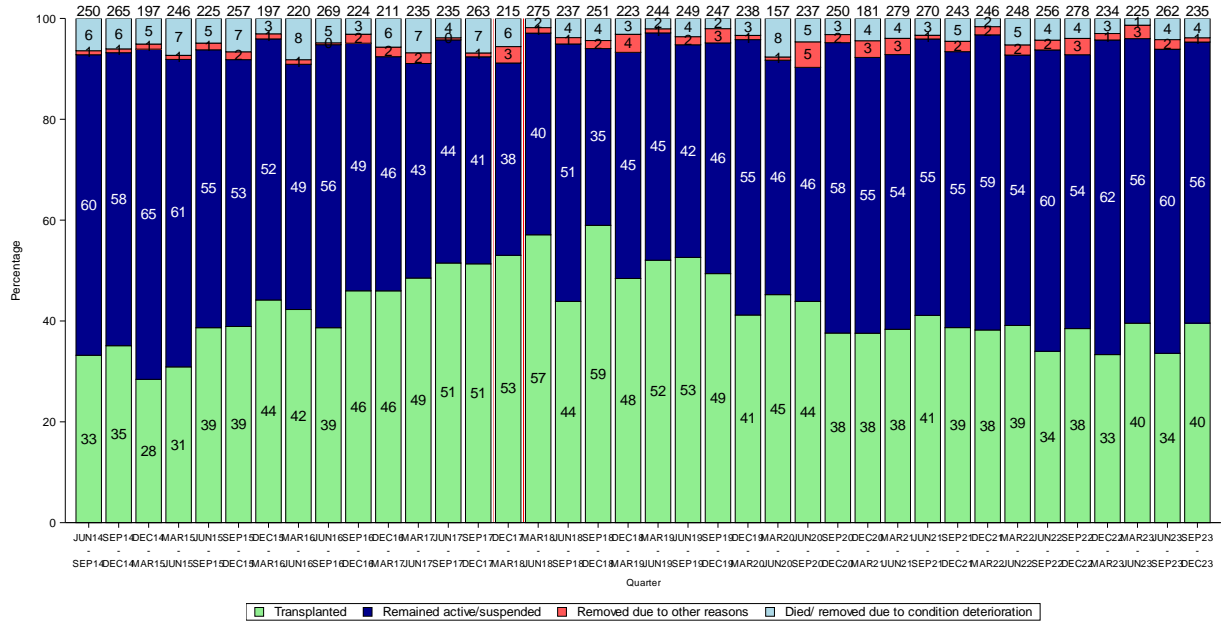


Figure B5 Three month registration outcome for active elective liver and liver/kidney patients, by quarter, 20 December 2014 to 19 December 2023



APPENDIX C: SIX MONTH REGISTRATION OUTCOME

Figure C1 Six month registration outcome for active elective liver and liver/kidney patients, by type of patient, 20 September 2014 to 19 September 2023

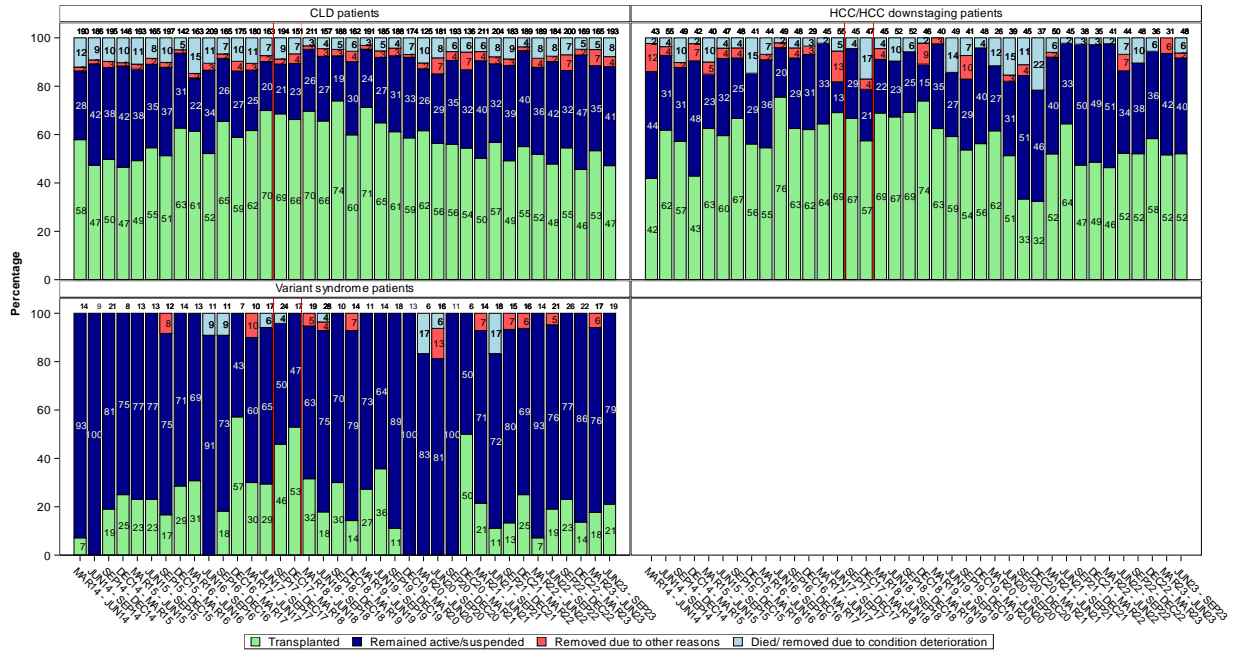


Figure C2 Six month registration outcome for active elective liver and liver/kidney patients, by age group, 20 September 2014 to 19 September 2023

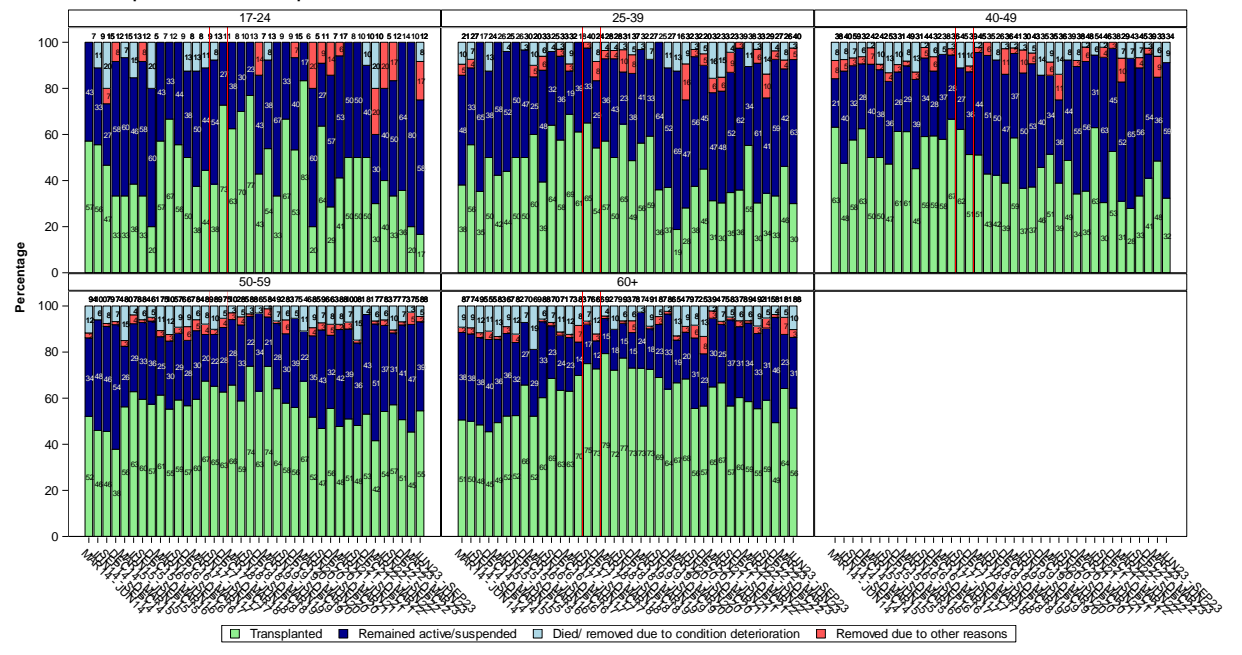


Figure C3 Six month registration outcome for active elective liver and liver/kidney patients, by first transplant or re-graft, 20 September 2014 to 19 September 2023

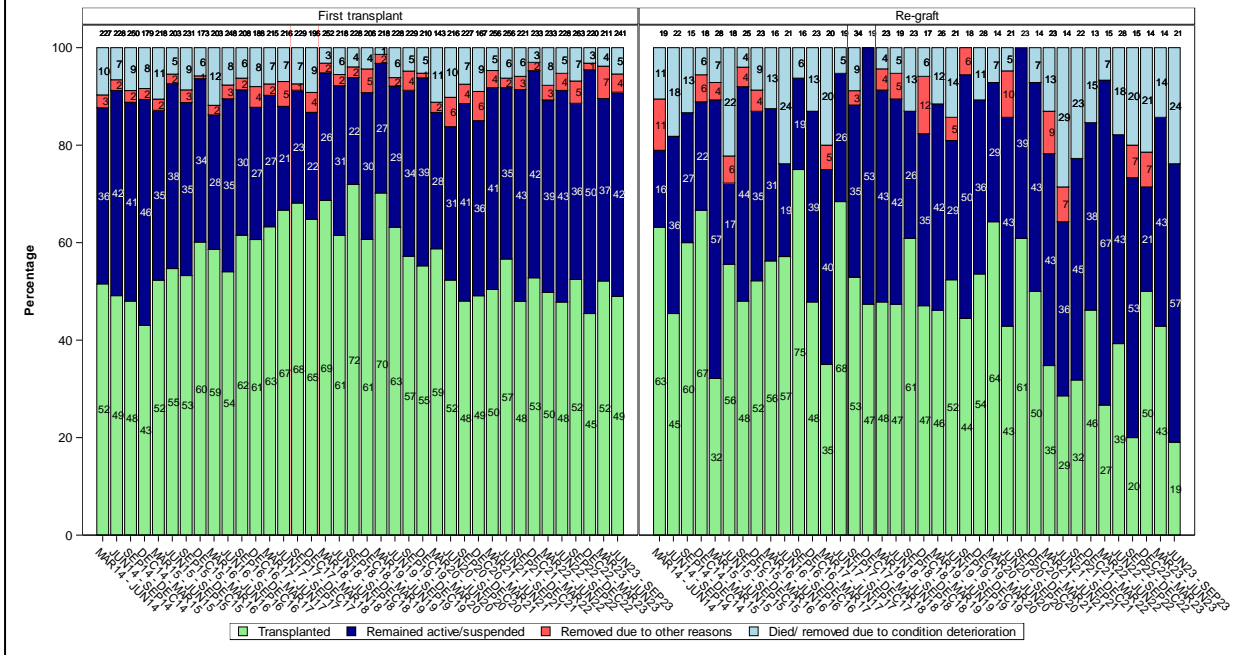


Figure C4 Six month registration outcome for active elective liver and liver/kidney patients, by sex, 20 September 2014 to 19 September 2023

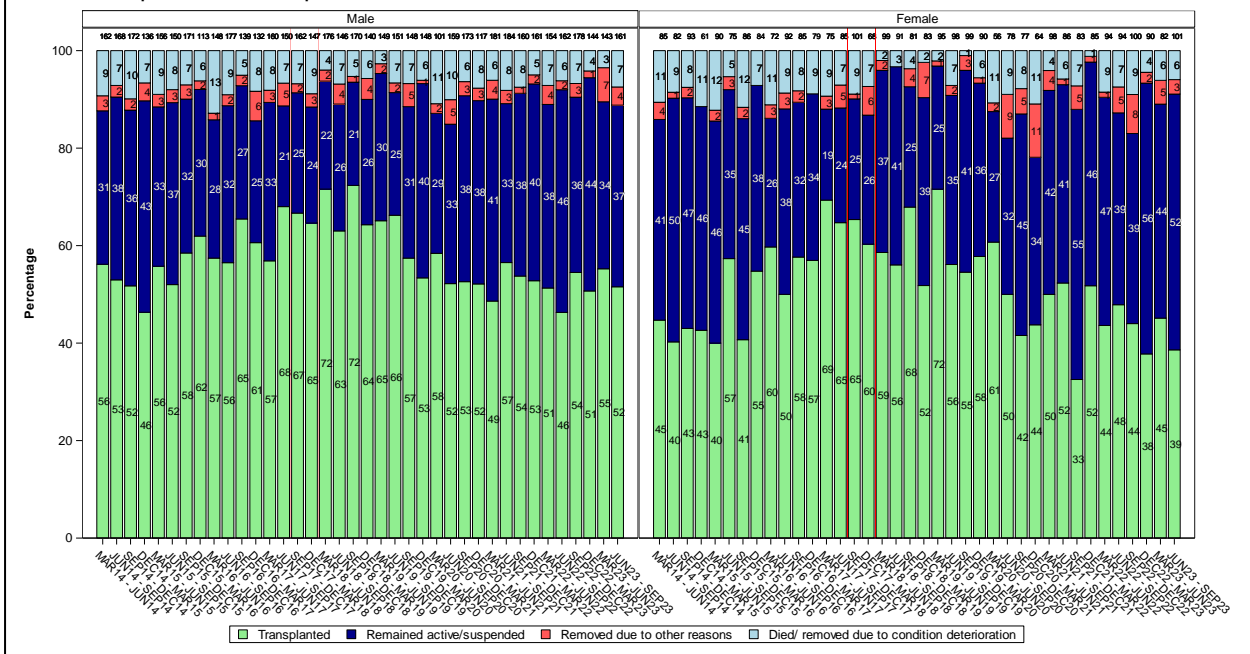


Figure C5 Six month registration outcome for active elective liver and liver/kidney patients, by quarter, 20 September 2014 to 19 September 2023

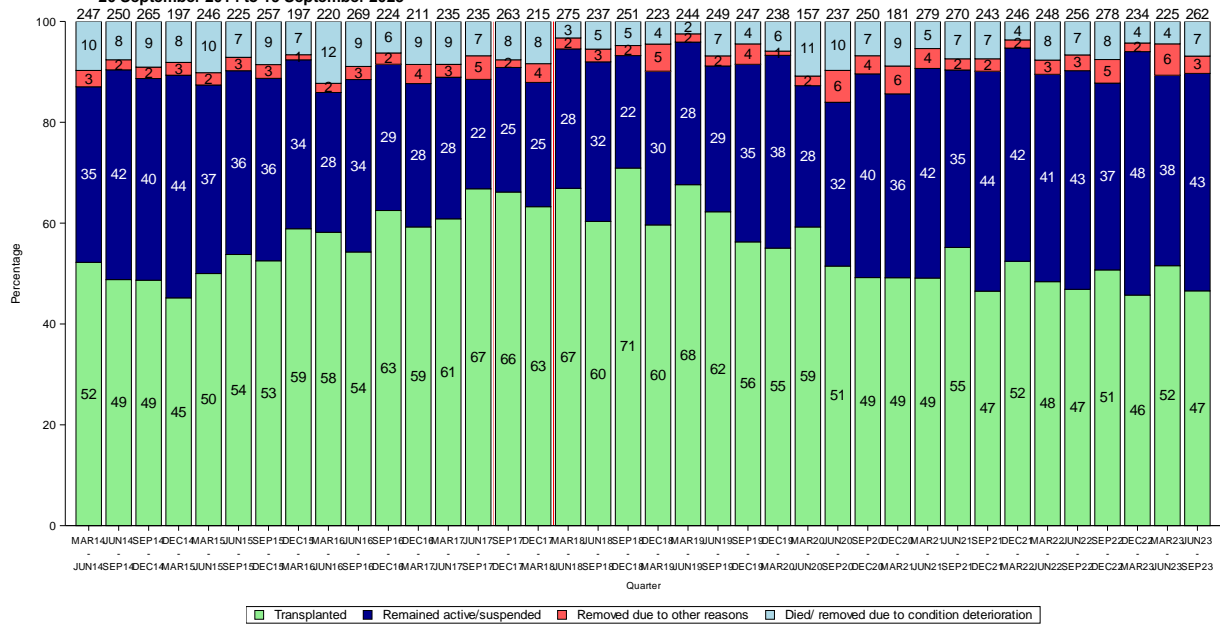


Table D(a) Median (IQR; range) time to transplant (days) for named patient offers for adult elective liver and liver/kidney transplants performed in the UK using livers from DBD donors, 20 March 2017 to 19 March 2024, as at 8 April 2024 LAG24(5.2)

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Centre							
Newcastle (N)	-	20	21	21	20	13	13
Median (IQR)	-	43 (21.5, 97.5)	34 (16, 85)	43 (20, 136)	32.5 (12, 107.5)	8 (5, 12)	21 (9, 164)
Range	-	2 - 318	2 - 488	4 - 607	2 - 760	4 - 998	4 - 1233
Leeds (N)	-	58	60	54	52	69	62
Median (IQR)	-	41.5 (8, 130)	19.5 (8, 100.5)	25 (11, 105)	18.5 (9, 82)	21 (7, 124)	32 (11, 84)
Range	-	1 - 1341	1 - 662	1 - 1260	1 - 1187	1 - 1058	1 - 873
Cambridge (N)	-	49	42	21	38	35	46
Median (IQR)	-	31 (9, 67)	15 (5, 30)	11 (3, 23)	22.5 (6, 63)	14 (7, 62)	16 (8, 42)
Range	-	2 - 760	2 - 656	0 - 153	0 - 633	1 - 407	1 - 753
Royal Free (N)	-	67	61	41	57	50	43
Median (IQR)	-	20 (6, 100)	19 (8, 66)	31 (8, 77)	22 (5, 92)	27 (9, 78)	38 (8, 155)
Range	-	1 - 1261	1 - 971	2 - 669	2 - 592	2 - 1453	2 - 1004
Kings College (N)	-	110	111	90	104	84	80
Median (IQR)	-	37 (10, 235)	28 (7, 160)	26.5 (7, 131)	27 (8, 78)	64 (10, 260)	86.5 (23.5, 265)
Range	-	1 - 1711	1 - 1620	1 - 1687	1 - 968	2 - 2100	1 - 1286
Birmingham (N)	-	119	108	69	88	92	90
Median (IQR)	-	35 (9, 92)	40 (7.5, 156.5)	28 (5, 107)	23 (7, 80)	49.5 (14.5, 172.5)	49.5 (15, 226)
Range	-	1 - 1657	1 - 865	1 - 1814	1 - 1470	1 - 1066	1 - 811
Edinburgh (N)	-	68	38	48	36	35	27
Median (IQR)	-	16.5 (5, 102.5)	39 (17, 98)	23 (9, 229)	21 (7, 37)	21 (8, 78)	80 (32, 204)
Range	-	1 - 1124	2 - 640	1 - 694	1 - 452	2 - 218	3 - 1401

Table D(b) Median (IQR; range) time to transplant (days) for fast-track offers for adult elective liver and liver/kidney transplants performed in the UK using livers from DBD donors, 20 March 2017 to 19 March 2024, as at 8 April 2024 LAG24(5.2)

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Centre							
Newcastle (N)	-	2	5	6	3	1	4
Median (IQR)	-	50 (4, 96)	21 (14, 64)	121.5 (22, 190)	88 (62, 130)	231 (-)	81.5 (32.5, 389.5)
Range	-	4 - 96	1 - 517	2 - 494	62 - 130	-	12 - 669
Leeds (N)	-	8	19	16	8	5	9
Median (IQR)	-	49.5 (21, 449)	93 (33, 187)	120.5 (61.5, 291)	119 (96.5, 170.5)	136 (46, 413)	206 (137, 414)
Range	-	6 - 566	3 - 1405	6 - 671	42 - 254	4 - 769	18 - 735
Cambridge (N)	-	16	18	14	12	5	6
Median (IQR)	-	65.5 (20.5, 258)	77 (15, 167)	46 (25, 212)	91 (56.5, 147)	16 (12, 139)	64.5 (5, 147)
Range	-	1 - 583	1 - 603	9 - 679	26 - 191	1 - 311	2 - 676
Royal Free (N)	-	16	30	16	8	18	24
Median (IQR)	-	106.5 (40, 244.5)	72.5 (37, 153)	61 (27, 260.5)	220.5 (86.5, 399)	112 (51, 440)	104 (34, 297.5)
Range	-	3 - 547	1 - 734	0 - 621	13 - 557	8 - 523	5 - 869
Kings College (N)	-	33	34	25	13	14	23
Median (IQR)	-	98 (29, 252)	97.5 (58, 193)	60 (19, 140)	107 (34, 315)	180.5 (111, 293)	145 (58, 263)
Range	-	1 - 605	6 - 465	0 - 512	3 - 689	4 - 1103	3 - 1105
Birmingham (N)	-	35	46	45	39	23	20
Median (IQR)	-	93 (22, 150)	129 (32, 476)	194 (65, 405)	122 (33, 282)	260 (68, 500)	162 (104, 452.5)
Range	-	1 - 937	0 - 976	1 - 1593	1 - 1400	1 - 2223	30 - 1420
Edinburgh (N)	-	20	14	10	3	5	4
Median (IQR)	-	42.5 (12.5, 192.5)	106 (46, 178)	84 (52, 324)	13 (2, 51)	30 (23, 31)	29.5 (23.5, 84.5)
Range	-	2 - 621	10 - 310	4 - 749	2 - 51	6 - 57	18 - 139