



**Blood and Transplant**

# **KIDNEY TRANSPLANTATION ANNUAL RENAL UNIT REPORT**

**REPORT FOR 2023/24  
(1 APRIL 2015 – 31 MARCH 2024)**

**March 2026**

**PRODUCED IN COLLABORATION WITH THE UK RENAL REGISTRY**



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# Introduction

This report presents data on activity and outcomes of kidney transplant candidates and recipients between 1 April 2015 and 31 March 2024, for all 67 renal centres in the UK. Data were obtained from the UK Transplant Registry, at NHS Blood and Transplant, which holds information relating to donors, recipients and outcomes for all kidney transplants performed in the UK. Renal unit information was supplied by the UK Renal Registry.

[Graft](#) and [patient survival](#) estimates are reported at 1- and 5- year post-transplant for the periods 1 April 2019 to 31 March 2023 and 1 April 2015 to 31 March 2019, respectively. Adjusted mean [eGFR](#) post-transplant is reported at 3- and 12- months post-transplant for the period 1 April 2019 to 31 March 2023. Results are described separately according to the type of donor (deceased and [living](#)).

The unit specific results for survival estimates are adjusted for differences in [risk factors](#) between the units. The risk models used are described in [Appendix A3](#).

Patients requiring [multi-organ transplants](#) are excluded from all analyses and all results are described for adult (aged  $\geq 18$  years) patients.

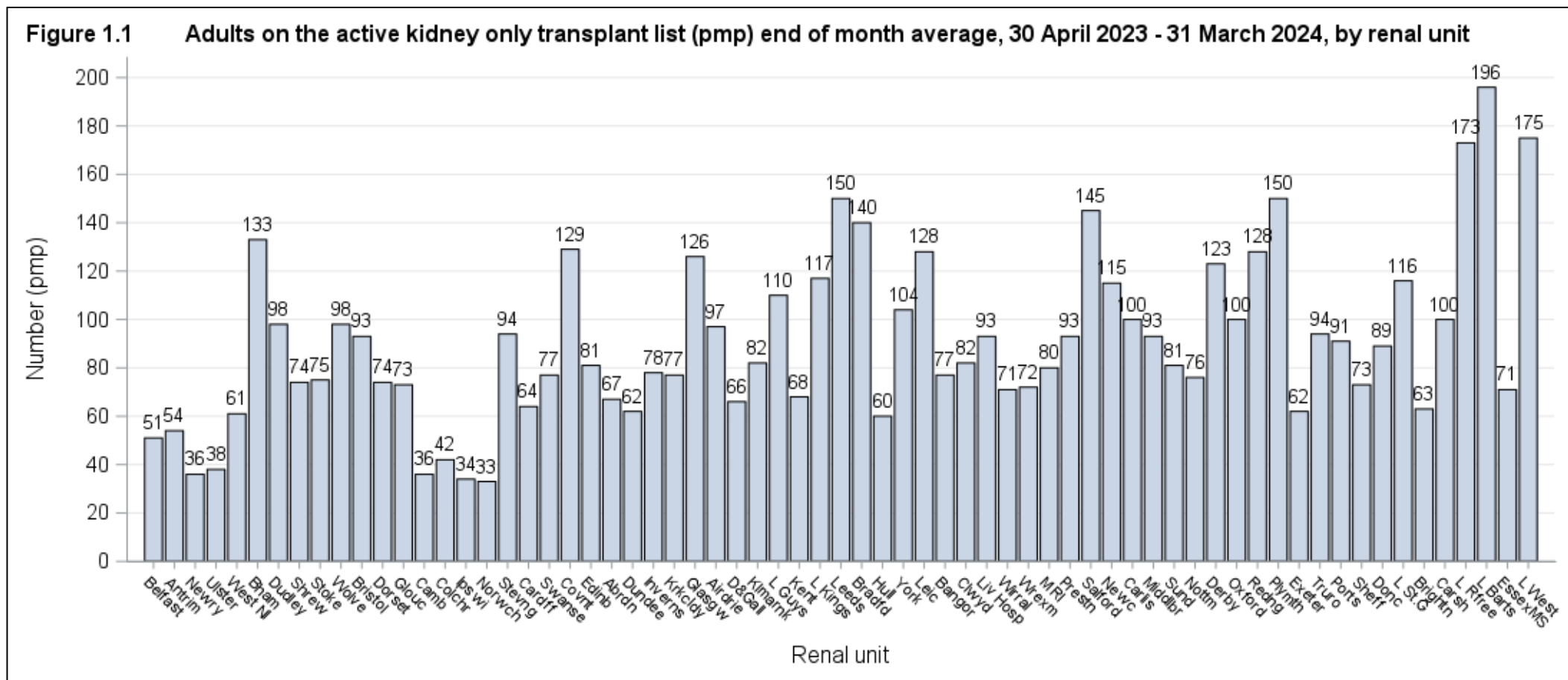
The COVID-19 pandemic led to unprecedented challenges for UK transplantation. Concerns about the ability to care for transplant recipients, lack of access to resource because it is being used for patients in the pandemic, and the risk versus benefit for immunosuppressed transplant recipients, resulted in a major reduction in the number of organ transplants undertaken and the impact of the pandemic is still evident.

Use of the contents of this report should be acknowledged as follows:  
*Annual Report on Kidney Transplantation 2023/2024 by Renal Unit, NHS Blood and Transplant.*

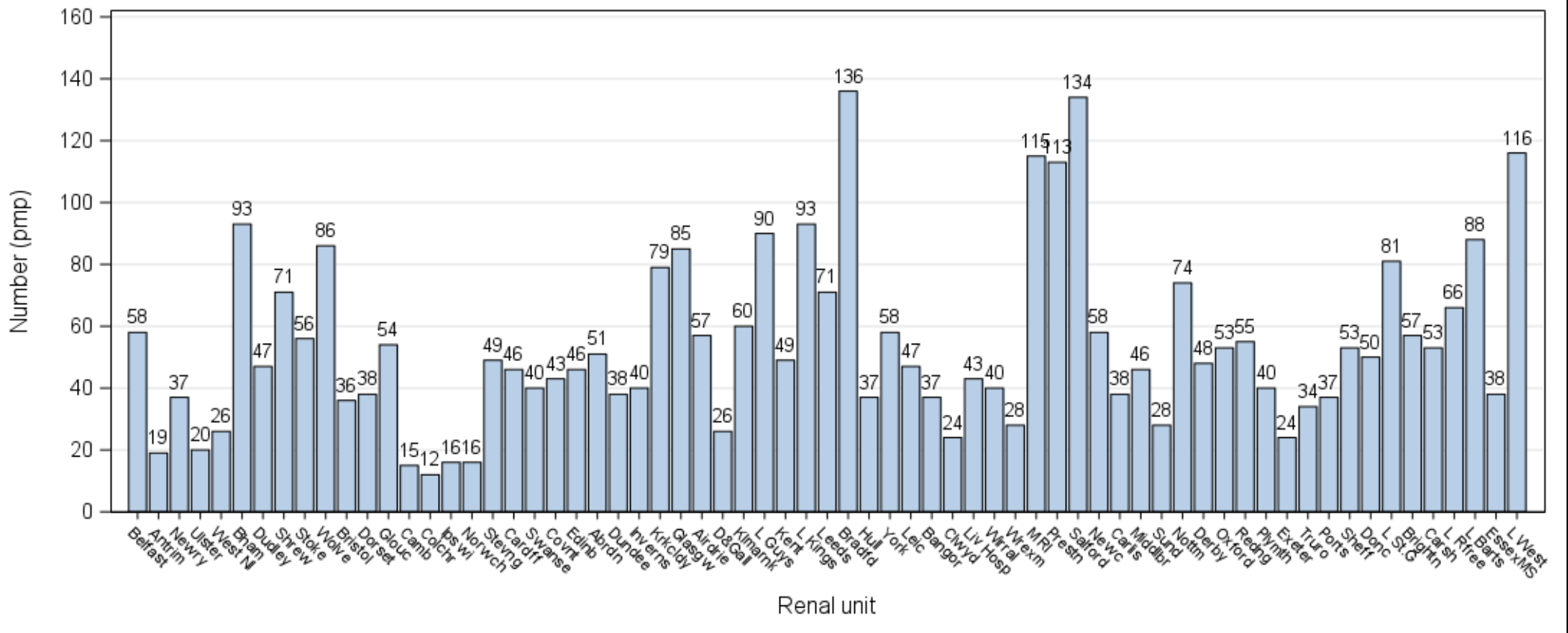
# **Adult kidney transplant list**

## 1.1 Kidney only transplant list, 30 April 2023 – 31 March 2024

**Figure 1.1** shows the mean number of adults on the active kidney only [transplant list](#) per million population (pmp) at the end of each month by renal unit for the period 30 April 2023 to 31 March 2024. Barts, 'L Barts' below, had the highest mean rate of adults on the waiting list per million population. **Figure 1.2** shows similar information for adults on the suspended kidney only [transplant list](#). Bradford, 'Bradfd' below, had the highest mean rate of suspended adults.

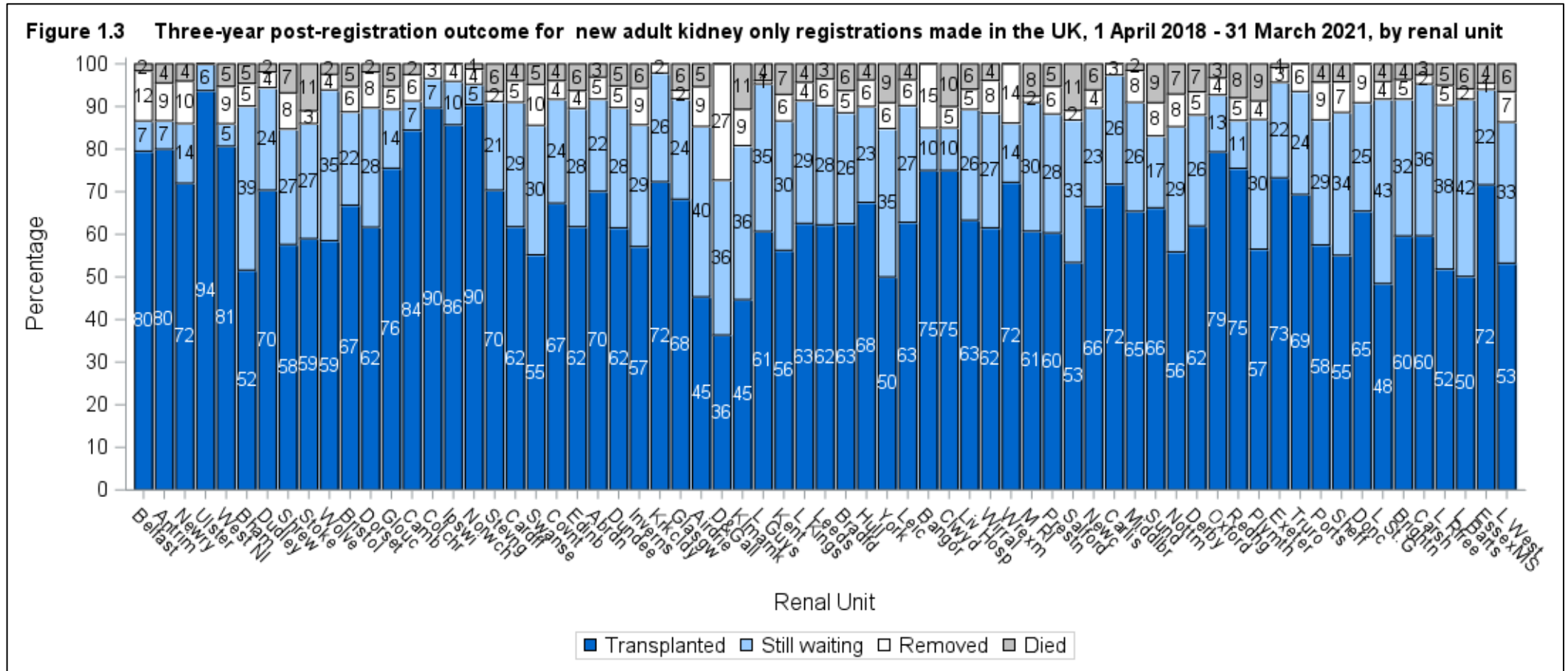


**Figure 1.2 Adults on the suspended kidney only transplant list (pmp) end of month average, 30 April 2023 - 31 March 2024, by renal unit**



## 1.2 Post-registration outcomes, 1 April 2018 – 31 March 2021

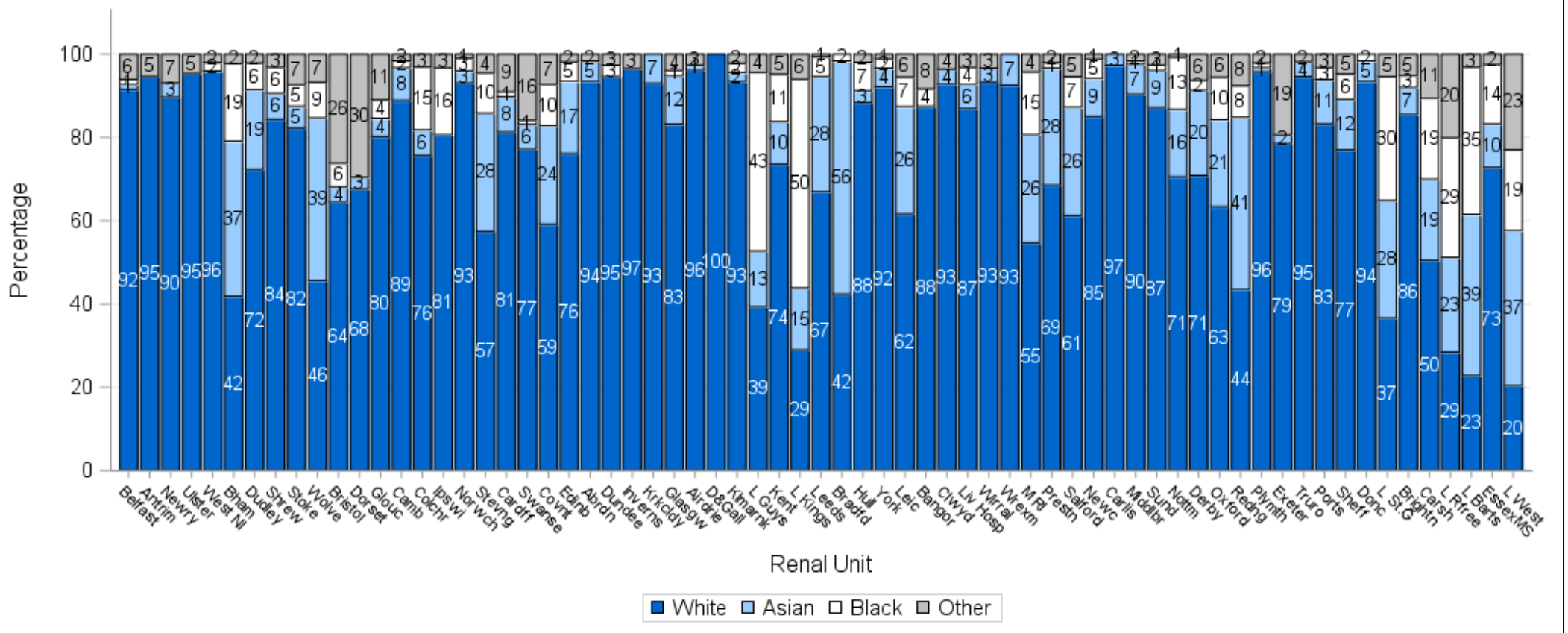
**Figure 1.3** shows the registration outcomes of patients registered between 1 April 2018 and 31 March 2021 by renal unit at three years post-registration. The proportion of patients transplanted three years after listing at each unit ranges from 36% at Dumfries and Galloways, 'D & Gall' below, to 94% at Ulster. A small proportion of patients across centres were removed or died on the list.



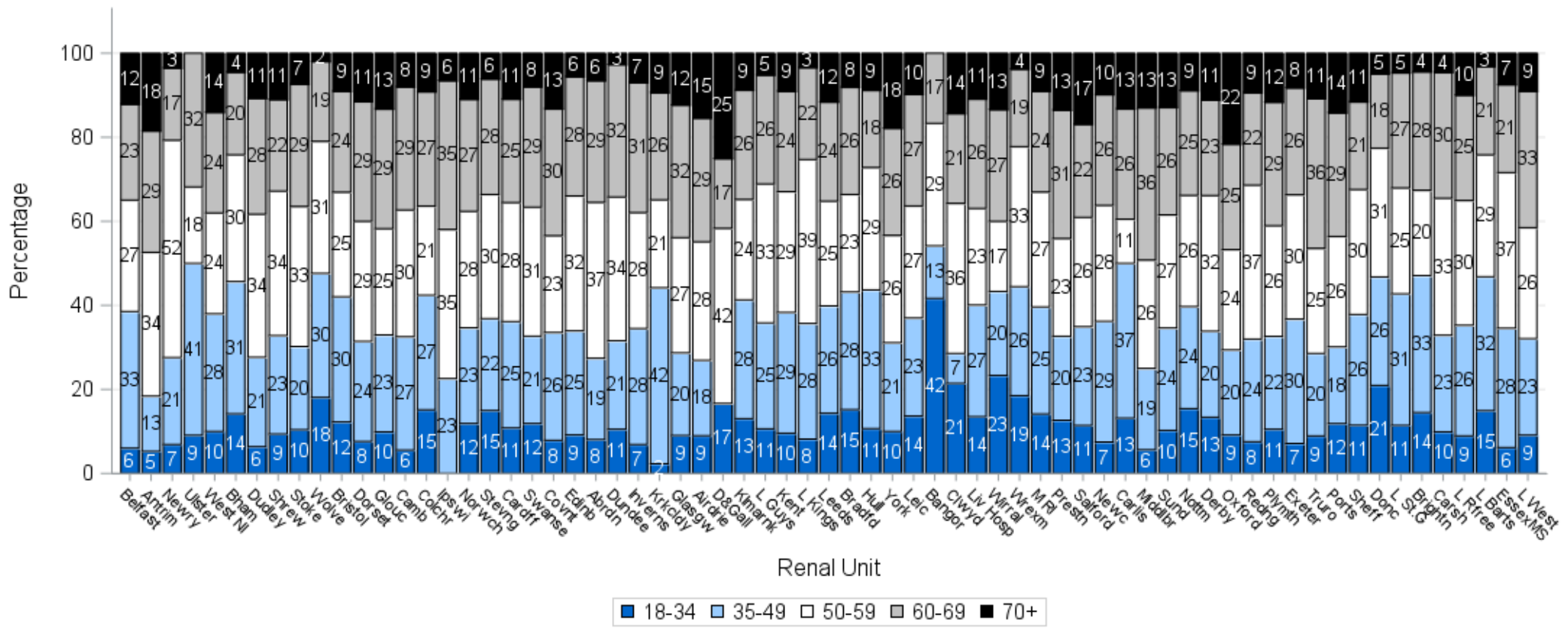
### 1.3 Demographic characteristics, 1 April 2021 – 31 March 2024

The ethnicity and age group of patients registered onto the transplant list between 1 April 2021 and 31 March 2024 are shown by renal unit in **Figures 1.4** and **1.5**, respectively. Note that all percentages quoted are based only on data where relevant information was available.

**Figure 1.4 Ethnicity of patients registered onto the active kidney only transplant list, 1 April 2021 - 31 March 2024, by renal unit**



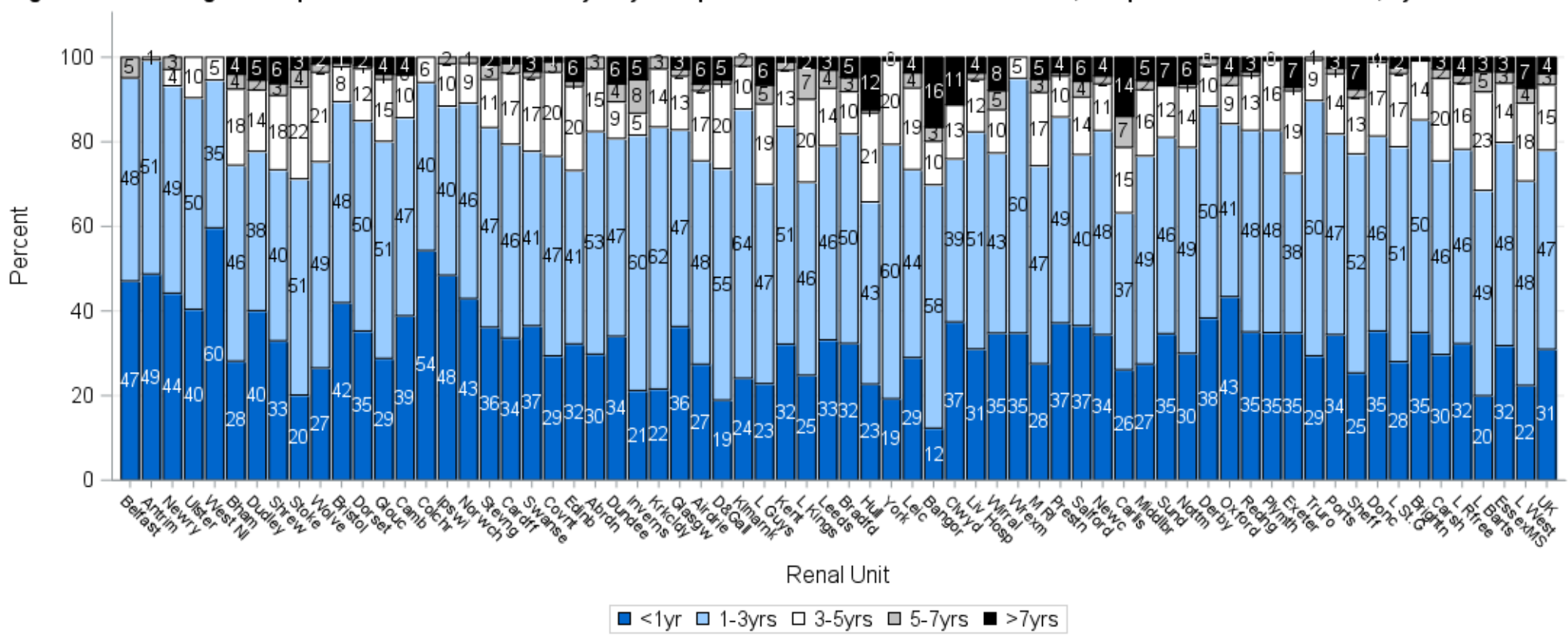
**Figure 1.5 Age of patients registered onto the active kidney only transplant list, 1 April 2021 - 31 March 2024, by renal unit**



### 1.4 Waiting times for patients on the list as at the end of each month, 30 April 2023 - 31 March 2024

Figure 1.6 shows the length of time patients have been waiting on the kidney only [transplant list](#) by renal unit for those active on the list as at the end of each month, 30 April 2023 - 31 March 2024. A small proportion of patients (4%) have been waiting for a transplant for more than seven years. 99% of these long waiters are highly sensitised with a calculated reaction frequency (cRF) of 85% or higher, with 87% having a cRF of 100% which makes these patients very difficult to match.

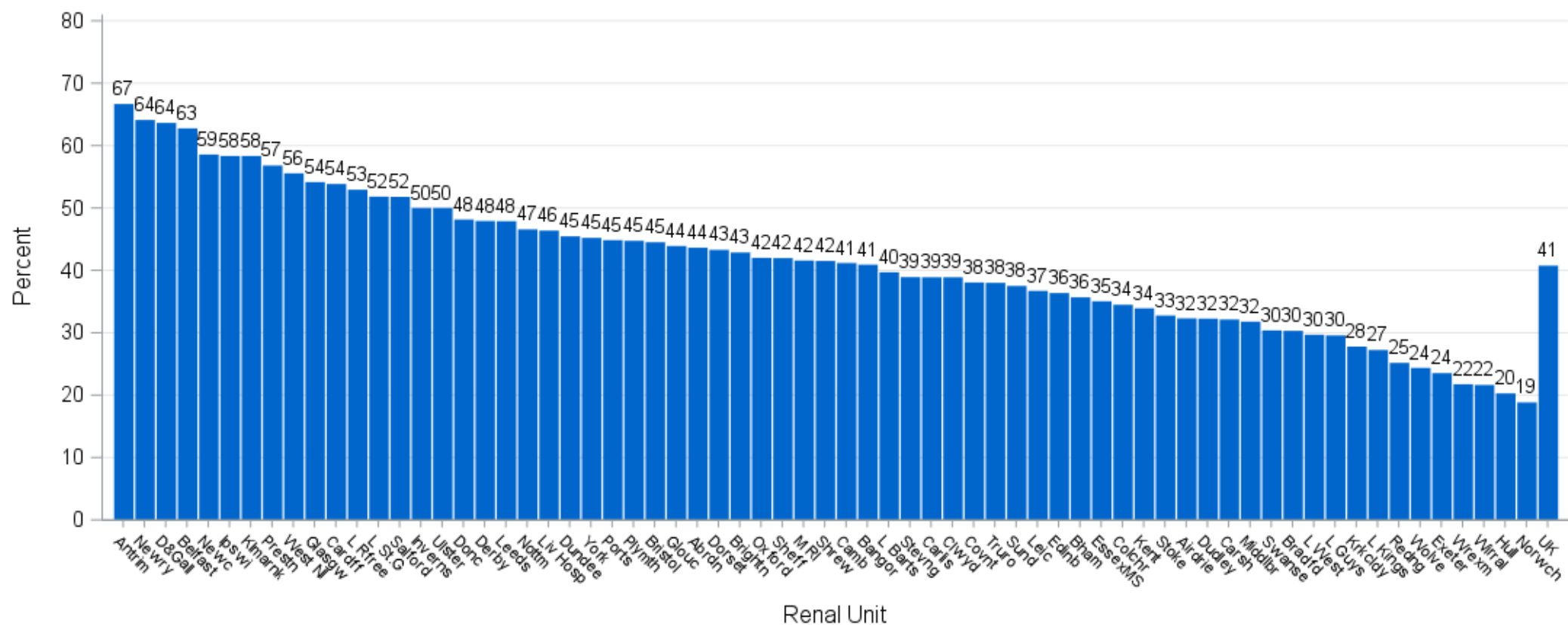
Figure 1.6 Waiting time of patients on the active kidney only transplant list as at the end of each month, 30 April 2023 - 31 March 2024, by renal unit



### 1.5 Pre-emptive listing rates, 1 April 2020 - 31 March 2023

Rates of [pre-emptive](#) kidney only listings are shown in **Figure 1.7** for adults joining the list between 1 April 2020 and 31 March 2023. Patients listed on the deceased donor [transplant list](#) prior to receiving a living donor transplant are excluded. [Pre-emptive](#) listing accounted for 41% of all adult registrations across the UK ranging from 67% at Antrim to 19% at Norwich.

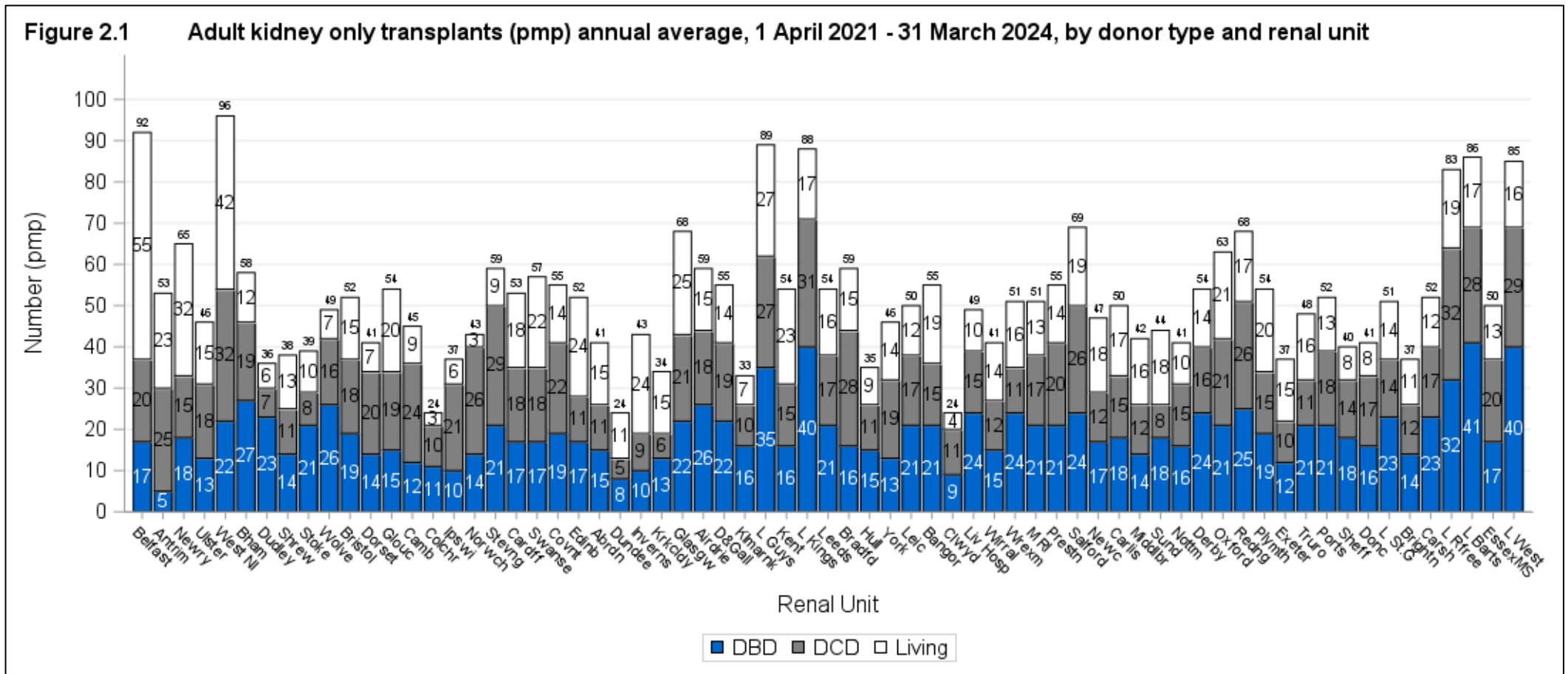
**Figure 1.7 Adult pre-emptive listing rates by centre, registrations 1 April 2020 - 31 March 2023**



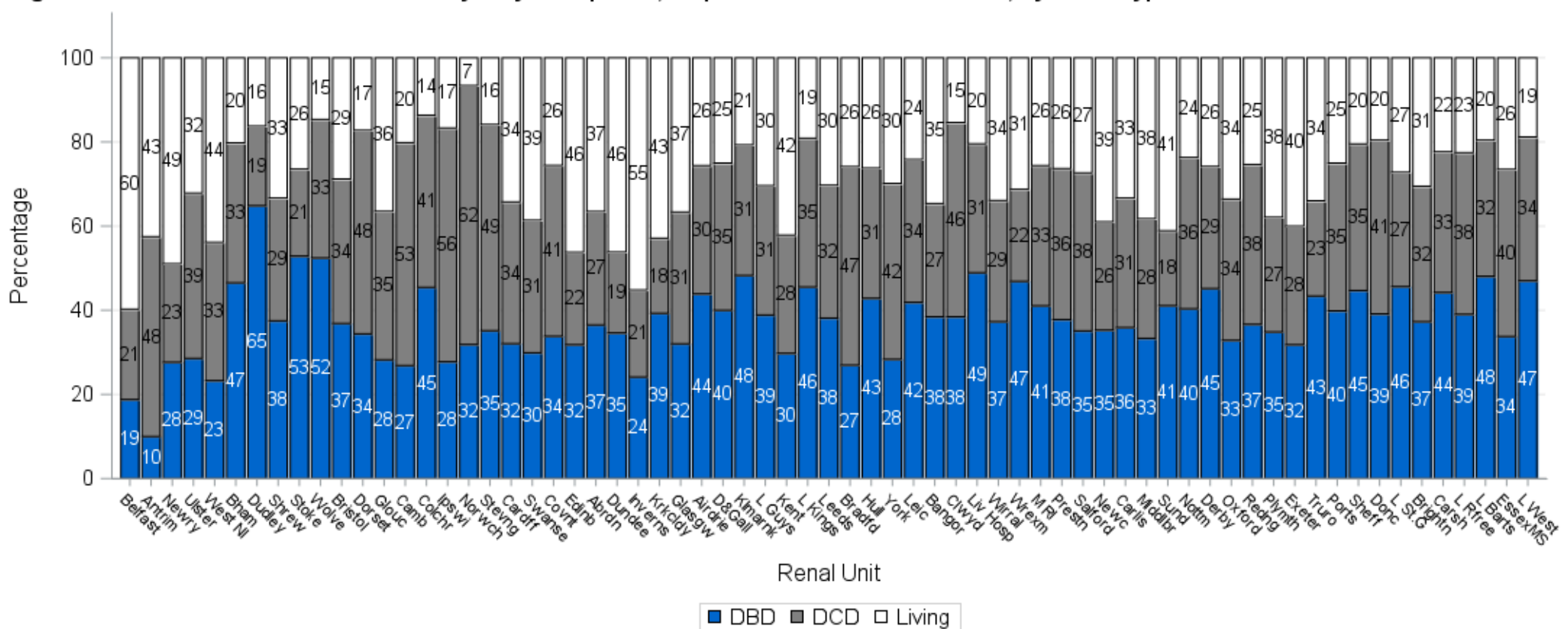
# Adult kidney transplants

## 2.1 Kidney only transplants, 1 April 2021 – 31 March 2024

**Figure 2.1** shows the mean number of adult kidney only transplants performed per million population (pmp) between 1 April 2021 and 31 March 2024, by renal unit and type of donor. Omagh and Altnagelvin, 'West NI' below, had the highest overall mean rate of adult kidney only transplants per million population at 96 pmp. King's College 'L Kings' below, had the highest deceased donor rate (71 pmp) and Belfast had the highest living donor rate (55 pmp). **Figure 2.2** shows the proportion of [DBD](#), [DCD](#) and [living donor](#) transplants performed for each unit.



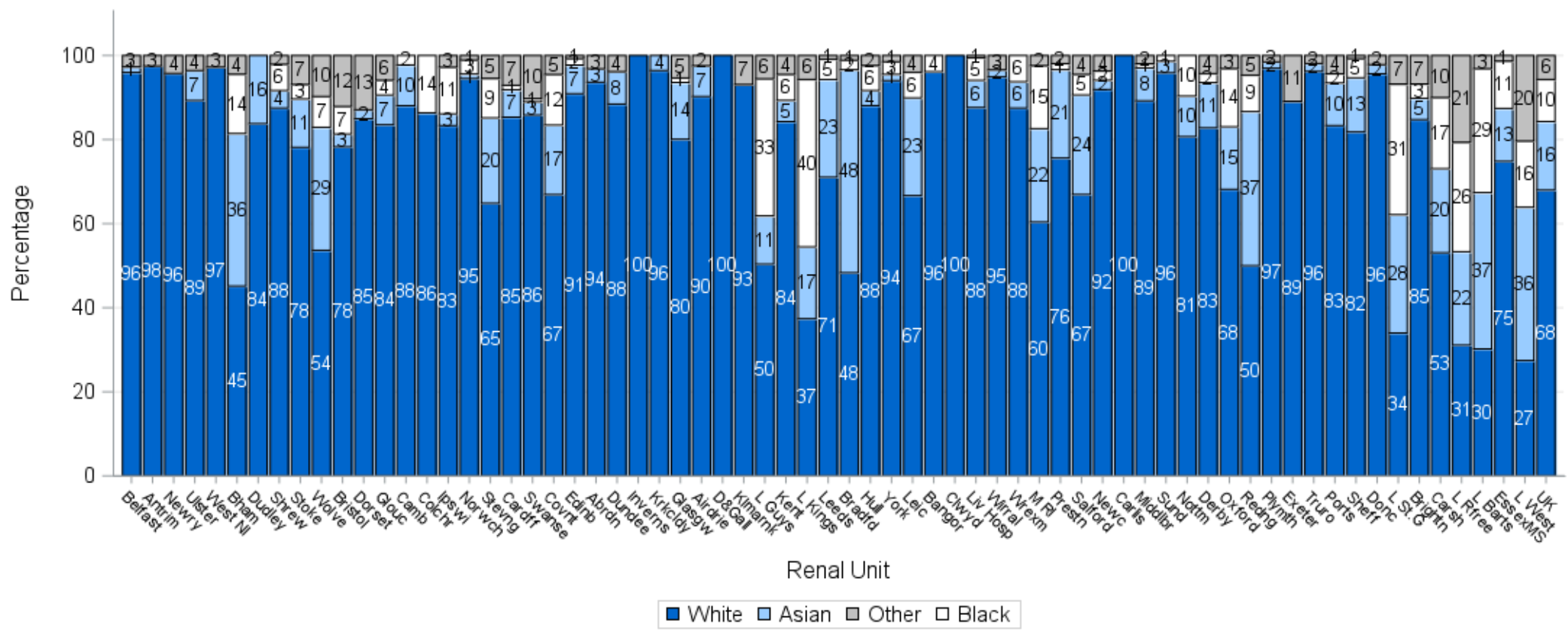
**Figure 2.2 Distribution of adult kidney only transplants, 1 April 2021 and 31 March 2024, by donor type and renal unit**



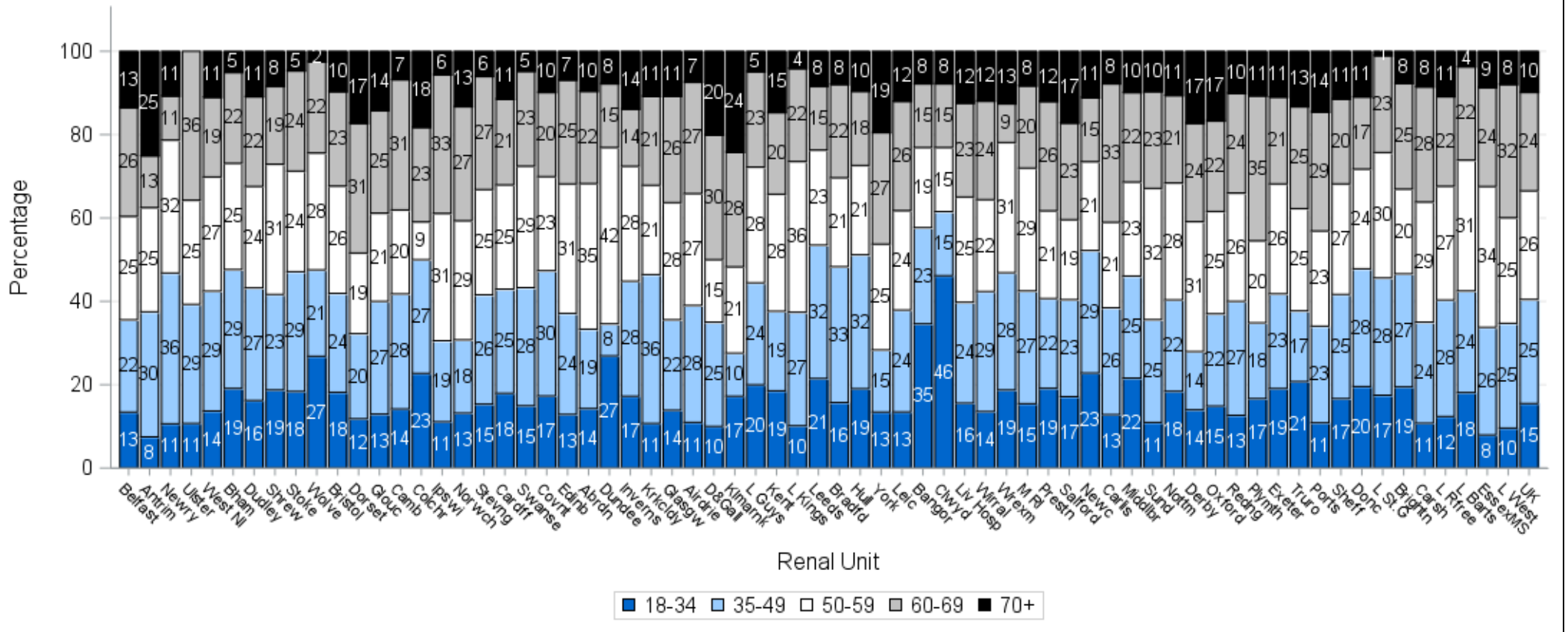
## 2.2 Demographic characteristics of recipients, 1 April 2021 - 31 March 2024

The ethnicity and age group of adults who received a kidney only transplant between 1 April 2021 and 31 March 2024 are shown by renal unit in **Figures 2.3** and **2.4**, respectively. Note that all percentages quoted are based only on data where relevant information was available.

**Figure 2.3 Ethnicity of adult kidney only transplant recipients, 1 April 2021 - 31 March 2024, by renal unit**



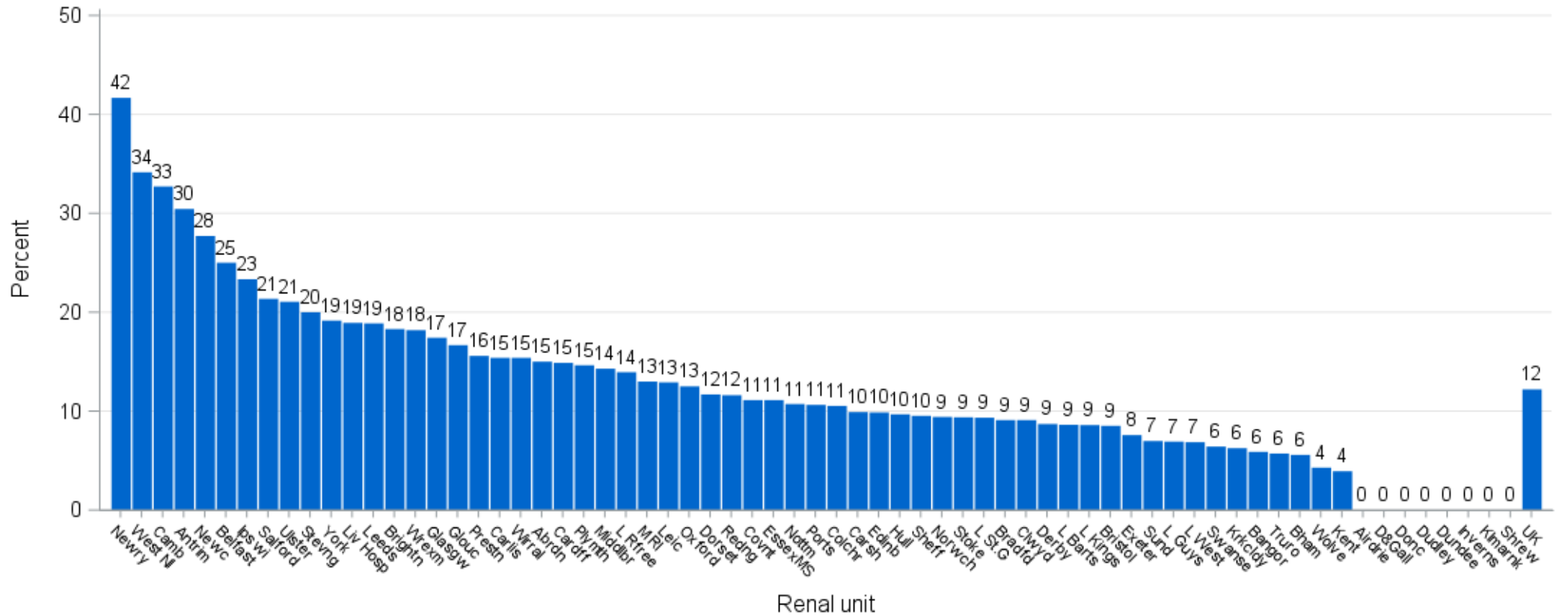
**Figure 2.4** Age of adult kidney only transplant recipients, 1 April 2021 - 31 March 2024, by renal unit



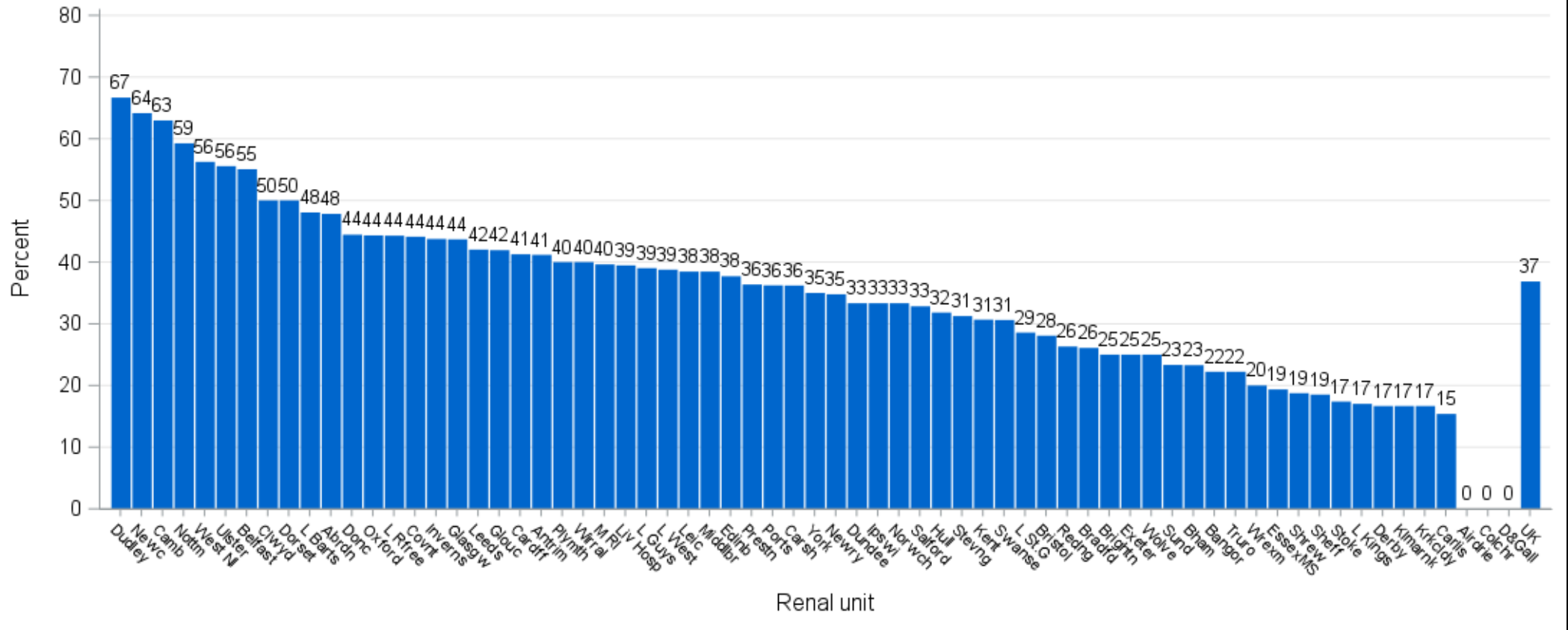
### 2.3 Pre-emptive transplant rates, 1 April 2021 - 31 March 2024

Rates of [pre-emptive](#) kidney only transplantation for transplants performed between 1 April 2021 and 31 March 2024 are shown in **Figure 2.5** for deceased donor transplants and **Figure 2.6** for [living donor](#) transplants. Living donor transplants are more likely to be carried out before the need for dialysis than deceased donor transplants: 37% and 12% respectively. This is because a living donor transplant can often be carried out more quickly than a deceased donor kidney transplant. Adult deceased donor [pre-emptive](#) transplant rates ranged from 42% at Newry to 0% at several units. Adult living donor [pre-emptive](#) transplant rates ranged from 67% at Dudley to 0% at Airdrie, Colchester and Dumfries & Galloway.

**Figure 2.5 Adult deceased donor pre-emptive transplant rates by renal unit, 1 April 2021 - 31 March 2024**



**Figure 2.6 Adult living donor pre-emptive transplant rates by renal unit, 1 April 2021 - 31 March 2024**



# **Adult kidney outcomes – post transplant survival**

We present a visual comparison of survival rates among renal units that is based on a graphical display known as a [funnel plot](#) (1,2). This display is used to show how consistent the rates of the different renal units are with the national rate. [Funnel plots](#) show the [risk-adjusted survival rate](#) plotted against the number of transplants for each unit, with the overall national [unadjusted survival rate](#) (solid line), and its 95% (thin dotted lines) and 99.8% (thick dotted lines) [confidence limits](#) superimposed. Each dot in the plot represents one of the units.

If a unit lies within all the limits, then that unit has a survival rate that is statistically consistent with the national rate. If a unit lies outside the 95% [confidence limits](#), this serves as an alert that the unit may have a rate that is significantly different from the national rate. If a unit lies outside the 99.8% limits, then further investigations may be carried out to determine the reasons for the possible difference. When a unit lies above the upper limits, this indicates a survival rate that is higher than the national rate, while a unit that lies below the lower limits has a survival rate that is lower than the national rate. It is important to note that adjusting for patient mix through the use of risk-adjustment models may not account for all possible causes of unit differences. There may be other factors that are not taken into account in the risk-adjustment process that may affect the survival rate of a particular unit.

This section excludes [multi-organ transplants](#) and includes first time transplants only, with results presented separately for deceased and [living donor](#) transplants. Centres have been omitted where less than 75% of data reported. Data have been omitted where less than 10 transplants. One-year [patient](#) and [graft survival rates](#) are based on transplants performed in the period 1 April 2019 to 31 March 2023 while five-year [patient](#) and [graft survival rates](#) are based on transplants in the period 1 April 2015 to 31 March 2019. The [risk factors](#) used to produce the [risk-adjusted survival rates](#) are detailed in **Table A3.1** in [Appendix A3](#).

**Note that although we report survival according to renal unit, many patients receive after care from their transplant centre before returning to their local renal units. We do not know at what point a patient is transferred back from the transplant centre to their renal unit, but we do know that this practice can differ widely across the country.**

#### References:

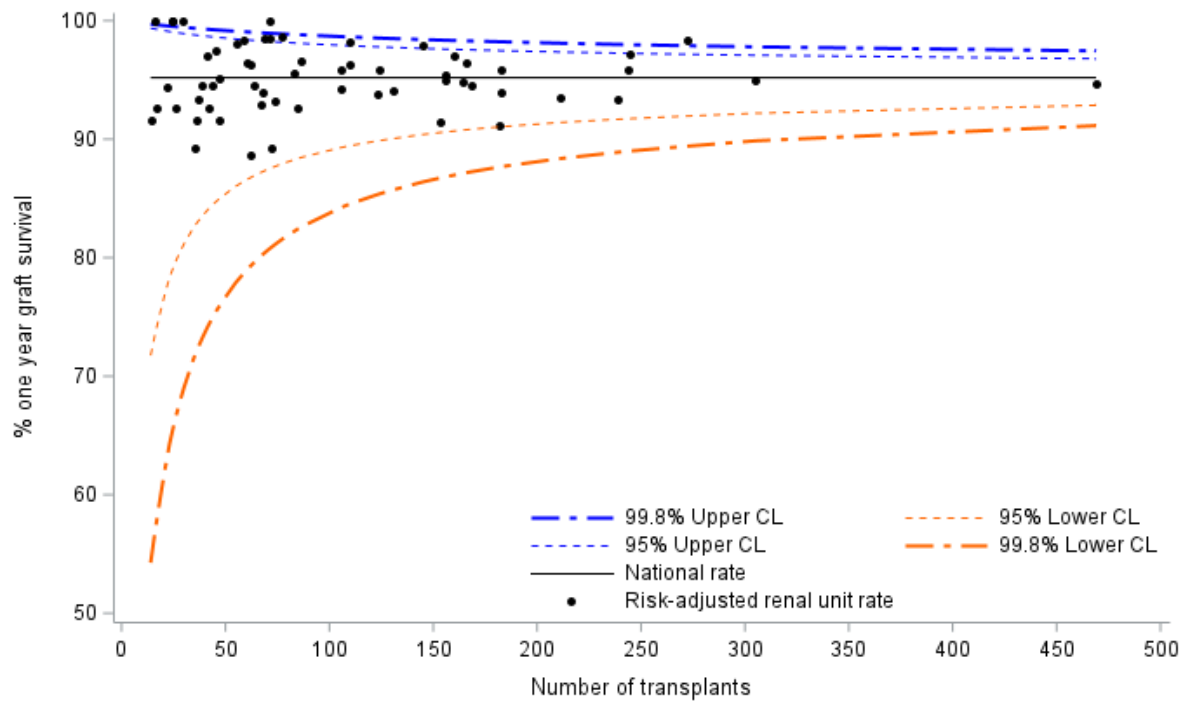
1. Tekkis PP, McCulloch P, Steger AC, Benjamin IS, Poloniecki JD. Mortality control charts for comparing performance of surgical units: validation study using hospital mortality data. *British Medical Journal* 2003; 326: 786 – 788.
2. Stark J, Gallivan S, Lovegrove J, Hamilton JRL, Monro JL, Pollock JCS, Watterson KG. Mortality rates after surgery for congenital heart defects in children and surgeons' performance. *Lancet* 2000; 355: 1004 – 1007.

### 3.1 Deceased donor graft and patient survival

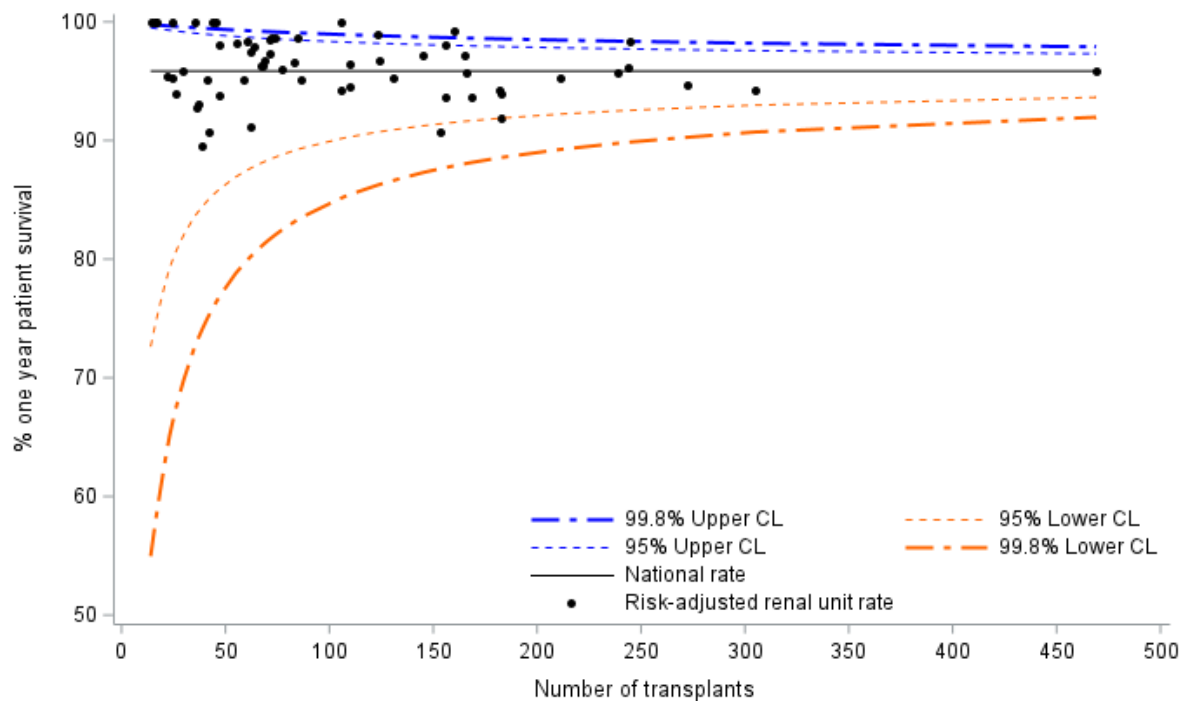
Figures 3.1-3.4 and Table 3.1 show the [risk-adjusted patient](#) and [graft survival rates](#) for each unit and nationally following deceased donor transplantation. At five years post-transplant, the national patient survival rate was 85% and the graft survival was 86%.

The [funnel plots](#) show that, for the most part, the renal units lie within the [confidence limits](#). The [funnel plots](#) show two units that lie outside the lower 95% [confidence limits](#) in the five-year estimates for graft survival and one unit for patient survival, indicating that the unit has a survival rate that is significantly lower than the national rate. All of the [funnel plots](#) show some units to be above the upper 99.8% [confidence limit](#). This suggests that these units may have survival rates that are considerably higher than the national rate. Units can be identified by the information shown in Table 3.1.

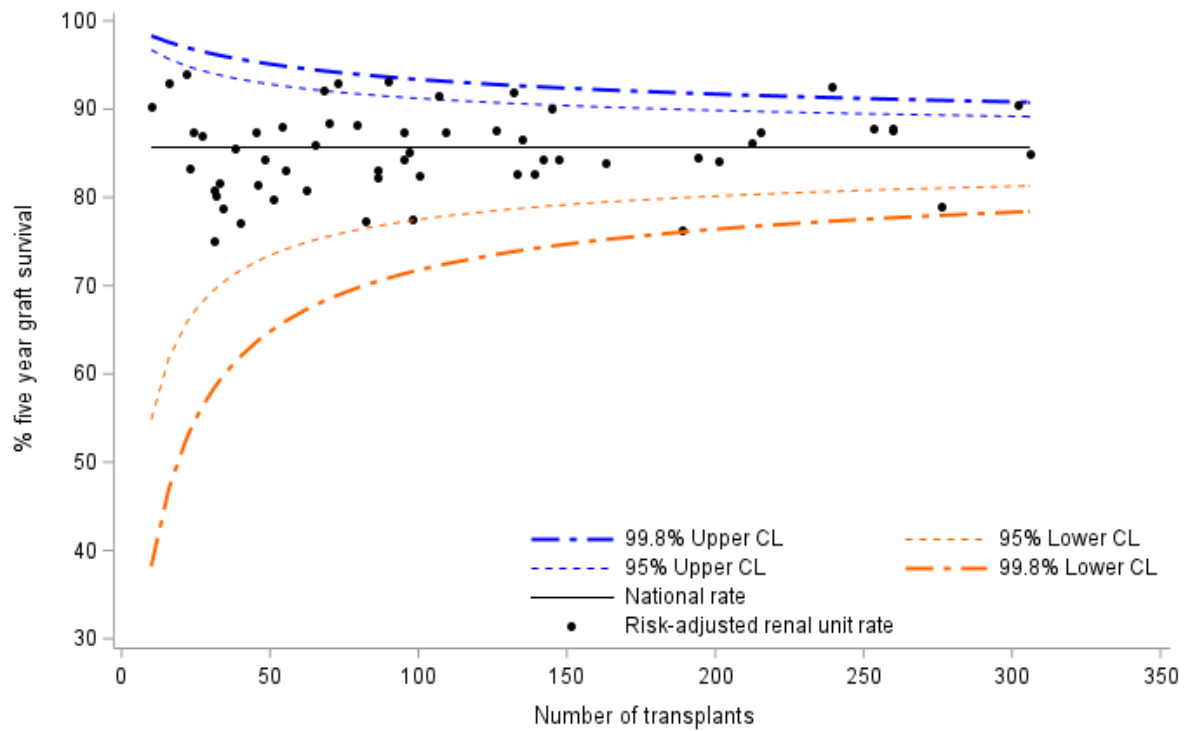
**Figure 3.1 Risk-adjusted one year graft (death censored) survival rates for first deceased donor kidney transplants in adults, 1 April 2019 - 31 March 2023**



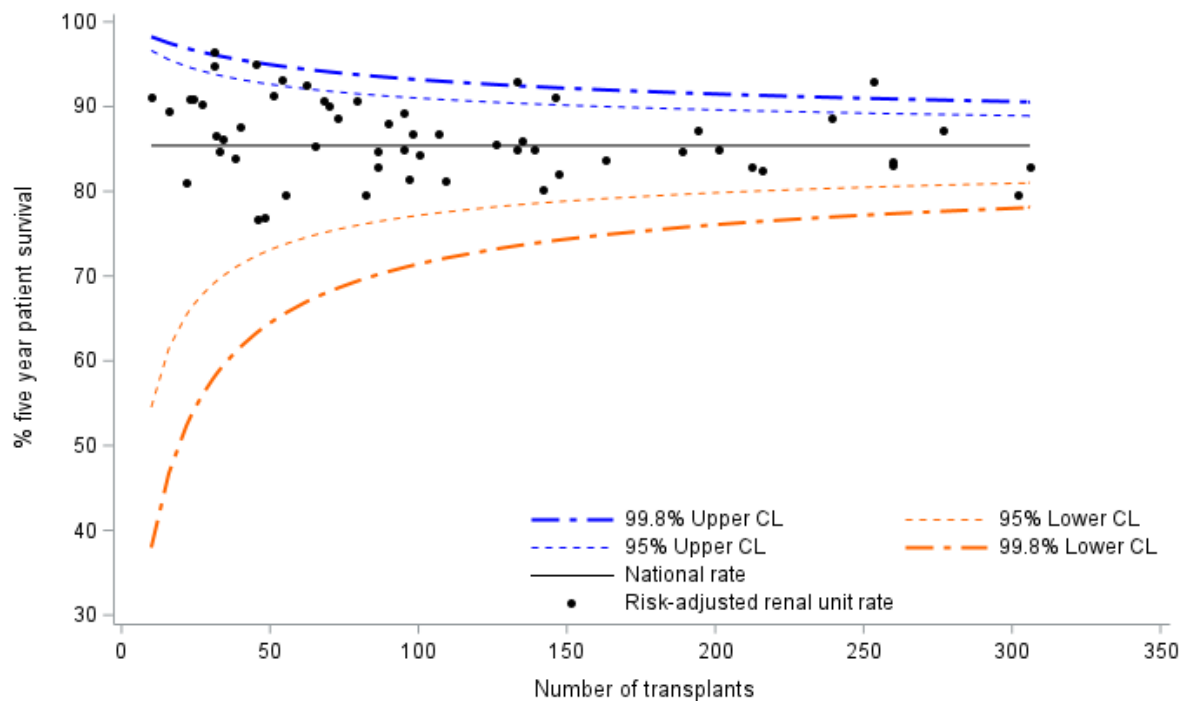
**Figure 3.2 Risk-adjusted one year patient survival rates for first deceased donor kidney transplants in adults, 1 April 2019 - 31 March 2023**



**Figure 3.3 Risk-adjusted five year graft (death censored) survival rates for first deceased donor kidney transplants in adults, 1 April 2015 - 31 March 2019**



**Figure 3.4 Risk-adjusted five year patient survival rates for first deceased donor kidney transplants in adults, 1 April 2015 - 31 March 2019**



**Table 3.1 One and five year first adult kidney-only graft and patient survival using kidneys from deceased donors**

Unit	Kidney graft survival				Patient survival			
	One-year*		Five-year**		One-year*		Five-year**	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Belfast	89	(78 - 96)	86	(72 - 94)	99	(92 - 100)	85	(73 - 93)
Antrim	97	(83 - 100)	80	(57 - 93)	95	(82 - 99)	86	(71 - 95)
Newry	89	(68 - 98)	79	(54 - 92)	100	N/A	86	(68 - 96)
Ulster	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
West NI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bham	93	(89 - 96)	79	(73 - 84)	96	(92 - 98)	87	(81 - 92)
Dudley	92	(75 - 98)	77	(57 - 90)	93	(74 - 99)	88	(68 - 97)
Shrew	93	(76 - 99)	75	(51 - 89)	93	(57 - 99)	95	(71 - 100)
Stoke	95	(84 - 99)	93	(84 - 98)	98	(88 - 100)	89	(78 - 95)
Wolve	89	(75 - 96)	81	(67 - 90)	97	(86 - 100)	93	(81 - 98)
Bristol	98	(94 - 100)	84	(76 - 90)	97	(93 - 99)	82	(74 - 88)
Dorset	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Glouc	93	(84 - 98)	83	(70 - 92)	96	(89 - 99)	85	(74 - 92)
Camb	95	(90 - 98)	87	(78 - 94)	98	(94 - 100)	85	(74 - 92)
Colchr	100	N/A	87	(63 - 97)	96	(77 - 100)	91	(67 - 99)
Ipswi	95	(80 - 99)	88	(71 - 96)	100	N/A	95	(82 - 99)
Norwch	93	(84 - 97)	84	(73 - 92)	99	(92 - 100)	89	(80 - 95)
Stevng	94	(89 - 97)	N/A	N/A	92	(86 - 96)	N/A	N/A
Cardff	94	(87 - 98)	88	(79 - 93)	99	(94 - 100)	86	(78 - 91)
Swanse	94	(85 - 98)	92	(82 - 97)	96	(87 - 100)	91	(80 - 97)
Covnt	96	(90 - 99)	N/A	N/A	97	(92 - 99)	N/A	N/A
Edinb	99	(92 - 100)	88	(77 - 95)	97	(90 - 100)	91	(81 - 96)
Abrdn	92	(78 - 98)	88	(74 - 96)	98	(89 - 100)	93	(80 - 99)
Dundee	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inverns	100	N/A	83	(51 - 97)	100	N/A	91	(67 - 99)
Krkcldy	100	N/A	87	(62 - 97)	100	N/A	90	(65 - 99)
Glasgw	94	(89 - 97)	88	(82 - 92)	95	(91 - 98)	83	(77 - 88)
Airdrie	98	(91 - 100)	84	(66 - 94)	95	(86 - 99)	77	(60 - 88)
D&Gall	92	(53 - 100)	90	(46 - 100)	100	N/A	91	(50 - 100)
Klmarnk	93	(73 - 99)	81	(59 - 93)	94	(78 - 99)	96	(80 - 100)
L Guys	97	(93 - 99)	84	(77 - 89)	99	(96 - 100)	84	(76 - 89)
Kent	99	(92 - 100)	83	(72 - 90)	97	(88 - 100)	84	(74 - 91)
L Kings	95	(90 - 98)	90	(84 - 94)	97	(93 - 99)	91	(84 - 96)
Leeds	95	(90 - 97)	84	(77 - 89)	94	(89 - 97)	85	(78 - 90)
Bradfd	100	N/A	77	(65 - 86)	98	(91 - 100)	87	(76 - 94)
Hull	96	(87 - 100)	82	(70 - 90)	98	(91 - 100)	83	(70 - 91)
York	97	(86 - 100)	88	(76 - 95)	100	N/A	90	(78 - 96)
Leic	98	(96 - 100)	91	(86 - 94)	95	(91 - 97)	80	(74 - 84)
Bangor	93	(59 - 100)	93	(61 - 100)	100	N/A	89	(62 - 99)
Clwyd	-	-	94	(66 - 100)	-	-	81	(51 - 95)
Liv Hosp	94	(88 - 98)	84	(75 - 91)	95	(89 - 98)	80	(71 - 87)
Wirral	93	(78 - 98)	N/A	N/A	91	(73 - 98)	N/A	N/A
Wrexm	94	(69 - 100)	86	(66 - 95)	95	(75 - 100)	84	(67 - 94)
M RI	91	(85 - 95)	86	(80 - 91)	91	(84 - 95)	83	(77 - 88)
Prestn	95	(91 - 98)	85	(78 - 90)	94	(89 - 97)	87	(81 - 92)
Salford	96	(92 - 98)	87	(82 - 92)	94	(89 - 97)	82	(76 - 88)
Newc	96	(90 - 99)	85	(74 - 92)	100	N/A	81	(70 - 89)
Carlis	100	N/A	82	(57 - 94)	95	(74 - 100)	85	(65 - 95)

**Table 3.1 One and five year first adult kidney-only graft and patient survival using kidneys from deceased donors**

Unit	Kidney graft survival				Patient survival			
	One-year*		Five-year**		One-year*		Five-year**	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Middlbr	97	(90 - 99)	77	(63 - 87)	95	(88 - 99)	80	(67 - 88)
Sund	98	(89 - 100)	83	(67 - 93)	98	(90 - 100)	80	(62 - 90)
Nottm	96	(87 - 99)	87	(78 - 92)	97	(87 - 100)	86	(78 - 92)
Derby	96	(87 - 100)	92	(84 - 96)	91	(80 - 97)	87	(77 - 93)
Oxford	96	(93 - 98)	88	(83 - 92)	96	(93 - 98)	83	(78 - 88)
Redng	98	(94 - 100)	92	(85 - 96)	96	(92 - 99)	93	(87 - 97)
Plymth	95	(81 - 99)	81	(60 - 93)	90	(73 - 97)	77	(59 - 88)
Truro	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Exeter	93	(84 - 98)	87	(78 - 94)	99	(93 - 100)	81	(70 - 89)
Ports	96	(92 - 99)	93	(88 - 96)	96	(92 - 98)	89	(84 - 92)
Sheff	96	(90 - 99)	83	(74 - 89)	95	(87 - 98)	85	(76 - 91)
Donc	95	(82 - 99)	80	(63 - 90)	94	(78 - 99)	91	(78 - 98)
L St.G	99	(93 - 100)	N/A	N/A	96	(88 - 99)	N/A	N/A
Brightn	N/A	N/A	93	(84 - 98)	N/A	N/A	88	(77 - 95)
Carsh	91	(86 - 95)	76	(68 - 83)	94	(89 - 97)	85	(77 - 90)
L Rfree	97	(94 - 99)	88	(83 - 92)	98	(96 - 100)	93	(89 - 96)
L Barts	95	(92 - 97)	85	(80 - 89)	94	(90 - 97)	83	(77 - 88)
EssexMS	94	(88 - 98)	83	(75 - 89)	94	(88 - 98)	85	(76 - 91)
L West	95	(92 - 97)	N/A	N/A	96	(94 - 97)	N/A	N/A
<b>UK</b>	<b>95</b>	<b>(95 - 96)</b>	<b>86</b>	<b>(85 - 87)</b>	<b>96</b>	<b>(96 - 97)</b>	<b>85</b>	<b>(84 - 86)</b>

- Unit has reached the upper 99.8% confidence limit
- Unit has reached the upper 95% confidence limit
- Unit has reached the lower 95% confidence limit
- Unit has reached the lower 99.8% confidence limit

\* Includes transplants performed between 1 April 2019 - 31 March 2023

\*\* Includes transplants performed between 1 April 2015 - 31 March 2019

'N/A' Centres have been omitted where less than 75% of data reported

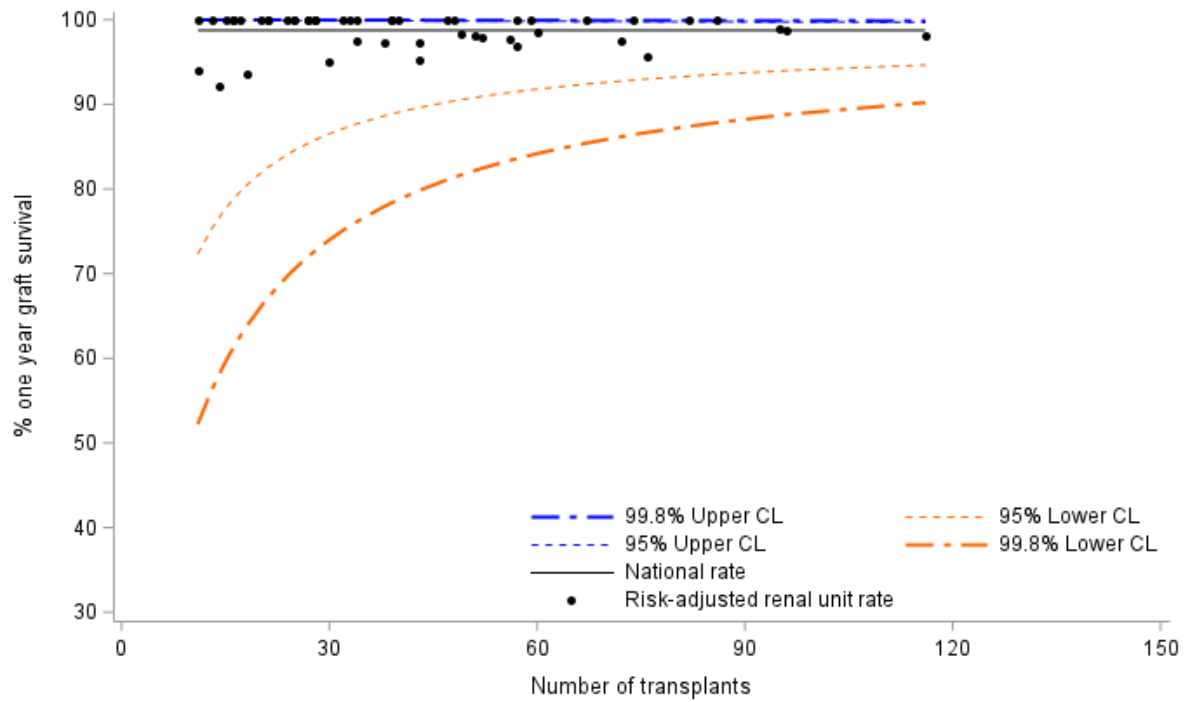
'-' Data have been omitted where less than 10 transplants

### 3.2 Living donor graft and patient survival

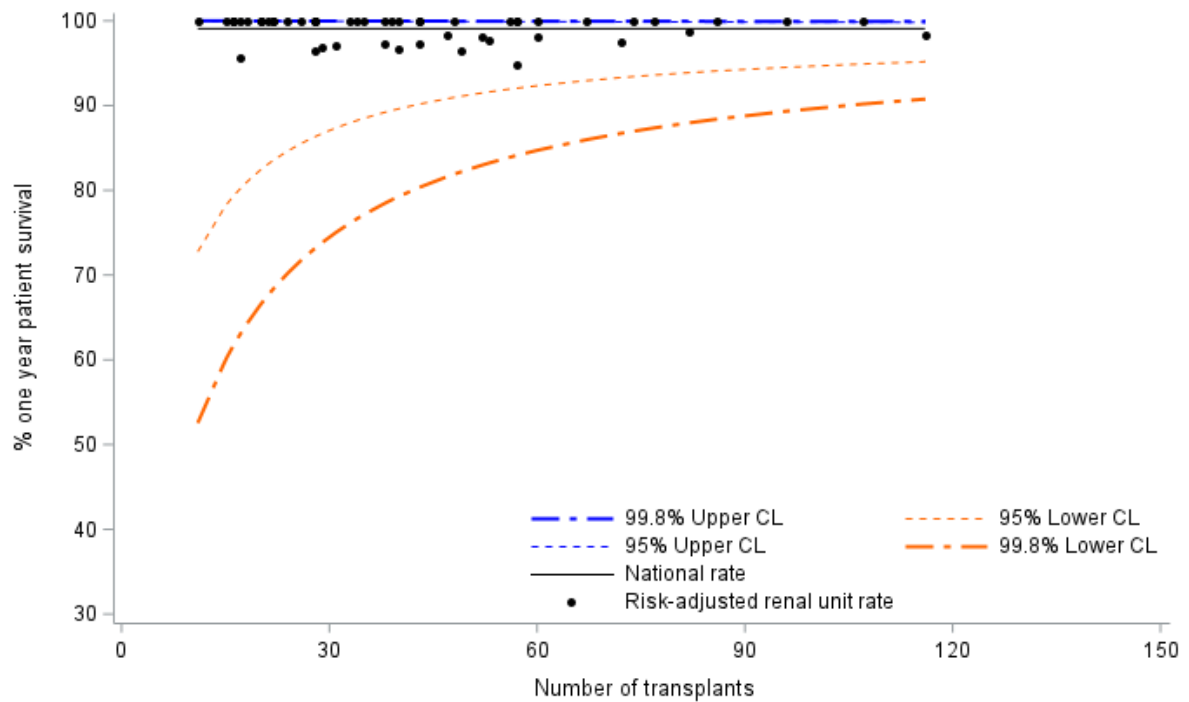
Figures 3.5-3.8 and Table 3.2 show the [risk-adjusted patient](#) and [graft survival rates](#) for each unit and nationally following [living donor](#) transplantation. At five years post-transplant, the national patient survival rate was 93% and the graft survival was 94%.

Many units appear above the upper 99.8% [confidence limit](#) in the [funnel plots](#). This suggests that these units may have survival rates that are considerably higher than the national rate. The [funnel plots](#) show one unit that lies outside the lower 95% [confidence limits](#) in the five-year estimates for graft and patient survival, indicating a survival rate that is significantly lower than the national. Units can be identified by the information shown in **Table 3.2**.

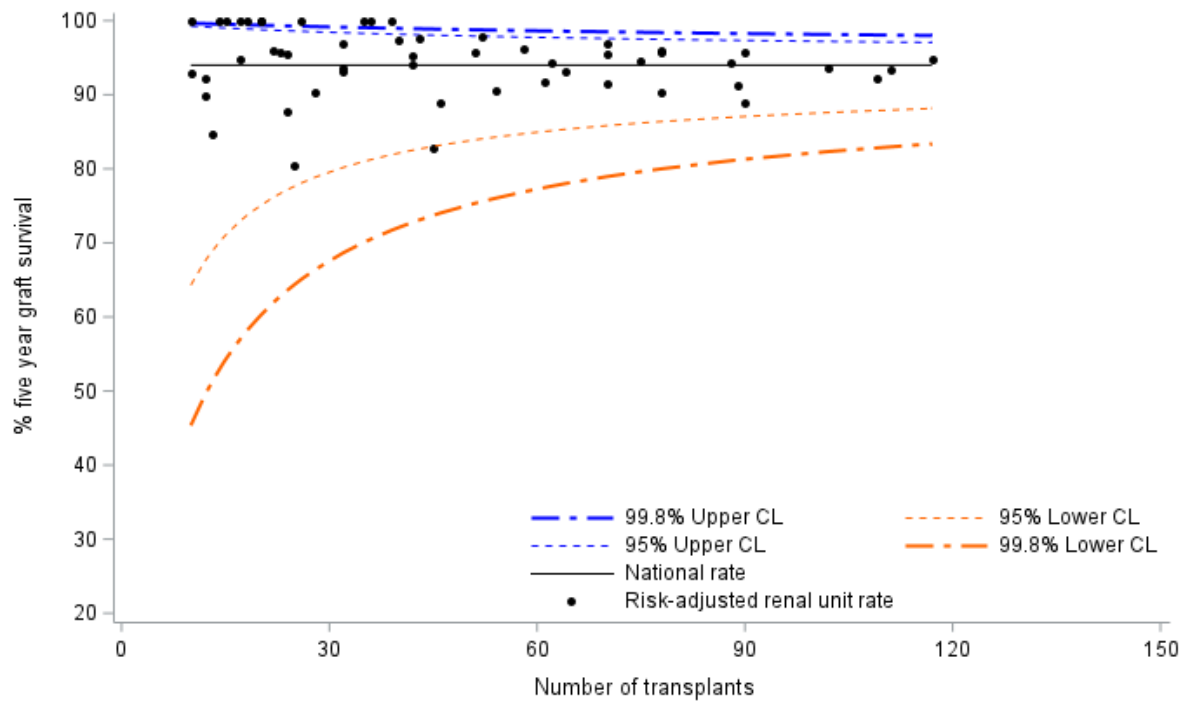
**Figure 3.5 Risk-adjusted one year graft (death censored) survival rates for first live donor kidney transplants in adults, 1 April 2019 - 31 March 2023**



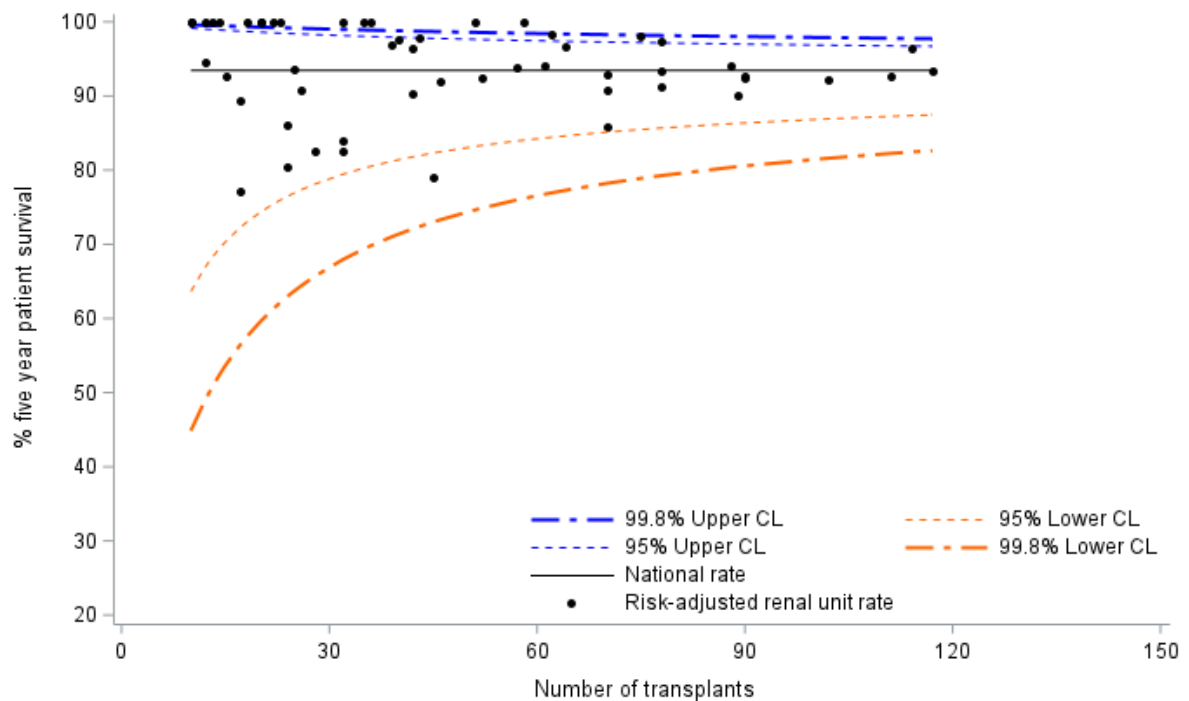
**Figure 3.6 Risk-adjusted one year patient survival rates for first live donor kidney transplants in adults, 1 April 2019 - 31 March 2023**



**Figure 3.7 Risk-adjusted five year graft (death censored) survival rates for first live donor kidney transplants in adults, 1 April 2015 - 31 March 2019**



**Figure 3.8 Risk-adjusted five year patient survival rates for first live donor kidney transplants in adults, 1 April 2015 - 31 March 2019**







**Table 3.2 One and five year first adult kidney-only graft and patient survival using kidneys from living donors**

Unit	Kidney graft survival				Patient survival			
	One-year*		Five-year**		One-year*		Five-year**	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Belfast	100	N/A	89	(78 - 95)	100	N/A	93	(86 - 97)
Antrim	100	N/A	100	N/A	100	N/A	91	(73 - 98)
Newry	100	N/A	90	(65 - 99)	100	N/A	83	(62 - 94)
Ulster	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
West NI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bham	98	(87 - 100)	93	(87 - 97)	100	N/A	93	(84 - 97)
Dudley	-	-	85	(45 - 98)			100	N/A
Shrew	94	(65 - 100)	90	(43 - 100)	100	N/A	95	(70 - 100)
Stoke	100	N/A	94	(77 - 99)	100	N/A	84	(65 - 94)
Wolve	-	-	95	(75 - 100)	-	-	81	(55 - 94)
Bristol	95	(82 - 99)	98	(88 - 100)	100	N/A	92	(80 - 98)
Dorset	92	(57 - 100)	N/A	N/A	96	(76 - 100)	N/A	N/A
Glouc	100	N/A	N/A	N/A	97	(84 - 100)	N/A	N/A
Camb	100	N/A	100	N/A	100	N/A	100	N/A
Colchr	-	-	-	-	-	-	-	-
Ipswi	-	-	100	N/A	-	-	100	N/A
Norwch	100	N/A	95	(71 - 100)	100	N/A	77	(42 - 94)
Stevng	97	(85 - 100)	94	(79 - 99)	100	N/A	96	(80 - 100)
Cardff	100	N/A	91	(78 - 97)	100	N/A	94	(82 - 99)
Swanse	100	N/A	80	(50 - 95)	97	(82 - 100)	94	(77 - 99)
Covnt	97	(85 - 100)	N/A	N/A	100	N/A	N/A	N/A
Edinb	98	(90 - 100)	97	(86 - 100)	96	(87 - 100)	98	(86 - 100)
Abrdn	100	N/A	93	(75 - 99)	100	N/A	100	N/A
Dundee	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inverns	100	N/A	100	N/A	100	N/A	100	N/A
Krkldy	100	N/A	100	N/A	100	N/A	100	N/A
Glasgw	98	(93 - 100)	94	(86 - 98)	98	(94 - 100)	92	(84 - 97)
Airdrie	100	N/A	96	(77 - 100)	100	N/A	100	N/A
D&Gall	-	-	-	-	-	-	-	-
Klmarnk	-	-	-	-	-	-	-	-
L Guys	100	N/A	95	(86 - 99)	100	N/A	98	(90 - 100)
Kent	100	N/A	94	(85 - 98)	98	(91 - 100)	98	(91 - 100)
L Kings	100	N/A	97	(82 - 100)	100	N/A	83	(55 - 95)
Leeds	100	N/A	93	(83 - 98)	100	N/A	97	(88 - 100)
Bradfd	-	-	100	N/A	100	N/A	100	N/A
Hull	100	N/A	96	(84 - 99)	100	N/A	100	N/A
York	94	(66 - 100)	100	N/A	100	N/A	100	N/A
Leic	100	N/A	91	(82 - 97)	100	N/A	90	(81 - 95)
Bangor	-	-	-	-	-	-	-	-
Clwyd	-	-	-	-	-	-	-	-
Liv Hosp	100	N/A	90	(80 - 96)	100	N/A	91	(81 - 97)
Wirral	100	N/A	N/A	N/A	100	N/A	N/A	N/A

**Table 3.2 One and five year first adult kidney-only graft and patient survival using kidneys from living donors**

Unit	Kidney graft survival				Patient survival			
	One-year*		Five-year**		One-year*		Five-year**	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Wrexm	-	-	100	N/A	-	-	93	(60 - 100)
M RI	98	(92 - 100)	96	(88 - 99)	98	(90 - 100)	97	(91 - 99)
Prestn	100	N/A	91	(81 - 98)	95	(81 - 99)	86	(73 - 94)
Salford	97	(91 - 100)	96	(87 - 99)	97	(91 - 100)	93	(83 - 98)
Newc	97	(89 - 100)	97	(89 - 100)	100	N/A	91	(81 - 96)
Carlis	-	-	93	(60 - 100)	-	-	100	N/A
Middlbr	98	(88 - 100)	96	(86 - 100)	98	(89 - 100)	100	N/A
Sund	100	N/A	95	(83 - 99)	96	(80 - 100)	90	(77 - 97)
Nottm	100	N/A	96	(77 - 100)	100	N/A	100	N/A
Derby	100	N/A	92	(56 - 100)	100	N/A	100	N/A
Oxford	99	(93 - 100)	95	(89 - 98)	100	N/A	93	(87 - 97)
Redng	100	N/A	100	N/A	100	N/A	100	N/A
Plymth	100	N/A	88	(64 - 97)	97	(82 - 100)	86	(64 - 96)
Truro	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Exeter	98	(86 - 100)	98	(86 - 100)	97	(85 - 100)	98	(88 - 100)
Ports	100	N/A	96	(88 - 99)	100	N/A	93	(86 - 98)
Sheff	100	N/A	89	(72 - 97)	100	N/A	92	(77 - 98)
Donc	-	-	100	N/A	-	-	89	(41 - 100)
L St.G	100	N/A	100	N/A	100	N/A	97	(82 - 100)
Brightn	100	N/A	92	(81 - 97)	100	N/A	94	(83 - 99)
Carsh	98	(89 - 100)	94	(87 - 98)	98	(87 - 100)	94	(85 - 98)
L Rfree	100	N/A	92	(84 - 97)	99	(93 - 100)	97	(90 - 99)
L Barts	96	(88 - 99)	96	(87 - 99)	100	N/A	92	(83 - 97)
EssexMS	95	(83 - 99)	83	(64 - 93)	97	(85 - 100)	79	(59 - 91)
L West	99	(95 - 100)	N/A	N/A	100	N/A	N/A	N/A
<b>UK</b>	<b>99</b>	<b>(98 - 99)</b>	<b>94</b>	<b>(93 - 95)</b>	<b>99</b>	<b>(99 - 99)</b>	<b>93</b>	<b>(92 - 94)</b>

 Unit has reached the upper 99.8% confidence limit  
 Unit has reached the upper 95% confidence limit  
 Unit has reached the lower 95% confidence limit  
 Unit has reached the lower 99.8% confidence limit

\* Includes transplants performed between 1 April 2019 - 31 March 2023

\*\* Includes transplants performed between 1 April 2015 - 31 March 2019

'N/A' Centres have been omitted where less than 75% of data reported.

'-' Data have been omitted where less than 10 transplants.

# **Adult kidney outcomes – risk adjusted eGFR**

## 4.1 Risk adjusted eGFR

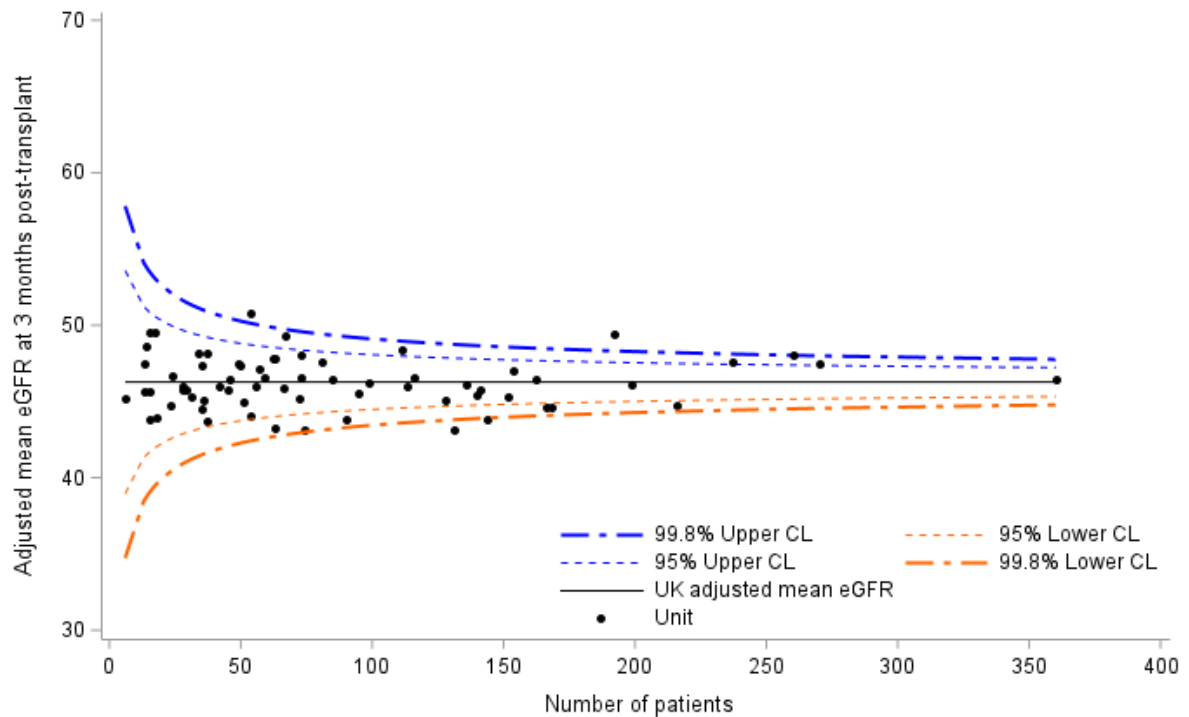
[Funnel plots](#) were used to compare the adjusted mean 3 and 12 month [eGFR](#) at each renal unit to the national average. The plots show each unit's adjusted mean [eGFR](#) at 3- and 12-months post-transplant against the number of patients at each unit. The national adjusted mean [eGFRs](#) at 3- and 12-months post-transplant are shown by the black line and the 95% and 99.8% [confidence limits](#) around this national average are shown by the dotted lines. Units that fall within the upper and lower 95% [confidence limits](#) have an adjusted mean [eGFR](#) statistically consistent with the national average [eGFR](#). Those units that are above the 95% upper [confidence limit](#) have significantly higher adjusted mean [eGFR](#) than the national average and units that are below the 95% lower [confidence limit](#) have significantly lower adjusted mean [eGFR](#) than the national average.

Where graft failure has occurred within 3 months post-transplant, eGFR is set to 6.9ml/min/1.73m<sup>2</sup> at 3 months and 12 months. Where graft failure has occurred between 3 and 12 months post-transplant, eGFR is calculated as usual for 3 months post-transplant and set to 6.9ml/min/1.73m<sup>2</sup> for 12 months post-transplant.

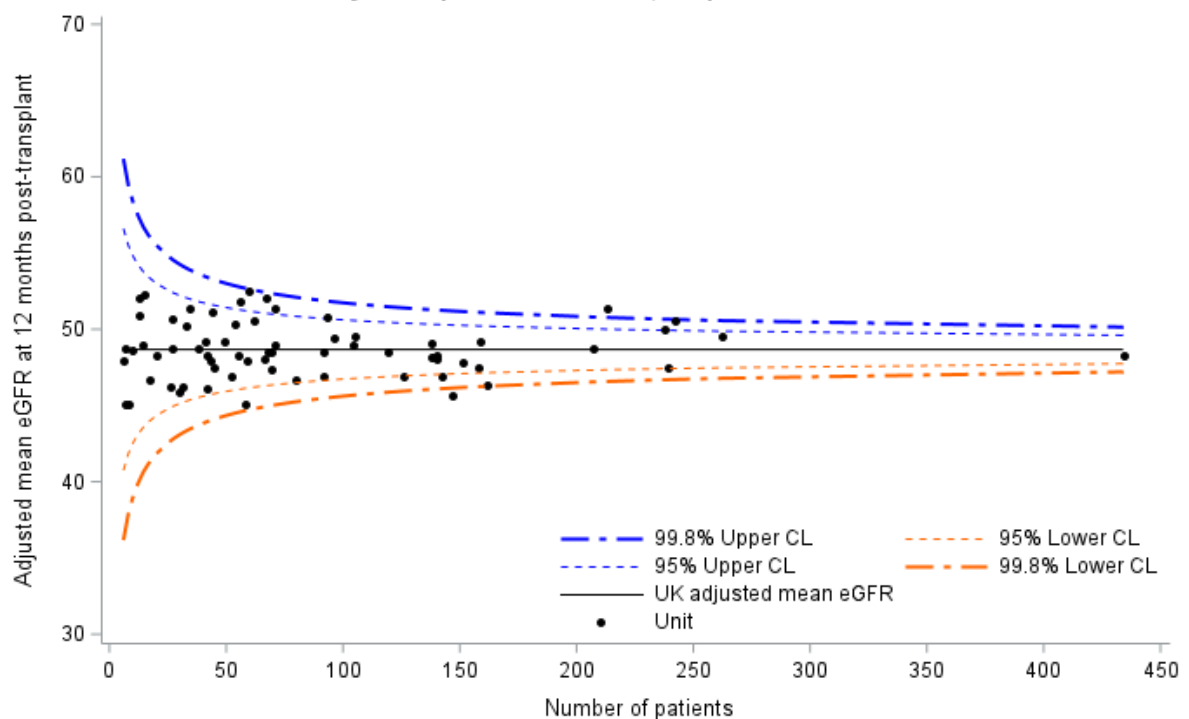
This section excludes [multi-organ transplants](#) and includes first time transplants only, with results presented separately for deceased and [living donor](#) transplants. Estimates are based on transplants performed in the period 1 April 2019 to 31 March 2023. The [risk factors](#) used to produce the risk-adjusted [eGFR](#) values are detailed in **Table A3.2** in [Appendix A3](#).

**Figures 4.1-4.4** and **Table 4.1** show the [risk-adjusted](#) mean [eGFR](#) for each unit and nationally. The [funnel plots](#) show a number of units outside the lower 95% and 99.8% [confidence limits](#) from both deceased and living donors, this may indicate adjusted mean [eGFR](#) values considerably lower than the national rate. Units can be identified by the information shown in **Table 4.1**. At 12 months post-transplant, the national mean [eGFR](#) rate was 48.7 mL/min/1.73m<sup>2</sup> and 56.4 mL/min/1.73m<sup>2</sup> for deceased and living donor transplants respectively.

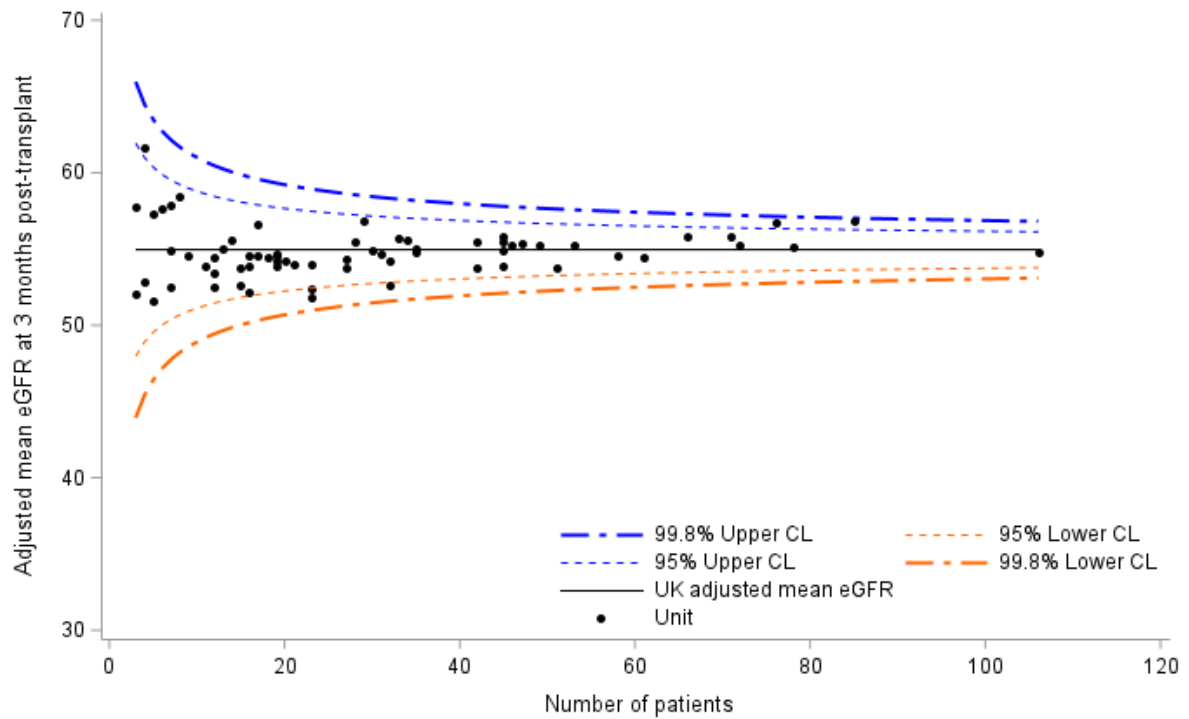
**Figure 4.1** Adjusted mean eGFR at 3 months by renal unit for first adult deceased donor kidney transplants in the UK, 1 April 2019 - 31 March 2023



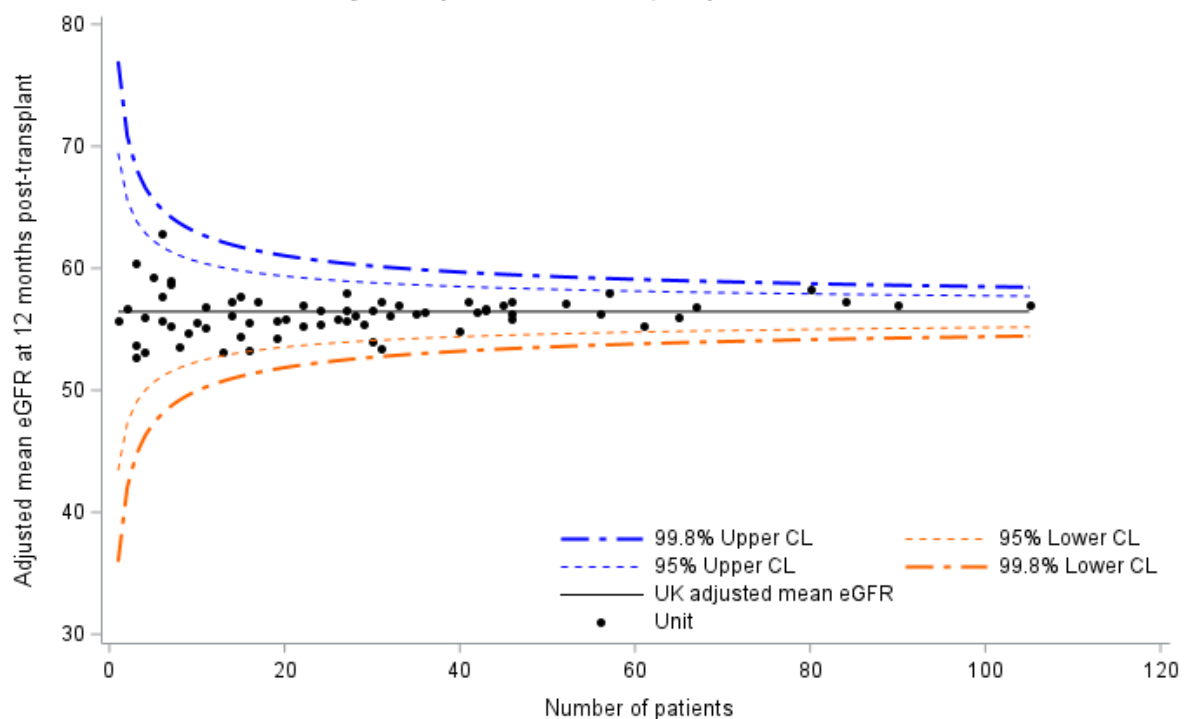
**Figure 4.2** Adjusted mean eGFR at 12 months by renal unit for first adult deceased donor kidney transplants in the UK, 1 April 2019 - 31 March 2023



**Figure 4.3** Adjusted mean eGFR at 3 months by renal unit for first adult living donor kidney transplants in the UK, 1 April 2019 - 31 March 2023



**Figure 4.4** Adjusted mean eGFR at 12 months by renal unit for first adult living donor kidney transplants in the UK, 1 April 2019 - 31 March 2023



**Table 4.1 Adjusted mean eGFR at 3 and 12 months, by donor type and renal unit**

Unit	Deceased donor transplants				Living donor transplants			
	3 months		12 months		3 months		12 months	
	post-transplant*		post-transplant**		post-transplant***		post-transplant****	
	N	Mean	N	Mean	N	Mean	N	Mean
Belfast	63	47.9	71	51.4	61	54.4	65	56.0
Antrim	35	47.4	34	51.3	14	55.6	11	56.9
Newry	28	46.0	33	50.2	16	52.1	16	53.4
Ulster	29	45.8	7	45.0	12	53.4	2	56.7
West NI	46	46.4	7	48.7	17	54.5	4	55.9
Bham	192	49.4	213	51.3	45	55.8	46	57.3
Dudley	28	45.8	31	46.2	9	54.6	6	57.7
Shrew	34	48.1	27	50.7	15	53.8	15	54.5
Stoke	57	47.2	54	50.3	19	54.7	22	57.0
Wolve	54	50.8	60	52.5	8	58.5	7	58.9
Bristol	141	45.8	138	48.2	42	53.7	40	54.9
Dorset	45	45.8	45	47.4	12	52.5	11	55.2
Glouc	63	43.3	58	45.1	27	53.7	26	55.8
Camb	144	43.8	151	47.9	32	52.7	31	53.4
Colchr	24	46.6	27	48.7	3	52.0	3	53.7
Ipswi	37	43.8	42	46.2	7	54.9	9	54.8
Norwch	74	43.2	80	46.7	11	53.9	10	55.5
Stevng	162	46.5	140	48.0	33	55.7	30	53.9
Cardff	111	48.4	93	50.8	46	55.2	35	56.3
Swanse	62	47.8	41	49.2	32	54.2	24	56.5
Covnt	116	46.5	96	49.4	30	55.0	30	56.6
Edinb	49	47.5	68	48.5	35	54.8	42	56.4
Abrdn	36	45.1	43	47.9	20	54.2	20	55.9
Dundee	15	49.5	10	48.6	16	54.6	3	52.7
Inverns	14	48.6	15	52.3	12	54.4	14	57.3
Krkldy	17	49.5	13	50.9	13	55.0	8	53.5
Glasgw	199	46.2	207	48.7	106	54.8	105	57.0
Airdrie	56	45.9	59	48.0	16	53.9	16	55.6
D&Gall	13	45.6	14	49.0	5	51.5	4	53.1
Klmarnk	23	44.8	26	46.2	7	52.5	7	55.2
L Guys	131	43.2	147	45.7	58	54.5	56	56.2
Kent	66	45.9	66	48.1	42	55.5	41	57.3
L Kings	152	45.3	142	46.9	35	55.1	32	56.1
Leeds	154	47.0	159	49.2	53	55.2	52	57.1
Bradfd	67	49.3	67	52.0	19	54.6	17	57.3
Hull	50	47.4	55	48.3	21	54.0	27	55.8
York	42	46.0	42	48.3	19	53.9	19	55.7
Leic	260	48.1	242	50.6	85	56.8	80	58.2
Bangor	13	47.5	13	52.1	4	61.7	6	62.8
Clwyd	6	45.2	6	47.9	3	57.7	3	60.4
Liv Hosp	113	46.0	119	48.5	29	56.8	27	57.9
Wirral	31	45.3	38	48.8	15	52.6	13	53.2
Wrexm	18	43.9	20	48.3	7	57.9	7	58.8
M RI	140	45.4	140	48.2	51	53.8	46	55.8
Prestn	136	46.1	138	49.1	47	55.4	45	57.0
Salford	168	44.6	158	47.5	66	55.8	57	58.0
Newc	99	46.2	92	48.5	45	55.5	46	56.3
Carlis	15	43.9	17	46.7	6	57.7	5	59.3
Middlbr	72	45.2	69	48.5	49	55.3	43	56.5
Sund	51	45.0	52	46.9	23	53.9	22	55.2
Nottm	81	47.6	62	50.6	23	51.9	19	54.3
Derby	59	46.6	49	49.2	18	54.5	15	57.7

**Table 4.1 Adjusted mean eGFR at 3 and 12 months, by donor type and renal unit**

Unit	Deceased donor transplants				Living donor transplants			
	3 months		12 months		3 months		12 months	
	N	Mean	N	Mean	N	Mean	N	Mean
Oxford	216	44.8	239	47.5	78	55.1	90	57.0
Redng	95	45.5	105	49.5	27	54.3	29	55.4
Plymth	35	44.5	30	45.9	23	52.4	24	55.4
Exeter	54	44.0	69	47.3	28	55.5	33	57.1
Truro	15	45.7	8	45.1	5	57.3	1	55.7
Ports	128	45.1	126	47.0	45	53.9	36	56.4
Sheff	85	46.4	104	48.9	19	54.3	27	56.6
Donc	37	48.2	44	51.2	4	52.9	6	55.7
L St.G	73	46.6	71	49.0	17	56.6	14	56.1
Brightn	73	48.1	56	51.8	31	54.7	28	56.2
Carsh	166	44.6	162	46.3	45	54.9	43	56.8
L Rfree	237	47.6	238	50.0	72	55.3	61	55.2
L Barts	270	47.5	262	49.6	71	55.8	67	56.9
EssexMS	90	43.9	92	46.9	34	55.6	31	57.3
L West	360	46.5	434	48.3	76	56.7	84	57.3
<b>UK</b>	<b>5825</b>	<b>46.3</b>	<b>5836</b>	<b>48.7</b>	<b>2014</b>	<b>55.0</b>	<b>1914</b>	<b>56.4</b>

- Unit has reached the upper 99.8% confidence limit
- Unit has reached the upper 95% confidence limit
- Unit has reached the lower 95% confidence limit
- Unit has reached the lower 99.8% confidence limit

\* Adjusted for recipient ethnicity, donor type, donor hypertension, recipient sex, donor diabetes history, donor alcohol abuse history, donor ethnicity, recipient diabetic status, donor age, donor height and total preservation time.  
 \*\* Adjusted for recipient sex, recipient ethnicity, donor hypertension history, donor type, donor diabetes history, donor alcohol abuse history, donor age, donor height, total preservation time, waiting time and recipient age.  
 \*\*\* Adjusted for recipient ethnicity, relationship between donor and recipient, donor age, donor weight, total preservation time and donor BMI.  
 \*\*\*\* Adjusted for recipient ethnicity, recipient sex, financial year of transplant, donor age, donor weight, donor height and total preservation time.

# Appendix

## **A1 Glossary of terms**

### **ABO**

The most important human blood group system for transplantation is the ABO system. Every human being is of blood group O, A, B or AB, or of one of the minor variants of these four groups. ABO blood groups are present on other tissues and, unless special precautions are taken, a group A kidney transplanted to a group O patient will be rapidly rejected.

### **Active transplant list**

When a patient is registered for a transplant, they are registered on what is called the 'active' transplant list. This means that when a donor kidney becomes available, the patient is included among those who are matched against the donor to determine whether or not the kidney is suitable for them. It may sometimes be necessary to take a patient off the transplant list, either temporarily or permanently. This may be done, for example, if someone becomes too ill to receive a transplant. The patient is told about the decision to suspend them from the list and is informed whether the suspension is temporary or permanent. If a patient is suspended from the list, they are not included in the matching of any donor kidneys that become available.

### **Case mix**

The types of patients treated at a unit for a common condition. This can vary across units depending on the facilities available at the unit as well as the types of people in the catchment area of the unit. The definition of what type of patient a person is depends on the patient characteristics that influence the outcome of the treatment. For example the case mix for patients registered for a kidney transplant is defined in terms of various factors such as the blood group, tissue type and age of the patient. These factors have an influence on the chance of a patient receiving a transplant.

### **Confidence interval (CI)**

When an estimate of a quantity such as a survival rate is obtained from data, the value of the estimate depends on the set of patients whose data were used. If, by chance, data from a different set of patients had been used, the value of the estimate may have been different. There is therefore some uncertainty linked with any estimate. A confidence interval is a range of values whose width gives an indication of the uncertainty or precision of an estimate. The number of transplants or patients analysed influences the width of a confidence interval. Smaller data sets tend to lead to wider confidence intervals compared to larger data sets. Estimates from larger data sets are therefore more precise than those from smaller data sets. Confidence intervals are calculated with a stated probability, usually 95%. We then say that there is a 95% chance that the confidence interval includes the true value of the quantity we wish to estimate.

### **Confidence limit**

The upper and lower bounds of a [confidence interval](#).

### **Cox Proportional Hazards model**

A statistical model that relates the instantaneous risk (hazard) of an event occurring at a given time point to the [risk factors](#) that influence the length of time it takes for the event to occur. This model can be used to compare the hazard of an event of interest, such as graft failure or patient death, across different groups of patients.

### **Cross-match**

A cross-match is a test for patient antibodies against donor antigens. A positive cross-match shows that the donor and patient are incompatible. A negative cross-match means there is no reaction between donor and patient and that the transplant may proceed.

### **Donor after brain death (DBD)**

Donation after brainstem death means donation which takes place following the diagnosis of death using neurological criteria.

### **Donor after circulatory death (DCD)**

Donation after circulatory death means donation which takes place following the diagnosis of death using circulatory criteria.

### **eGFR**

Estimate of the glomerular filtration rate (GFR) – a recognised indication of renal function. Derived from serum creatinine, age and ethnicity, using the 4-variable Modification of Diet in Renal Disease (MDRD) formula.

### **Funnel plot**

A graphical method that shows how consistent the survival rates of the different renal units are compared to the national rate. The graph shows for each unit, a survival rate plotted against the number of transplants undertaken, with the national rate and [confidence limits](#) around this national rate superimposed. In this report, 95% and 99.8% [confidence limits](#) were used. Units that lie within the [confidence limits](#) have survival rates that are statistically consistent with the national rate. When a unit is close to or outside the limits, this is an indication that the centre may have a rate that is considerably different from the national rate.

### **Graft survival rate**

The percentage of patients whose grafts are still functioning. This is usually specified for a given time period after transplant. For example, a five-year transplant survival rate is the percentage of transplants still functioning five years after transplant.

### **HLA mismatch**

Human Leucocyte Antigen (HLA) antigens are carried on many cells in the body and the immune system can distinguish between those that can be recognised as 'self' (belonging to you or identical to your own) and those that can be recognised as 'nonself'. The normal response of the immune system is to attack foreign/non-self material by producing antibodies against the foreign material. This is one of the mechanisms that provide protection against infection. This is unfortunate from the point of view of transplantation as the immune system will see the graft as just another 'infection' to be destroyed, produce antibodies against the graft and rejection of the grafted organ will take place. To help overcome this response, it is recognised that 'matching' the recipient and donor on the basis of HLA (and blood group)

reduces the chances of acute rejection and, with the added use of immunosuppressive drugs, very much improves the chances of graft survival. 'Matching' refers to the similarity of the recipient HLA type and donor HLA type. HLA mismatch refers to the number of mismatches between the donor and the recipient at the A, B and DR (HLA) loci. There can only be a total of two mismatches at each locus. For example, an HLA mismatch value of 000, means that the donor and recipient are identical at all three loci, while an HLA mismatch value of 210 means that the donor and recipient differ completely at the A locus, are partly the same at the B locus and are identical at the DR locus.

### **Inter-quartile range**

The values between which the middle 50% of the data fall. The lower boundary is the lower quartile, the upper boundary the upper quartile.

### **Kaplan-Meier method**

A method that allows patients with incomplete follow-up information to be included in estimating survival rates. For example, in a cohort for estimating one year [patient survival rates](#), a patient was followed up for only nine months before they relocated. If we calculated a crude survival estimate using the number of patients who survived for at least a year, this patient would have to be excluded as it is not known whether or not the patient was still alive at one year after transplant. The Kaplan-Meier method allows information about such patients to be used for the length of time that they are followed-up, when this information would otherwise be discarded. Such instances of incomplete follow-up are not uncommon and the Kaplan-Meier method allows the computation of estimates that are more meaningful in these cases.

### **Live donor**

A donor who is a living person and who is usually, but not always, a relative of the transplant patient. For example, a parent may donate one of their kidneys to their child.

### **Median**

The midpoint in a series of numbers, so that half the data values are larger than the median, and half are smaller.

### **Multi-organ transplant**

A transplant in which the patient receives more than one organ. For example, a patient may undergo a transplant of a kidney and liver.

### **National Kidney Allocation Scheme**

A nationally agreed set of rules for sharing and allocating kidneys for transplant between transplant centres in the UK. The scheme is administered by NHS Blood and Transplant.

### **Patient survival rate**

The percentage of patients who are still alive (whether the graft is still functioning or not). This is usually specified for a given time period after transplant. For example, a five-year patient survival rate is the percentage of patients who are still alive five years after their first transplant.

### **p value**

In the context of comparing survival rates across units, the p value is the probability that the differences observed in the rates across centres occurred by chance. As this is a probability, it takes values between 0 and 1. If the p value is small, say less than 0.05, this implies that the differences are unlikely to be due to chance and there may be some identifiable cause for these differences. If the p value is large, say greater than 0.1, then it is quite likely that any differences seen are due to chance.

### **Pre-emptive**

Patients that are placed on the kidney transplant list or receive a transplant prior to the need for dialysis are termed as pre-emptive. Patients listed pre-emptively will usually require dialysis within six months of being placed on the transplant list.

### **Risk-adjusted survival rate**

Some transplants have a higher chance than others of failing at any given time. The differences in expected survival times arise due to differences in certain factors, the [risk factors](#), among patients. A risk-adjusted survival rate for a unit is the expected survival rate for that unit given the [case mix](#) of their patients. Adjusting for [case mix](#) in estimating unit-specific survival rates allows valid comparison of these rates across centres and to the national rate.

### **Risk factors**

These are the characteristics of a patient, transplant or donor that influence the length of time that a graft is likely to function or a patient is likely to survive following a transplant. For example, when all else is equal, a transplant from a younger donor is expected to survive longer than that from an older donor and so donor age is a risk factor.

### **Unadjusted survival rate**

Unadjusted survival rates do not take account of [risk factors](#) and are based only on the number of transplants at a given centre and the number and timing of those that fail within the post-transplant period of interest. In this case, unlike for [risk-adjusted rates](#), all transplants are assumed to be equally likely to fail at any given time. However, some centres may have lower unadjusted survival rates than others simply because they tend to undertake transplants that have increased risks of failure. Comparison of unadjusted survival rates across centres and to the national rate is therefore inappropriate.

## A2 Methods

[Unadjusted](#) and [risk-adjusted](#) estimates of [patient](#) and [graft survival](#) are given for each centre. [Unadjusted rates](#) give an estimate of what the survival rate at a centre is, assuming that all patients at the centre have the same chance of surviving a given length of time after transplant. In reality, patients differ and a [risk-adjusted rate](#) that allows for these differences would give a more meaningful estimate of survival.

### Computing unadjusted survival rates

[Unadjusted survival rates](#) were calculated using the [Kaplan-Meier method](#), which allows patients with incomplete follow-up information to be included in the computation. For example, in a cohort for estimating one-year [patient survival rates](#), a patient was followed up for only nine months before they relocated. If we calculated a crude survival estimate using the number of patients who survived for at least a year, this patient would have to be excluded, as it is not known whether or not the patient was still alive one year after transplant. The [Kaplan-Meier method](#) allows information about such patients to be used for the length of time that they are followed-up, when this information would otherwise be discarded. Such instances of incomplete follow-up are not uncommon in the analysis of survival data and the [Kaplan-Meier method](#) therefore allows the computation of survival estimates that are more meaningful.

### Computing risk-adjusted survival rates

A [risk-adjusted survival rate](#) is an estimate of what the survival rate at a centre would have been if they had had the same mix of patients as that seen nationally. The [risk-adjusted rate](#) therefore presents estimates in which differences in patient mix across centres have been removed as much as possible. For that reason, it is valid to only compare centres using risk-adjusted rather than unadjusted rates, as differences among the latter can be attributed to differences in patient mix.

[Risk-adjusted survival estimates](#) were obtained through indirect standardisation. A [Cox Proportional Hazards model](#) was used to determine the probability of survival for each patient based on their individual risk factor values. The sum of these probabilities for all patients at a centre gives the number, E, of patients or grafts expected to survive at least one year or five years after transplant at that centre. The number of patients who actually survive the given time period is given by O. The [risk-adjusted estimate](#) is then calculated by multiplying the ratio O/E by the overall unadjusted survival rate across all centres.

The risk-adjustment models used were based on results from previous studies that looked at factors affecting the survival rates of interest. The factors included in the models are shown in **Table A3.1**.

### A3 Risk adjustment factors

**Table A3.1 Risk factors used in the adult kidney risk adjusted survival, by donor type and model**

<b>Donor Type</b>	<b>Model</b>	<b>Factors</b>
Deceased	1 year graft survival	Donor age, donor type, donor cause of death, recipient age, waiting time to transplant, primary renal disease, HLA mismatch group, total preservation time*, recipient ethnicity
	1 year patient survival	Donor age, recipient age, waiting time to transplant, primary renal disease, HLA mismatch group, total preservation time*
	5 year graft survival	Transplant year, donor age, donor type, donor cause of death, recipient age, waiting time to transplant, primary renal disease, HLA mismatch group, recipient ethnicity
	5 year patient survival	Transplant year, donor age, recipient age, waiting time to transplant, primary renal disease
Living	1 year graft survival	Donor age, recipient age, primary renal disease, number of HLA mismatches
	1 year patient survival	Recipient age
	5 year graft survival	Transplant year, donor age, recipient age, primary renal disease, number of HLA mismatches
	5 year patient survival	Recipient age, recipient diabetic status

\*Time between retrieval of kidney from the donor and time of transplant in the patient.

**Table A3.2 Risk factors used in the adult kidney risk adjusted eGFR, by donor type and model**

<b>Donor Type</b>	<b>Model</b>	<b>Factors</b>
Deceased	3 month	Recipient ethnicity, donor type, donor hypertension, recipient sex, donor diabetes history, donor alcohol abuse history, donor ethnicity, recipient diabetic status, donor age, donor height, total preservation time*
	12 month	Recipient sex, recipient ethnicity, donor hypertension history, donor type, donor diabetes history, donor alcohol abuse history, donor age, donor height, total preservation time*, waiting time, recipient age
Living	3 month	Recipient ethnicity, relationship between donor and recipient, donor age, donor weight, total preservation time*, donor BMI
	12 month	Recipient ethnicity, recipient sex, financial year of transplant, donor age, donor weight, donor height, total preservation time*

\*Time between retrieval of kidney from the donor and time of transplant in the patient.

## A4 Renal unit names

<b>Table A4.1 Renal unit's abbreviation and location</b>		
<b>Abbreviation</b>	<b>Name</b>	<b>Location</b>
Abrdn	Aberdeen Royal Infirmary	Aberdeen
Airdrie	Monklands Hospital	Airdrie
Antrim	Antrim Hospital	Antrim
Bangor	Ysbyty Gwynedd Hospital	Bangor
Belfast	Belfast City Hospital	Belfast
Bham	Heartlands Hospital Queen Elizabeth Hospital	Birmingham
Bradfd	St Lukes Hospital	Bradford
Brightn	Royal Sussex County Hospital	Brighton
Bristol	Southmead Hospital	Bristol
Camb	Addenbrookes Hospital	Cambridge
Cardiff	University Hospital of Wales	Cardiff
Carlis	Cumberland Infirmary	Carlisle
Carsh	St Helier Hospital	Carshalton
Clwyd	Ysbyty Glan Clwyd	Rhyl
Colchr	Colchester General Hospital	Colchester
Covnt	University Hospital Coventry & Warwick	Coventry
D&Gall	Dumfries & Galloway Royal Infirmary	Dumfries
Derby	Royal Derby Hospital	Derby
Donc	Doncaster Royal Infirmary	Doncaster
Dorset	Dorset County Hospital	Dorchester
Dudley	Russels Hall Hospital	Dudley
Dundee	Ninewells Hospital	Dundee
Edinb	Edinburgh Royal Infirmary	Edinburgh
EssexMS	Basildon Hospital Broomfield Southend Hospital	Basildon Chelmsford Southend-on-Sea
Exeter	Royal Devon and Exeter Hospital	Exeter
Glasgw	Queen Elizabeth University Hospital	Glasgow
Glouc	Gloucestershire Royal Hospital	Gloucester
Hull	Hull Royal Infirmary	Hull
Inverns	Raigmore Hospital	Inverness
Ipswi	Ipswich Hospital	Ipswich
Kent	Kent & Canterbury Hospital	Canterbury
Klmarnk	University Hospital Crosshouse	Kilmarnock
KrkCldy	Victoria Hospital	Kirkcaldy
L Barts	Barts and The London Hospital	London
L Guys	Guy's and St Thomas's Hospital	London
L Kings	King's College Hospital	London
L Rfree	Royal Free Hospital	London
L St.G	St George's Hospital	London
L West	West London Transplant & Renal Centre	London
Leeds	St James's University Hospital	Leeds

Leic	Leicester General Hospital	Leicester
Liv Hosp	Aintree University Hospital Royal Liverpool University Hospital	Liverpool
M RI	Manchester Royal Infirmary	Manchester
Middlbr	James Cook University Hospital	Middlesborough
Newc	Freeman Hospital & Royal Victoria Infirmary	Newcastle
Newry	Daisy Hill Hospital (Southern Trust)	Newry
Norwch	Norfolk & Norwich University Hospital	Norwich
Nottm	Nottingham City Hospital	Nottingham
Oxford	Oxford Radcliffe Hospital	Oxford
Plymth	Derriford Hospital	Plymouth
Ports	Queen Alexandra Hospital	Portsmouth
Prestn	Royal Preston Hospital	Preston
Redng	Royal Berkshire Hospital	Reading
Salford	Salford Royal Hospital	Salford
Sheff	Northern General Hospital	Sheffield
Shrew	Royal Shrewsbury Hospital	Shrewsbury
Stevng	Lister Hospital	Stevenage
Stoke	Royal Stoke University Hospital	Stoke-on-Trent
Sund	Sunderland Royal Hospital	Sunderland
Swanse	Morrison Hospital	Swansea
Truro	Royal Cornwall Hospital (Treliske)	Truro
Ulster	Ulster Hospital	Belfast
West NI	Tyrone County Hospital (Western Trust)	Omagh
Wirral	Arrowe Park Hospital	Wirral
Wolve	New Cross Hospital	Wolverhampton
Wrexm	Wrexham Maelor Hospital	Wrexham
York	York District General Hospital	York

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