



Blood and Transplant

ANNUAL REPORT ON LUNG TRANSPLANTATION

**REPORT FOR 2025/2026
(1 APRIL 2016 – 31 MARCH 2026)**

PUBLISHED AUGUST 2026

PRODUCED IN COLLABORATION WITH NHS ENGLAND



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EXECUTIVE SUMMARY



1. Executive Summary

This report presents key data about lung transplantation in the UK. The period reported covers 10 years, from 1 April 2016 to 31 March 2026. The data include number of people listed for a transplant, number of transplants performed and survival rates following lung transplantation; both on a national and centre-specific basis. Most of the data were extracted on 17 June 2026.

Key findings

ADULT LUNG TRANSPLANTATION

- On 31 March 2026 there were 180 adults waiting for a lung transplant: 153 on the non-urgent list, 19 on the urgent list and 8 waiting for a heart-lung transplant. In comparison to 31 March 2025, the waiting list has fallen by 3%, however in comparison to 31 March 2017, the waiting list has fallen by 51%. This is due to several factors, including reduced numbers of registrations onto the lung list compared with 10 years ago.
- The 1 year waiting list mortality rate was 18% on the non-urgent list and 24% on the urgent list (including removals due to deteriorating condition and deaths within 30 days of removal).
- Median waiting time to lung transplant was 340 days from non-urgent registration and 35 days from urgent registration.
- During 2025/2026 there were 185 adult lung transplants including 3 heart-lung transplants. This was 27% higher than the previous year and was the second highest annual number in the decade.
- Of the 182 adult lung only transplants, 48% were urgent or super-urgent, the highest percentage since the introduction of the urgent and super-urgent allocation schemes in 2017.
- The total lung preservation time between retrieval and transplant has increased over the decade from a median of 6.3 hours to 9.4 hours partly due to increased use of 10 degree lung preservation.
- The national rates of patient survival following adult lung transplant were 90.9% at 90 days, 82.7% at 1 year and 56.9% at 5 years.

PAEDIATRIC LUNG TRANSPLANTATION

- On 31 March 2026 there were 7 paediatric patients waiting for a lung transplant: 5 on the non-urgent list, 1 on the urgent lung list and 1 waiting for a heart-lung transplant. This is a decrease since the peak of 16 patients waiting on 31 March 2023. Registrations onto the lung list were higher in the first half of the decade compared with the latter half.
- Median waiting time to transplant was 227 days from initial registration onto the waiting list.
- During 2025/2026, there were 6 paediatric lung transplants including 1 heart-lung transplant; all were performed at Great Ormond Street Hospital.
- There were no deaths post-transplant within the first year in the cohort of patients transplanted between 1 April 2021 and 31 March 2025, however 5 year survival was especially low at 46.7% for the cohort of patients transplanted between 1 April 2017 and 31 March 2021.

Use of the contents of this report should be acknowledged as follows: *Annual Report on Lung Transplantation 2025/2026, NHS Blood and Transplant*

INTRODUCTION



2. Introduction

This report presents data on activity and outcomes of lung transplant candidates and recipients between 1 April 2016 and 31 March 2026, for all centres performing lung transplantation 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 cardiothoracic organ transplants performed in the UK.

Results are described separately for adults (aged 16 years or over) and paediatric patients (aged less than 16 years). There are six lung transplant centres in the UK. Four of the six centres specialise in adult transplantation, one in paediatric transplantation (Great Ormond Street Hospital) and one in both adult and paediatric transplantation (Newcastle). Any transplants carried out at Great Ormond Street Hospital in recipients aged 16 or over are included in the paediatric analysis, and any transplants carried out at adult only centres in recipients less than 16 are included in the adult analysis.

Heart-lung block transplant activity is included within the adult and paediatric lung sections and post-transplant survival is considered in [Section 6.4](#) for adults only. Other [multi-organ transplants](#) are presented separately in [Section 6.5](#) and are excluded from the rest of the main report. In addition, partial lung transplants and patients receiving their second (or subsequent) graft are excluded from all survival analysis calculations.

The time period of analysis covers the introduction of the urgent and super-urgent lung allocation schemes in May 2017.

Methods used are described in the [Appendix](#). The centre specific adult [survival rates](#) are adjusted for differences in [risk factors](#) between the centres. The risk models used are described in the [Appendix](#). The adult lung risk model was revised in July 2023 in consultation with the clinical community.

2.1 Overview

Figure 2.1 shows the number of lung transplant candidates on the [active transplant list](#) at financial year end between 2017 and 2026. The number of people on the active lung and heart-lung transplant list remained reasonably stable until 2020, after which there was a 24% decrease to 271 in 2021 due to a fall in registrations across all disease groups during the COVID-19 pandemic. Since then, whilst the number of registrations for fibrosing lung disease and chronic obstructive pulmonary disease have recovered to pre-pandemic levels, the number of registrations for cystic fibrosis has remained low, corresponding with the introduction of an alternative therapy for cystic fibrosis.

Figure 2.1 Number of people on the national active lung and heart-lung transplant lists on 31 March each year, 2017 to 2026

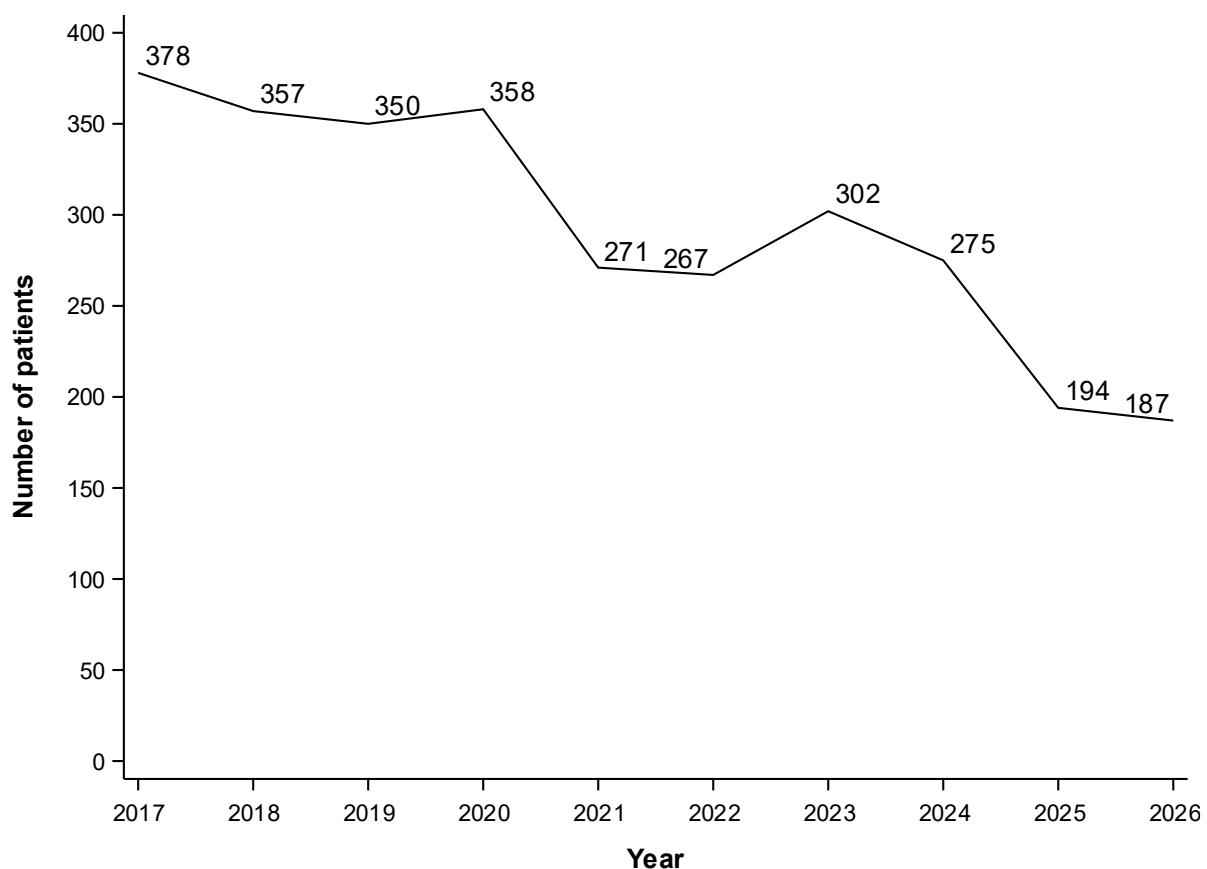


Figure 2.2 and **Figure 2.3** show the number of adult and paediatric patients on the [active transplant list](#) on 31 March 2026 at each centre. In total, there were 180 adults and 7 paediatric patients waiting for a lung transplant. Manchester had the highest number of adults on the lung transplant list. All 7 paediatric patients were waiting at Great Ormond Street Hospital.

Figure 2.2 Number of adults on the active lung transplant list on 31 March 2026, by centre

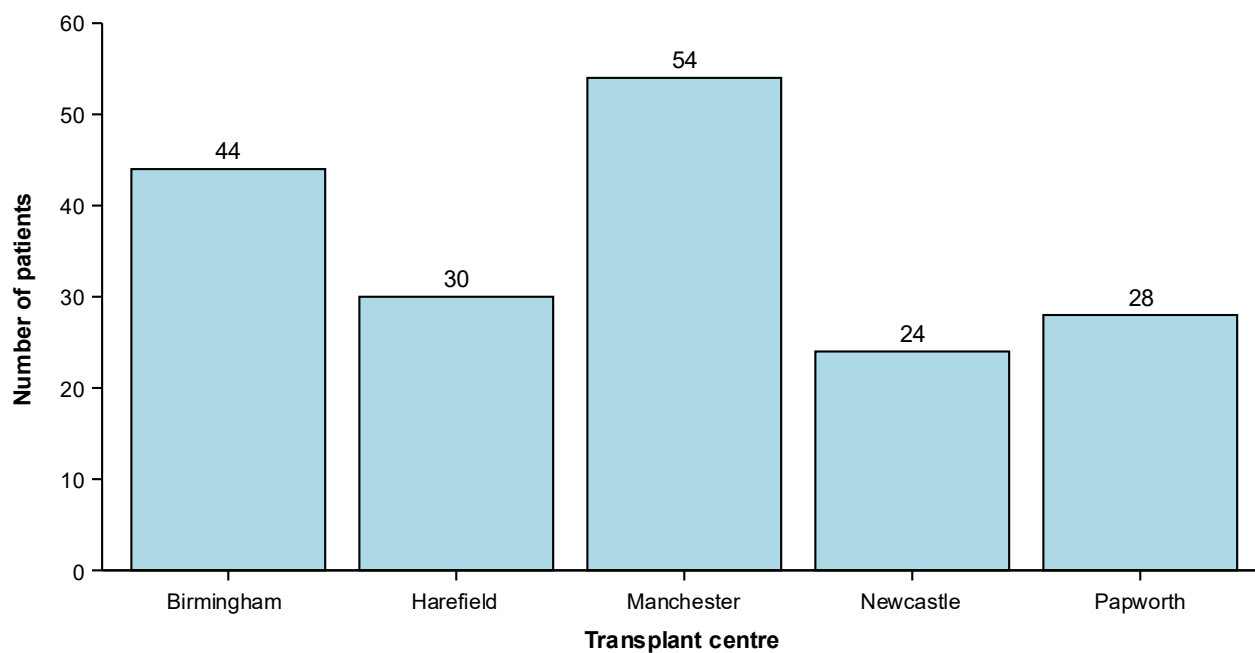


Figure 2.3 Number of paediatric patients on the active lung transplant list on 31 March 2026, by centre



Figure 2.4 shows the total number of transplants performed in each of the last 10 financial years. The number of lung transplants last year increased by 26% to 191 and was in line with pre COVID-19 pandemic levels.

Figure 2.4 Number of lung transplants in the UK, by financial year, 1 April 2016 to 31 March 2026

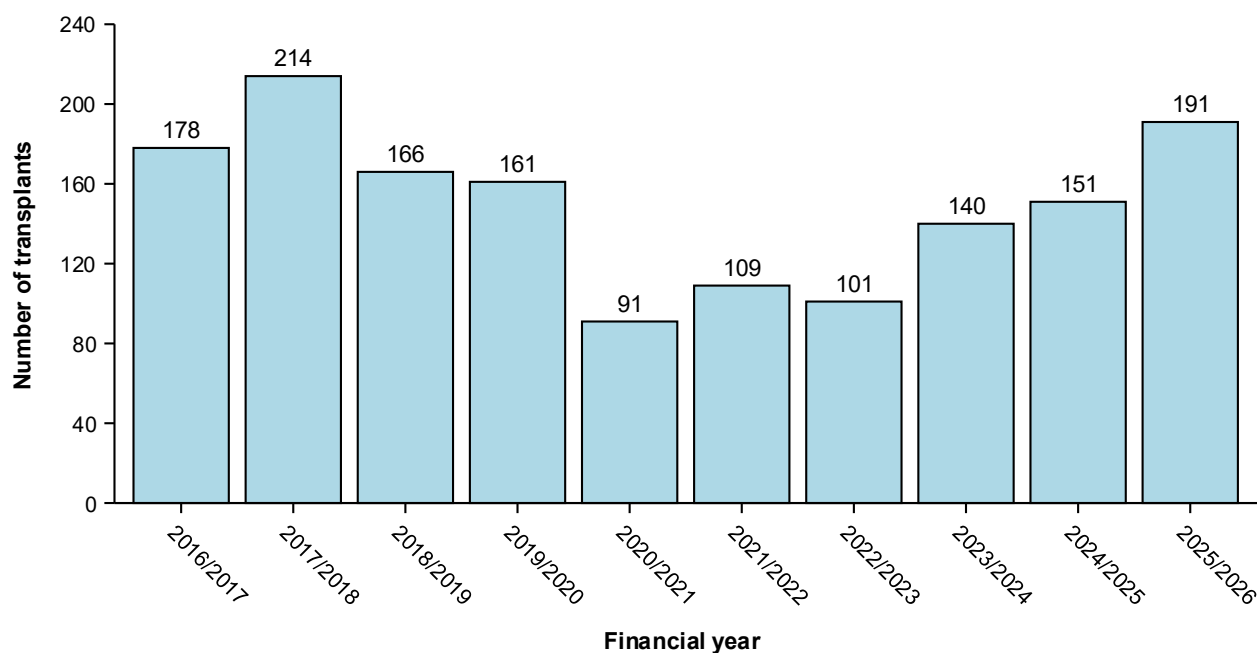


Figure 2.5 and **Figure 2.6** show the number of adult and paediatric transplants carried out in the most recent financial year at each centre. Papworth performed the highest number of adult lung transplants. Great Ormond Street Hospital performed all paediatric lung transplants in the year, however, note that a transplant at Newcastle in a patient aged 16-18 was carried out in the year and is counted within the adult activity in this report.

Figure 2.5 Number of adult lung transplants in the UK, by centre, 1 April 2025 to 31 March 2026

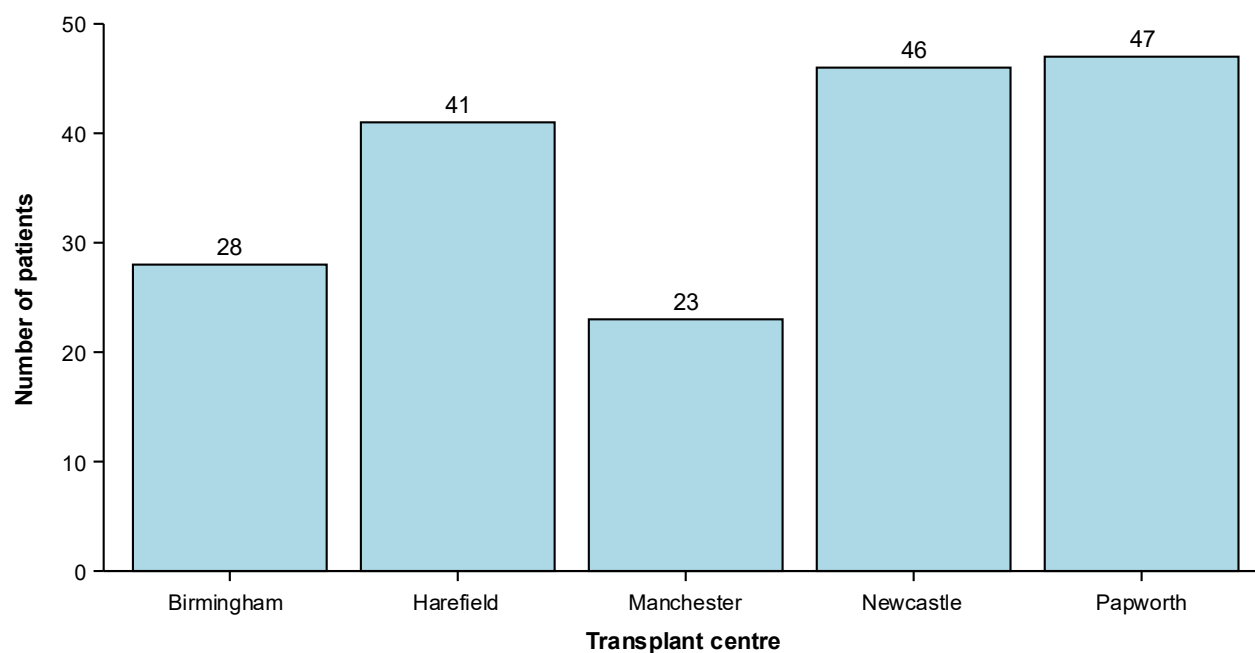


Figure 2.6 Number of paediatric lung transplants in the UK, by centre,
1 April 2025 to 31 March 2026

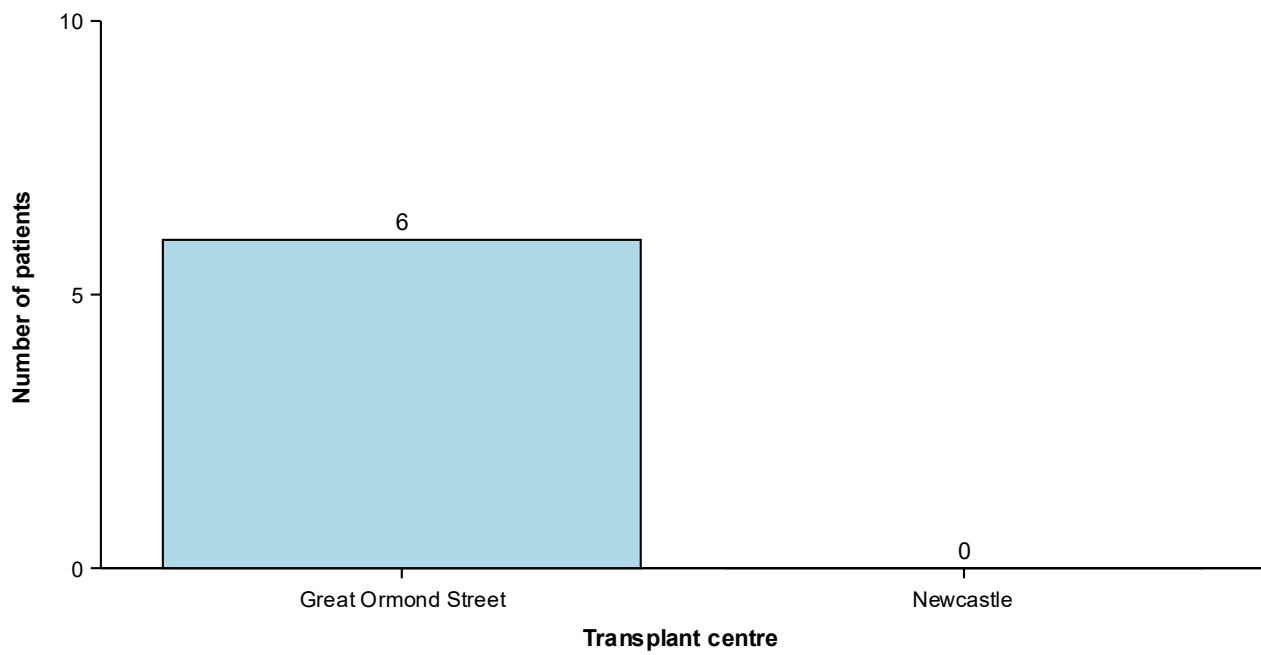
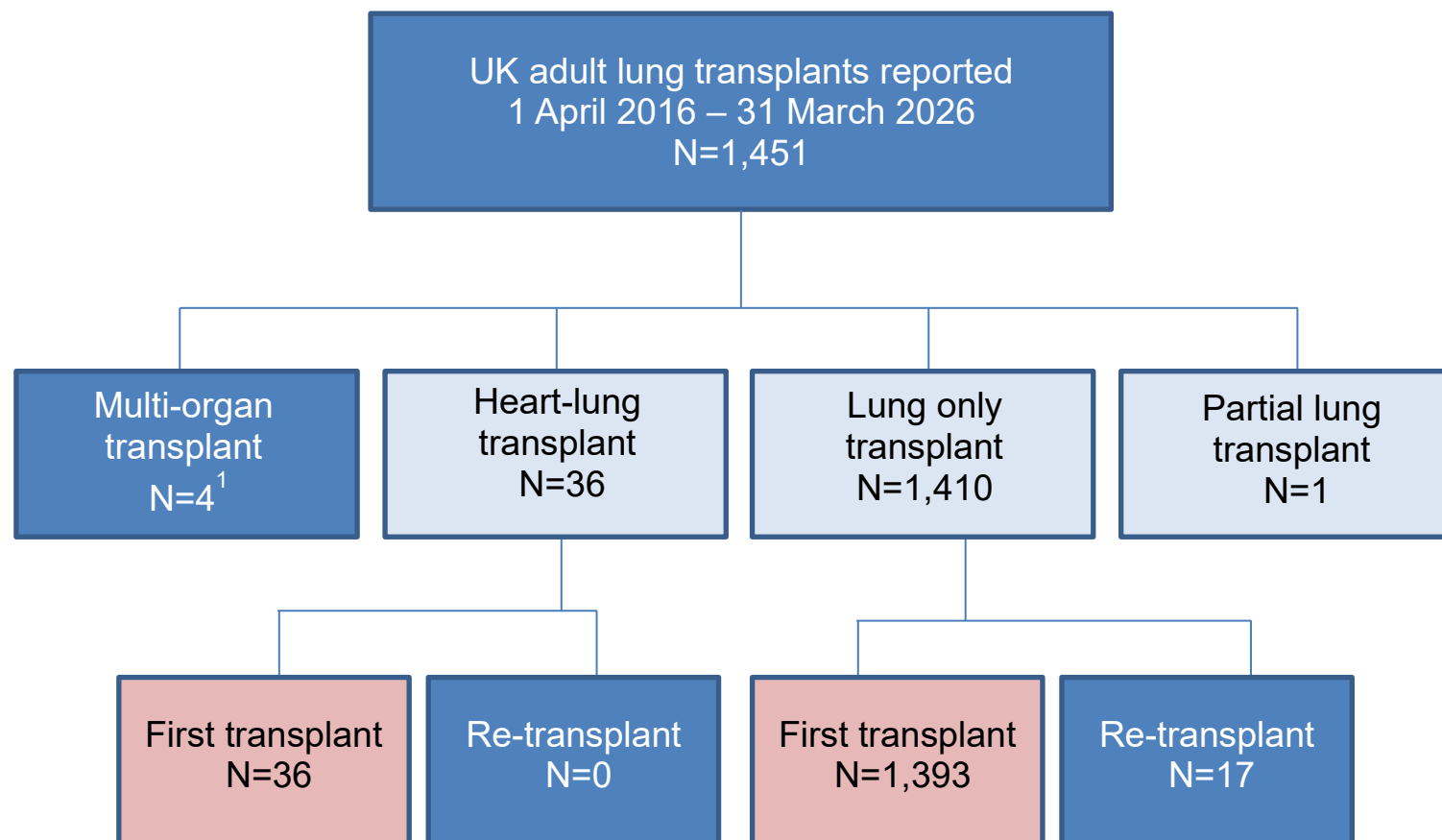


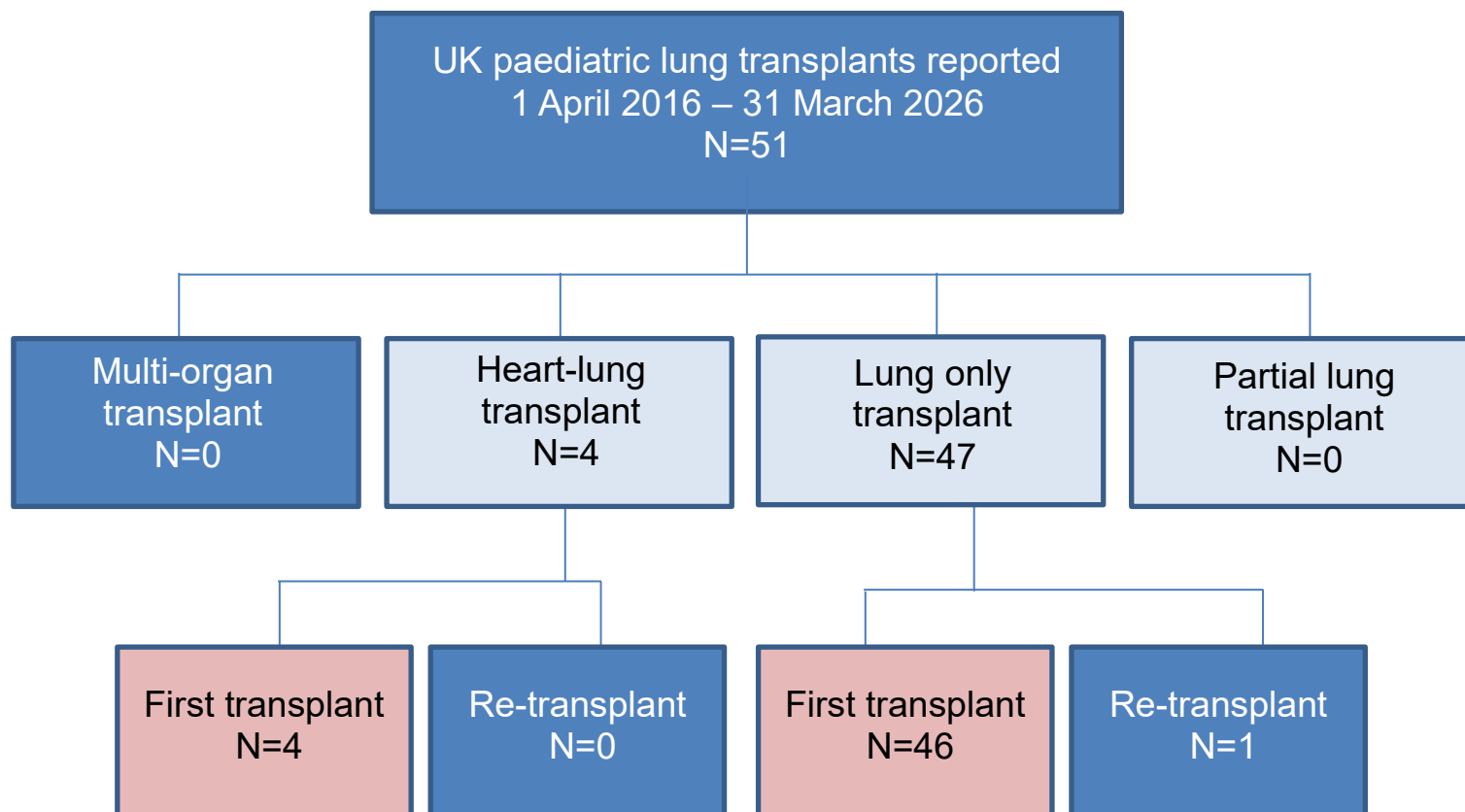
Figure 2.7 shows a breakdown of the 1,451 adult lung transplants performed in the UK in the ten-year period while **Figure 2.8** shows a similar breakdown for the 51 paediatric transplants performed during the same period. Re-transplants are included in the transplant activity sections of this report but excluded from the survival analysis sections. [Multi-organ transplants](#) are excluded from the rest of the report apart from the separate multi-organ outcome section ([Sections 6.5](#)).

Figure 2.7 Adult lung transplants performed in the UK, 1 April 2016 to 31 March 2026



¹ All lung and liver transplants

Figure 2.8 Paediatric lung transplants performed in the UK, 1 April 2016 to 31 March 2026



2.2 Geographical variation in registration and transplant rates

Figure 2.9 shows rates of registration to the lung transplant list per million population (pmp) between 1 April 2025 and 31 March 2026 and rates of lung transplantation pmp for the same time period, by [recipient country/NHS region of residence](#). **Table 2.1** shows the actual numbers as well as rates. These numbers include a small number of heart-lung patients. The UK lung registration and transplant rates are 3.5 pmp and 2.7 pmp respectively.

Since there will inevitably be some random variation in rates between areas, the systematic coefficient component of variation ([SCV](#)) was used to identify if the variation is more (or less) than a random effect for the different NHS regions in England only. The larger the SCV the greater the evidence of systematic variation between areas. Registration and transplant rates yielded an SCV of 0.0195 (p-value = 0.1) and 0.0023 (p-value = 0.3), respectively. The p-value shows the probability that an SCV of this size (or higher) would be observed by chance if only random variation existed, and therefore there is no evidence of geographical variation beyond what would be expected at random across English NHS regions. No adjustment has been made for area-specific demographic characteristics that may impact the rates of registration to the transplant list and transplantation such as age and sex. Therefore, these results should be interpreted with caution.

Figure 2.9 Comparison of lung registration rates (pmp) with transplant rates (pmp) by recipient country/NHS region of residence

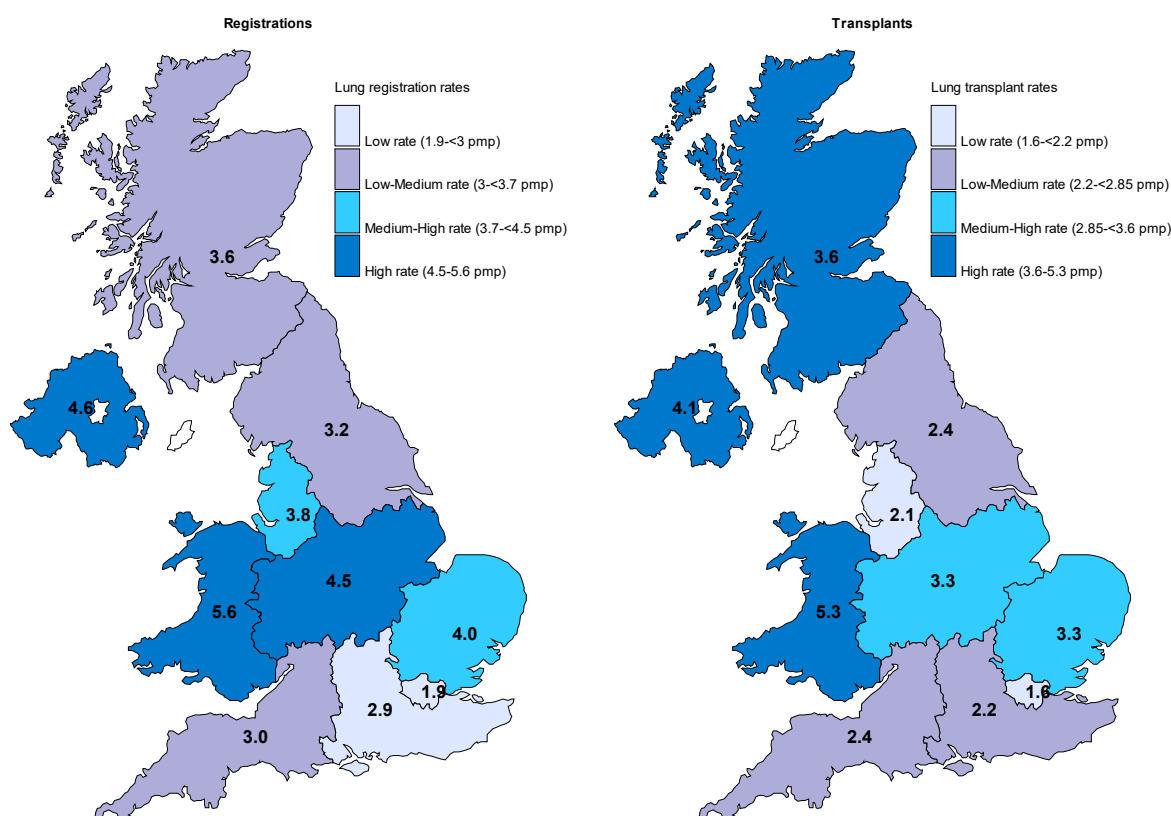


Table 2.1 Lung registration and transplant rates per million population (pmp) in the UK, 1 April 2025 - 31 March 2026, by Country/NHS region

Country/ NHS region	Registrations (pmp)		Transplants (pmp)	
North East and Yorkshire	27	(3.2)	20	(2.4)
North West	29	(3.8)	16	(2.1)
Midlands	51	(4.5)	37	(3.3)
East of England	26	(4.0)	22	(3.3)
London	17	(1.9)	15	(1.6)
South East	28	(2.9)	21	(2.2)
South West	18	(3.0)	14	(2.4)
England	196	(3.3)	145	(2.5)
Isle of Man	0	(0.0)	0	(0.0)
Channel Islands	1	(5.9)	1	(5.9)
Wales	18	(5.6)	17	(5.3)
Scotland	20	(3.6)	20	(3.6)
Northern Ireland	9	(4.6)	8	(4.1)
TOTAL	245¹	(3.5)	191	(2.7)

¹ Registrations include 1 patient whose postcode was unknown and excludes 1 patient who resides in the Republic of Ireland

ADULT LUNG TRANSPLANTATION

Transplant List



3.1 Adult lung and heart-lung transplant list on 31 March, 2017 – 2026

Figure 3.1 shows the number of adults on the lung and heart-lung transplant lists on 31 March each year between 2017 and 2026 split by urgency status. The number on the active non-urgent lung transplant list has decreased substantially over the past decade due to a number of factors, including reduced registrations during the COVID-19 pandemic and the introduction of an alternative therapy for patients with cystic fibrosis. On 31 March 2026 the number of adults on the active non-urgent lung transplant list was 153. The super-urgent and urgent lung allocation schemes were introduced in May 2017 and in the last two years there has been an increase in the number of adults on the urgent list, with 19 waiting on 31 March 2026 (none on the super-urgent list). There were 8 adults waiting for a combined heart-lung transplant on 31 March 2026.

Figure 3.1 Number of adults on the lung and heart-lung transplant lists on 31 March each year, by urgency status

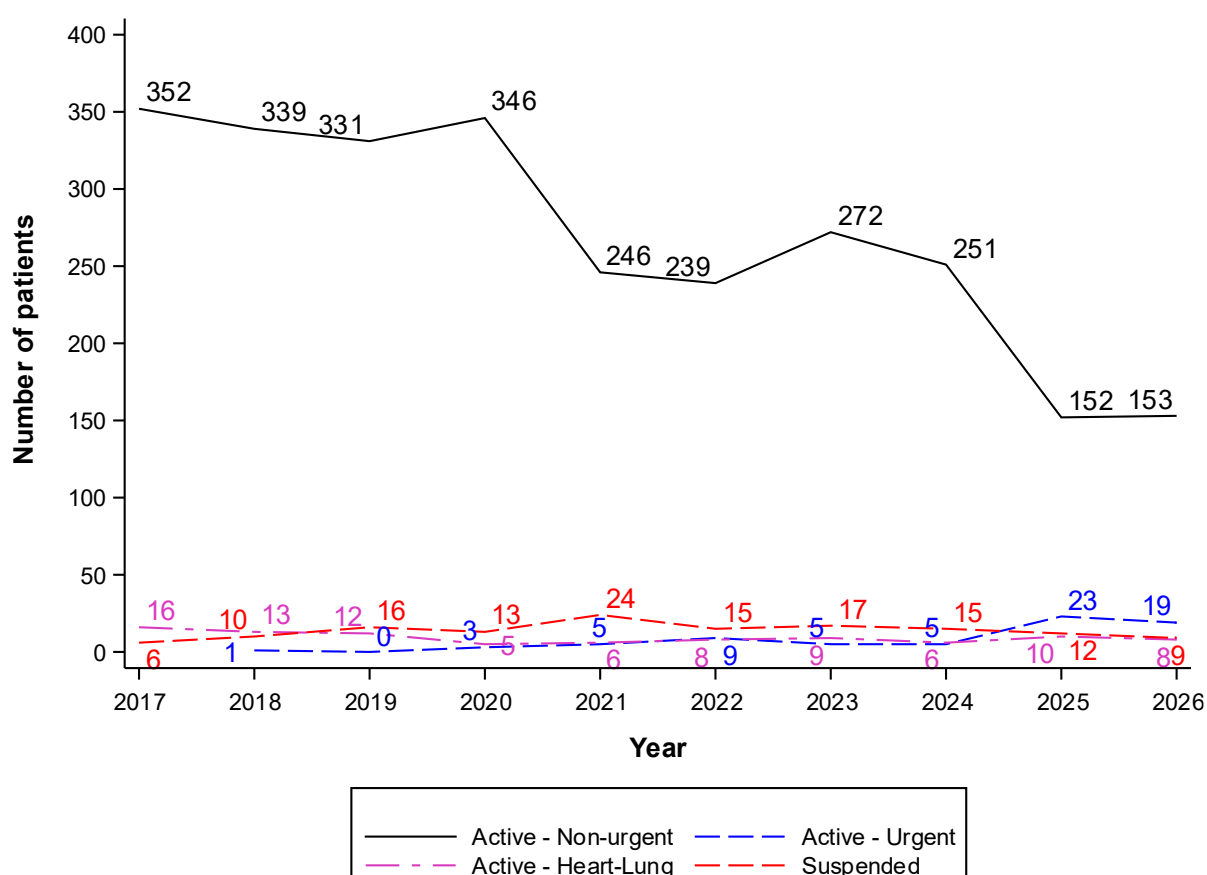


Figure 3.2 shows the number of adults on the [active lung and heart-lung transplant lists](#) on 31 March 2026, by centre and urgency. In total, there were 180 adults waiting, including 19 on the urgent lung list. Manchester had the highest number of people registered on the transplant list, with 54 adults waiting.

Figure 3.2 Number of adults on the active lung and heart-lung transplant lists on 31 March 2026, by centre and urgency

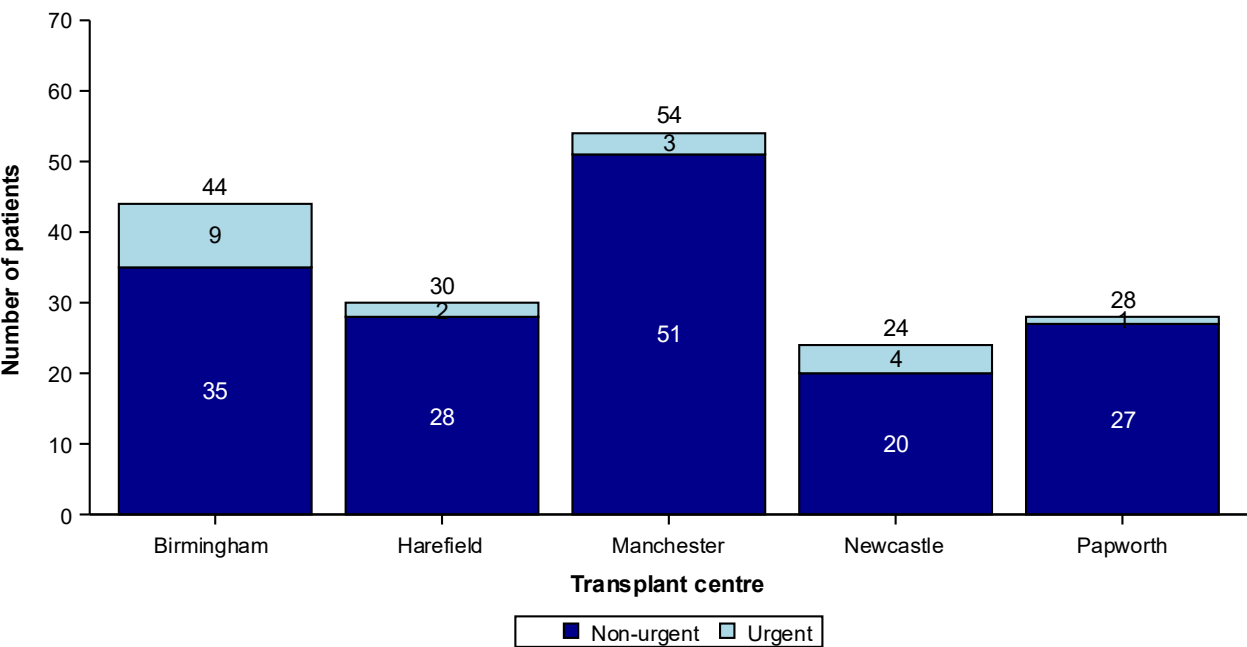
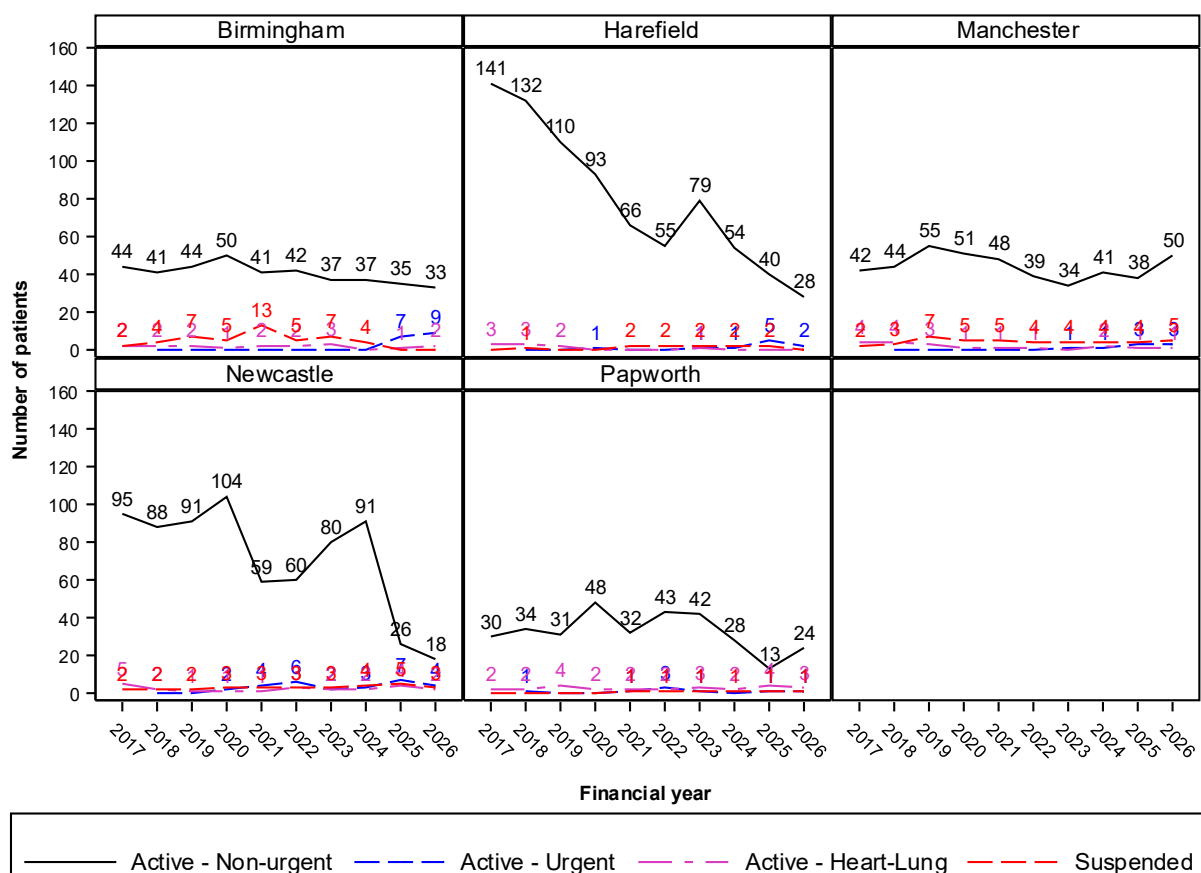


Figure 3.3 shows the trend over time in the number of adults on the lung transplant list on 31 March each year across centres. Harefield and Newcastle have experienced substantial decreases in their lung lists in recent years. The sudden decline in Newcastle's waiting list in 2025 is not reflective of the true change, but is due to late notification of deaths and removals from the list to NHSBT leading to a batch of patients being removed in summer 2024. There was no one waiting on the super-urgent list on 31 March in any year.

Figure 3.3 Number of adults on the lung and heart-lung transplant lists on 31 March each year, for the last 10 years, by centre



3.2 Adult lung and heart-lung registrations, 1 April 2016 – 31 March 2026

This section shows trends over the last 10 years in the number of registrations onto the lung transplant list. Note that the urgent and super-urgent schemes were introduced in May 2017. In the figures in this section, the urgency status is the highest urgency a patient was listed on within the financial year of their initial registration.

Figure 3.4 shows the total number of adult registrations each year split by urgency between 1 April 2016 and 31 March 2026. In 2020/2021 there was a substantial decrease in the number of registrations due to the COVID-19 pandemic. Since then, the number of registrations has increased each year.

Figure 3.4 Number of adult lung registrations in the UK, by financial year and urgency status, 1 April 2016 to 31 March 2026

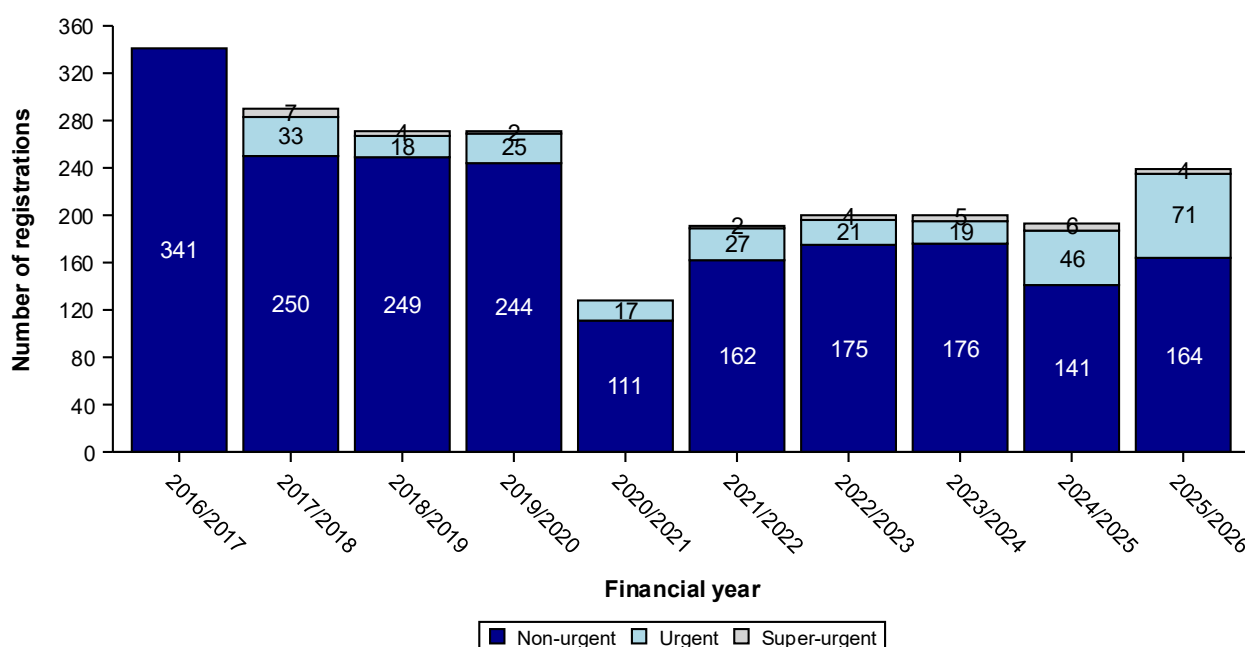


Figure 3.5 and **Figure 3.6** provides a breakdown of the number of adult lung registrations by centre and urgency for the latest financial year and over the last ten years respectively.

Figure 3.5 Number of adult lung registrations in the UK, by centre and urgency status, 1 April 2025 to 31 March 2026

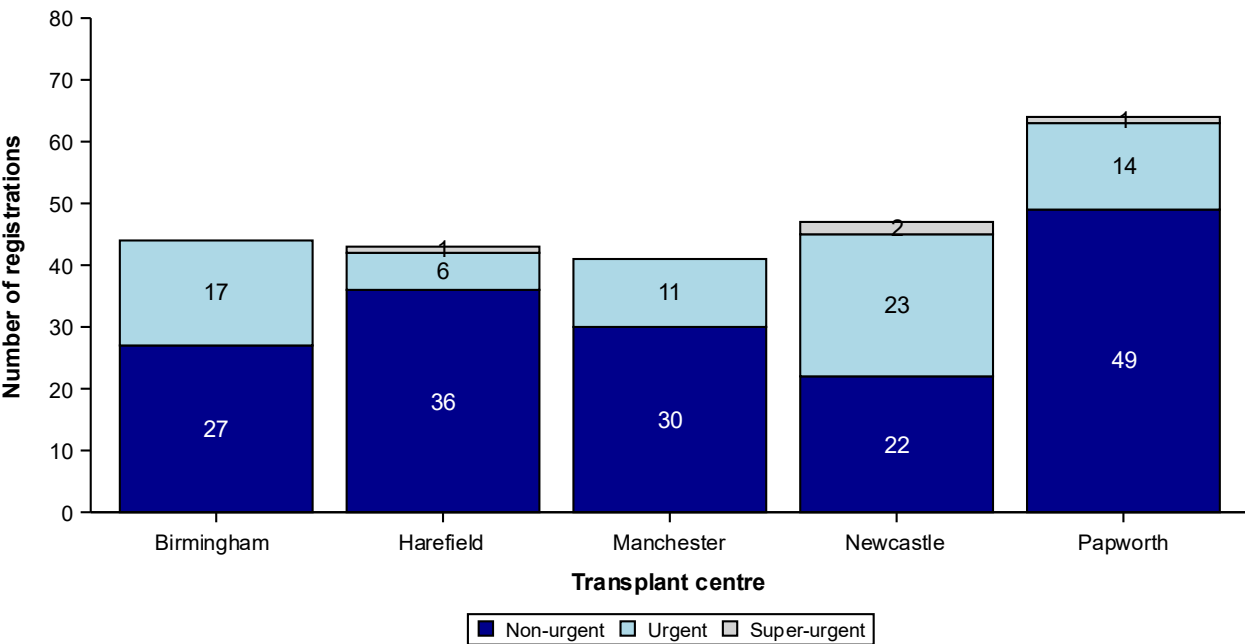
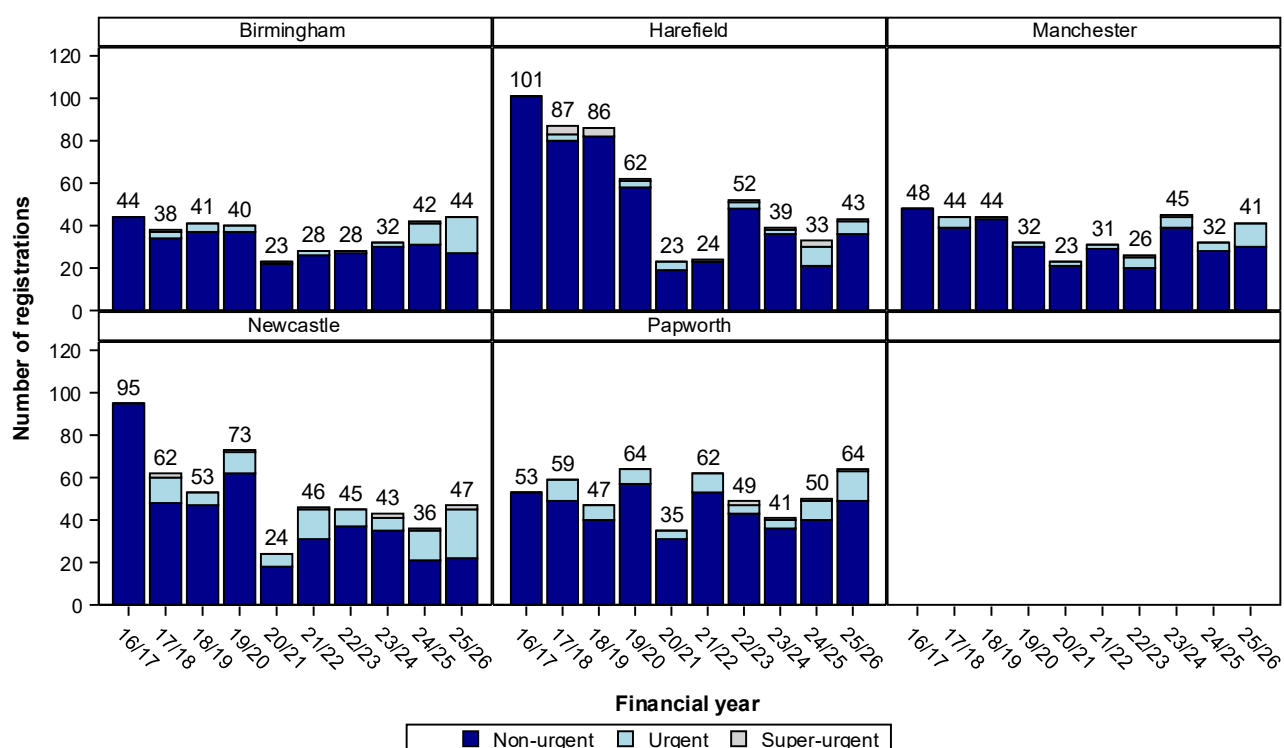


Figure 3.6 Number of adult lung registrations in the UK, by financial year, centre and urgency, 1 April 2016 to 31 March 2026



3.3 Demographic characteristics, 1 April 2025 – 31 March 2026

There were 239 adult registrations onto the lung or heart-lung transplant lists between 1 April 2025 and 31 March 2026. Demographic characteristics of these individuals are shown by centre and overall in **Table 3.1**. Nationally, 58% were male and the median age was 56 years. The most common primary disease group was fibrosing lung disease. For some characteristics, due to rounding, percentages may not add up to 100.

Table 3.1 Demographic characteristics of adult patient registrations onto the lung and heart-lung transplant lists between 1 April 2025 and 31 March 2026, by centre							
		Birmingham N (%)	Harefield N (%)	Manchester N (%)	Newcastle N (%)	Papworth N (%)	TOTAL N (%)
Number of registrations		44 (100)	43 (100)	41 (100)	47 (100)	64 (100)	239 (100)
Highest urgency during year	Non-urgent	27 (61)	36 (84)	30 (73)	22 (47)	49 (77)	164 (69)
	Urgent	17 (39)	6 (14)	11 (27)	23 (49)	14 (22)	71 (30)
	Super-urgent	0 (0)	1 (2)	0 (0)	2 (4)	1 (2)	4 (2)
Recipient sex	Male	25 (57)	25 (58)	21 (51)	28 (60)	39 (61)	138 (58)
	Female	19 (43)	18 (42)	20 (49)	19 (40)	25 (39)	101 (42)
Recipient ethnicity	White	38 (86)	32 (74)	37 (90)	46 (98)	56 (88)	209 (87)
	Asian	6 (14)	4 (9)	3 (7)	1 (2)	5 (8)	19 (8)
	Black	0 (0)	2 (5)	0 (0)	0 (0)	1 (2)	3 (1)
	Other	0 (0)	3 (7)	1 (2)	0 (0)	0 (0)	4 (2)
	Missing	0 (0)	2 (5)	0 (0)	0 (0)	2 (3)	4 (2)
Recipient age (years)	Median (IQR)	58 (52, 62)	50 (41, 57)	60 (53, 63)	57 (52, 63)	56 (52, 61)	56 (49, 61)
	Missing	0	0	0	0	0	0

Table 3.1 Demographic characteristics of adult patient registrations onto the lung and heart-lung transplant lists between 1 April 2025 and 31 March 2026, by centre

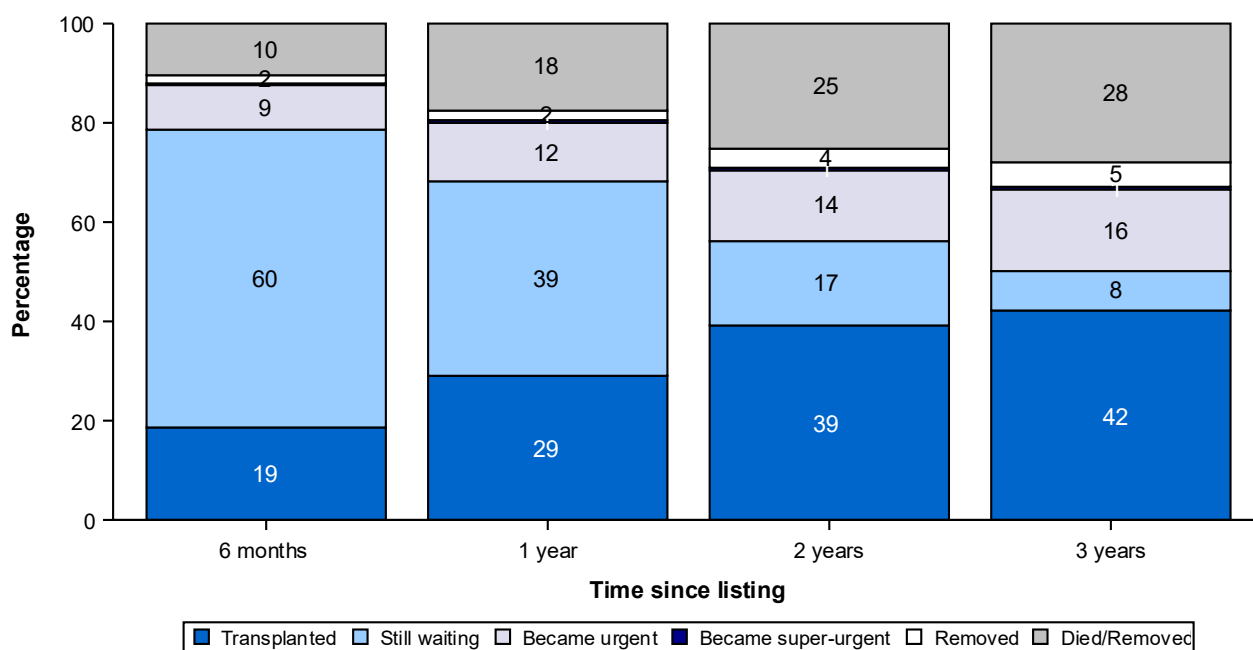
		Birmingham N (%)	Harefield N (%)	Manchester N (%)	Newcastle N (%)	Papworth N (%)	TOTAL N (%)
Primary Disease	Cystic fibrosis and bronchiectasis	0 (0)	3 (7)	3 (7)	3 (6)	2 (3)	11 (5)
	Fibrosing lung disease	34 (77)	18 (42)	25 (61)	32 (68)	45 (70)	154 (64)
	COPD and emphysema	9 (20)	18 (42)	12 (29)	10 (21)	12 (19)	61 (26)
	Primary pulmonary hypertension	0 (0)	0 (0)	1 (2)	1 (2)	5 (8)	7 (3)
	Other or unknown lung disease	1 (2)	4 (9)	0 (0)	1 (2)	0 (0)	6 (3)
Smoker	No	44 (100)	43 (100)	40 (98)	46 (98)	63 (98)	236 (99)
	Yes	0 (0)	0 (0)	0 (0)	1 (2)	1 (2)	2 (1)
	Missing	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	1 (0)
Lung function - FEV1 (litres)	Median (IQR)	1.24 (0.84, 1.92)	1.26 (0.83, 2.06)	1.35 (0.83, 1.99)	1.19 (0.94, 1.56)	1.35 (0.92, 1.76)	1.28 (0.87, 1.88)
	Missing	2	1	1	3	3	10
Lung function - FVC (litres)	Median (IQR)	1.80 (1.36, 2.32)	2.41 (1.82, 2.88)	2.38 (1.70, 3.01)	1.72 (1.41, 2.47)	2.06 (1.65, 2.61)	2.09 (1.54, 2.61)
	Missing	2	1	1	3	3	10

3.4 Post-registration outcomes, 1 April 2021 – 31 March 2023

The registration outcomes of adults listed for a lung only transplant between 1 April 2021 and 31 March 2023 are summarised in **Figures 3.7 – 3.9**, nationally and by centre, for non-urgent and urgent registrations respectively. The possible outcomes on the list include receiving a transplant, removal from the list, moving lists, dying on the list, or remaining on the list at a given time point post-registration. Removals from the list due to deteriorating condition or deaths within 30 days of removal are grouped with deaths in this analysis. In these figures, the *first* outcome is used, so if an individual was transplanted then died their registration outcome would be “transplanted”. If they moved lists, e.g. from the non-urgent to the urgent list, they would be included in both the non-urgent and the urgent charts and analysed according to the outcome on each list.

Nationally, within 6 months of non-urgent registration, 19% of lung registrations resulted in transplant and 10% had died. Three years after listing, 42% has received a transplant and 28% had died. By centre (**Figure 3.8**), within 1 year of registration, the proportion transplanted ranged from 15% at Birmingham to 44% at Papworth and the proportion dying on the list ranged from 12% at Harefield to 32% at Birmingham.

Figure 3.7 Post-registration outcome for 365 non-urgent lung only registrations made in the UK, 1 April 2021 to 31 March 2023



Deaths include removals due to deteriorating condition and patients who died within 30 days of removal

Figure 3.8 1 year post-registration outcomes for 365 non-urgent lung only registrations made in the UK, by centre, 1 April 2021 to 31 March 2023

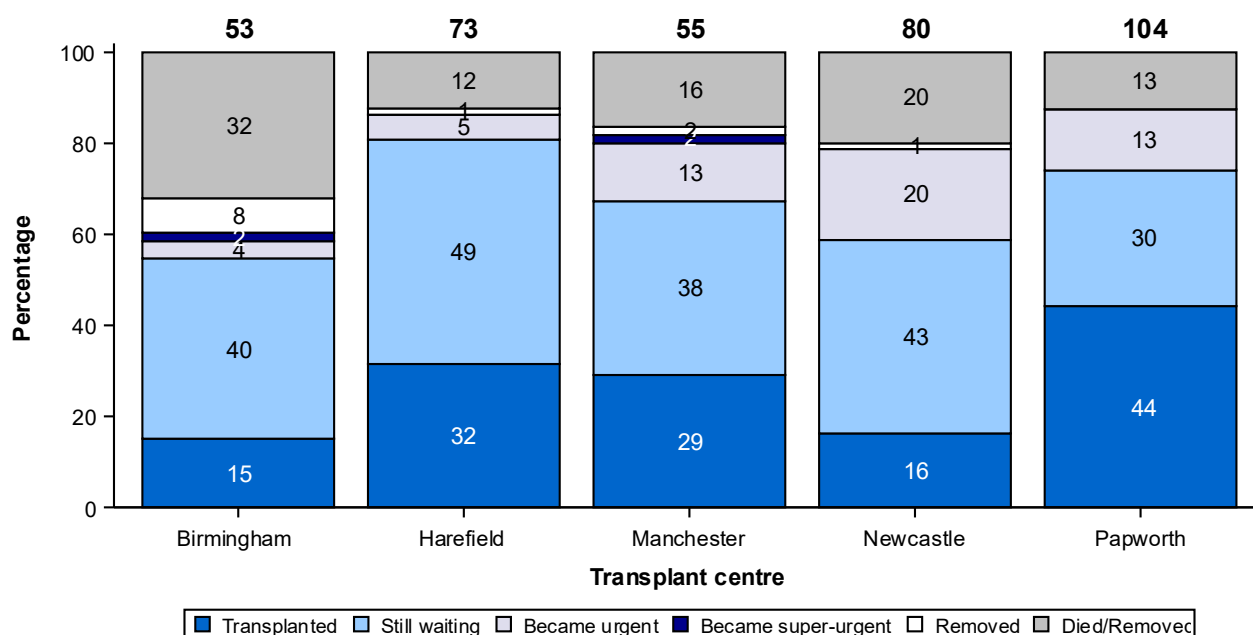
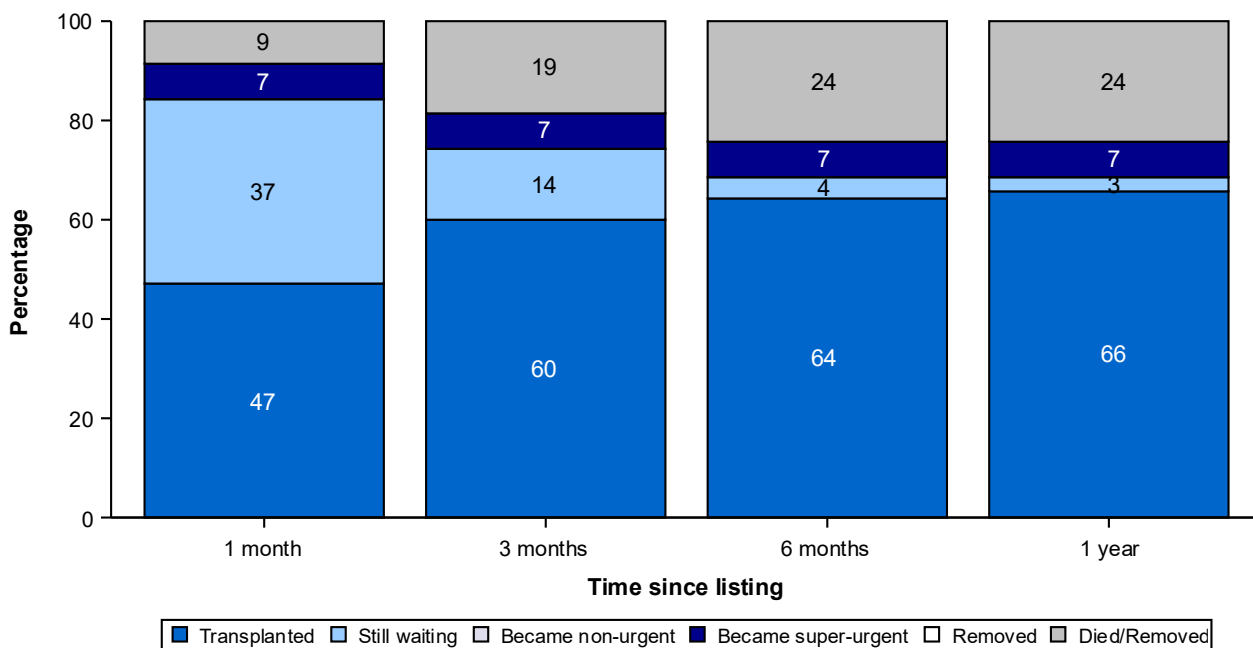


Figure 3.9 shows outcomes on the urgent lung list. The chance of transplant is much higher from the urgent list compared with the non-urgent list; within 6 months, 64% of urgent patients had received a transplant. However, the chance of death is also higher, at 24% by 6 months compared with 10% on the non-urgent list. A centre breakdown is not provided for urgent registrations, nor is a super-urgent registration figure, due to small numbers.

Figure 3.9 Post-registration outcome for 70 urgent lung only registrations made in the UK, 1 April 2021 to 31 March 2023



Deaths include removals due to deteriorating condition and patients who died within 30 days of removal

3.5 Median waiting time to transplant, 1 April 2022 - 31 March 2025

The [median](#) waiting time to non-urgent lung transplant from registration for an adult, lung only transplant is shown in **Figure 3.10** and **Table 3.2**. This is estimated for individuals registered initially as non-urgent between 1 April 2022 and 31 March 2025 using the [Kaplan Meier](#) method to allow for censoring. The national [median](#) waiting time from non-urgent listing was 340 days and ranged from 128 days at Papworth to 456 days at Newcastle (log-rank $p < 0.01$). The national [median](#) waiting time from urgent listing was 35 days. Median waiting time is not presented for super-urgent registrations due to low frequency of patients initially registered as super-urgent.

Figure 3.10 Median active waiting time to non-urgent lung transplant for adults registered between 1 April 2022 and 31 March 2025, by centre

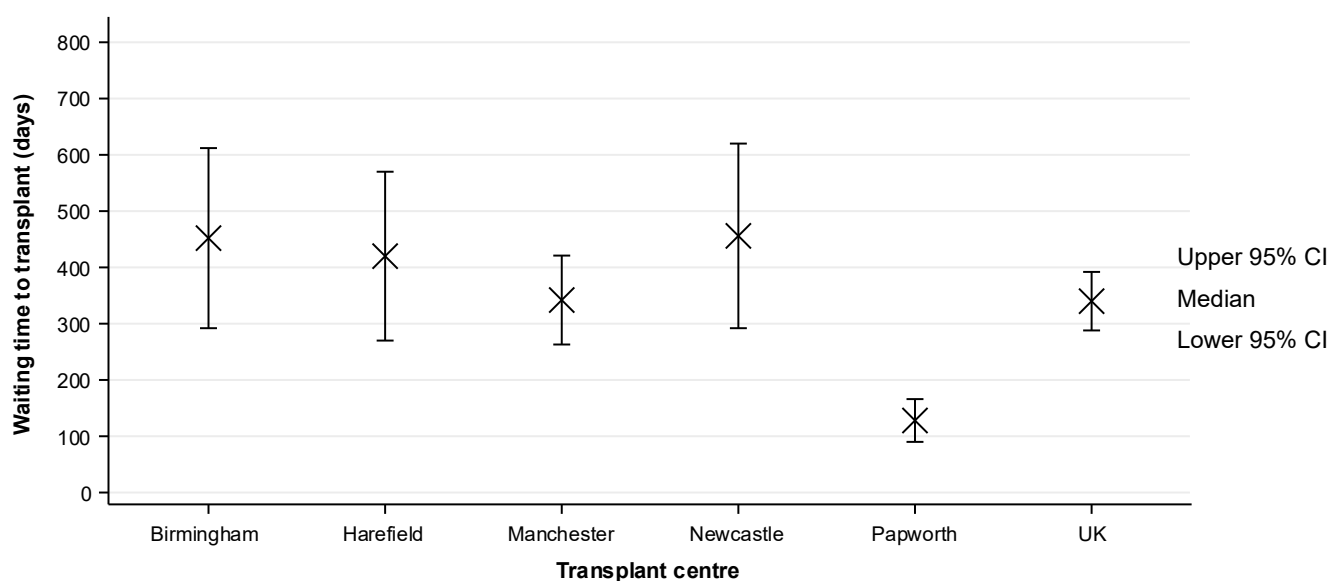


Table 3.2 Median active waiting time to lung transplant for adult patients registered on the transplant list, by urgency at registration and centre, 1 April 2022 to 31 March 2025				
Transplant centre	Number of patients registered	Number transplanted	Waiting time (days)	
			Median	95% Confidence interval
Non-urgent at initial registration				
Birmingham	92	44	452	292 - 612
Harefield	116	73	420	270 - 570
Manchester	96	53	342	263 - 421
Newcastle	112	60	456	292 - 620
Papworth	127	95	128	90 - 166
UK	543	325	340	288 - 392
Urgent at initial registration				
UK	23	15	35	12 - 58

The [median](#) waiting time to non-urgent lung transplant for adults is also considered by blood group. This is shown in **Figure 3.11** and **Table 3.3**. Blood group O had the longest median wait (490 days) compared with the other blood groups (log-rank $p < 0.01$).

Figure 3.11 Median active waiting time to non-urgent lung transplant for adults registered between 1 April 2022 to 31 March 2025, by blood group

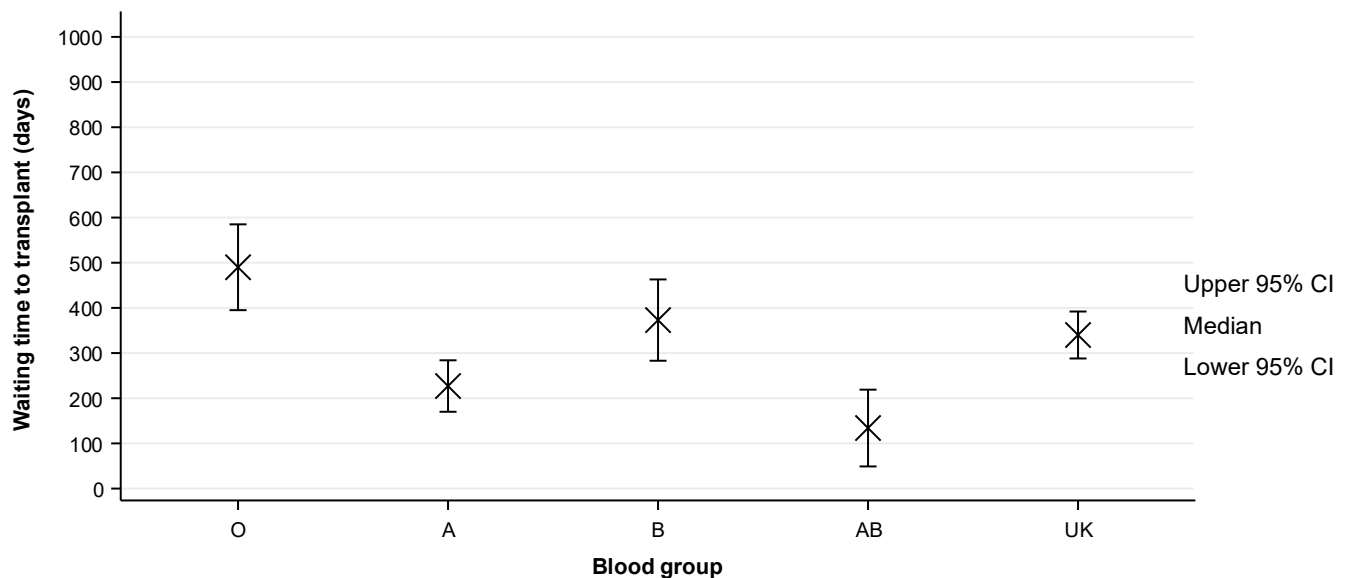


Table 3.3 Median active waiting time to lung transplant for adult patients registered on the transplant list, by urgency at registration and blood group, 1 April 2022 to 31 March 2025

Blood Group	Number of patients registered	Number transplanted	Waiting time (days)	
			Median	95% Confidence interval
Non-urgent at initial registration				
O	233	122	490	395 - 585
A	226	150	227	170 - 284
B	64	37	373	283 - 463
AB	20	16	134	49 - 219
UK	543	325	340	288 - 392
Urgent at initial registration				
UK	23	15	35	12 - 58

ADULT LUNG TRANSPLANTATION

Response to Offers



4. Response to Offers

This section presents an analysis of adult donor lung offer decline rates, separately for [DBD](#) and [DCD](#) donor offers. This only considers offers of bilateral lungs between 1 April 2023 and 31 March 2026 that were eventually transplanted and excludes all fast track offers. A bilateral lung offer is counted as accepted if either both the lungs were accepted or just a single lung was accepted. Lungs offered as part of a heart-lung block are considered. Super-urgent, urgent and non-urgent offers are all considered. Offers to paediatric patients at Newcastle are excluded. Additionally, offers where the reason for decline was HLA related, or because another donor had already been accepted for this recipient, were excluded.

In 2017, group offering for non-urgent cardiothoracic organ offers was introduced, where all centres receive a simultaneous offer for their non-urgent patients but acceptance is determined by a centre's position in the allocation sequence. In this analysis, adjustments have been made to count any centre who is ranked above the accepting centre in the allocation sequence for that donor as declining the lung, even if they did not respond to the group offer, and any declines recorded for a centre ranked below the accepting centre were discounted.

Figure 4.1 compares individual centre decline rates for DBD donor lung offers with the national rate using a [funnel plot](#). The offer decline rate for Newcastle is above the higher 99.8% [confidence limit](#), indicating a higher decline rate compared with the national rate. The offer decline rate for Papworth is below the lower 99.8% [confidence limit](#), indicating a significantly lower decline rate than the national rate. The other centre decline rates were statistically consistent with the national rate.

Figure 4.1 UK adult DBD donor bilateral lung offer decline rates by centre, 1 April 2023 to 31 March 2026

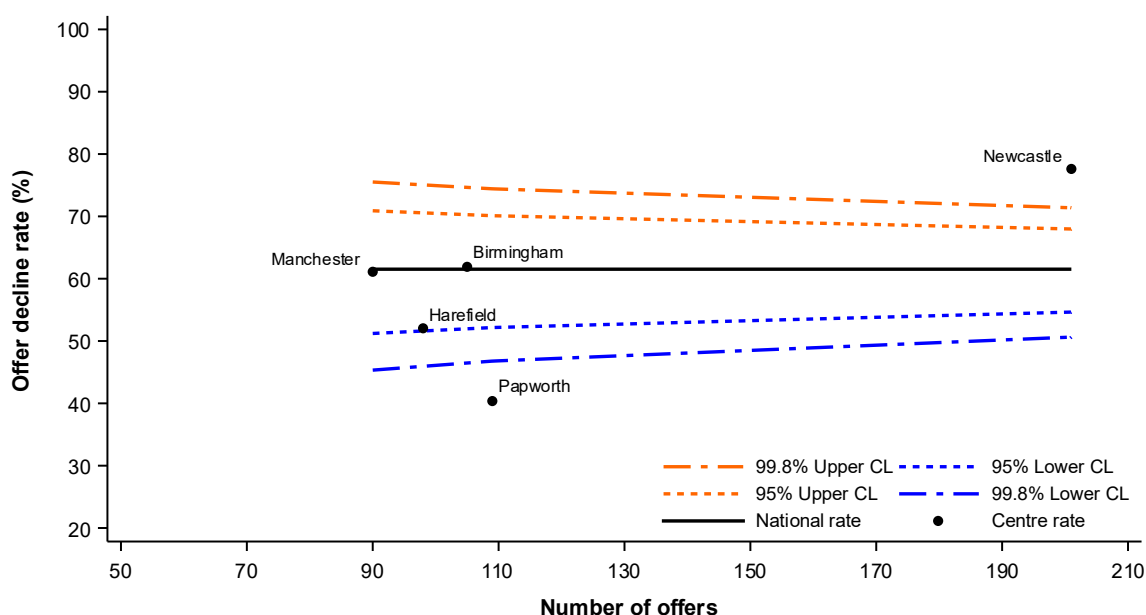


Table 4.1 shows a breakdown of each centre's bilateral lung decline rate for DBD donors across the three years analysed. Nationally, the decline rate for offers of lungs that were eventually transplanted was lowest in 2024/2025.

Table 4.1 Adult DBD donor bilateral lung offer results by transplant centre, between 1 April 2023 and 31 March 2026								
Centre	2023/24		2024/25		2025/26		Overall	
	No. offers	Decline rate (%)	No. offers	Decline rate (%)	No. offers	Decline rate (%)	No. offers	Decline rate (%)
Birmingham	35	(71.4)	35	(48.6)	35	(65.7)	105	(61.9)
Harefield	38	(60.5)	24	(54.2)	36	(41.7)	98	(52.0)
Manchester	38	(57.9)	27	(55.6)	25	(72.0)	90	(61.1)
Newcastle	67	(79.1)	52	(78.8)	82	(75.6)	201	(77.6)
Papworth	40	(30.0)	27	(44.4)	42	(47.6)	109	(40.4)
UK	218	(61.9)	165	(59.4)	220	(62.7)	603	(61.5)
Centre has reached the upper 99.8% confidence limit Centre has reached the upper 95% confidence limit Centre has reached the lower 95% confidence limit Centre has reached the lower 99.8% confidence limit								

Figure 4.2 and **Table 4.2** compare individual centre decline rates for DCD donor lung offers. The offer decline rate for Newcastle is above the higher 95% [confidence limit](#), providing some evidence of a higher decline rate compared with the national rate. The offer decline rate for Papworth is below the lower 99.8% [confidence limit](#), indicating a significantly lower decline rate than the national rate. Due to a relatively small number of DCD declines for subsequently transplanted lungs, there is no breakdown by centre and year in **Table 4.2**.

Figure 4.2 UK adult DCD donor bilateral lung offer decline rates by centre, 1 April 2023 to 31 March 2026

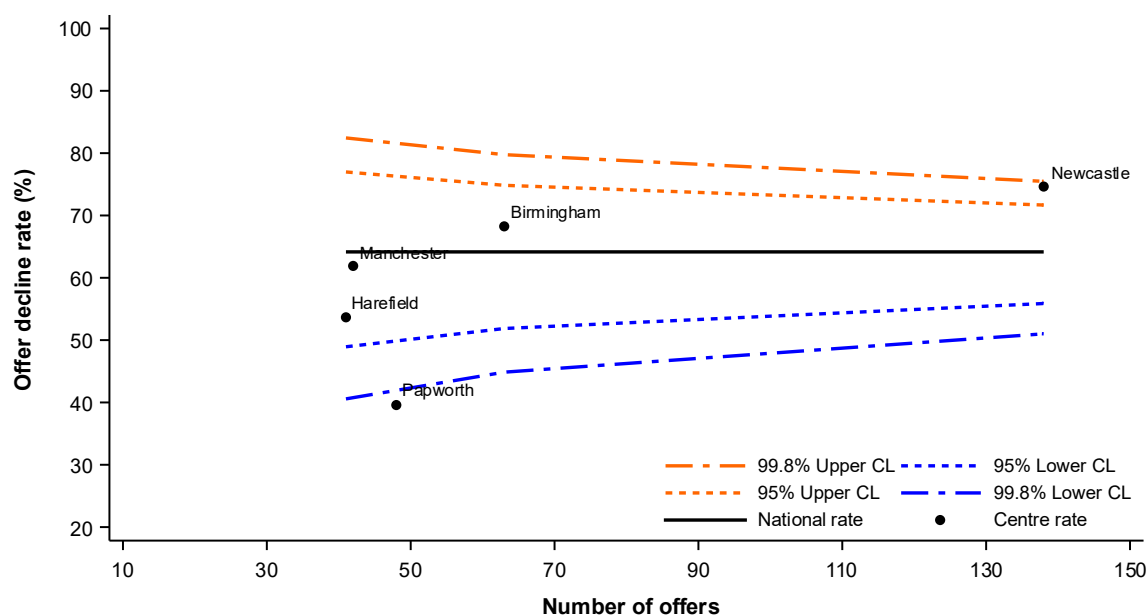


Table 4.2 Adult DCD donor bilateral lung offer results by transplant centre, between 1 April 2023 and 31 March 2026

Centre	Number of offers	Decline rate (%)
Birmingham	63	(68.3)
Harefield	41	(53.7)
Manchester	42	(61.9)
Newcastle	138	(74.6)
Papworth	48	(39.6)
UK	332	(64.2)
Centre has reached the upper 99.8% confidence limit Centre has reached the upper 95% confidence limit Centre has reached the lower 95% confidence limit Centre has reached the lower 99.8% confidence limit		

ADULT LUNG TRANSPLANTATION

Transplants



5.1 Adult lung and heart-lung transplants, 1 April 2016 – 31 March 2026

Figure 5.1 and **5.2** show the number of adult lung transplants performed per year over the last 10 years, by donor type, nationally and by centre, respectively. The number of transplants fell dramatically in 2020/2021, to 87, coinciding with the COVID-19 pandemic. There has been a gradual increase in annual numbers since then, with 185 in the latest year which surpasses the two years prior to the pandemic and represents the second highest year in the decade. **Figure 5.2** shows that all centres performed more transplants in 2025/2026 compared to the previous year, except for Manchester, which performed 4 fewer. Last year DCD lungs represented 41% of the total transplants. Last year's activity is shown by centre and donor type in **Figure 5.3**. The highest number of transplants were performed by Papworth followed closely by Newcastle.

Figure 5.1 Number of adult lung transplants in the UK, by financial year and donor type, 1 April 2016 to 31 March 2026

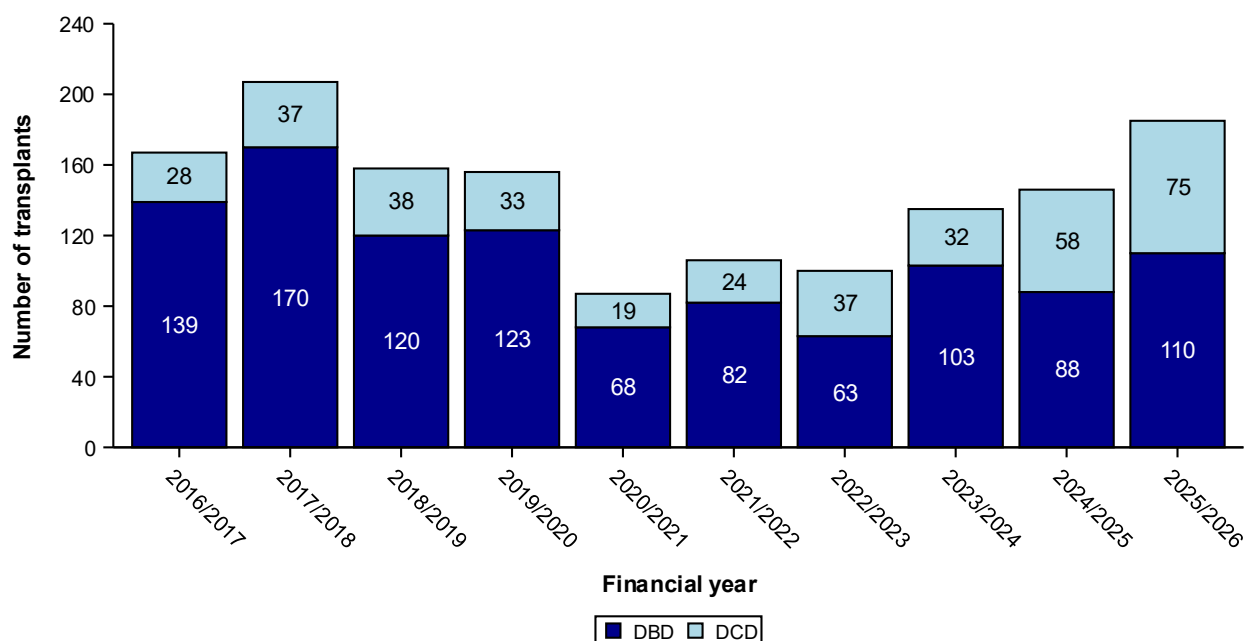


Figure 5.2 Number of adult lung transplants in the UK, by financial year, centre and donor type, 1 April 2016 to 31 March 2026

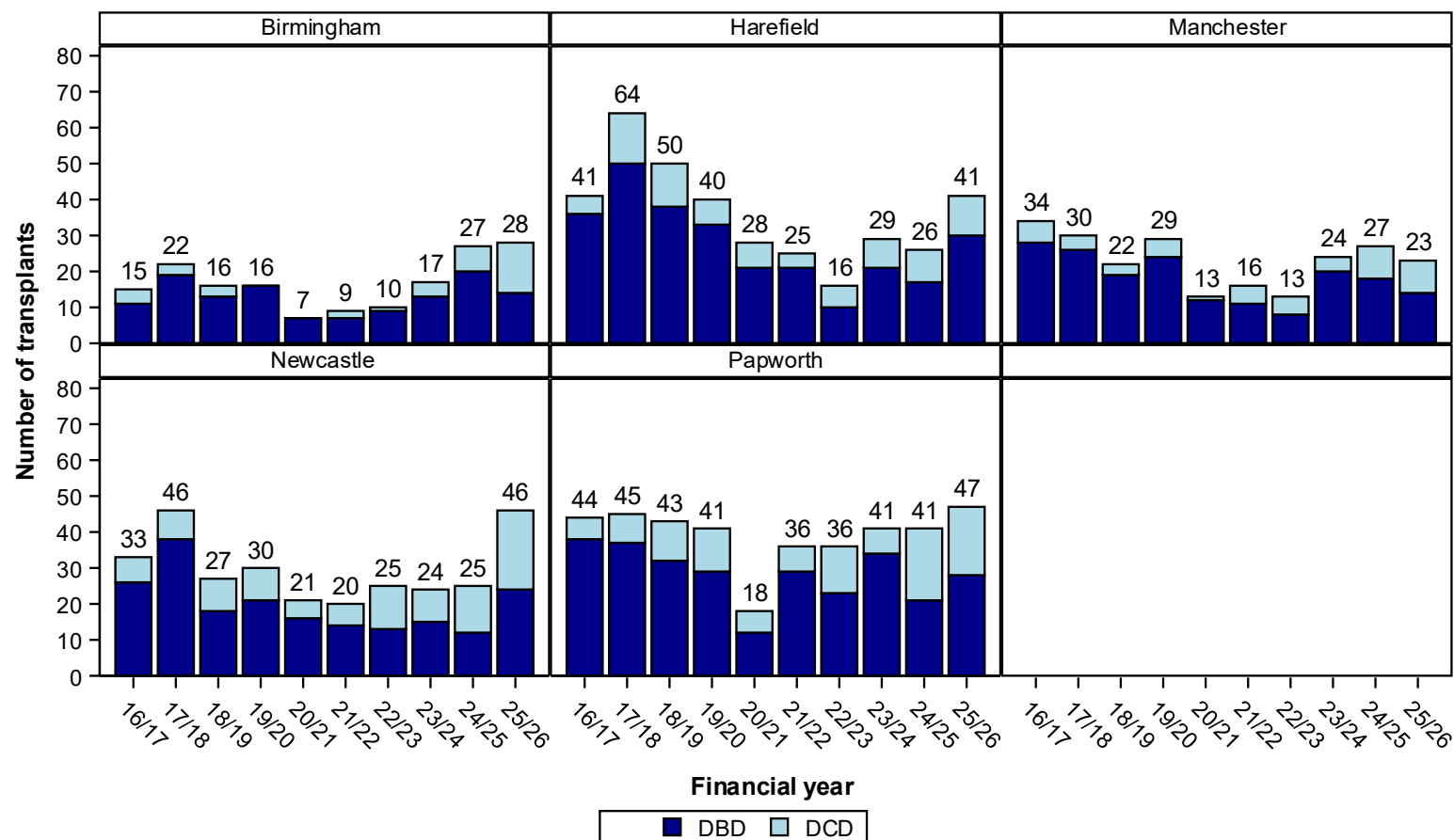


Figure 5.3 Number of adult lung transplants in the UK, by centre and donor type, 1 April 2025 to 31 March 2026

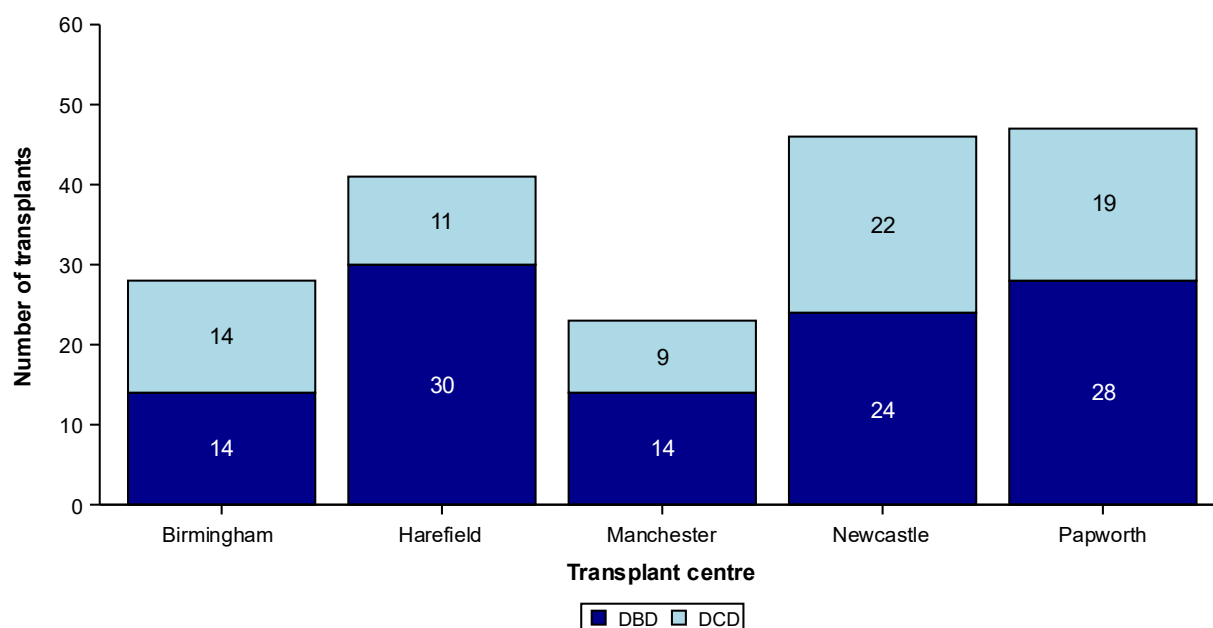


Figure 5.4 and **5.5** show the number of adult lung transplants performed in the last 10 years, by transplant type, nationally and by centre, respectively. There was a total of 36 heart-lung block transplants, and 1 partial lung transplant, over the last 10 years. The number of single lung transplants has decreased over the decade, with just 2 in the most recent year. When broken down by centre (**Figure 5.5**), all centres have reduced their use of single lungs. In the last financial year (**Figure 5.6**), Papworth and Harefield both performed 1 single lung transplant; Papworth also performed 1 partial lung transplant.

Figure 5.4 Number of adult lung transplants in the UK, by financial year and transplant type, 1 April 2016 to 31 March 2026

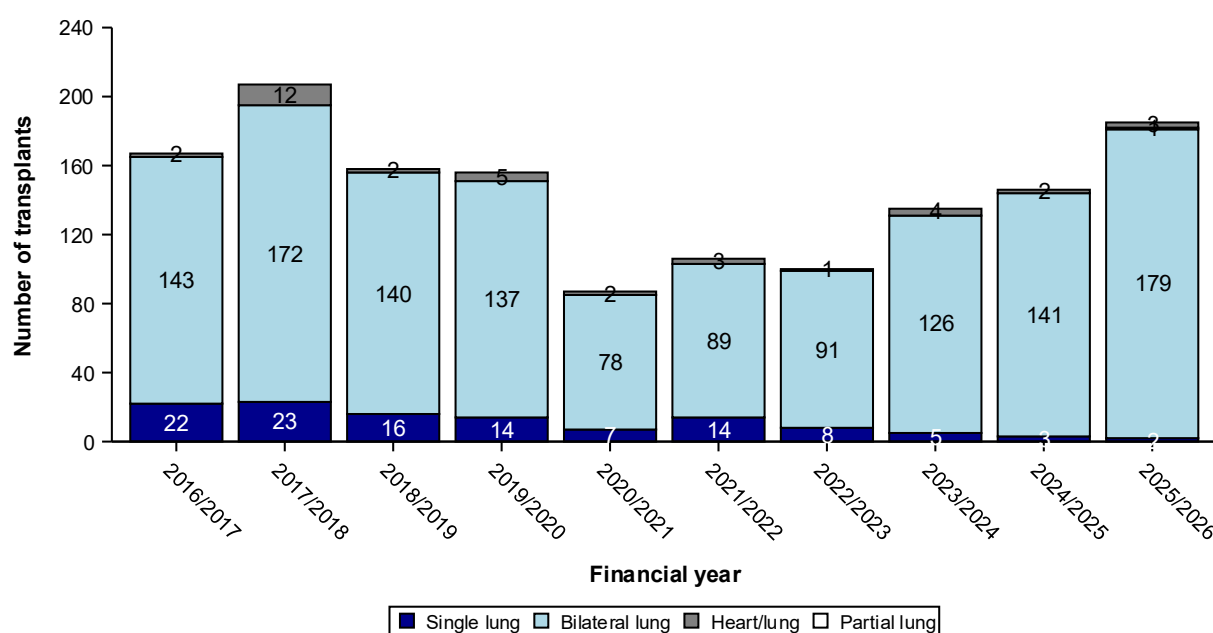


Figure 5.5 Number of adult lung transplants in the UK, by financial year, centre and transplant type, 1 April 2016 to 31 March 2026

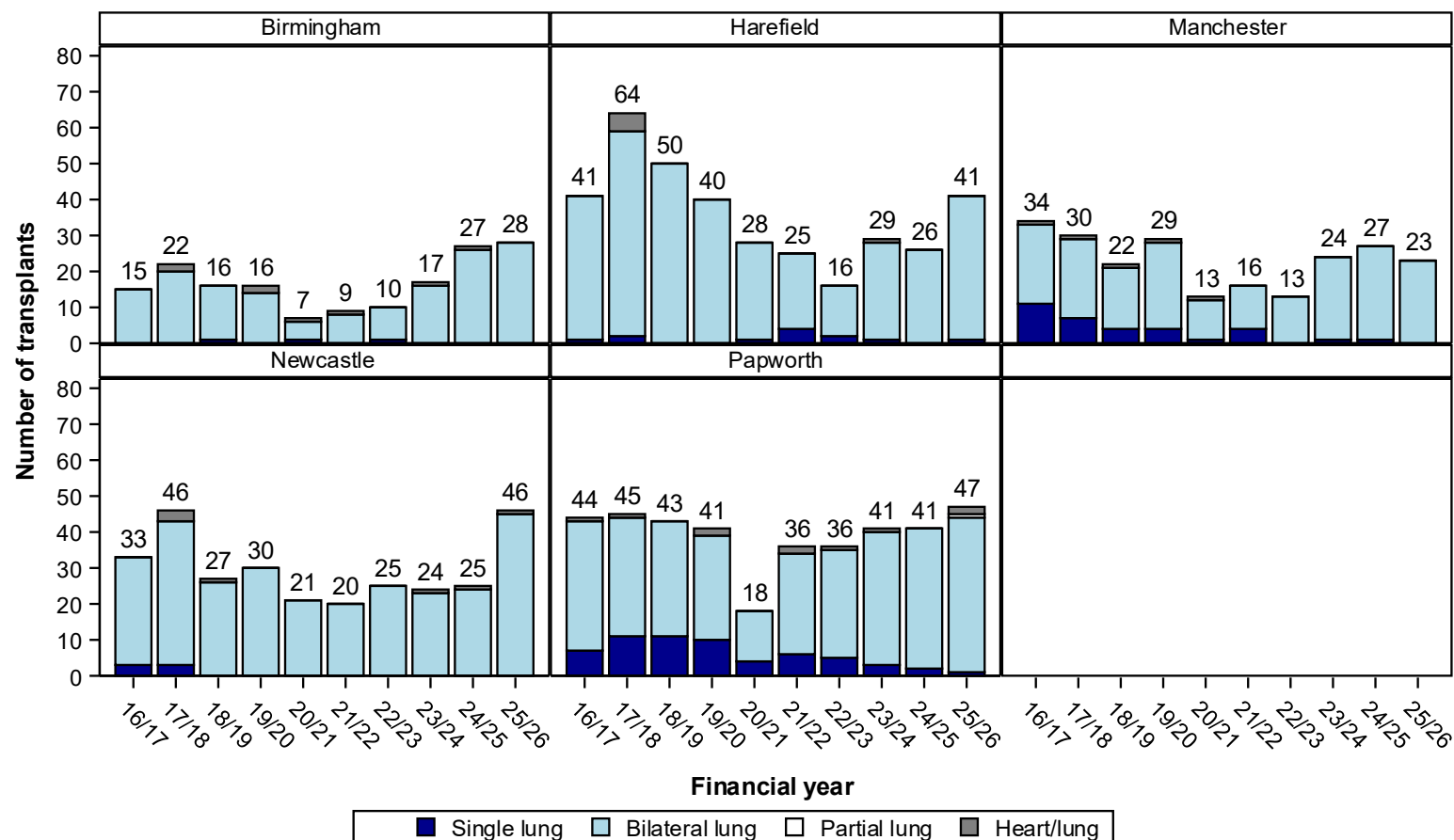
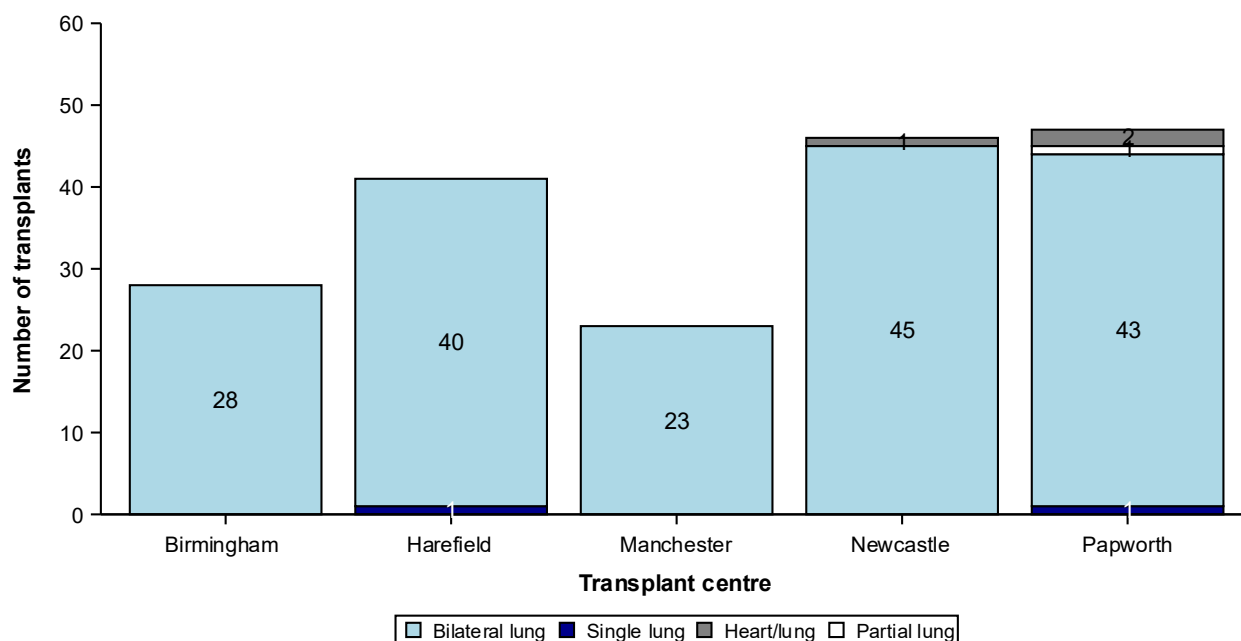


Figure 5.6 Number of adult lung transplants in the UK, by centre and transplant type, 1 April 2025 to 31 March 2026



In May 2017, the super-urgent and urgent lung allocation schemes were introduced, allowing for prioritisation of the sickest patients awaiting a lung transplant nationally. The number of lung only transplants per year by urgency status is shown in **Figure 5.7**; the proportion of urgent or super-urgent lung transplants was highest in 2025/2026, at 48%.

Figure 5.7 Number of adult lung only transplants in the UK, by financial year and urgency status, 1 April 2016 to 31 March 2026

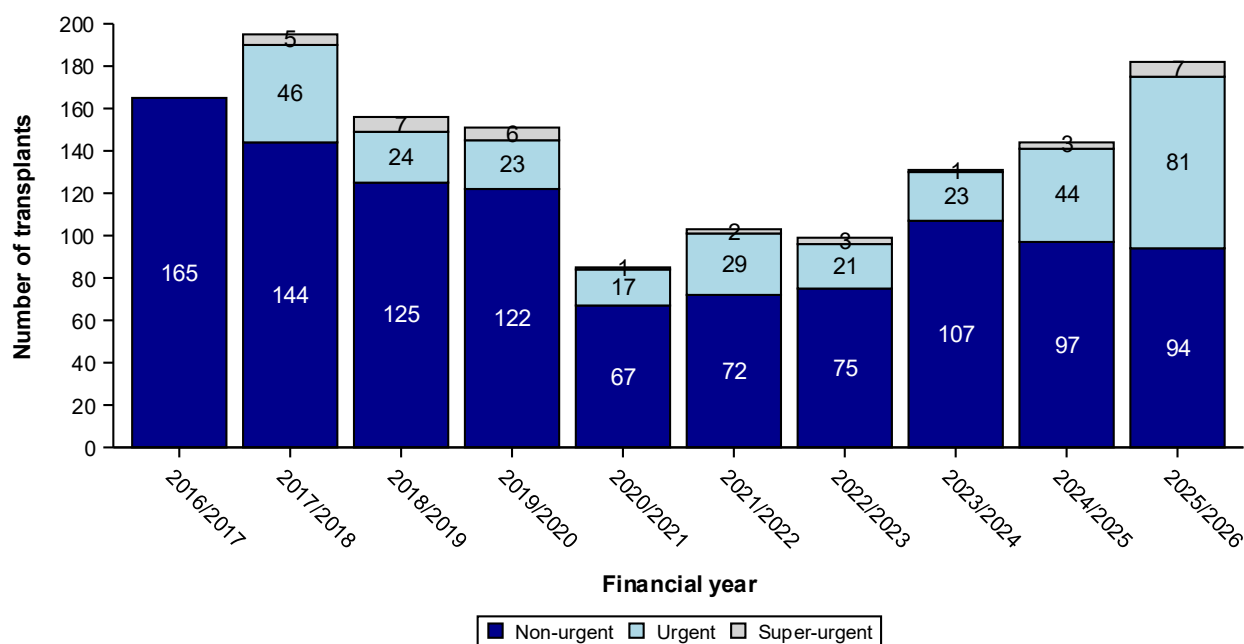


Figure 5.8 provides a breakdown of the number of lung only transplants by centre and urgency for the latest financial year. Newcastle performed the highest number of urgent lung transplants, representing 56% of their transplant activity. There were 7 super-urgent lung only transplants; 1 at Papworth, Harefield and Manchester each, and 4 at Newcastle. Three adult heart-lung transplants took place in 2025/2026; 2 were non-urgent and 1 was urgent (not shown in the figure).

Figure 5.8 Number of adult lung only transplants in the UK, by centre and urgency status, 1 April 2025 to 31 March 2026

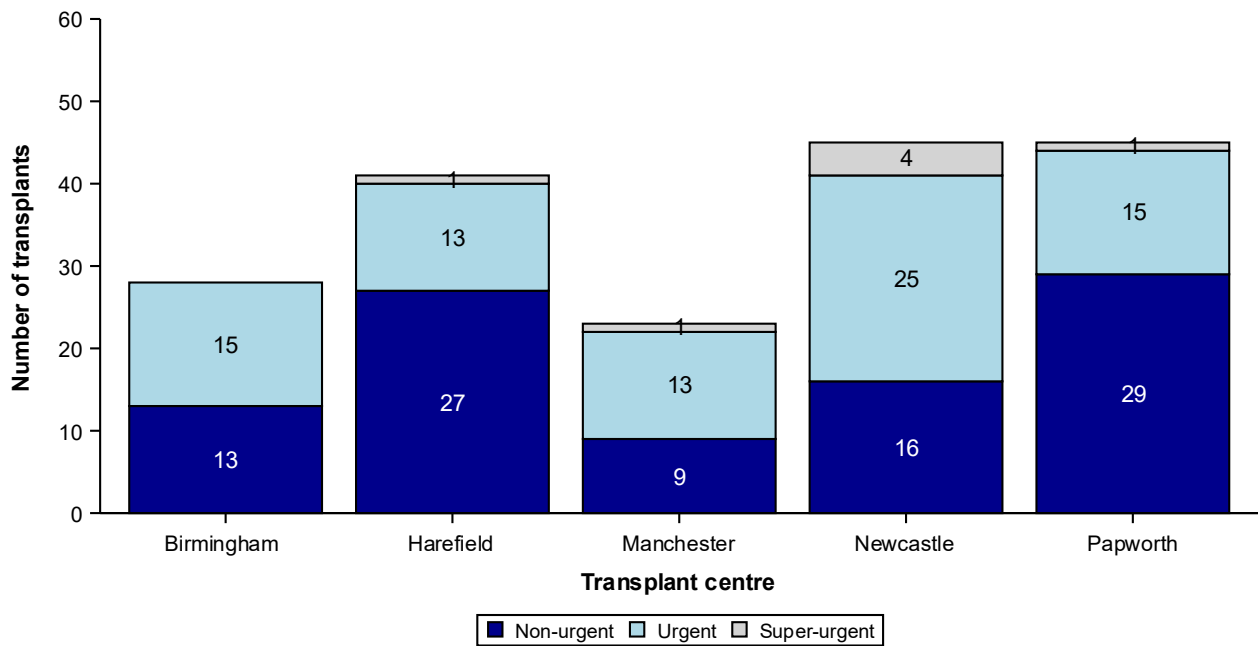


Figure 5.9 shows the number of adult lung only transplants over the last 10 financial years, by disease group. The majority of lung only transplants in 2025/2026 were for recipients with fibrosing lung disease. **Figure 5.10** shows the number of adult lung only transplants over the last 10 financial years by disease group and centre.

Figure 5.9 Number of adult lung only transplants in the UK, by financial year and disease group, 1 April 2016 to 31 March 2026

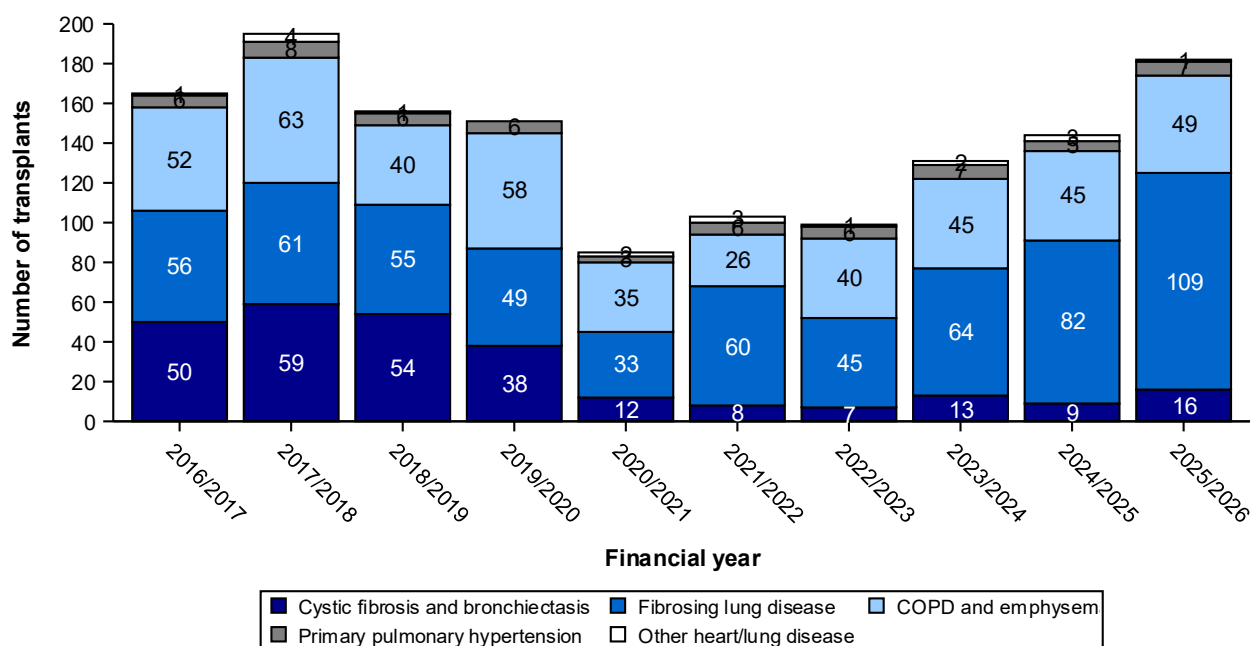
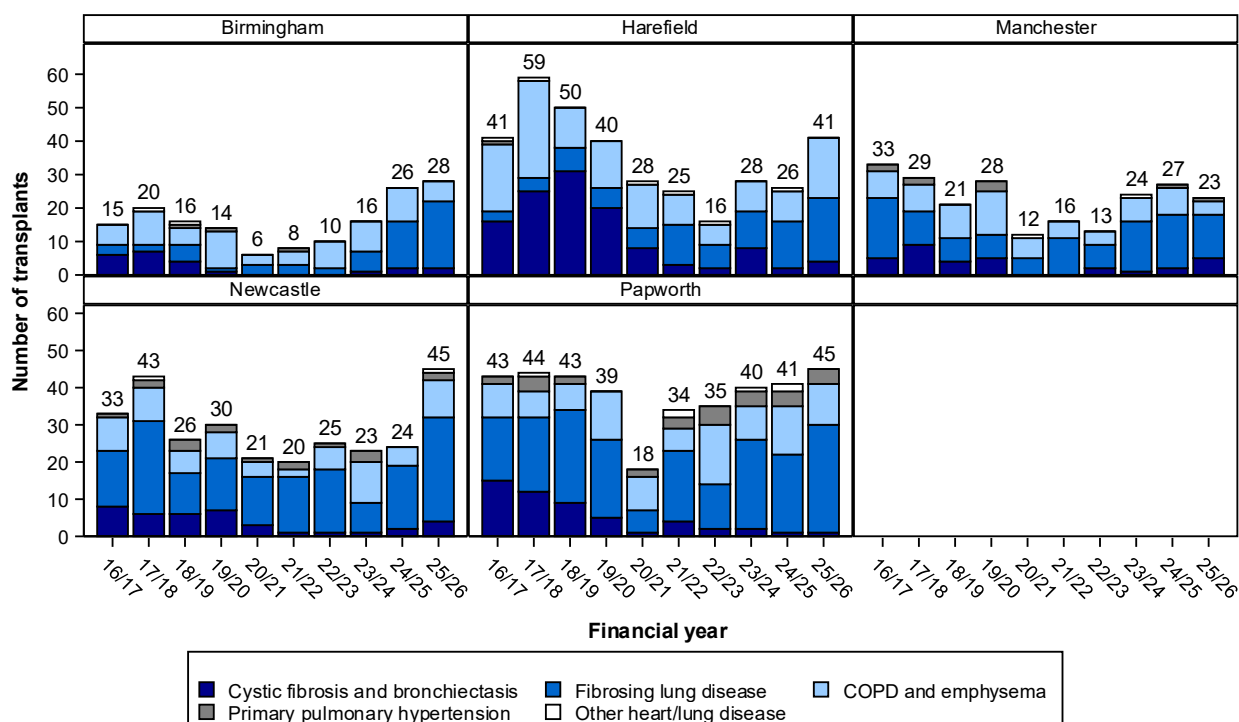


Figure 5.10 Number of adult lung only transplants in the UK, by financial year, centre and disease group, 1 April 2016 to 31 March 2026



5.2 Demographic characteristics of transplants, 1 April 2025 – 31 March 2026

The demographic characteristics of the 185 adult lung and heart-lung transplant recipients and donors in the latest year are shown by centre and overall in **Table 5.1**. Nationally, 68% of lung recipients were male and the [median](#) age was 57 years while the median age of donors was 46 years. For some characteristics, due to rounding, percentages may not add up to 100.

Table 5.1 Demographic characteristics of UK adult lung transplants performed between 1 April 2025 and 31 March 2026, by centre							
		Birmingham N (%)	Harefield N (%)	Manchester N (%)	Newcastle N (%)	Papworth N (%)	TOTAL N (%)
Number of transplants		28 (100)	41 (100)	23 (100)	46 (100)	47 (100)	185 (100)
Urgency status at transplant	Non-urgent	13 (46)	27 (66)	9 (39)	16 (35)	31 (66)	96 (52)
	Urgent	15 (54)	13 (32)	13 (57)	26 (57)	15 (32)	82 (44)
	Super-urgent	0 (0)	1 (2)	1 (4)	4 (9)	1 (2)	7 (4)
Recipient sex	Male	27 (96)	27 (66)	14 (61)	30 (65)	27 (57)	125 (68)
	Female	1 (4)	14 (34)	9 (39)	16 (35)	20 (43)	60 (32)
Recipient ethnicity	White	23 (82)	35 (85)	21 (91)	44 (96)	44 (94)	167 (90)
	Asian	5 (18)	2 (5)	2 (9)	1 (2)	2 (4)	12 (7)
	Black	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	2 (1)
	Missing	0 (0)	2 (5)	0 (0)	1 (2)	1 (2)	4 (2)
Recipient age (years)	Median (IQR)	57 (50, 61)	51 (41, 59)	58 (52, 61)	59 (49, 61)	56 (52, 61)	57 (50, 61)
	Missing	0	0	0	0	0	0
Recipient weight (kg)	Median (IQR)	80 (69, 89)	75 (58, 82)	69 (58, 84)	74 (66, 82)	75 (64, 83)	75 (65, 83)
	Missing	0	0	0	0	0	0
Recipient primary disease	Cystic fibrosis and bronchiectasis	2 (7)	4 (10)	5 (22)	4 (9)	1 (2)	16 (9)
	Fibrosing lung disease	20 (71)	19 (46)	13 (57)	28 (61)	30 (64)	110 (60)
	COPD and emphysema	6 (21)	18 (44)	4 (17)	10 (22)	11 (23)	49 (27)
	Primary pulmonary hypertension	0 (0)	0 (0)	1 (4)	2 (4)	5 (11)	8 (4)
	Other or unknown lung disease	0 (0)	0 (0)	0 (0)	2 (4)	0 (0)	2 (1)

Table 5.1 Demographic characteristics of UK adult lung transplants performed between 1 April 2025 and 31 March 2026, by centre

		Birmingham N (%)	Harefield N (%)	Manchester N (%)	Newcastle N (%)	Papworth N (%)	TOTAL N (%)
Recipient in hospital	No	28 (100)	39 (95)	18 (78)	42 (91)	44 (94)	171 (92)
	Yes	0 (0)	2 (5)	5 (22)	4 (9)	3 (6)	14 (8)
In hospital, recipient on ventilator	No	0 (0)	2 (100)	5 (100)	4 (100)	3 (100)	14 (100)
In hospital, recipient ECMO	No	0 (0)	2 (100)	4 (80)	1 (25)	2 (67)	9 (64)
	Yes	0 (0)	0 (0)	1 (20)	3 (75)	1 (33)	5 (36)
In hospital, recipient on inotropes	No	0 (0)	2 (100)	5 (100)	3 (75)	3 (100)	13 (93)
	Yes	0 (0)	0 (0)	0 (0)	1 (25)	0 (0)	1 (7)
Recipient CMV status	Negative	16 (57)	24 (59)	14 (61)	33 (72)	26 (55)	113 (61)
	Positive	12 (43)	17 (41)	9 (39)	13 (28)	20 (43)	71 (38)
	Missing	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	1 (1)
Recipient HCV status	Negative	28 (100)	41 (100)	23 (100)	46 (100)	47 (100)	185 (100)
Recipient HBV status	Negative	28 (100)	41 (100)	23 (100)	46 (100)	46 (98)	184 (100)
	Positive	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	1 (1)
Recipient HIV status	Negative	28 (100)	41 (100)	23 (100)	46 (100)	47 (100)	185 (100)
Recipient serum creatinine (umol/l)	Median (IQR)	71 (62, 81)	75 (56, 83)	69 (57, 84)	66 (53, 79)	66 (53, 83)	69 (56, 82)
	Missing	1	0	0	0	0	1
Donor sex	Male	9 (32)	17 (41)	6 (26)	18 (39)	22 (47)	72 (39)
	Female	19 (68)	24 (59)	17 (74)	28 (61)	25 (53)	113 (61)
Donor ethnicity	White	26 (93)	36 (88)	22 (96)	40 (87)	42 (89)	166 (90)
	Asian	1 (4)	3 (7)	0 (0)	3 (7)	3 (6)	10 (5)
	Black	0 (0)	0 (0)	0 (0)	2 (4)	1 (2)	3 (2)
	Missing	1 (4)	2 (5)	1 (4)	1 (2)	1 (2)	6 (3)
Donor age (years)	Median (IQR)	47 (39, 55)	47 (36, 58)	36 (17, 49)	47 (28, 51)	45 (36, 56)	46 (34, 54)
	Missing	0	0	0	0	0	0

Table 5.1 Demographic characteristics of UK adult lung transplants performed between 1 April 2025 and 31 March 2026, by centre

		Birmingham N (%)	Harefield N (%)	Manchester N (%)	Newcastle N (%)	Papworth N (%)	TOTAL N (%)
Donor BMI (kg/m ²)	Median (IQR)	26 (23, 28)	27 (24, 32)	27 (23, 30)	23 (21, 26)	25 (23, 29)	26 (23, 29)
	Missing	0	0	0	0	0	0
Donor cause of death	Intracranial/CVA	25 (89)	36 (88)	20 (87)	41 (89)	39 (83)	161 (87)
	Trauma	0 (0)	0 (0)	0 (0)	1 (2)	3 (6)	4 (2)
	Others	3 (11)	5 (12)	3 (13)	4 (9)	5 (11)	20 (11)
Donor hypotension	No	22 (79)	34 (83)	22 (96)	18 (39)	38 (81)	134 (72)
	Yes	4 (14)	7 (17)	1 (4)	5 (11)	9 (19)	26 (14)
	Missing	2 (7)	0 (0)	0 (0)	23 (50)	0 (0)	25 (14)
Donor past cardio disease	No	27 (96)	37 (90)	21 (91)	43 (93)	43 (91)	171 (92)
	Yes	1 (4)	4 (10)	2 (9)	2 (4)	4 (9)	13 (7)
	Missing	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	1 (1)
Donor past hypertension	No	26 (93)	31 (76)	18 (78)	42 (91)	37 (79)	154 (83)
	Yes	2 (7)	9 (22)	5 (22)	4 (9)	10 (21)	30 (16)
	Missing	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	1 (1)
Donor history of cancer/malignancy	No	28 (100)	40 (98)	23 (100)	46 (100)	45 (96)	182 (98)
	Yes	0 (0)	1 (2)	0 (0)	0 (0)	1 (2)	2 (1)
	Missing	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	1 (1)
Donor past/current smoker	No	14 (50)	25 (61)	16 (70)	30 (65)	27 (57)	112 (61)
	Yes	14 (50)	16 (39)	7 (30)	16 (35)	20 (43)	73 (40)
Total preservation time ¹ (hours)	Median (IQR)	7.2 (6.4, 7.8)	11.6 (10.1, 15.0)	9.2 (7.5, 11.1)	10.8 (8.4, 13.3)	9.0 (7.5, 10.4)	9.4 (7.6, 12.1)
	Missing	0	5	3	0	0	8
Transplant type	Single lung	0 (0)	1 (2)	0 (0)	0 (0)	1 (2)	2 (1)
	Bilateral lung	28 (100)	40 (98)	23 (100)	45 (98)	43 (91)	179 (97)
	Partial lung	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	1 (1)
	Heart/lung	0 (0)	0 (0)	0 (0)	1 (2)	2 (4)	3 (2)

¹ Time from cross clamp in the donor to reperfusion in the recipient

5.3 Total preservation time, 1 April 2016 – 31 March 2026

Figure 5.11 shows [boxplots](#) of the total preservation time for [DBD](#) donor lungs transplanted into adult recipients over the last 10 years. The total preservation time is the difference between donor cross-clamp and recipient reperfusion (of second lung if applicable) and can be considered the out of body time. The national [median](#) total preservation time has increased from 6.3 hours to 9.4 hours over the last 10 years, with the increase mainly occurring in the last three years. This most likely corresponds with the introduction of 10-degree fridge preservation which allows safe prolongation of the out of body time. It may also reflect a recent increase in the use of Ex-Vivo Lung Perfusion (EVLP). Harefield and Papworth began using the 10-degree fridge in 2023, Manchester and Newcastle in 2025 and more recently Birmingham in 2026.

Figure 5.11 Boxplots of total preservation time for DBD donor lungs transplanted into adult recipients, by financial year, 1 April 2016 to 31 March 2026

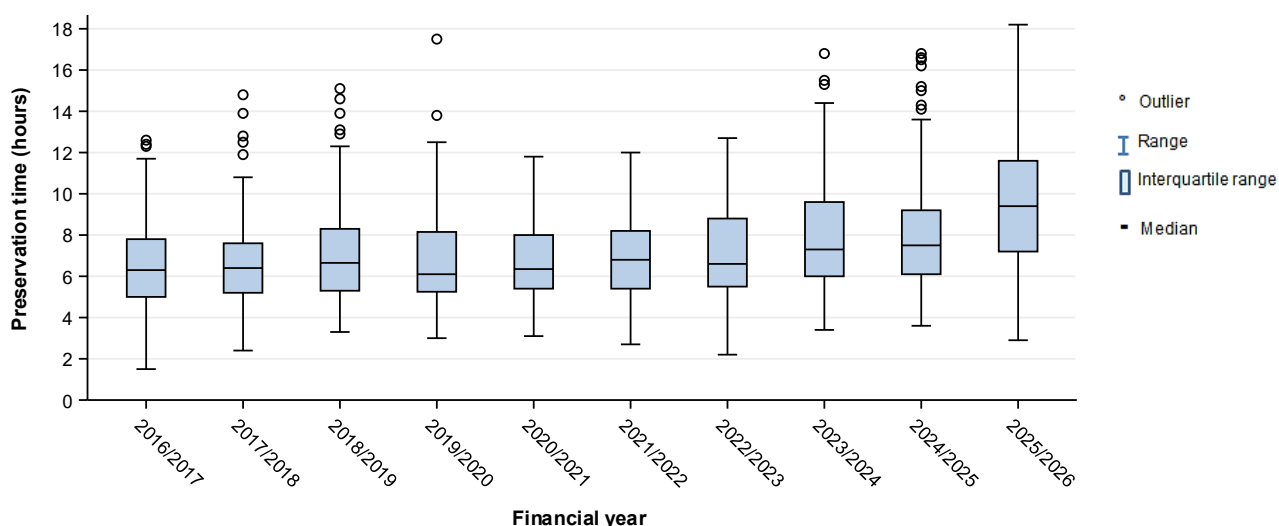


Figure 5.12 and **Figure 5.13** show [boxplots](#) of total preservation time by centre in the latest financial year and over the last 10 years, respectively. The median total preservation time for lung transplants in 2025/2026 was longest for lungs transplanted by Harefield and shortest for lungs transplanted by Birmingham. All centres have seen increases in median total preservation time over time (**Figure 5.13**).

Figure 5.12 Boxplots of total preservation time for DBD donor lungs transplanted into adult recipients, by transplant centre, 1 April 2025 to 31 March 2026

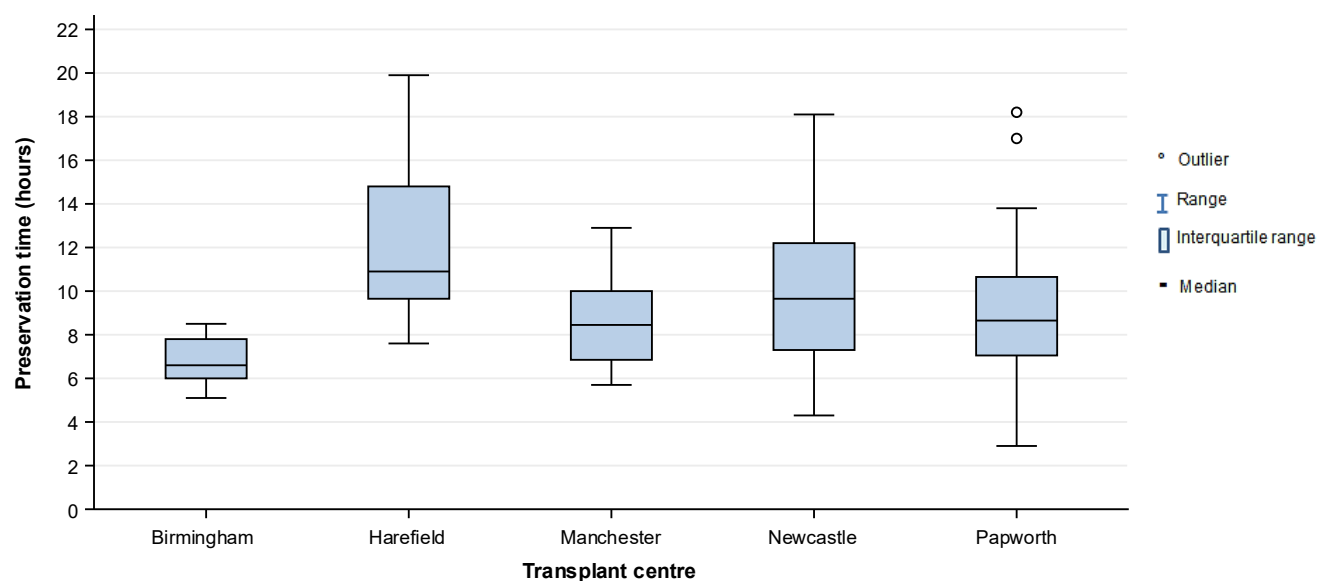
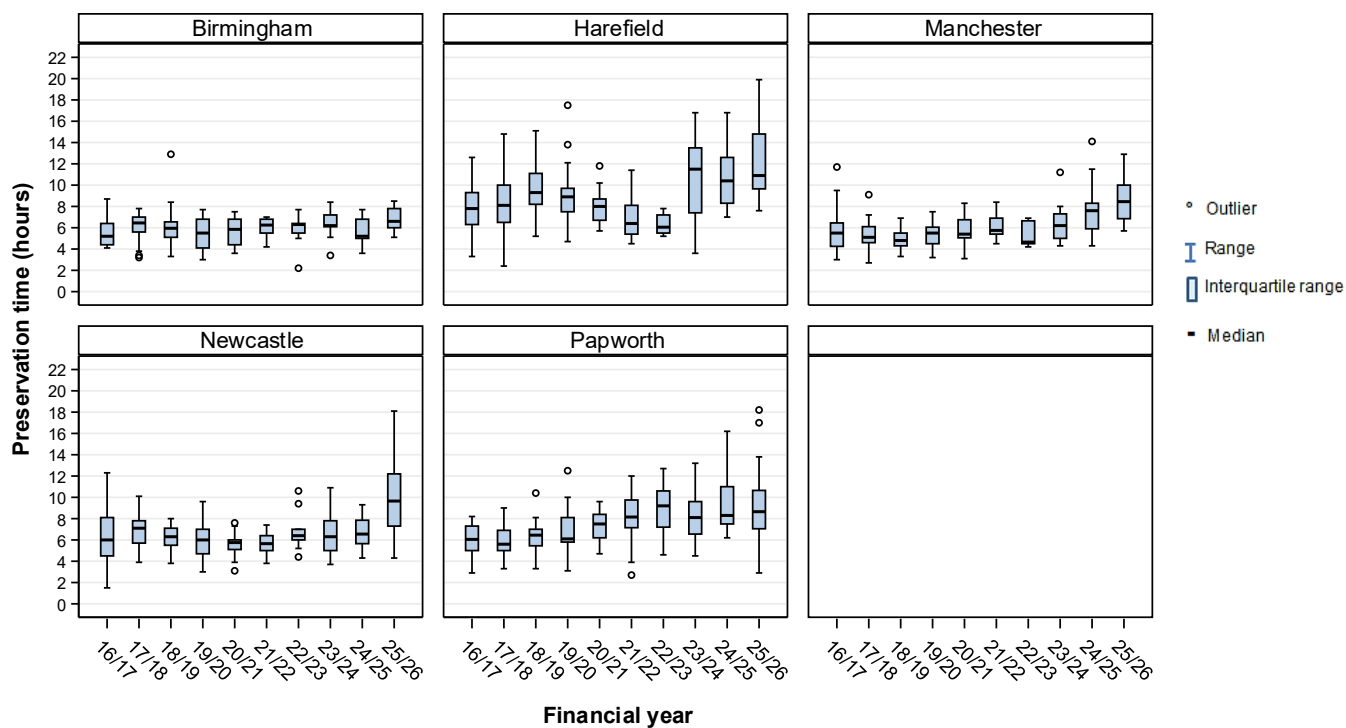


Figure 5.13 Boxplots of total preservation time for DBD donor lungs transplanted into adult recipients, by transplant centre and financial year, 1 April 2016 to 31 March 2026



ADULT LUNG TRANSPLANTATION

Post-Transplant Survival



6. Post-Transplant Survival

This section presents survival post adult lung transplantation. [Funnel plots](#) are used to compare the [risk-adjusted](#) survival rate at each centre with the national rate. The [risk-adjusted](#) rates seek to compare centre performance after accounting for differences in [case mix](#) across centres. The [unadjusted survival rates](#) are also presented in the tables, showing the observed survival experience at that centre. The [risk factors](#) used to produce the [risk-adjusted survival rates](#) are listed in [Appendix A3](#).

The survival analyses in **Section 6.1-6.3** include first time lung only transplants. Ninety-day and 1-year [survival rates](#) are based on transplants performed in the period 1 April 2021 to 31 March 2025 while 5-year [survival rates](#) are based on transplants performed in the period 1 April 2017 to 31 March 2021. Both DBD and DCD lung transplants are included. [Survival rates](#) are presented by transplant centre in **Tables 6.1-6.3** and **Figures 6.1-6.3**, by disease group in **Tables 6.4-6.5**, and by transplant type (single or bilateral lungs) in **Table 6.6**. Survival following heart-lung transplantation is provided separately in **Section 6.4** and survival outcomes following [multi-organ](#) lung transplantation are summarised in **Section 6.5**.

6.1 Survival by centre

Table 6.1 and **Figure 6.1** show the 90-day post-transplant [unadjusted](#) and [risk-adjusted](#) patient survival rates for each centre and nationally for the 471 first adult lung only transplants in the period 1 April 2021 to 31 March 2025. All centres were statistically consistent with the national rate of survival which was 90.9%.

Table 6.1 90 day patient survival rates after first adult lung transplant, by centre, 1 April 2021 and 31 March 2025					
Centre	Number of transplants	% 90 day survival (95% CI)			
		Unadjusted		Risk-adjusted	
Birmingham	60	95.0	(85.3 - 98.4)	91.4	(73.4 - 97.2)
Harefield	91	84.6	(75.4 - 90.6)	89.0	(81.5 - 93.5)
Manchester	78	93.6	(85.3 - 97.3)	92.8	(82.7 - 97.0)
Newcastle	92	90.2	(82.0 - 94.8)	88.4	(77.7 - 94.0)
Papworth	150	92.0	(86.3 - 95.4)	92.0	(85.9 - 95.5)
UK	471	90.9	(87.9 - 93.1)		

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

Figure 6.1 Risk-adjusted 90 day patient survival rates for adult lung transplants, by centre, 1 April 2021 to 31 March 2025

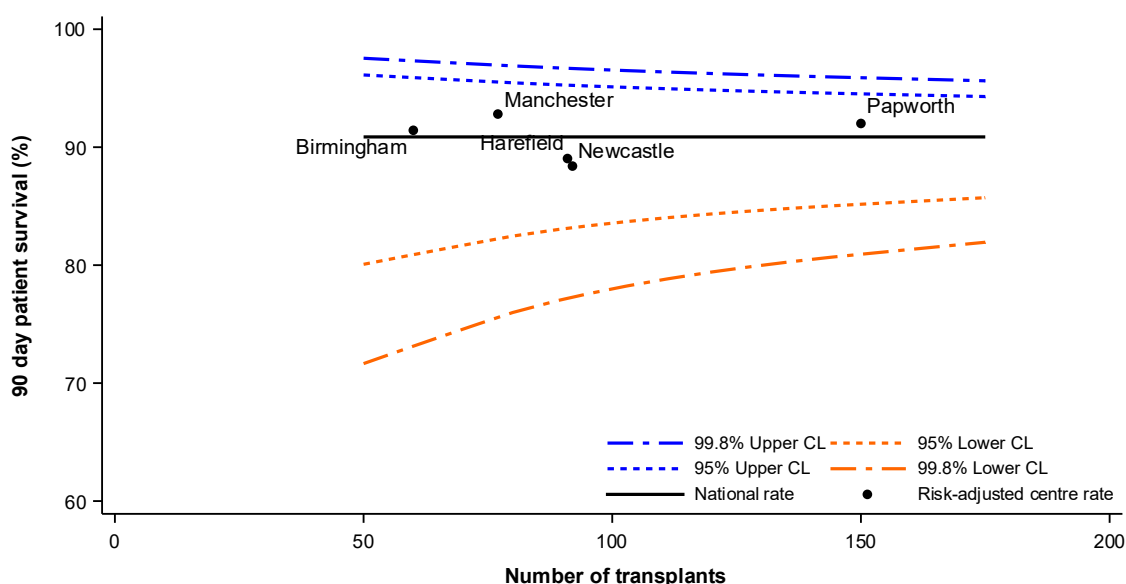


Table 6.2 and **Figure 6.2** show the 1-year post-transplant [unadjusted](#) and [risk-adjusted](#) patient [survival rates](#) for each centre and nationally for the 471 first adult lung only transplants in the period 1 April 2021 to 31 March 2025. The national rate of survival was 82.7%. The rates for all centres were statistically consistent with the national rate.

Table 6.2 1 year patient survival rates after first adult lung transplant, by centre, 1 April 2021 to 31 March 2025					
Centre	Number of transplants	% 1 year survival (95% CI)			
		Unadjusted		Risk-adjusted	
Birmingham	60	86.1	(73.9 - 92.8)	83.4	(66.7 - 91.7)
Harefield	91	81.3	(71.7 - 87.9)	83.4	(73.3 - 89.7)
Manchester	78	84.2	(73.8 - 90.7)	84.4	(72.5 - 91.1)
Newcastle	92	81.5	(71.9 - 88.1)	79.7	(67.4 - 87.4)
Papworth	150	81.9	(74.8 - 87.2)	82.1	(73.8 - 87.7)
UK	471	82.7	(78.9 - 85.8)		

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

Figure 6.2 Risk-adjusted one year patient survival rates for adult lung transplants, by centre, 1 April 2021 to 31 March 2025

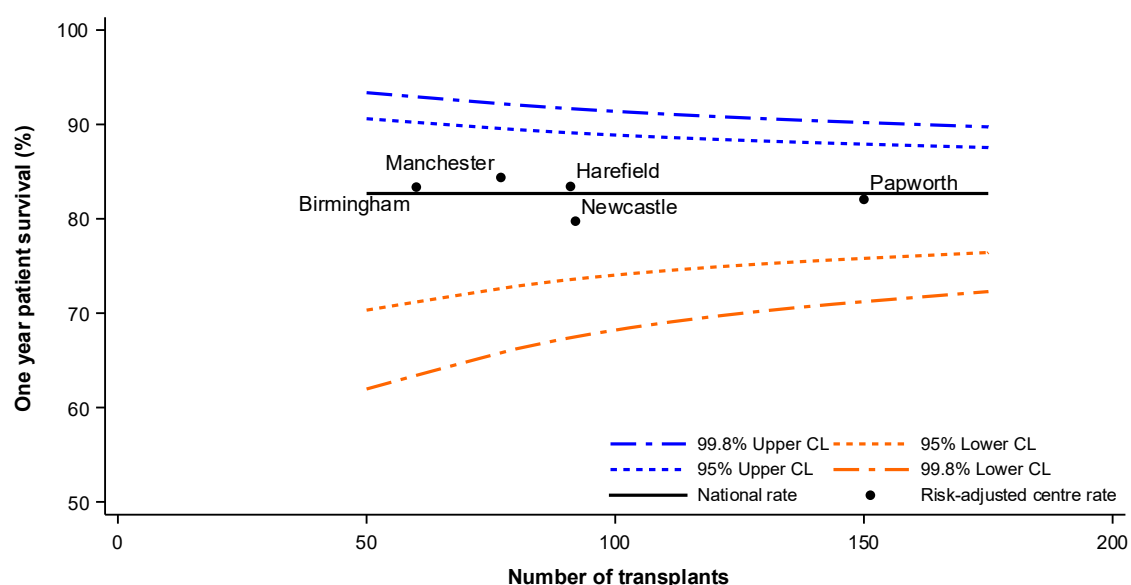
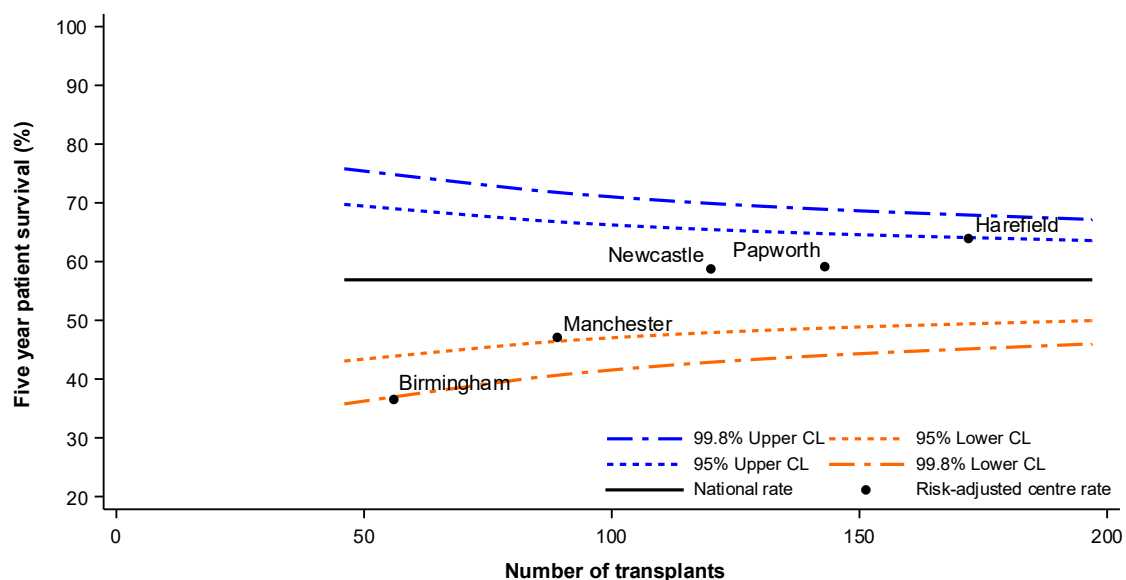


Table 6.3 and **Figure 6.3** show the 5-year post-transplant [unadjusted](#) and [risk-adjusted](#) patient [survival rates](#) for each centre and nationally for the 580 first adult lung only transplants in the period 1 April 2017 to 31 March 2021. Birmingham's survival rate at 5 years falls below the 99.8% lower [confidence limit](#), indicating a significantly lower post-transplant survival at this time point. All other centres were statistically consistent with the national rate of survival of 56.9%.

Table 6.3 5 year patient survival after first adult lung transplant, by centre, 1 April 2017 and 31 March 2021					
Centre	Number of transplants	% 5 year survival (95% CI)			
		Unadjusted		Risk-adjusted	
Birmingham	56	44.6	(31.4 - 57.0)	36.5	(9.7 - 55.4)
Harefield	172	63.2	(55.5 - 69.9)	63.9	(53.8 - 71.8)
Manchester	89	51.7	(40.9 - 61.5)	47.1	(28.7 - 60.8)
Newcastle	120	56.1	(46.6 - 64.5)	58.8	(45.9 - 68.6)
Papworth	143	58.0	(49.5 - 65.6)	59.1	(47.4 - 68.3)
UK	580	56.9	(52.7 - 60.8)		
Centre has reached the lower 99.8% confidence limit Centre has reached the lower 95% confidence limit Centre has reached the upper 95% confidence limit Centre has reached the upper 99.8% confidence limit					

Figure 6.3 Risk-adjusted five year patient survival rates for adult lung transplants, by centre, 1 April 2017 to 31 March 2021



6.2 Survival by disease group

Tables 6.4 and 6.5 present [unadjusted](#) and [risk-adjusted survival rates](#) by primary disease group, at 1 year and 5 years post-transplant, respectively. The [risk factors](#) used to produce the [risk-adjusted survival rates](#) are listed in [Appendix A3](#). There was no statistically significant difference in [survival rates](#) across disease groups at 1 year. At 5 years, the risk-adjusted survival rate for patients with cystic fibrosis and bronchiectasis was significantly higher than the national rate.

Table 6.4 1 year patient survival rates after first adult lung transplant, by disease group, 1 April 2021 to 31 March 2025

Disease group	Number of transplants	% 1 year survival (95% CI)			
			Unadjusted	Risk-adjusted	
Cystic fibrosis and bronchiectasis	35	88.4	(71.9 - 95.5)	86.7	(64.6 - 95.0)
COPD and emphysema	156	81.3	(74.2 - 86.6)	80.1	(71.4 - 86.2)
Fibrosing lung disease	250	83.5	(78.3 - 87.6)	83.7	(77.9 - 88.0)
Primary pulmonary hypertension and other diseases	30	76.7	(57.2 - 88.1)	79.8	(57.6 - 90.4)
UK	471	82.7	(78.9 - 85.8)		

Table 6.5 5 year patient survival rates after first adult lung transplant, by disease group, 1 April 2017 to 31 March 2021

Disease group	Number of transplants	% 5 year survival (95% CI)			
			Unadjusted	Risk-adjusted	
Cystic fibrosis and bronchiectasis	161	67.7	(59.9 - 74.3)	65.3	(54.5 - 73.6)
COPD and emphysema	195	55.4	(48.1 - 62.2)	52.4	(41.2 - 61.4)
Fibrosing lung disease	196	50.4	(43.2 - 57.1)	55.8	(46.1 - 63.8)
Primary pulmonary hypertension and other diseases	28	50.0	(30.6 - 66.6)	49.2	(14.2 - 69.9)
UK	580	56.9	(52.7 - 60.8)		

6.3 Survival by transplant type

Table 6.6 presents [unadjusted survival rates](#) by transplant type (single lung against bilateral lungs), at 90 days, 1 year and 5 years post-transplant, respectively. Survival rates at 90 days and 1 year are based on transplants performed between 1 April 2021 and 31 March 2025 whereas the 5 year survival rates are for transplants performed between 1 April 2017 and 31 March 2021. Survival rates across transplant types were comparable at 90 days and 1 year, but at 5 years the survival after single lung transplant was markedly lower compared to bilateral lung transplant.

Table 6.6 Unadjusted patient survival rates after first adult lung transplant, by transplant type, 1 April 2021 to 31 March 2024 (90 day and 1 year) and 1 April 2017 to 31 March 2021 (5 year)

Transplant type	90 day			1 year			5 year		
	N*	% survival (95% CI)		N*	% survival (95% CI)		N*	% survival (95% CI)	
		Unadjusted			Unadjusted			Unadjusted	
Single lung	29	89.7	(71.3 - 96.5)	29	82.5	(62.9 - 92.3)	58	37.9	(25.6 - 50.1)
Bilateral lungs	442	91.0	(87.9 - 93.3)	442	82.7	(78.8 - 85.9)	522	59.0	(54.6 - 63.1)
UK	471	90.9	(87.9 - 93.1)	471	82.7	(78.9 - 85.8)	580	56.9	(52.7 - 60.8)

* Number of transplants

6.4 Survival post heart-lung transplant

Table 6.7 and **Table 6.8** present short-term patient [survival rates](#) following combined heart-lung transplant, by centre and nationally. During the time period 1 April 2017 to 1 April 2025, no centre performed more than 10 transplants so centre-specific rates are not presented. The national rates of survival were 90.3% at 90 days and 80.3% at 1 year.

Table 6.7 90 day patient survival after first adult heart-lung transplant, by centre, 1 April 2017 and 1 April 2025				
Centre	Number of transplants	Number of deaths	% 90 day survival (95% CI) (unadjusted)	
Birmingham ¹	8	1	-	-
Harefield ¹	6	2	-	-
Manchester ¹	4	0	-	-
Newcastle ¹	6	0	-	-
Papworth ¹	7	0	-	-
UK	31	3	90.3	(72.9 - 96.8)
¹ Survival rates for groups with less than 10 patients are not presented due to small numbers				

Table 6.8 1 year patient survival after first adult heart-lung transplant, by centre, 1 April 2017 and 1 April 2025				
Centre	Number of transplants	Number of deaths	% 1 year survival (95% CI) (unadjusted)	
Birmingham ¹	8	1	-	-
Harefield ¹	6	4	-	-
Manchester ¹	4	0	-	-
Newcastle ¹	6	1	-	-
Papworth ¹	7	0	-	-
UK	31	6	80.3	(61.3 - 90.6)
¹ Survival rates for groups with less than 10 patients are not presented due to small numbers				

6.5 Survival post multi-organ lung transplant

The survival outcomes of the small number of recipients of multi-organ lung transplants are reported in **Table 6.9**, at 90 days and 1 year post-transplant. This includes all first-time multi-organ transplants involving the lung, from DBD or DCD donors, between 1 April 2017 and 31 March 2025. It does not include heart-lung transplants which are shown in the previous section.

Table 6.9 Survival outcomes following multi-organ lung transplants performed between 1 April 2017 and 31 March 2025			
Transplant type	Number of transplants N	Number of patients alive at 90 days post-transplant N	Number of patients alive at 1 year post-transplant N
Lung & liver	4	3	2

ADULT LUNG TRANSPLANTATION

Survival from Listing



7. Survival from Listing

Survival from listing was analysed for patients aged 16 years or older registered for the first time for a lung transplant between 1 April 2017 and 31 March 2025. Survival time was defined as the time from joining the transplant list to death, regardless of whether the patient was transplanted and any factors associated with such a transplant e.g. transplant type. Survival time was censored at the last known follow-up date post-transplant when no death date was recorded, or at time of analysis if the patient was still active on the transplant list. For patients who were removed from the transplant list without receiving a transplant, and where there was no recorded death date, if the reason for removal was due to deteriorating condition, then this was classed as an event, while all other cases were censored. The [risk-adjusted](#) rates seek to compare centre performance after accounting for differences in [case mix](#) across centres. The [unadjusted survival rates](#) are also presented in the tables, showing the observed survival experience at that centre. The [risk factors](#) used to produce the [risk-adjusted survival rates](#) are listed in [Appendix A2](#).

1 and 5 year [risk-adjusted survival rates](#) from the point of lung transplant listing are shown as [funnel plots](#) in **Figures 7.1** and **7.2**, respectively. These rates are also shown in **Table 7.1** and **7.2**, respectively, along with the unadjusted rates. Note that the rates for 1 year and 5 year survival are calculated from disjoint cohorts of patients, to allow for the full 1 and 5 year follow-up periods to elapse.

The 1 year and 5 year survival rates from listing for all centres were statistically consistent with the national rate.

Table 7.1 1 year patient survival from listing for adult lung patients registered between 1 April 2021 to 31 March 2025					
Centre	Number of registrations	1 year survival % (95% CI)			
		<u>Unadjusted</u>		<u>Risk-adjusted</u>	
Birmingham	121	70.9	(61.9 - 78.2)	71.4	(60.2 - 79.5)
Harefield	135	78.3	(70.4 - 84.4)	75.0	(64.0 - 82.6)
Manchester	128	78.0	(69.8 - 84.3)	80.1	(71.2 - 86.3)
Newcastle	161	67.6	(59.8 - 74.2)	67.9	(57.9 - 75.6)
Papworth	183	75.7	(68.7 - 81.3)	75.8	(67.4 - 82.0)
UK	728	74.0	(70.6 - 77)		

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

Figure 7.1 Risk-adjusted one year patient survival rates from listing, by centre, 1 April 2021 to 31 March 2025

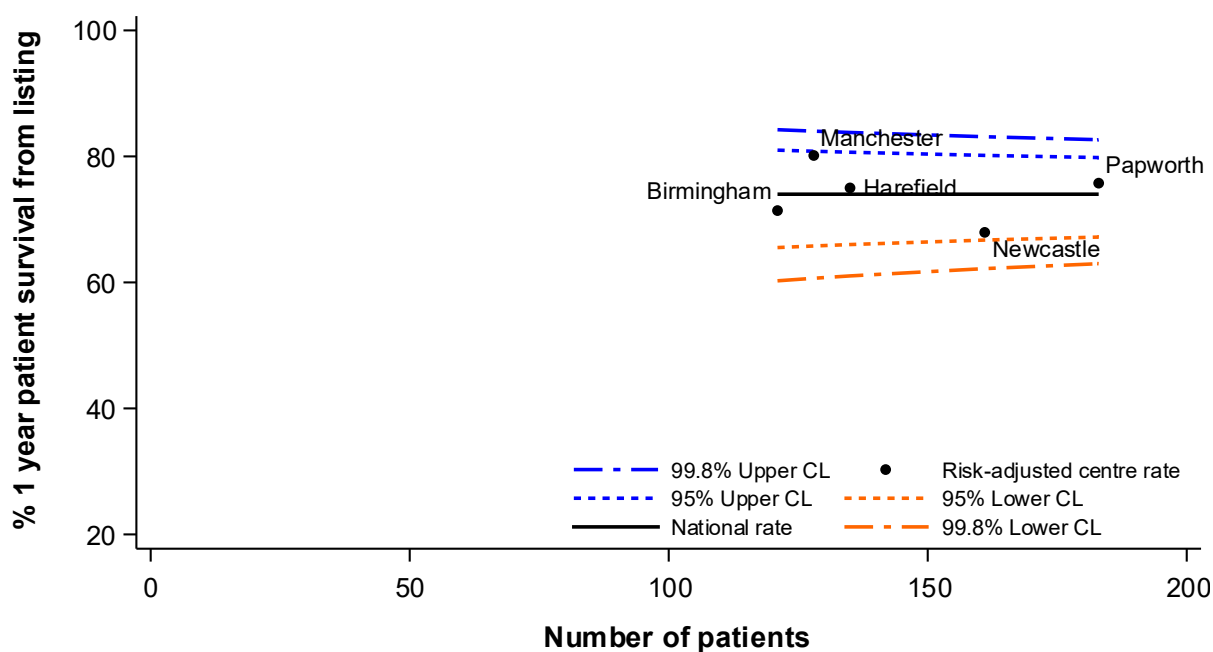
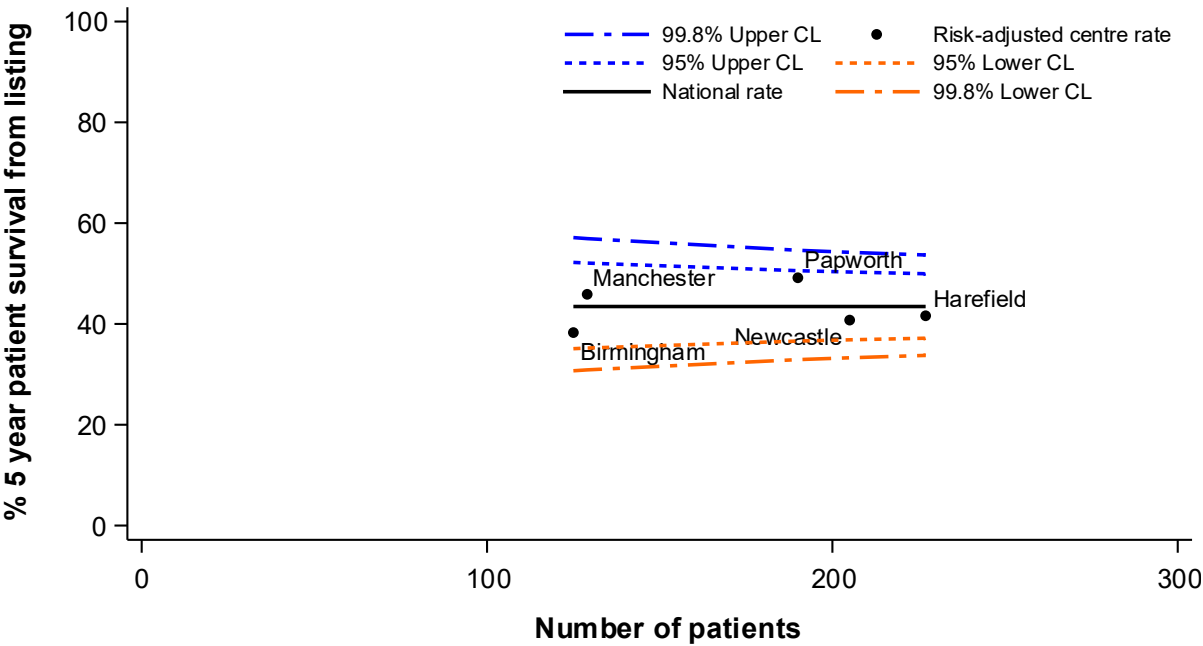


Table 7.2 5 year patient survival from listing for adult lung patients registered between 1 April 2017 to 31 March 2021					
Centre	Number of registrations	5 year survival % (95% CI)			
		<u>Unadjusted</u>		<u>Risk-adjusted</u>	
Birmingham	125	33.6	(25.3 - 42.1)	38.3	(23.9 - 50.0)
Harefield	227	50.8	(43.9 - 57.3)	41.6	(31.8 - 50.0)
Manchester	129	46.9	(37.8 - 55.6)	45.9	(35.1 - 54.9)
Newcastle	205	36.2	(29.5 - 42.9)	40.8	(31.1 - 49.1)
Papworth	190	46.7	(39.3 - 53.6)	49.2	(38.0 - 58.3)
UK	876	43.5	(40.1 - 46.8)		

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

Figure 7.2 Risk-adjusted five year patient survival rates from listing, by centre, 1 April 2017 to 31 March 2021



ADULT LUNG TRANSPLANTATION

Form Return Rates



8. Adult lung form return rates, 1 January – 31 December 2025

Form return rates are reported in **Table 8.1** for the cardiothoracic transplant record and the 3 month and 1 year follow up form, along with lifetime follow up (2 years or more). These include all adult lung and heart-lung transplants between 1 January and 31 December 2025 for the transplant record, and all follow up forms issued in this time period. Centres highlighted are the currently active transplant centres. All active centres have a form return rate of 98% or greater for this period except Newcastle and Harefield which have return rates of 94% and 95% respectively for lifetime follow-up. Note that any skipped follow-up forms are counted as not returned.

Table 8.1 Form return rates for adult lung transplants, 1 January 2025 to 31 December 2025

Centre	Transplant record		3 month follow-up		1 year follow-up		Lifetime follow-up	
	No. required	% returned	No. required	% returned	No. required	% returned	No. required	% returned
Aberdeen, Aberdeen Royal Infirmary	-	-	-	-	-	-	1	100
Birmingham, Queen Elizabeth Hospital	28	100	23	100	23	100	93	100
Harefield, Harefield Hospital	41	100	36	100	18	100	402	95
Leeds, St James Hospice	-	-	-	-	-	-	1	100
Manchester, Wythenshawe Hospital	28	100	31	100	20	100	171	99
Newcastle, Freeman Hospital	37	100	28	100	24	100	279	94
Papworth, Papworth Hospital	44	100	44	100	38	100	312	98
Sheffield, Northern General Hospital	-	-	-	-	-	-	2	100
Overall	178	100	162	100	123	100	1261	96

PAEDIATRIC LUNG TRANSPLANTATION

Transplant List



9.1 Paediatric lung and heart/lung transplant list on 31 March, 2017 – 2026

Figure 9.1 shows the number of paediatric patients on the lung transplant list on 31 March each year between 2017 and 2026 split by urgency status. There has been a recent decrease in the waiting list, with 7 patients active on the lung list on 31 March 2026; 5 on the non-urgent lung list, 1 on the urgent lung list, and 1 on the heart-lung list.

Figure 9.1 Number of paediatric patients on the lung transplant list on 31 March each year, by urgency status



Figure 9.2 shows the number of paediatric patients on the [active lung transplant list](#) on 31 March 2026 by centre and urgency. The 7 paediatric patients waiting for a lung transplant were all at Great Ormond Street Hospital. One patient at Great Ormond Street Hospital was on the urgent list, and none were on the super-urgent list.

Figure 9.2 Number of paediatric patients on the active lung transplant list on 31 March 2026, by centre and urgency

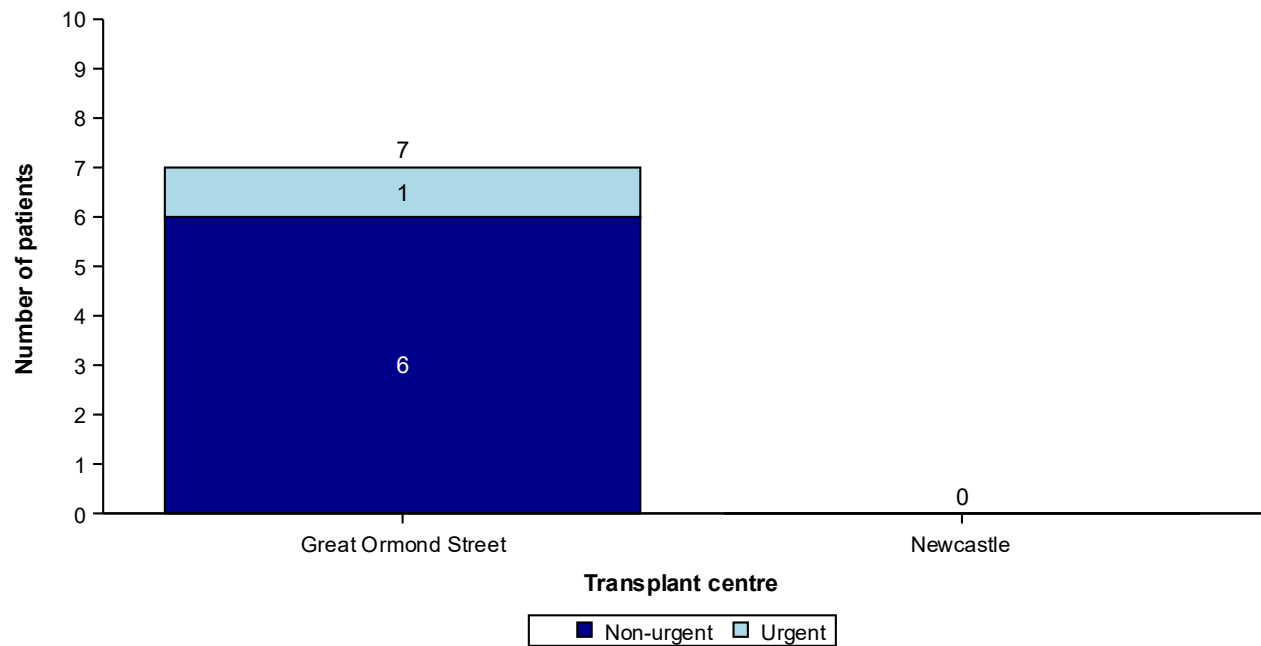
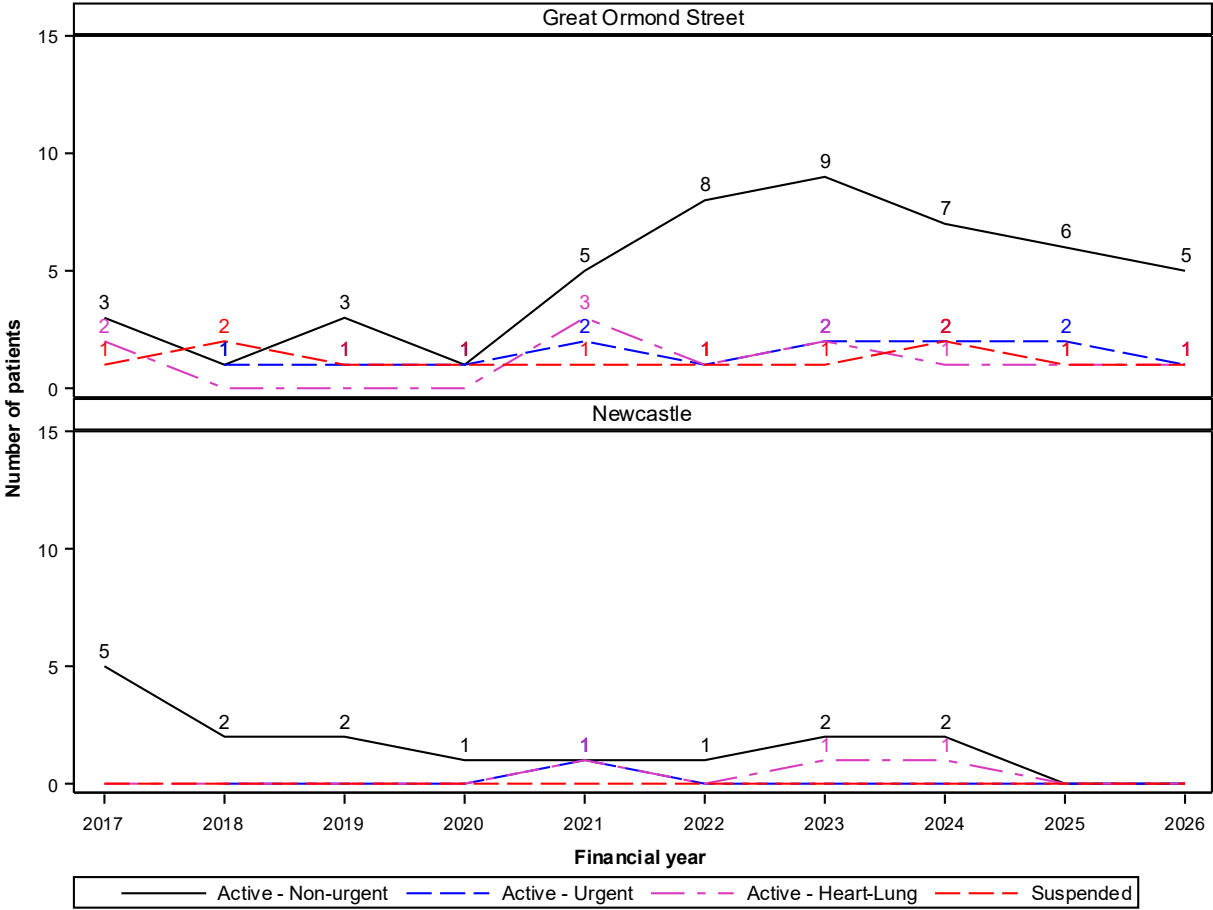


Figure 9.3 shows the trend over time in the number of paediatric patients on the lung transplant list at each centre on 31 March of each year between 2017 and 2026. Great Ormond Street Hospital experienced an increase in their list between 2021 and 2024 but more recently it has decreased to 7 active patients (5 non-urgent, 1 urgent, 1 heart-lung) as of 31 March 2026. Newcastle had a peak of 5 on their list in 2017, but this has now decreased to zero.

Figure 9.3 Number of paediatric patients on the lung transplant list on 31 March each year, for the last 10 years, by centre



9.2 Paediatric lung and heart-lung registrations, 1 April 2016 – 31 March 2026

This section shows trends over the last 10 years in the number of registrations onto the lung transplant list. Note that the urgent and super-urgent schemes were introduced in May 2017. In the figures in this section, the urgency status is the highest urgency a patient was listed on within the financial year of their initial registration.

Figure 9.4 shows the total number of paediatric registrations each year split by urgency between 1 April 2016 and 31 March 2026.

Figure 9.4 Number of paediatric lung registrations in the UK, by financial year and urgency status, 1 April 2016 to 31 March 2026

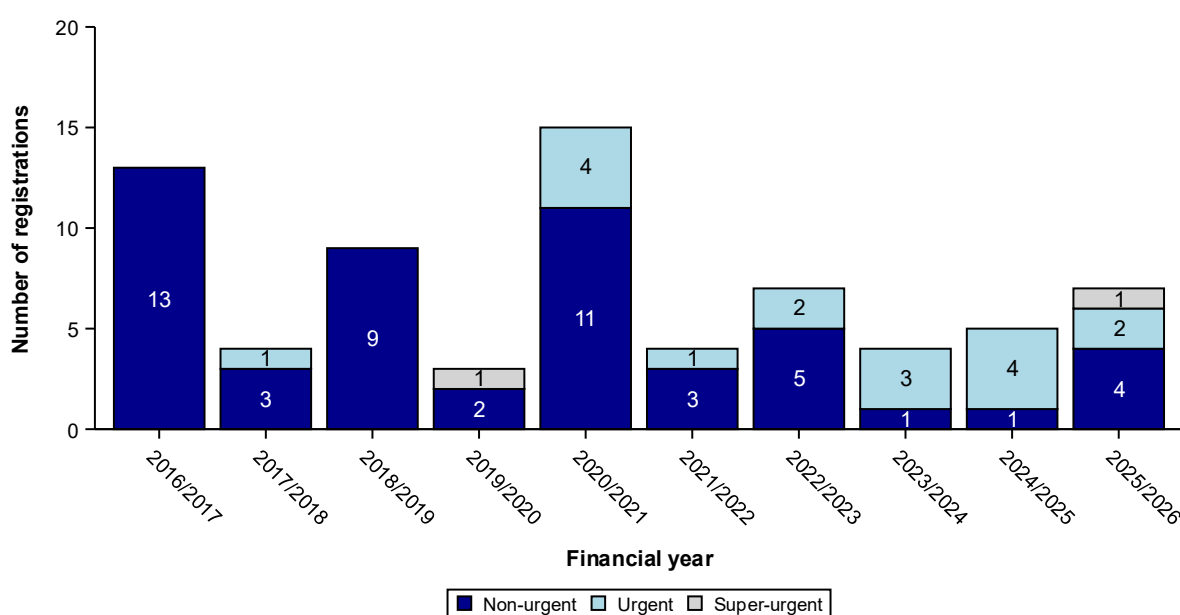


Figure 9.5 and **Figure 9.6** provides a breakdown of the number of paediatric lung registrations by centre and urgency for the latest financial year and over the last ten years respectively. Of the two patients registered by Newcastle during 2025/2026, one received a transplant aged 16 so their transplant is included in the adult section of the report and the other turned 16 by the end of the financial year so is included in the adult transplant list section as opposed to Figure 9.3.

Figure 9.5 Number of paediatric lung registrations in the UK, by centre and urgency status, 1 April 2025 to 31 March 2026

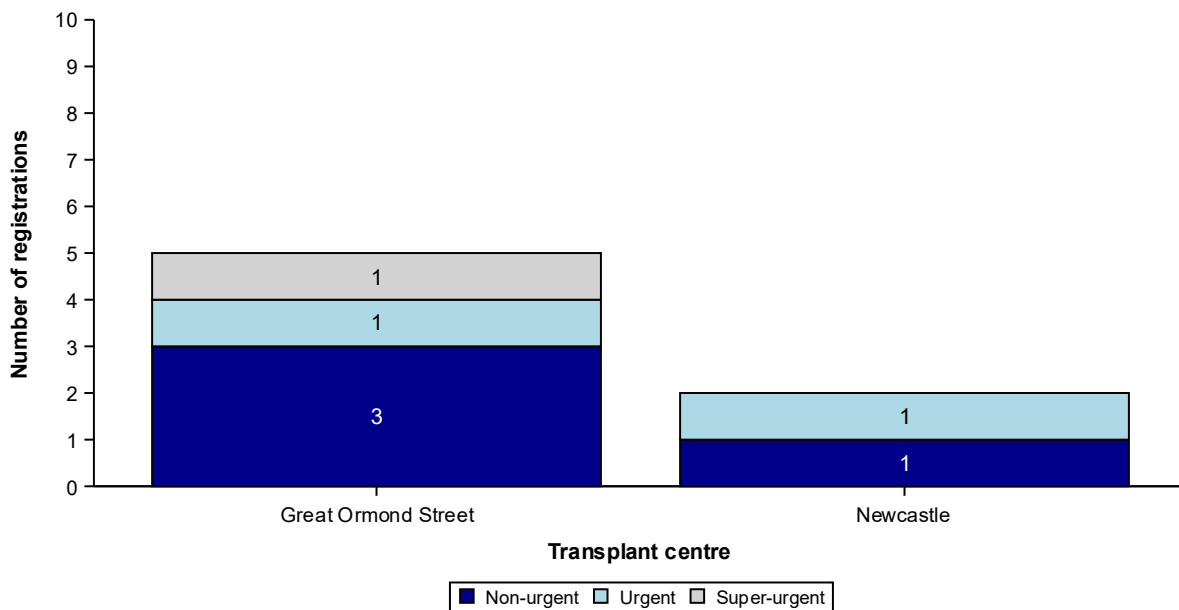
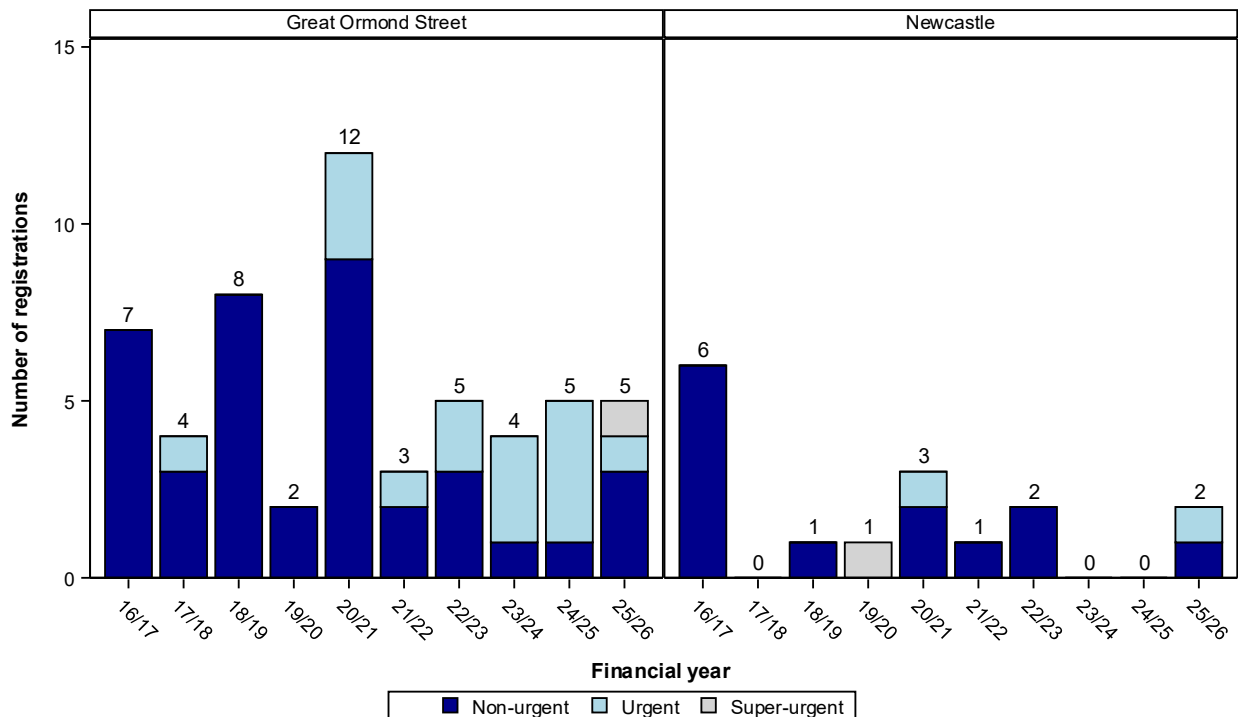


Figure 9.6 Number of paediatric lung registrations in the UK, by financial year, centre and urgency, 1 April 2016 to 31 March 2026



9.3 Demographic characteristics, 1 April 2016 – 31 March 2026

There were 71 paediatric registrations onto the lung transplant list between 1 April 2016 and 31 March 2026 (10 years analysed due to small numbers). Demographic characteristics are shown by centre and overall in **Table 9.1**.

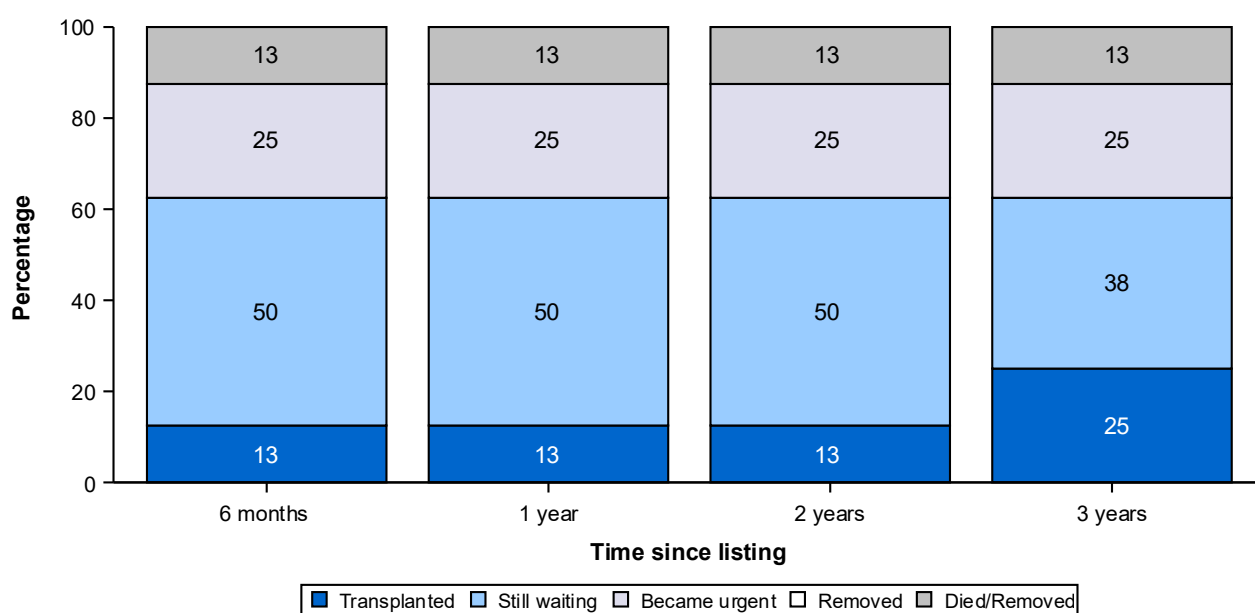
Table 9.1 Demographic characteristics of paediatric patient registrations onto the lung transplant list between 1 April 2016 and 31 March 2026, by centre				
		Great Ormond Street N (%)	Newcastle N (%)	TOTAL N (%)
Number of registrations		55 (100)	16 (100)	71 (100)
Highest urgency during registration	Non-urgent	35 (64)	11 (69)	46 (65)
	Urgent	19 (35)	4 (25)	23 (32)
	Super-urgent	1 (2)	1 (6)	2 (3)
Recipient sex	Male	16 (29)	8 (50)	24 (34)
	Female	39 (71)	8 (50)	47 (66)
Recipient ethnicity	White	49 (89)	14 (88)	63 (89)
	Asian	3 (5)	2 (13)	5 (7)
	Black	1 (2)	0 (0)	1 (1)
	Other	2 (4)	0 (0)	2 (3)
Recipient age (years)	Median (IQR)	11 (5, 14)	13 (9, 14)	11 (6, 14)
	Missing	0	0	0
Height (cm)	Median (IQR)	143 (106, 161)	140 (121, 153)	143 (111, 159)
	Missing	0	0	0
Weight (kg)	Median (IQR)	32 (17, 52)	30 (20, 42)	32 (19, 51)
	Missing	0	0	0
Primary Disease	Cystic fibrosis and bronchiectasis	8 (15)	6 (38)	14 (20)
	Fibrosing lung disease	4 (7)	3 (19)	7 (10)
	COPD and emphysema	6 (11)	0 (0)	6 (9)
	Primary pulmonary hypertension	27 (49)	4 (25)	31 (44)
	Other or unknown lung disease	10 (18)	3 (19)	13 (18)

9.4 Post-registration outcomes, 1 April 2021 – 31 March 2023

The registration outcomes of paediatric patients listed for a non-urgent lung transplant between 1 April 2021 and 31 March 2023 are summarised in **Figure 9.7**. The possible outcomes on the list include receiving a transplant, removal from the list, dying on the list, or remaining on the list at a given time point post-registration. Removals from the list due to deteriorating condition or deaths within 30 days of removal are grouped with deaths in this analysis. In these figures, the *first* outcome is used, so if an individual was transplanted then died their registration outcome would be “transplanted”.

Within 6 months of non-urgent registration, 13% of patients were transplanted, 50% were still waiting, 25% moved to the urgent list and 13% died. After 3 years, the transplant rate had increased to 25% and the percentage still waiting decreased to 38%, however please note that this is based on just 8 patients. Due to small numbers, outcomes on the urgent or super-urgent lists are not presented.

Figure 9.7 Post-registration outcome for 8 non-urgent paediatric lung only registrations made in the UK, 1 April 2021 to 31 March 2023



9.5 Median waiting time to transplant, 1 April 2022 - 31 March 2025

The [median](#) waiting time to lung transplant from registration for paediatric patients registered for a lung only transplant between 1 April 2022 and 31 March 2025 is shown in **Table 9.2**. This is estimated using the [Kaplan Meier](#) method which allows for censoring. Due to small numbers, both non-urgent and urgent registrations were combined in this analysis, and the overall median waiting time was estimated at 227 days (although the wide 95% [confidence interval](#) indicates a lot of uncertainty in this estimate).

Table 9.2 Median active waiting time to lung transplant for paediatric patients registered on the transplant list, by centre, 1 April 2022 to 31 March 2025

Transplant centre	Number registered	Number transplanted	Waiting time (days)	
			Median	95% Confidence interval
Great Ormond Street Hospital	13	10	144	0 - 305
Newcastle ¹	1	0	-	-
UK	14	10	227	47 - 407

¹ Median waiting time for groups with less than 10 patients are not presented due to small numbers

PAEDIATRIC LUNG TRANSPLANTATION

Response to Offers



10. Response to Offers

Table 10.1 presents individual centre paediatric bilateral lung offer decline rates between 1 April 2023 to 31 March 2026, separately for [DBD](#) and [DCD](#) donor offers. This only considers offers of lungs from UK donors aged less than 16 that were eventually transplanted and excludes fast track offers. A bilateral lung offer is counted as accepted if both lungs or just one lung was accepted. Lungs offered as part of a heart-lung block are considered. Urgent and non-urgent offers are all considered. Offers to adults at Newcastle are excluded.

Table 10.1 shows the number of DBD lung offers and decline rates, by centre and nationally, while **Table 10.2** shows the same information but for DCD lung offers.

Table 10.1 UK paediatric DBD donor bilateral lung offer decline rates by transplant centre, 1 April 2023 and 31 March 2026		
Centre	Number of offers	Decline rate (%)
Great Ormond Street Hospital	11	90.9
Newcastle	8	87.5
UK	19	89.5

Table 10.2 UK paediatric DCD donor bilateral lung offer decline rates by transplant centre, 1 April 2023 and 31 March 2026		
Centre	Number of offers	Decline rate (%)
Great Ormond Street Hospital	8	62.5
Newcastle	7	100
UK	15	80.0

PAEDIATRIC LUNG TRANSPLANTATION

Transplants



11.1 Paediatric lung and heart-lung transplants, 1 April 2016 – 31 March 2026

Figure 11.1 and **11.2** show the number of paediatric lung and heart-lung transplants performed in the last 10 years by donor type, nationally and by centre, respectively. The number of transplants has decreased since 2016/2017 when there were 11 transplants, down to just 1 performed in 2022/2023. In the last year there were 6 transplants performed. The majority of paediatric lung transplants over the decade were performed by Great Ormond Street Hospital. Newcastle performed 1 paediatric lung transplant in 2024/2025, having not performed any in the previous 4 years, however note that in addition to the activity shown in **Figure 11.2**, Newcastle performed 3 transplants in patients aged 16-18 over the decade which are counted within the adult activity in this report. The number of transplants in the latest financial year is shown by centre and donor type in **Figure 11.3**.

Figure 11.1 Number of paediatric lung transplants in the UK, by financial year and donor type, 1 April 2016 to 31 March 2026

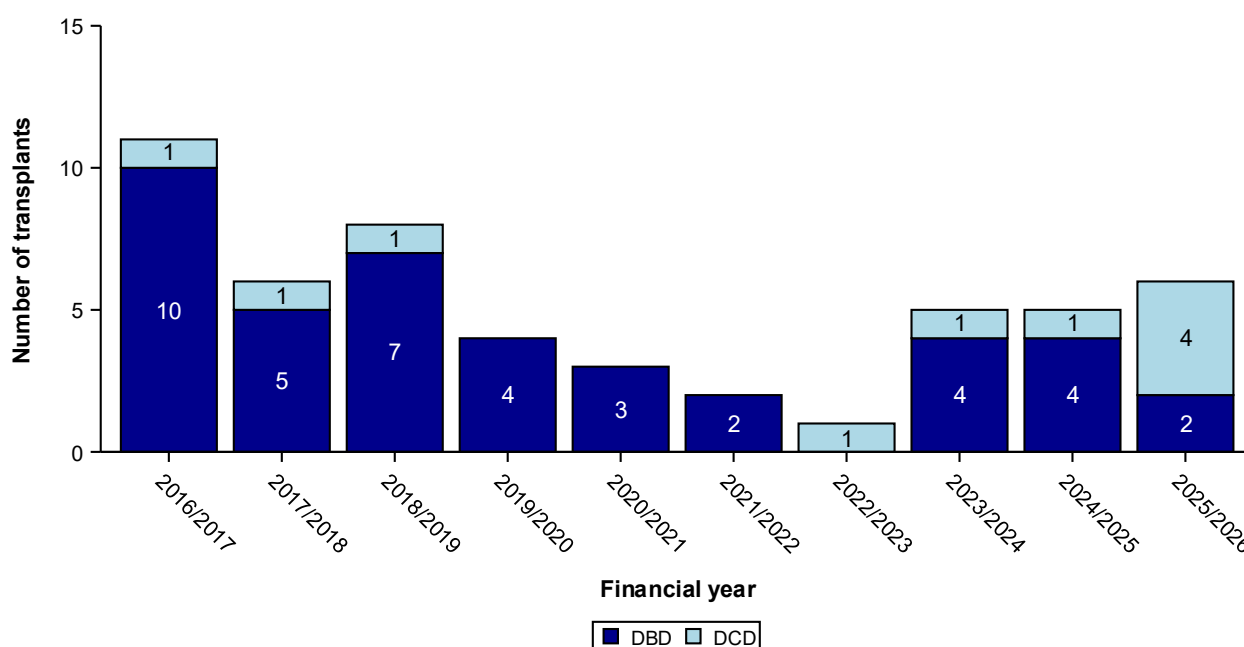


Figure 11.2 Number of paediatric lung transplants in the UK, by financial year, centre and donor type, 1 April 2016 to 31 March 2026

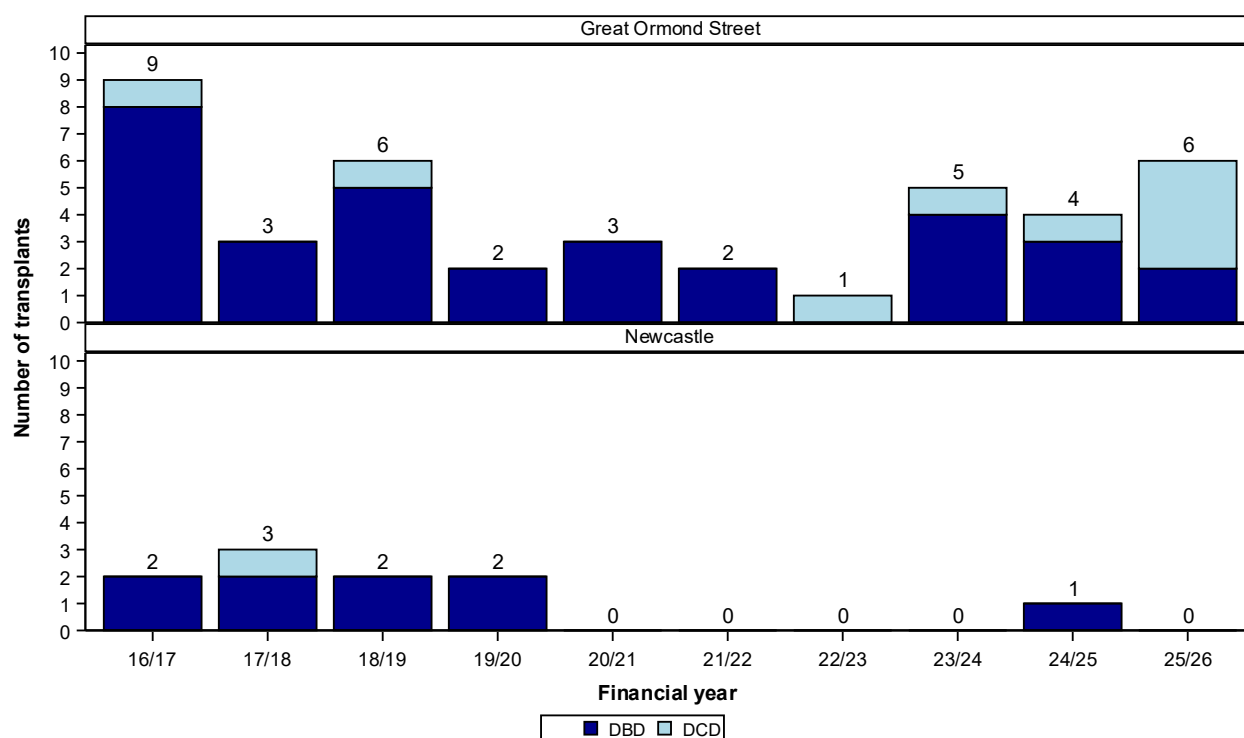


Figure 11.3 Number of paediatric lung transplants in the UK, by centre and donor type, 1 April 2025 to 31 March 2026

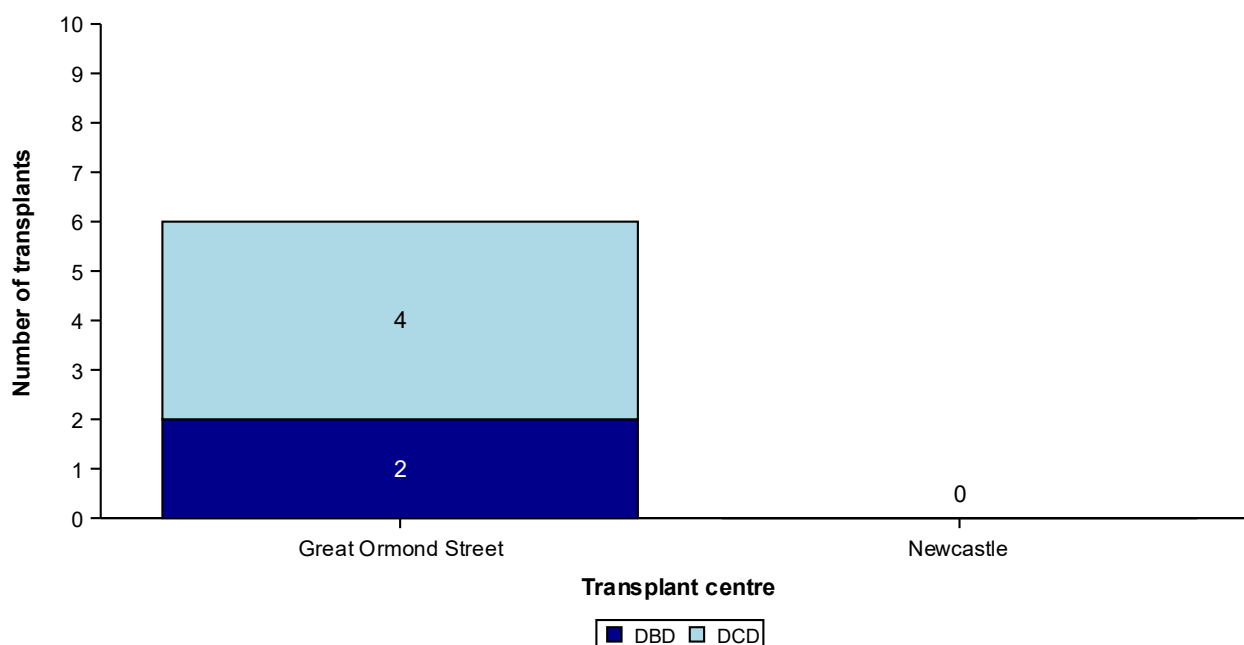


Figure 11.4 and 11.5 show the number of paediatric lung transplants performed in the last 10 years, by transplant type, overall and by centre respectively. Over the time period there have been 4 paediatric heart-lung block transplants.

Figure 11.4 Number of paediatric lung transplants in the UK, by financial year and transplant type, 1 April 2016 to 31 March 2026

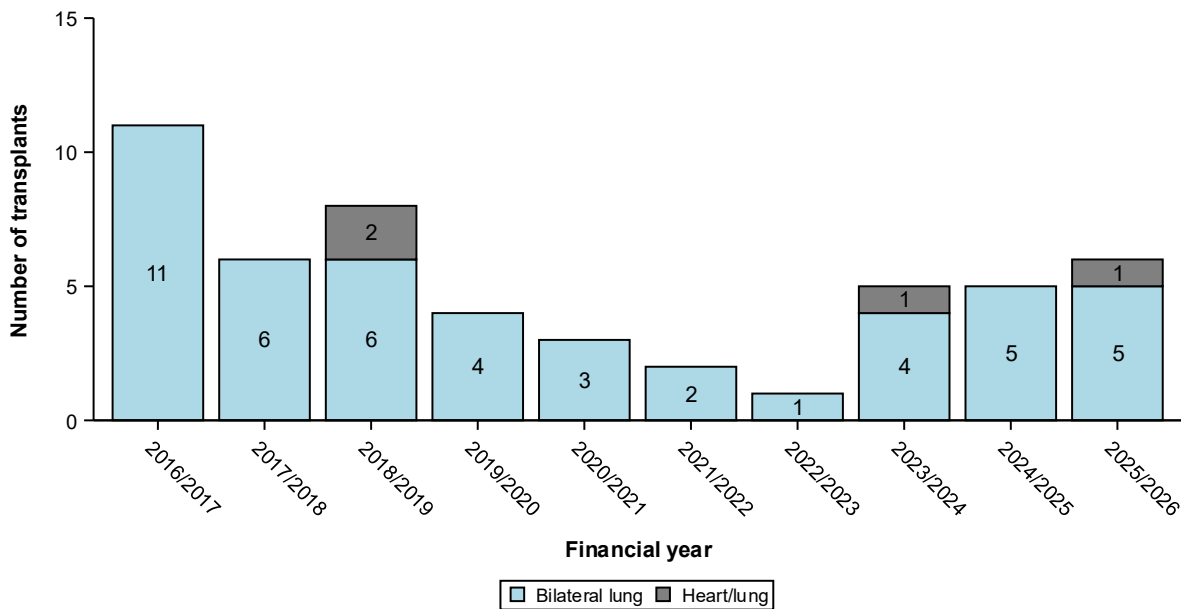
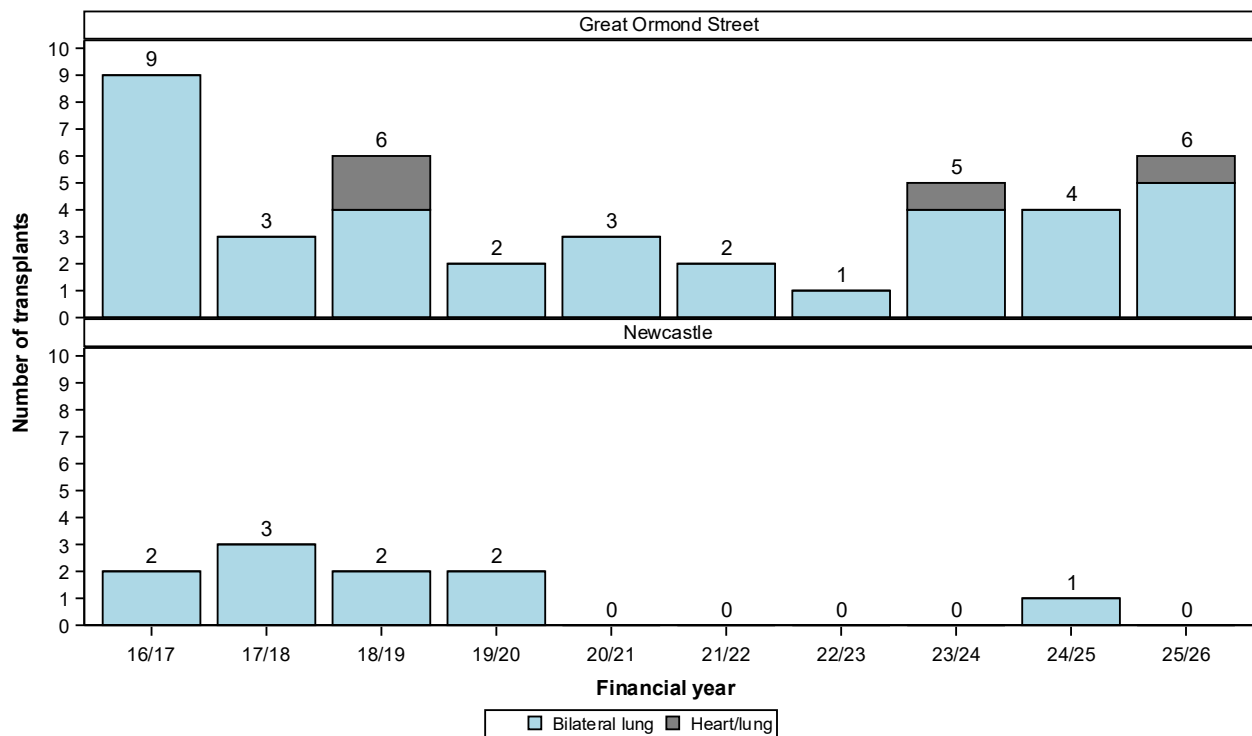


Figure 11.5 Number of paediatric lung transplants in the UK, by financial year, centre and transplant type, 1 April 2016 to 31 March 2026



In May 2017, the super-urgent and urgent lung allocation schemes were introduced, allowing for prioritisation of the sickest patients awaiting a lung transplant nationally. **Figure 11.6** displays the number of paediatric lung only transplants performed in the last 10 financial years by urgency and **Figure 11.7** shows the number in the latest financial year, by centre and urgency. Of the 5 lung only transplants in 2025/2026, 2 were urgent and 3 were non-urgent.

Figure 11.6 Number of paediatric lung only transplants in the UK, by financial year and urgency status, 1 April 2016 to 31 March 2026

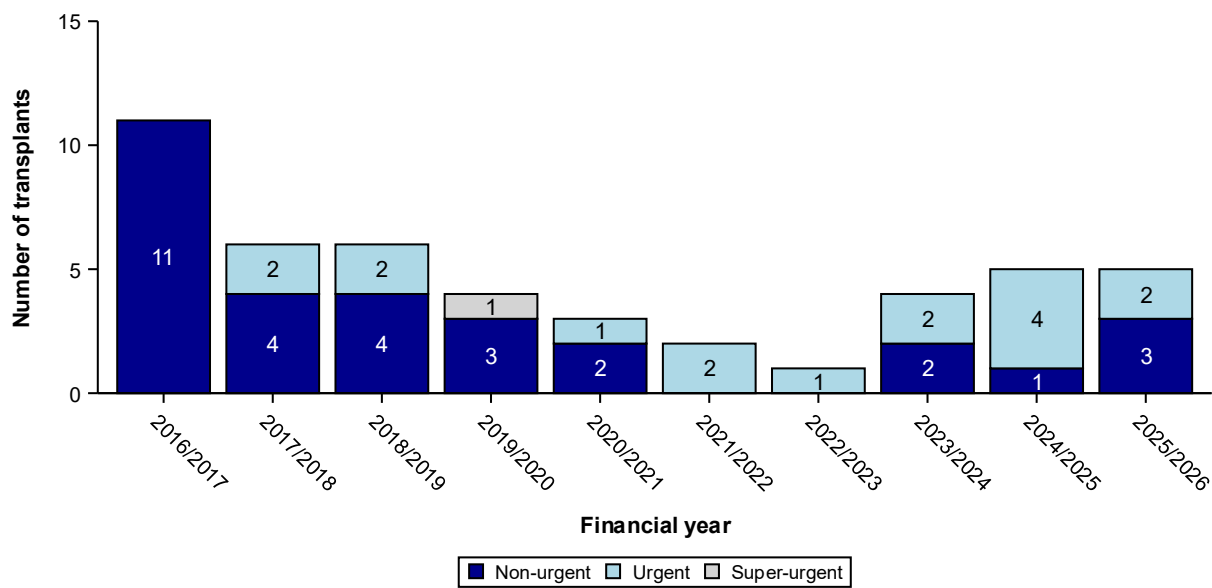
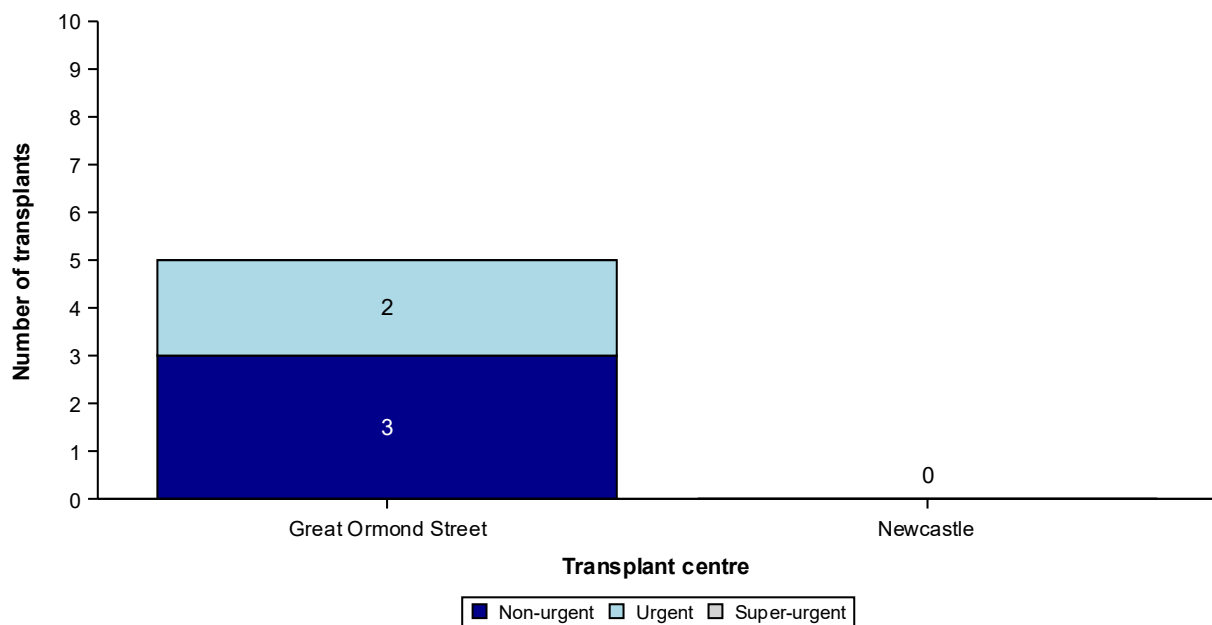


Figure 11.7 Number of paediatric lung only transplants in the UK, by centre and urgency status, 1 April 2025 to 31 March 2026



11.2 Demographic characteristics of transplants, 1 April 2016 – 31 March 2026

The demographic characteristics of the 51 paediatric lung transplant recipients and donors in the last 10 years are shown by centre and overall in **Table 11.1**. Nationally, 63% of lung recipients were female and the [median](#) age was 13 years, while the median age of donors was 15 years. For some characteristics, due to rounding, percentages may not add up to 100.

Table 11.1 Demographic characteristics of UK paediatric lung transplants performed between 1 April 2016 and 31 March 2026, by centre

		Great Ormond Street N (%)	Newcastle N (%)	TOTAL N (%)
Number of transplants		41 (100)	10 (100)	51 (100)
Urgency status at transplant	Non-urgent	25 (61)	6 (60)	31 (61)
	Urgent	16 (39)	3 (30)	19 (37)
	Super-urgent	0 (0)	1 (10)	1 (2)
Recipient sex	Male	14 (34)	5 (50)	19 (37)
	Female	27 (66)	5 (50)	32 (63)
Recipient ethnicity	White	38 (93)	10 (100)	48 (94)
	Asian	2 (5)	0 (0)	2 (4)
	Other	1 (2)	0 (0)	1 (2)
Recipient age (years)	Median (IQR)	13 (9, 15)	13 (9, 15)	13 (9, 15)
	Missing	0	0	0
Recipient weight (kg)	Median (IQR)	34 (23, 49)	37 (21, 49)	37 (22, 49)
	Missing	0	0	0
Recipient primary disease	Cystic fibrosis and bronchiectasis	7 (17)	6 (60)	13 (26)
	Fibrosing lung disease	3 (7)	2 (20)	5 (10)
	COPD and emphysema	6 (15)	0 (0)	6 (12)
	Primary pulmonary hypertension	19 (46)	1 (10)	20 (39)
	Other or unknown lung disease	6 (15)	1 (10)	7 (14)
Recipient in hospital	No	29 (71)	5 (50)	34 (67)
	Yes	9 (22)	5 (50)	14 (28)
	Missing	3 (7)	0 (0)	3 (6)
In hospital, recipient on ventilator	No	8 (89)	4 (80)	12 (86)
	Yes	1 (11)	1 (20)	2 (14)
In hospital, recipient ECMO	No	9 (100)	3 (60)	12 (86)
	Yes	0 (0)	1 (20)	1 (7)
	Missing	0 (0)	1 (20)	1 (7)
In hospital, recipient on inotropes	No	6 (67)	3 (60)	9 (64)
	Yes	3 (33)	2 (40)	5 (36)
Recipient CMV status	Negative	30 (73)	9 (90)	39 (77)
	Positive	11 (27)	1 (10)	12 (24)
Recipient HCV status	Negative	38 (93)	10 (100)	48 (94)
	Missing	3 (7)	0 (0)	3 (6)

Table 11.1 Demographic characteristics of UK paediatric lung transplants performed between 1 April 2016 and 31 March 2026, by centre

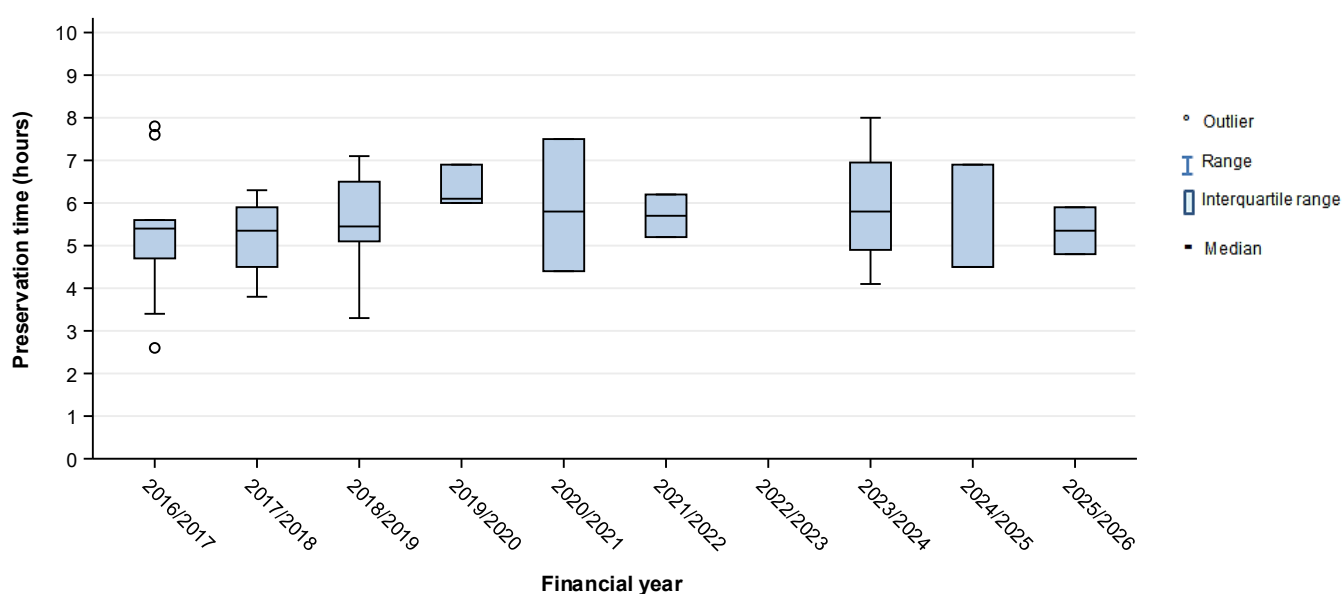
		Great Ormond Street	Newcastle	TOTAL
		N (%)	N (%)	N (%)
Recipient HBV status	Negative	38 (93)	10 (100)	48 (94)
	Missing	3 (7)	0 (0)	3 (6)
Recipient HIV status	Negative	38 (93)	10 (100)	48 (94)
	Missing	3 (7)	0 (0)	3 (6)
Recipient serum creatinine (umol/l)	Median (IQR)	45 (31, 52)	29 (23, 50)	44 (28, 52)
	Missing	3	1	4
Donor sex	Male	19 (46)	3 (30)	22 (43)
	Female	22 (54)	7 (70)	29 (57)
Donor ethnicity	White	33 (80)	8 (80)	41 (80)
	Asian	1 (2)	0 (0)	1 (2)
	Other	1 (2)	1 (10)	2 (4)
	Missing	6 (15)	1 (10)	7 (14)
Donor age (years)	Median (IQR)	23 (11, 39)	10 (5, 14)	15 (9, 36)
	Missing	0	0	0
Donor BMI (kg/m ²)	Median (IQR)	22 (17, 25)	19 (17, 21)	21 (17, 25)
	Missing	0	0	0
Donor cause of death	Intracranial/CVA	24 (59)	6 (60)	30 (59)
	Trauma	3 (7)	0 (0)	3 (6)
	Others	14 (34)	4 (40)	18 (35)
Donor hypotension	No	24 (59)	7 (70)	31 (61)
	Yes	11 (27)	2 (20)	13 (26)
	Missing	6 (15)	1 (10)	7 (14)
Donor history of cardiac disease	No	34 (83)	9 (90)	43 (84)
	Yes	1 (2)	0 (0)	1 (2)
	Missing	6 (15)	1 (10)	7 (14)
Donor history of hypertension	No	34 (83)	8 (80)	42 (82)
	Yes	2 (5)	1 (10)	3 (6)
	Missing	5 (12)	1 (10)	6 (12)
Donor history of cancer/malignancy	No	34 (83)	9 (90)	43 (84)
	Yes	2 (5)	0 (0)	2 (4)
	Missing	5 (12)	1 (10)	6 (12)
Donor past/current smoker	No	27 (66)	10 (100)	37 (73)
	Yes	9 (22)	0 (0)	9 (18)
	Missing	5 (12)	0 (0)	5 (10)
Total preservation time ¹ (hours)	Median (IQR)	5.9 (4.8, 7.1)	5.5 (5.4, 6.0)	5.7 (5.1, 6.9)
	Missing	5	1	6
Transplant type	Bilateral lung	37 (90)	10 (100)	47 (92)
	Heart/lung	4 (10)	0 (0)	4 (8)

¹ Time from cross clamp in the donor to reperfusion in the recipient

11.3 Total preservation time, 1 April 2016 – 31 March 2026

Figure 11.8 shows [boxplots](#) of total preservation time for [DBD](#) donor lungs transplanted into paediatric recipients over the last 10 years. The total preservation time is the difference between donor cross-clamp and recipient reperfusion and can be considered the out of body time. The [median](#) total preservation time varied substantially over the decade; however, these are based on a very small number of transplants per year. No further breakdown by centre is shown due to small numbers. In the financial year 2022/2023, there was only 1 transplant, so the boxplot for that year is not displayed. The median preservation time for DBD donor lungs in 2025/2026 was 5.4 hours.

Figure 11.8 Boxplots of total preservation time for DBD donor lungs transplanted into paediatric recipients, by financial year, 1 April 2016 to 31 March 2026



PAEDIATRIC LUNG TRANSPLANTATION

Post-Transplant Survival



12. Post-Transplant Survival

The survival analyses presented in this section exclude heart-lung transplants and other [multi-organ transplants](#) and include first time transplants only. Partial lung transplants are also excluded. Both DBD and DCD lung transplants are included. Ninety-day and 1-year [survival rates](#) are based on transplants performed in the period 1 April 2021 and 31 March 2025 while 5-year [survival rates](#) are based on transplants performed in the period 1 April 2017 and 31 March 2021.

The 90-day post-transplant [unadjusted](#) patient [survival rates](#) are shown in **Table 12.1** for the 12 first paediatric lung only transplants in the period 1 April 2021 to 31 March 2025. Nationally, the 90-day survival rate following first paediatric lung transplant was 100%.

Table 12.1 90 day patient survival rates after first paediatric lung transplants, by centre, 1 April 2021 and 31 March 2025

Centre	Number of patients	Number of deaths	% 90 day survival (95% CI) (unadjusted)	
Great Ormond Street Hospital	11	0	100	(-)
Newcastle ¹	1	0	-	-
UK	12	0	100	(-)

¹ Survival rates for groups with less than 10 patients are not presented due to small numbers

There were no deaths between 90 days and 1 year for the 12 paediatric lung only transplants in the period 1 April 2021 and 31 March 2025; resulting in a national survival rate of 100%. The unadjusted patient [survival rates](#) are shown in **Table 12.2**.

Table 12.2 1 year patient survival rates after first paediatric lung transplants, by centre, 1 April 2021 and 31 March 2025

Centre	Number of patients	Number of deaths	% 1 year survival (95% CI) (unadjusted)	
Great Ormond Street Hospital	11	0	100	(-)
Newcastle ¹	1	0	-	-
UK	12	0	100	(-)

¹ Survival rates for groups with less than 10 patients are not presented due to small numbers

Five year [survival rates](#) were estimated from the 18 first lung only transplants performed in the period 1 April 2017 and 31 March 2021. The unadjusted patient [survival rates](#) are shown in **Table 12.3**.

Table 12.3 5 year patient survival rates after first paediatric lung transplants, by centre, 1 April 2017 to 31 March 2021

Centre	Number of patients	Number of deaths	% 5 year survival (95% CI) (unadjusted)	
Great Ormond Street Hospital	12	6	46.9	(17.6 - 71.8)
Newcastle ¹	6	3	-	-
UK	18	9	46.7	(22.1 - 68.1)

¹ Survival rates for groups with less than 10 patients are not presented due to small numbers

PAEDIATRIC LUNG TRANSPLANTATION

Form Return Rates



13. Paediatric lung form return rates, 1 January – 31 December 2025

Form return rates are reported in **Table 13.1** for the cardiothoracic transplant record and the 3 month and 1 year follow up form, along with lifetime follow up (2 years or more). These include all paediatric lung and heart-lung transplants between 1 January and 31 December 2025 for the transplant record, and all follow up forms issued in this time period. Great Ormond Street Hospital have a return rate of 67% for transplant record forms, and Newcastle has a return rate of 86% for lifetime follow-up forms.

Table 13.1 Form return rates for paediatric lung transplants, 1 January 2025 to 31 December 2025

Centre	Transplant record		3 month follow-up		1 year follow-up		Lifetime follow-up	
	No. requested	% returned	No. requested	% returned	No. requested	% returned	No. requested	% returned
Great Ormond Street Hospital	6	67	6	100	3	100	12	100
Newcastle, Freeman Hospital	-	-	-	-	2	100	14	86
Overall	6	67	6	100	5	100	26	92

APPENDIX



A1: Number of patients analysed

The cohort of patients in this report varies by section/analysis. Tables **A1.1** and **A1.2** below summarise the number of adult and paediatric (respectively) transplants in each cohort and the section this applies to. For the survival from listing analysis, see the Methods section in **A2** below.

Table A1.1 Adult transplants analysed			
Time period	Report Section	Exclusion criteria	No. lung (+ heart-lung) transplants
1 April 2016 – 31 March 2026	• Introduction	None	1451
1 April 2016 – 31 March 2026	• Transplants	• Multi-organ transplants	1447
1 April 2021 – 31 March 2025	Post-transplant survival – • 90-day • 1-year survival	• Multi-organ transplants • Heart-lung transplants excluded from main analysis • Partial lung transplants • Second (or more) transplants • Group 2 transplants	471
1 April 2017 – 31 March 2021	Post-transplant survival – • 5-year survival	• Multi-organ transplants • Heart-lung transplants excluded from main analysis • Partial lung transplants • Second (or more) transplants • Group 2 transplants	580

Table A1.2 Paediatric transplants analysed			
Time period	Report Section	Exclusion criteria	No. lung (+ heart-lung) transplants
1 April 2016 – 31 March 2026	• Introduction	None	51
1 April 2016 – 31 March 2026	• Transplants	• Multi-organ transplants	51
1 April 2021 – 31 March 2025	Post-transplant survival – • 90-day • 1-year survival	• Multi-organ transplants • Heart-lung transplants • Partial lung transplants • Second (or more) transplants • Group 2 transplants	12
1 April 2017 – 31 March 2021	Post-transplant survival – • 5-year survival	• Multi-organ transplants (including heart-lung transplants) • Partial lung transplants • Second (or more) transplants • Group 2 transplants	18

Geographical variation analysis

Registration rates

All NHS group 1 patients who were registered onto the lung transplant list with an active status between 1 April 2025 and 31 March 2026 were extracted from the UK Transplant Registry on 10 July 2026 (numerator). Patients registered for a heart-lung block were included. If a patient had more than one registration in the period, each registration was considered. Patients were assigned to NHS regions in England using their postcode of residence, as reported at registration. The number of registrations per million population (pmp) by NHS region was obtained using mid-2025 population estimates based on the Office for National Statistics (ONS) 2021 Census figures (denominator). No NHS region age- or sex-specific standardisation of rates was performed.

The registration rates pmp were categorised into four groups – low, low-medium, medium-high and high – based on the quartiles of their distribution and visualised in a map using contrasting colours.

Transplant rates

Transplant rates pmp were obtained as the number of lung transplants on NHS group 1 recipients between 1 April 2025 and 31 March 2026 (numerator), divided by the mid-2025 population estimates from the ONS (denominator). Patients who received a heart-lung block transplant were included. If a patient had more than one transplant in the period, each transplant was considered. Transplant rates pmp were categorised and visualised in a map as done for the registration rates.

Systematic component of variation

Only registrations or transplants in England between 1 April 2025 and 31 March 2026 were included. If a patient was re-registered during the time period, only the first registration was considered. If a patient underwent more than one lung transplant in the time period, only the first transplant was considered.

A2: Methods

Offer decline rates

The offer decline rate analysis was limited to lung offers from donors who died at a UK hospital and the lung was eventually accepted and transplanted. The decline rate is defined as the number of offers declined divided by the number of offers made to that centre.

[Funnel plots](#) were used to compare centre specific offer decline rates and indicate how consistent the rates of the individual transplant centres are with the national rate. The overall national offer decline rate is shown by the solid line while the 95% and 99.8% confidence lines are indicated via a thin and thick dotted line, respectively. Each dot in the plot represents an individual transplant centre. Centres that are positioned above the upper limits indicate an offer decline rate that is higher than the national rate, while centres positioned below the lower limits indicate an offer decline

Unadjusted post-transplant survival rates

[Kaplan-Meier](#) methods were used to estimate the [unadjusted](#) patient [survival rates](#). Patients can be included in this method of analysis irrespective of the length of follow-up recorded. If a patient is alive at the end of the follow-up then information about the survival of the patient is censored.

Risk-adjusted post-transplant 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 1 year or 5 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 developed in consultation with clinicians and were based on statistical significance as well as previous studies of factors affecting the [survival rates](#) of interest. The factors included in the model are shown in [A3](#).

Missing values for [risk factors](#) were imputed using simple imputation of the median or most common group for the adult lung model (where missing values represented <10% of the cohort). Missing total preservation time (2% of cohort) was imputed with a centre and year specific median.

Funnel plots

The funnel plot is a graphical method to show how consistent the [survival rates](#) of the different transplant centres are compared to the national rate. The graph shows for each centre, 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.

Systematic component of variation

For a given individual who is a resident in a given NHS region, registration to the transplant list is modelled as a Bernoulli trial. At the whole area level, this becomes a Binomial process which can be approximated by a Poisson distribution when rare events are modelled. Transplant counts follow similar assumptions.

To allow for the possibility that, even after allowing for area-specific Poisson rates, area differences remain, introduce an additional multiplicative rate factor which varies from area to area. Postulate a non-parametric distribution for the multiplicative factor, with variance σ^2 . If the factor is one for all areas, then area differences are fully explained by the area-specific Poisson rate. If the factor varies with a nonzero variance, σ^2 , then we conclude that there are unexplained area differences.

The systematic component of variation (SCV; McPherson *et al.*, *N Engl J Med* 1982, **307**: 1310-4) is the moment estimator of σ^2 . Under the null hypothesis of homogeneity across areas, the SCV would be zero. The SCV, therefore, allows us to detect variability across areas beyond that expected by chance; the larger the SCV, the greater the evidence of systematic variation across areas.

Survival from listing

Data were obtained for all patients ≥ 16 years registered for the first time for a lung transplant between 1 April 2017 to 31 March 2025. Survival time was defined as the time from joining the transplant list to death, regardless of the length of time on the transplant list, whether or not the patient was transplanted and any factors associated with such a transplant e.g. transplant type. Survival time was censored at the last known follow up date post-transplant when no death date was recorded, or on 10 June 2026 if the patient was on the transplant list at time of analysis. For patients who were removed from the transplant list without receiving a transplant, and where there was no recorded death date, if the reason for removal was due to deteriorating condition, then this was classed as an event, while all other cases were censored.

Exclusions from the analysis:

- patient registered for a heart-lung block or other [multi-organ transplant](#)
- patients who were not listed prior to transplant
- patients first registered on another transplant list (e.g. kidney list)
- patients registered outside the UK or not entitled to NHS treatment
- adult patients registered at paediatric centres

Patients registered for a lung transplant who were non-urgent and then urgently listed on the same day (or vice-versa) were recorded as urgent at registration.

In [risk-adjusted](#) survival analysis, factors recorded at time of transplant listing were adjusted for. These are detailed in **Table A2.1** and were included in the modelling whether or not statistically significant. Missing data for these risk factors have been imputed using the median or modal value to ensure that cases with missing data are not excluded from the risk-adjusted analysis.

Table A2.1 Factors used in risk-adjusted model for patient survival from listing	
Lung	Age, bilirubin (logarithm), ethnicity, weight, urgency status (non-urgent vs urgent/super-urgent), primary disease, in hospital at registration, daily dose of prednisolone

[Survival rates](#) at 1 and 5 years post registration were calculated from the risk adjusted survival rate (RASR), obtained as $1 - \{\text{observed number of deaths in follow up period} / \text{expected number}\} \times \text{national mortality rate}$. The expected survival rates were estimated from fitting a [Cox model](#) to the national data, excluding transplant centre, evaluated at each patient's observed survival time. Interval estimates for 1 and 5 year rates, and the significance of differences between them across centres, were found using Poisson regression models for the logarithm of the observed number of deaths, with centre as a random effect. If the model failed to converge, centre was instead included as a fixed effect.

A3: Risk models

Table A3.1 Risk factors and categories used in the adult lung risk adjusted 90-day, 1- year and 5-year post-transplant survival model	
Donor type	DBD DCD
Donor age group	<30 30-<40 40-<50 ≥50
Donor respiratory arrest	No Yes
Donor past smoker	No Yes
Recipient BMI group	<25 25-<30 ≥30
Recipient ethnic group	White Ethnic minority group
Recipient bilirubin at registration (logged)	(modelled as continuous variable)
Recipient diabetes at registration	No Yes
Recipient eGFR group at transplant	≥90 <90
Recipient hospital status	Outpatient Inpatient
Total preservation time (hours)	Non-linear spline with knots at the 5 th , 35 th , 65 th and 95 th percentiles
Transplant type	Single lung Bilateral lungs
Donor/recipient blood group mismatch	Identical Compatible
Donor/recipient CMV mismatch	D-R- D+R+ D-R+ D+R-

A4: Glossary of terms

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 organ becomes available, the patient is included among those who are matched against the donor to determine whether or not the organ 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 organs that become available.

Boxplots

The length of the box in this plot represents the [inter-quartile range](#). The line inside the box indicates the [median](#) value. The vertical lines issuing from the box are called the whiskers and indicate the range of values that are outside of the inter-quartile range but are close enough not to be considered outliers. The circles that are outside the box indicate the outliers (any points that are a distance of more than $1.5 \times \text{IQR}$ from the box).

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.

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 patient death, across different groups of patients.

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.

Funnel plot

A graphical method that shows how consistent the rates, such as [survival rates](#) or decline rates, of the different transplant units are compared to the national rate. For survival rates, 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.

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, when estimating 1 year [patient survival rates](#), a patient may be followed up for only nine months before they relocate. 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 1 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. The Kaplan-Meier method can be used for any time to event analysis, including time to transplant. If not enough events have occurred or if there are not enough patients in the cohort, an estimate of the [median](#) may not be possible.

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 lung and kidney.

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 5-year patient survival rate is the percentage of patients who are still alive 5 years after their first transplant.

p value

In the context of comparing [survival rates](#) across centres, 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.

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 centre is the expected survival rate for that centre given the [case mix](#) of their patients. Adjusting for [case mix](#) in estimating centre-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.

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