

**NHS BLOOD AND TRANSPLANT**  
**CARDIOTHORACIC ADVISORY GROUP**  
**SUPER-URGENT LIVER PATHWAY – TWELVE MONTH REPORT**

**BACKGROUND**

- 1 Recipients listed for super urgent liver transplant are at risk of rapid and fatal deterioration during the time between listing and transplantation. The deterioration may occur over hours, such that the patient may become un-transplantable. Experience suggests that avoidable retrieval delay is common in such patients. The super-urgent liver pathway was proposed for cases where the liver has been accepted for a super-urgent patient to minimise the length of process and potentially avoid such situations. When a liver has been accepted for a super-urgent patient, if cardiothoracic organs are under offer, cardiothoracic offering will switch to group offering if not already at that stage to reduce the length of time taken.
- 2 The pathway was first brought in on 8 April 2021 under an “opt-in” trial where liver centres could choose to activate the pathway upon acceptance of the liver for a super-urgent patient. This had varying levels of utilisation across centres and so on 1 November 2021, a pilot began where this pathway would be implemented for all super-urgent liver acceptances where cardiothoracic offering is occurring. The timelines for cases since 1 November have been reviewed by a group of key stakeholders, identifying areas for development and areas of positive practice.

**SUPER-URGENT LIVER REGISTRATIONS AND OUTCOMES**

- 3 Between 1 November 2021 and 31 October 2022, there were 150 registrations to the super-urgent liver list. No patients were on the super-urgent list on 1 November 2021. The outcomes of these registrations are seen in **Figure 1**. Of the 150, 126 (84%) were ventilated or encephalopathic. In total, 129 received transplants – 119 from UK deceased donors, 4 from an overseas donor, and 6 from living donors. Twelve patients were removed due to deteriorating condition or died on the list, and 9 removed due to improved condition. Of the 119 transplanted from UK deceased donors, 95 (80%) had at least one cardiothoracic organ offered, with 41 proceeding to cardiothoracic donation.

**LENGTH OF PROCESS**

- 4 There were 119 super-urgent liver transplants and 731 non-urgent liver only transplants from 816 UK deceased donors between 1 November 2021 and 31 October 2022. **Table 1** shows the length of donation process for these two groups, by whether or not cardiothoracic offering occurred, on a donor basis. If the liver was split, the donor is categorised by the highest urgency of liver transplant that resulted. If no cardiothoracic organs were offered, the median length of time from Hub registration to abdominal team agreed departure time was 5.4 hours, which is 3.3 hours less than if cardiothoracic organs are offered. When the transplant was in a super-urgent recipient, this time interval was an hour shorter compared to the non-urgent transplant group.

- 5 **Table 2** shows the length of time from abdominal team arrival to knife to skin by whether a cardiothoracic team attended and urgency of liver transplant. The time from team arrival to theatre access was similar across the cohort, taking 18 minutes if there was a CT team in attendance, and 19.5 minutes if it was abdominal only. When no CT team was involved, the time from theatre access to knife to skin was quicker (91.5 mins vs 116 mins).

## ORGAN UTILISATION

- 6 There were 765 DBD donors who had their liver offered between 1 November 2021 and 31 October 2022, with 732 of these donors proceeding to donate at least one organ. Of the 765, 149 (19%) had the liver accepted for a super-urgent recipient (including acceptances which were subsequently declined), 590 (77%) had the liver accepted for other liver recipients (all tiers below super-urgent), and 26 (3%) did not have their liver accepted at all. **Table 3** below shows the utilisation of organs from these donors. Although based on small numbers, transplantation rates across organs were similar or better between the two groups where the liver had been accepted. Note that a number of the livers accepted for super-urgent recipients may have been subsequently declined and used in other liver recipients.

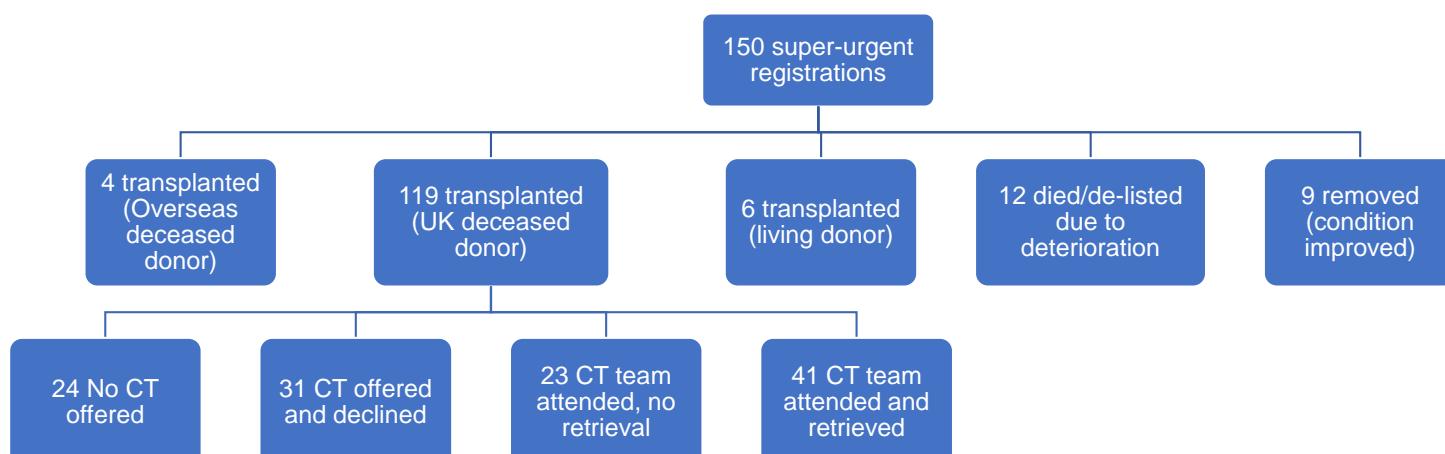
## LIMITATIONS

- 7 Throughout the analysis, it was assumed that all super-urgent liver acceptances went through the pathway where cardiothoracic organs were offered, however, there may be cases where the pathway was not used for various reasons such as group offering had already commenced by time of super-urgent liver acceptance or there was a request from the liver centre to not use the pathway.

## CASE REVIEW ANALYSIS

- 8 Between 1 November 2021 and 31 October 2022, there have been 84 cases that have been reviewed by a group of key stakeholders, with the aim to identify any areas for development as well as any areas of good practice. In total, 14 different areas for development were identified across cases, and 11 areas of good practice. **Figure 2** shows each of the 14 areas for development and the number of cases where each one was identified, grouped by the area of practice responsible. The total number of areas for development per case ranged from 0 to 7, with a median of 2. **Figure 3** shows the same information for the areas of good practice, and for these the number of areas of good practice per case ranged from 0 to 6 with a median of 1.

**Figure 1 Super-urgent liver registrations and outcomes, 1 November 2021 – 31 October 2022**



**Table 1 Length of offering process for liver only transplants, by urgency of transplant and whether CT offering occurred, 1 November 2021 – 31 October 2022**

CT offering occurred	Urgency of transplant	Number of donors	Hub registration to agreed departure time*	
			Number reported	Median (IQR) hours
No	Super-urgent	24	23	4.6 (3.6-6.6)
	Non-urgent	237	228	5.6 (4.0-7.8)
	Overall	261	251	5.4 (4.0-7.7)
Yes	Super-urgent	95	90	7.8 (6.0-9.8)
	Non-urgent	460	450	8.8 (6.4-11.6)
	Overall	555	540	8.7 (6.3-11.3)

\* As recorded by the SNOD for the abdominal NORS team

**Table 2 Timings from AB NORS team arrival to knife to skin for liver only transplants, by urgency of transplant and whether CT team attended, 1 November 2021 – 31 October 2022**

CT team attended	Urgency of transplant	Number of donors	Team arrival to access to theatre		Access to theatre to knife to skin	
			Number reported	Median (IQR) mins	Number reported	Median (IQR) mins
No	Super-urgent	55	55	19 (11-31)	55	76 (61-98)
	Non-urgent	448	447	20 (10-33)	447	93 (70-123)
	Overall	503	502	19.5 (10-33)	502	91.5 (69-119)
Yes	Super-urgent	64	61	20 (10-30)	62	105 (83-138)
	Non-urgent	249	244	17 (10-35)	244	119.5 (82.5-159.5)
	Overall	313	305	18 (10-32)	306	116 (83-154)

**Table 3 Organ offer outcomes by highest recipient tier acceptance of liver,  
1 November 2021 – 31 October 2022**

<b>Liver acceptance</b>	<b>Outcome</b>	<b>Kidney<sup>1</sup></b>	<b>Liver</b>	<b>Pancreas</b>	<b>Heart</b>	<b>Lungs<sup>1</sup></b>
Liver accepted for SU	Offered	148	149	96	100	97
	Retrieved	145	145	64	39	13
	Transplanted (% of offered)	139 (94%)	129 (87%)	35 (36%)	39 (39%)	11 (11%)
Liver accepted for other <sup>2</sup>	Offered	575	590	319	303	319
	Retrieved	517	541	153	93	49
	Transplanted (% of offered)	486 (85%)	466 (79%)	78 (24%)	92 (30%)	48 (15%)
Liver not accepted	Offered	25	26	13	16	14
	Retrieved	16	0	1	2	1
	Transplanted (% of offered)	16 (64%)	0 (0%)	1 (8%)	2 (13%)	1 (7%)
<b>Total</b>	<b>Offered</b>	<b>748</b>	<b>765</b>	<b>428</b>	<b>419</b>	<b>427</b>
	<b>Retrieved</b>	<b>678</b>	<b>686</b>	<b>218</b>	<b>134</b>	<b>63</b>
	<b>Transplanted (% of offered)</b>	<b>641 (86%)</b>	<b>595 (78%)</b>	<b>114 (27%)</b>	<b>133 (32%)</b>	<b>60 (14%)</b>

<sup>1</sup> At least one

<sup>2</sup> All tiers below super-urgent

Figure 2 Areas of development identified in case reviews by area of practice responsible

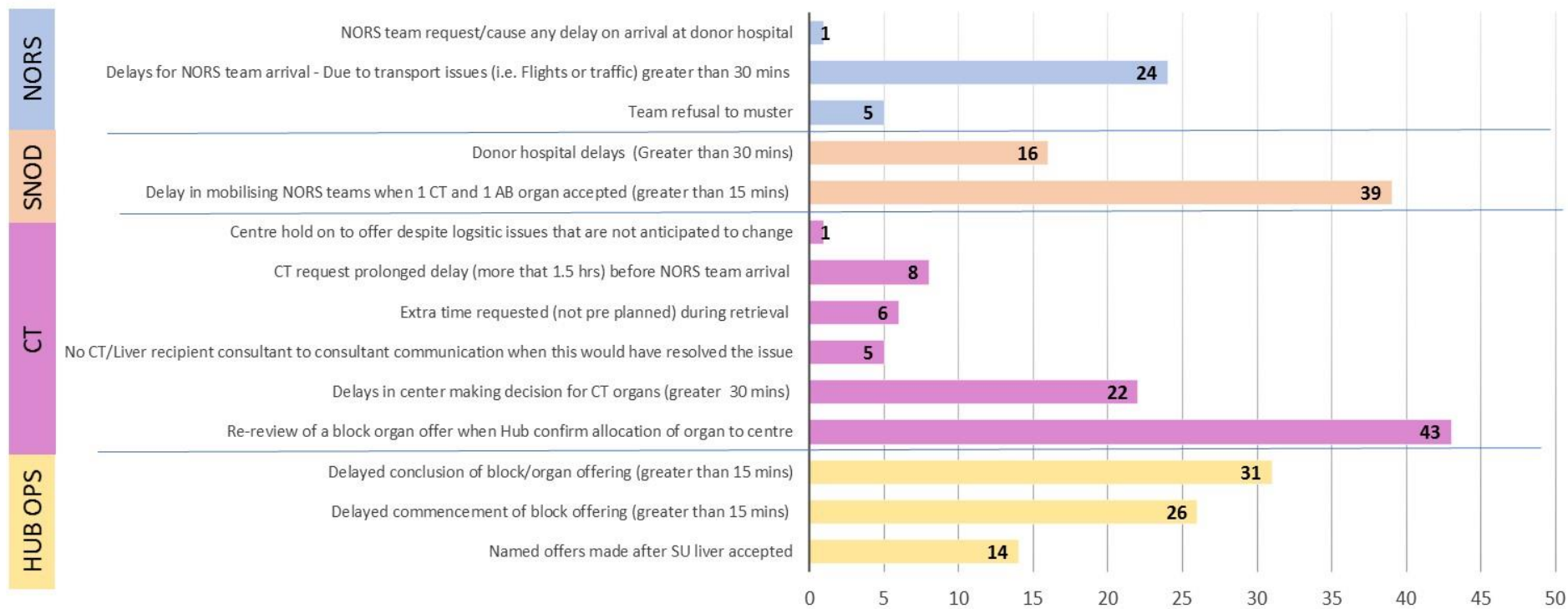


Figure 3 Areas of good practice identified in case reviews by area of practice responsible

