

NHS BLOOD AND TRANSPLANT

RETRIEVAL ADVISORY GROUP

SUPER-URGENT LIVER PATHWAY – NINE 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 July 2022, there were 115 registrations to the super-urgent liver list. No patients were on the super-urgent list on 1 November. The outcomes of these registrations are seen in **Figure 1**. Of the 115, 95 (83%) were ventilated or encephalopathic. In total, 101 received transplants – 93 from UK deceased donors, 3 from an overseas donor, and 5 from living donors. Ten patients were removed due to deteriorating condition, and 4 removed due to improved condition. Of the 93 transplanted from UK deceased donors, 77 (83%) had at least one cardiothoracic organ offered, with 31 proceeding to cardiothoracic donation.

LENGTH OF PROCESS

- 4 There were 93 super-urgent liver transplants and 552 non-urgent liver only transplants from 617 UK deceased donors between 1 November 2021 and 31 July 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 5.3 hours, which is 3.5 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 19 minutes if there was a CT team in attendance, and 20 minutes if it was abdominal only. When no CT team was involved, the time from theatre access to knife to skin was quicker (89.5 mins vs 115 mins).

ORGAN UTILISATION

- 6 There were 584 DBD donors who had their liver offered between 1 November 2021 and 31 July 2022, with 554 of these donors proceeding to donate at least one organ. Of the 584, 115 (20%) had the liver accepted for a super-urgent recipient (including acceptances which were subsequently declined), 448 (77%) had the liver accepted for other liver recipients (all tiers below super-urgent), and 21 (4%) 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 1 September 2022, there have been 73 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 3. **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 2.

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

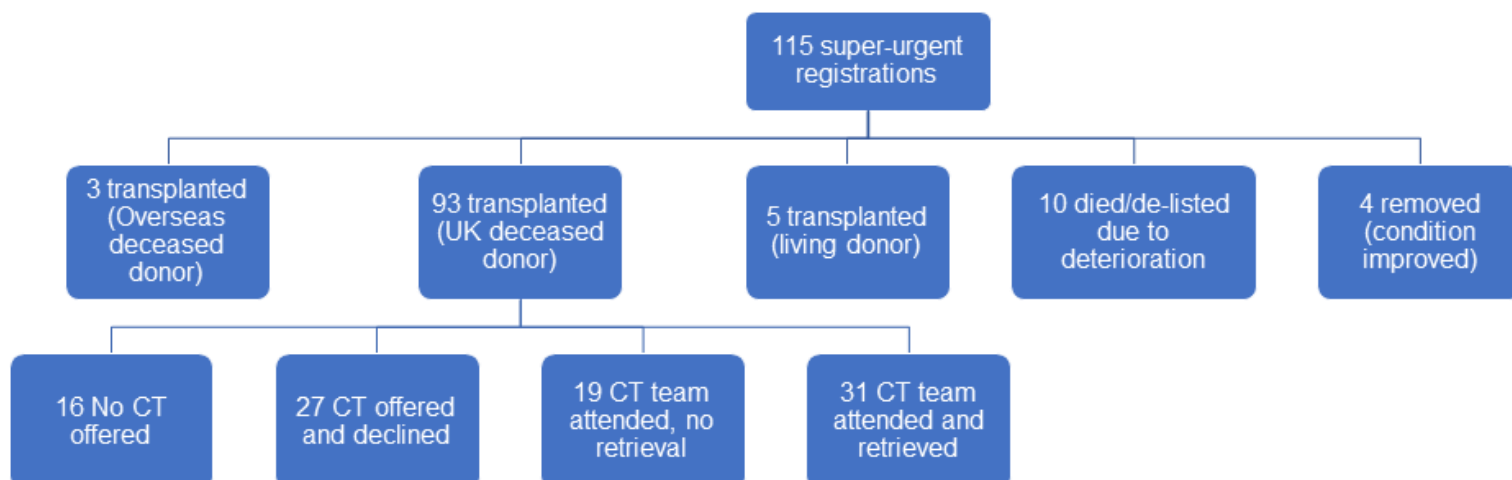


Table 1 Length of offering process for liver only transplants, by urgency of transplant and whether CT offering occurred, 1 November 2021 – 31 July 2022

CT offering occurred	Urgency of transplant	Number of donors	Hub registration to agreed departure time*	
			Number reported	Median (IQR) hours
No	Super-urgent	16	15	4.6 (4.1-7.7)
	Non-urgent	177	171	5.4 (4.0-7.7)
	Overall	193	186	5.3 (4.0-7.7)
Yes	Super-urgent	77	73	7.9 (6.2-10.0)
	Non-urgent	347	339	8.9 (6.4-11.6)
	Overall	424	412	8.8 (6.3-11.2)

* 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 July 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	43	43	15 (11-31)	43	76 (61-98)
	Non-urgent	336	334	20 (10-35)	335	92 (68-123)
	Overall	379	377	20 (10-34)	378	89.5 (67-118)
Yes	Super-urgent	50	47	20 (10-30)	48	104.5 (77.5-132.5)
	Non-urgent	188	182	17 (10-43)	181	118 (81-159)
	Overall	238	229	19 (10-38)	229	115 (80-153)

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

Liver acceptance	Outcome	Kidney¹	Liver	Pancreas	Heart	Lungs¹
Liver accepted for SU	Offered	114	115	74	78	76
	Retrieved	111	110	49	28	11
	Transplanted (% of offered)	106 (93%)	100 (87%)	30 (41%)	28 (36%)	10 (13%)
Liver accepted for other ²	Offered	439	448	240	228	242
	Retrieved	395	408	118	72	40
	Transplanted (% of offered)	373 (85%)	355 (79%)	65 (27%)	72 (32%)	39 (16%)
Liver not accepted	Offered	20	21	10	12	12
	Retrieved	11	0	1	2	1
	Transplanted (% of offered)	11 (55%)	0 (0%)	1 (10%)	2 (17%)	1 (8%)
Total	Offered	573	584	324	318	330
	Retrieved	517	518	168	102	52
	Transplanted (% of offered)	490 (86%)	455 (78%)	96 (30%)	102 (32%)	50 (15%)

¹ At least one

² All tiers below super-urgent

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

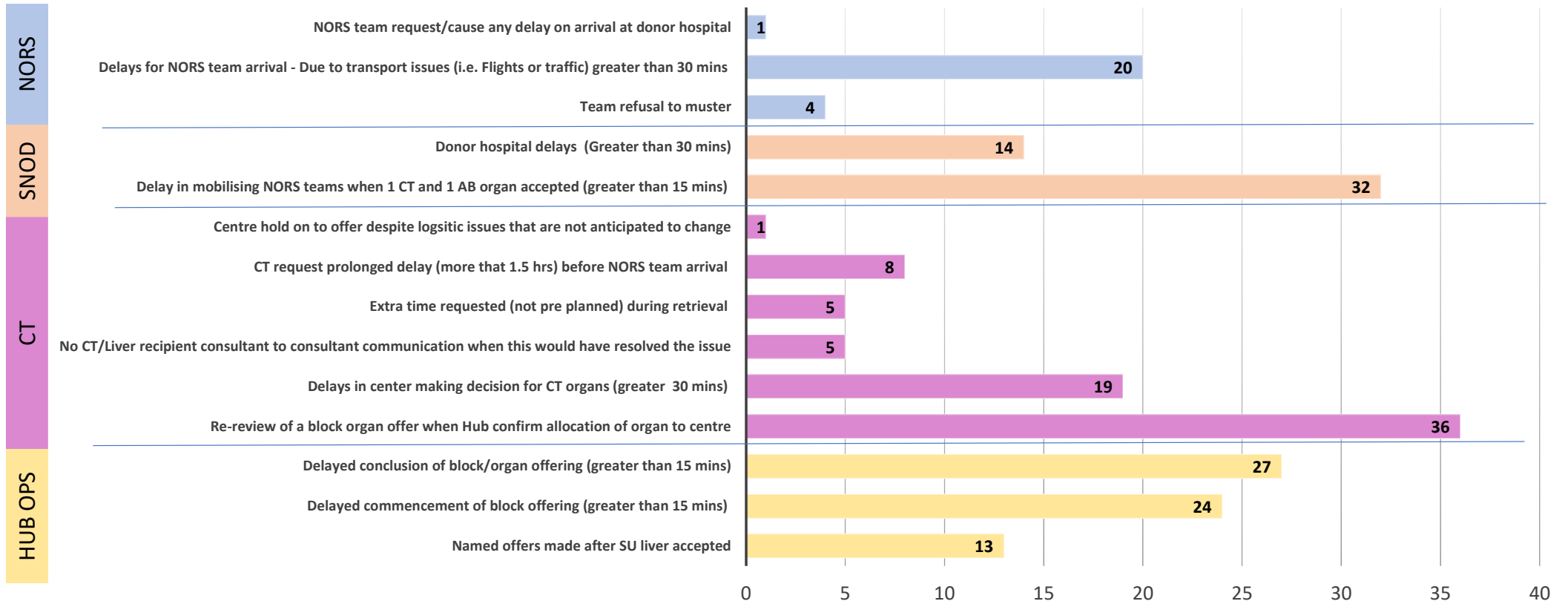


Figure 3 Areas of good practice identified in case reviews by area of practice responsible

