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A NATIONAL RESPONSE TO COVID PRIORITISING LIVER TRANSPLANT RECIPIENTS WITH THE HIGHEST NEED PROVIDED EXCELLENT OUTCOMES IN THE UK

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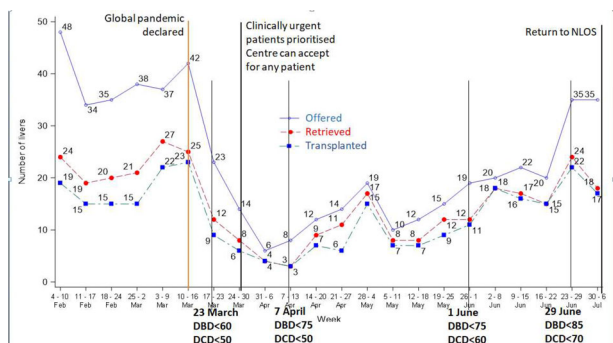
Background: The UK has been severely affected by COVID-19, with specific challenges in organ transplantation. Here, we describe the co-ordinated response to, and outcomes from, the 'first wave', across all 7 adult and 3 paediatric UK liver transplant (LT) centres.

Methods: Changes to the transplant process were agreed. These included liver donor age restrictions and changes to offering. A 'high-urgent' category was established (27th Mar-9th Jul), prioritising for LT only those with UKELD > 60, HCC reaching transplant criteria, and others deemed likely to die within 90 days. Outcomes were compared with the same time period in 2018 & 2019 when the system of national liver offering by transplant benefit had been introduced.

Results: There was a significant fall in the number of weekly LT (11 from 18), with an initial drop 84%, before gradual recovery (Figure 1). The retrieval rate for deceased donors (71%; $P < 0.0001$) and, in particular DCD (35%; $P = 0.008$) but not DBD (89%; $P = 0.2$), was higher in 2020, though subsequent transplant rate was similar. In total, 188 LT (157 adults and 31 paediatric) were undertaken. Compared to previous 5 years, paediatric LT was maintained (mean 29); but significant reduction in adult (37%) and total (32%) LT. Almost all adult LT (148) were super urgent ($n = 15$) or high urgent ($n = 133$). We successfully prioritised those with highest illness severity (Table 1) with no prolongation of ITU or hospital stay and no reduction in 90 days patient survival ($P = 0.84$). There was a small (5% vs 3%) but significant ($P = 0.0012$) increase in deaths or removals from the UK LT waitlist, during this time which occurred predominantly in the prioritised high urgency patients.

Conclusions: During the 'first wave' a nationally coordinated response mitigated against a significant fall in LT activity. LT recipients with highest need were prioritised; waitlist mortality was only marginally increased. Transplant outcomes remained excellent without a significant increase in hospital resource utilisation.

Figure 1 Number of livers from UK deceased donors offered, retrieved and transplanted, showing time points in changes to donor age restrictions and the liver offering scheme (4 Feb-9 Jul 2020)



Variable	Median (IQR)			p value
	2018 (N=156)	2019 (N=159)	2020 (N=97)	
Recipient age	57.5 (48.5 - 63.5)	55 (46 - 63)	53 (45 - 59)	0.02
Bilirubin	62 (33.5 - 121)	62 (33 - 118)	88 (46.5 - 206.5)	0.0030
INR	1.5 (1.3 - 1.8)	1.4 (1.3 - 1.7)	1.6 (1.4 - 1.9)	0.04
Sodium	136 (132 - 139)	136 (133 - 139)	136 (132 - 139)	0.6
Albumin	30 (26 - 35)	31 (27 - 36)	28.5 (26 - 34)	0.04
UKELD	56 (53 - 60)	56 (53 - 59)	58 (55 - 60)	0.01
MELD	18 (13 - 22)	16 (12.5 - 20)	18 (15 - 22)	0.01
Wait time	23.5 (8 - 92.5)	25 (7 - 96)	73 (19 - 150)	0.0030
Donor age	53.5 (39 - 64)	52 (41 - 63)	47 (35 - 59)	0.04
Donor BMI	25.95 (23.31 - 29.03)	25.95 (23.12 - 28.89)	25.75 (23.12 - 29.67)	0.91

Table 1 Recipient, donor and transplant characteristics for UK first adult elective CLD deceased donor liver transplants (27 Mar – 9 July) by year

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COVID-19 IN LIVER TRANSPLANT CANDIDATES: WAIT-LIST OUTCOMES AND POST-TRANSPLANT COURSE

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Background: The impact of prior SARS-CoV-2 infection on patients on the waiting list for liver transplantation (LT) and on their post-LT course is presently unknown.

Methods: Data from adult LT candidates with laboratory confirmed SARS-CoV-2 infection was collected across Europe and all consecutive patients with symptomatic COVID-19 were included in the analysis.

Results: From February 21st to November 20th, 2020, 136 adult cases with laboratory-confirmed SARS-CoV-2 infection from 33 centers in 10 European countries were collected, with 113 having symptomatic COVID-19. Thirty-three (29.2%) were managed as outpatients, 80 (70.8%) required hospitalization including admission to the intensive care unit (28/80, 35%). Thirty-seven (37/113, 32.7%) patients died after a median of 18 (10-30) days, respiratory failure being the major cause (33/37, 89.2%). The 60-day mortality risk did not change between first (35.3%, 95% CI 23.9-50.0) and second wave (26.0%, 95% CI 16.2-40.2). Multivariable Cox regression analysis showed MELD score ≥ 15 (MELD15-19:HR 6.09 95%CI 2.01-18.44; MELD ≥ 20 :HR 5.21, 95%CI 1.76-15.45) and dyspnea on presentation (HR:4.1, 95%CI 2.09-8.06) being the two negative independent factors for mortality. Twenty-six patients received a LT after a median time of 78.5 (IQR:44-102) days and 25 are alive after a median follow-up of 118 days (IQR:31-170).

Conclusions: Mortality of LT candidates with symptomatic COVID-19 was high (32.7%) peaking at 45% in decompensated cirrhotic with MELD > 15 and did not significantly differ between the 2 waves of the pandemic, respiratory failure being the major cause of death thus supporting high priority for vaccination. Prior SARS-CoV-2 infection did not affect early post-transplant survival (96%).