

LIVER ADVISORY GROUP

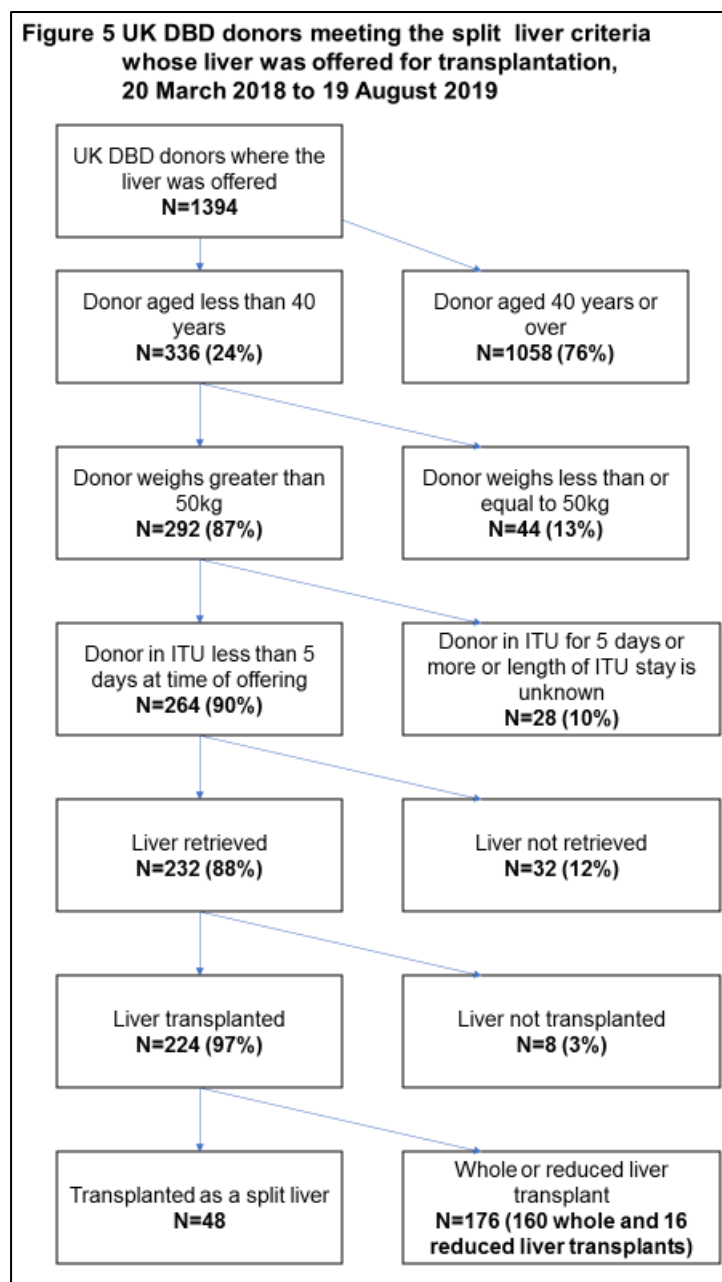
Proposal for change of Split criteria for Livers

Background

Currently there are 90-120 paediatric Liver transplants are performed annually in the UK.

The current Splitting Criteria

- DBD
- Age < 40
- Weight > 50kg
- ITU stay less than 5 days



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Only 48 (18%) out of 264 livers that met the current split criteria were split and transplanted. This suggests that the split criteria need to be reviewed to allow a number of objectives:

- 1) Increase the numbers of suitable organs that are available for paediatric recipients.
- 2) Livers that are offered for split have higher chance of being split. This will also reduce the time wasted in the offering process and will decrease unnecessary offers to paediatric units.
- 3) Based on the current offering scheme for livers that meet split criteria, allocation of the right lobe is done on the assumption that these livers are split and will be offered accordingly to the highest TBS recipient that can receive a split. However, 82% of these livers were not split which disadvantages a large pool of adult recipients. The change will reduce the frequency of this issue as the liver will be allocated as a whole graft for the appropriate recipient.

Need for change and demand

Paediatric mortality is currently running between 2-4%. However, it was agreed that although mortality is relatively low, there is significant number of patients that are currently waiting for a long time. It is unclear what is an acceptable rate of paediatric mortality.

Since April 2014, 28% of children registered for paediatric transplantation waited more than 6 months (all indications). The Paediatric Team feel that earlier transplantation will improve outcomes and allow near normal development of children.

There has been a progressive increase over the last few years to transplant for metabolic indications and this is across the three paediatric centers. This is likely to expand further in the future.

It is estimated that 70-80 splits are required annually.

Outcomes of Extended Right Lobe grafts

Analysis of national split data over 10 years (2008-2018) was done by Barbara Fiore and the following findings were observed;

- 1) There was no difference in the overall patient and graft survival between Extended Right Lobe Liver grafts (ERLL) and whole graft DBDs.
- 2) On sub analysis, to compare outcomes of ERLL across the 7 UK centres, the risk of overall morbidity, HAT,, bile leak and graft loss within 90 days were significantly higher if the ERLL was sent out from the splitting unit or if the ERLL had been transplanted in an “adult only” centre compared to “adult/paediatric” centre.

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- 3) 31.8% of donors outside splitting criteria and 12.1% of donors older than 40 years of age.
- 4) Travel distance between retrieval centre, splitting centre and recipient centre above 310 km and travel time above 180 min as well as a CIT longer than 13 hours are significant prognostic factors for HAT and graft loss within 90 days. CIT>13 hours is also a risk factor for regraft at any point after transplant.

Proposed criteria

It was acknowledged that LFTs, donor weight or BMI has a significant impact on decision making for acceptance of livers that were actually split.

Also, ICU stay seems to be less relevant on decision making in acceptance for split.

Rhiannon Taylor has performed multiple modellings to look at the impact of changing the criteria and the number of splittable livers that can be potentially available and successfully transplanted.

The following criteria are proposed;

Age <45 years

Weight <90kg or BMI<30

latest ALT prior to offering<200 and latest bilirubin prior to offering <30.

Expected impact ON ACTIVITY

The number of paediatric donors by complete financial year (excluding 2019/2020) ranged between 25 and 37 with 30 in 2018/2019.

The new proposed criteria are expected to provide of an average of 110-120 successful splits that are transplanted annually.

Taking into account paediatric donors (25-37) and living donors, this is likely to be sufficient to meet the paediatric demand. This will allow a margin for the increasing metabolic indications.

Recommendations

- 1) Implement the proposed criteria and review after 12 months to assess the outcomes and the impact on paediatric and adult waiting list mortality. If the paediatric demand is not met then, donor age extension to 50 years of age should be considered.
- 2) The Hub should explore the feasibility of performing two parallel runs for livers that are within split criteria; One to include the provisional Extended Right lobe

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and the other to include the liver as a whole graft. If the liver is not split or rejected, then the patient with the highest TBS score should be offered the whole graft.

- 3) Consider travel time/distance (>3 hours/190 miles), projected Cold ischaemia time (<13 hours) and the destination of the ERL on allocation of DBD splittable livers.
- 4) It is also important to keep in mind that calculating the projected ischaemia time should take into account that Livers take on average 2 hours from Cross clamp to leave the donor hospital, 2.5-3 hours for the split surgery. This in addition to travel time, time of the accepting centre to inspect the graft as well as recipient's hepatectomy time. For example, a liver that is retrieved at Bristol, split at Kings and the right lobe is allocated to Newcastle will have a projected ischaemia time of minimum of 14 hours. Outcomes of ERL with >13 hours of CIT is significantly poorer.
- 5) If the paediatric centre decided to keep the left lobe of a splittable liver for a larger paediatric recipient, the Hub should remind the adult centre accepting the right lobe that this is allowed and the adult centre will need to decide to decline or accept the right lobe from a Full-Right-Full-Left split.
- 6) Given the difference in ERL graft survival between centres and to improve the outcomes for ERL grafts, the Liver Advisory Group may wish to consider reviewing the national allocation of the ERL grafts to the same paediatric/adult or another paediatric/adult unit.

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