

## NHS BLOOD AND TRANSPLANT

### NATIONAL RETRIEVAL GROUP

#### PROPOSAL FOR ANALYSIS OF ORGAN RETRIEVAL QUALITY

#### INTRODUCTION

The monitoring of organ retrieval quality across NORS teams is a matter of great importance but current data and methods of analysis are not sufficient to allow reliable detection of divergent performance. This report describes the current situation and makes some proposals for future analyses.

#### BACKGROUND

Since 2011 funnel plots comparing NORS teams' organ retrieval damage rates by organ type have been presented to the National Retrieval Group (NRG) on a regular basis. Rates of damage have been determined according to organs reported with moderate or severe damage on the HTA-B form by the receiving surgeon (see **Figure 1**). This reporting has been criticised for being subjective, non-specific and not relevant for all organs. For this reason the NRG have requested that this analysis be reviewed and revised.

**Figure 1 Screenshot of the organ damage data currently collected for retrieved organs on receipt at implanting centre**

Grade of surgical damage to this organ	
None = 0	
Mild = 1 <input type="checkbox"/>	Mild = no surgical repair required
Moderate = 2 <input type="checkbox"/>	Moderate = surgical repair required to make organ usable
Severe = 3	Severe = organ not used due to damage
If code 2 - Moderate, has the damage had a significant impact on the recipient's health? (eg very likely to result in prolonged hospital stay)	
No = 1 <input type="checkbox"/>	Yes = 2 <input type="checkbox"/>
<i>Note: this response is important for defining a SAEAR. Recipient impact may not be immediately apparent – if recipient subsequently develops a significant problem attributed to the damage then an incident report should be sent to ODT Clinical Governance</i>	
If code 1, 2 or 3, please describe organ damage	

At the last meeting of the NRG, members suggested that organs deemed unsuitable for transplantation due to damage, or where organs were implanted and harm came to the recipient, or where the graft had to be subsequently removed, should be the focus of future analyses. As part of the NORS Review Implementation it has been highlighted that organs deemed unsuitable for transplantation due to damage and risk-adjusted short-term graft outcomes are important performance indicators for the service going forward.

#### CURRENT DATA

##### **Organs discarded due to damage**

Organs deemed unsuitable for transplantation due to damage are difficult to identify through current data reporting. As mentioned, the HTA-B form is not a reliable source, not least because some organs reported with severe damage are in fact transplanted. Another problem is that unused organs may incur some level of retrieval damage but be discarded due to another reason. Reasons for non-use are recorded by the ODT Duty Office but these data are also currently not reliable enough for the purposes of rigorous performance analysis (a list of available reasons is shown in **Appendix I**). For example, “organ damaged” may not refer to anything caused by the retrieval team and we know that there are cases where “organ damaged” has been recorded but the grade of damage on the HTA-B form is “None”.

**Table 1** shows the number of organs that we can identify as being discarded due to damage using “Severe” as the grade of damage and the knowledge that the organ was not implanted. The data show that this is a very rare event but there is probably a degree of underreporting. As it stands, it would be impossible to compare the incidence of such a rare event across NORS teams.

No. organs discarded due to damage / No. organs retrieved	Kidney	Liver	Pancreas	Heart	Lung
DBD	18/1897	3/924	14/459	1/230	4/405
DCD	20/1271	4/322	5/145	0/11	0/110

### ***Risk-adjusted short-term graft outcomes***

There is some interest in comparing risk-adjusted 90 day graft survival rates across NORS teams for each organ. However, it has been suggested that this is more appropriate for livers, hearts and lungs than for kidneys and pancreases. Data on 90 day outcomes and relevant risk factors are collected by NHSBT. The risk factors shown in **Appendix II** have been used to risk-adjust short-term survival comparisons across implanting centre in the NHSBT Organ Specific Annual Reports (<http://www.odt.nhs.uk/uk-transplant-registry/organ-specific-reports/>).

### **FUTURE DATA**

An electronic quality form is in development that will allow more sophisticated and reliable reporting of organ retrieval damage. The form will collect data on different aspects of retrieval quality for different organs and will be used to more accurately monitor performance at the point of retrieval, however, the resulting data are not likely to be available in the short/medium term.

### **INTERIM SOLUTIONS**

#### ***Organs discarded due to damage***

Option A: Continue with the funnel plot analysis of moderate or severe organ damage rates, accepting its limitations.

Option B: Cease reporting of the funnel plots analysis of moderate or severe organ damage rates and wait until more reliable data are available from the electronic quality form.

#### ***Risk-adjusted short-term graft outcomes***

Option C: Produce funnel-plots to detect significantly low 90 day graft survival rates compared with the national rate, for all organs, using data described in **Appendix II** (or suggested alternatives).

Option D: Produce funnel-plots to detect significantly low 90 day graft survival rates compared with the national rate, for livers, hearts and lungs only, using data described in **Appendix II** (or suggested alternatives).

Option E: Produce this analysis frequently (three times a year to coincide with NRG) with a rolling 12-month period used for analysis, accepting that there will be an overlap between observations in consecutive analyses.

Option F: Produce this analysis once a year (to coincide with the Summer NRG meeting?) using data from the previous financial year.

### **ACTION**

Members are asked to choose between options A and B, options C and D and options E and F.

## APPENDIX

## Appendix I Duty Office pick-list of reasons for non-use of organs

10	Donor unsuitable – cause of death
11	Donor unsuitable - age
12	Donor unsuitable - past history
17	Donor unsuitable - size
20	No suitable recipients
22	No time
24	Centre already retrieving/transplanting
26	Centre criteria not achieved
28	Poor function
29	Other administrative reason
30	Infection
31	Contamination/damage in removal
33	Clinical
34	Tumour
35	Anatomical
36	Poor perfusion
38	Medication
39	Other disease
40	HLA/ABO type
41	X-match positive
42	Unable to x-match
43	Better match required
44	Organ damaged
45	Contamination
46	Ischaemia time too long - warm
47	Ischaemia time too long - cold
48	Unable to x-match - no donor material
50	Recipient unfit
51	Recipient died
52	Recipient unavailable
53	Recipient refused
54	Recipient did not need transplant
60	Currently in tissue bank
73	Organ used elsewhere
74	Distance (euro)
76	No beds
77	No staff
78	No theatre
81	No response to fast track offer
84	Used for research after declined by centres
85	Fatty organ
86	Donor unsuitable - virology
87	Donor unsuitable - medical reason
90	Organ unsuitable for transplant
91	Unable to purify pancreas islets
92	Insufficient pancreas islets
93	Whole organ cut down for transplant
97	Zone team felt organ not viable
98	Other
99	Unknown
101	Organ too small
102	Organ fibrotic
104	Insufficient islet yield
105	Insufficient islet viability
106	Insufficient islet purity
888	Not reported

<b>Appendix II</b>		<b>Proposed data to be used in comparison of short-term graft survival outcomes by NORS team</b>	
<b>Organ</b>	<b>Outcome</b>	<b>Inclusion criteria</b>	<b>Risk factors</b>
Kidney	90 day graft survival (death with a functioning graft censored)	Adult, kidney only, DBD and DCD transplants (re-grafts included?)	Donor age Donor type Donor cause of death Recipient age Waiting time to transplant Primary renal disease HLA mismatch group Cold ischaemic time Recipient ethnicity
Pancreas	90 day graft survival (death with a functioning graft censored)	Adult, SPK and pancreas only, DBD and DCD transplants (re-grafts included?)	Donor age Donor type Donor BMI Waiting time to transplant
Liver	90 day graft survival (death with a functioning graft censored)	Adult, elective, liver only, DBD and DCD transplants (re-grafts included?)	Recipient sex Recipient ethnicity Indication Recipient HCV status Pre-transplant in-patient status Ascites Encephalopathy Pre-transplant renal support Previous abdominal surgery Varices & shunt Life style activity Graft appearance Recipient age years BMI kg/m <sup>2</sup> Serum Bilirubin µmol/l Serum Creatinine µmol/l Serum sodium mmol/l Serum potassium mmol/l INR Serum Albumin g/l Cold Ischaemia time Time on transplant list Donor sex Donor ethnicity Donor cause of death Donor history of diabetes Donor type ABO match Graft type Donor age years Donor BMI kg/m <sup>2</sup>
Heart	90 day graft survival (death with a functioning graft censored)	Adult, heart only, DBD transplants (re-grafts included?)	Donor cause of death Donor BMI Donor age Respiratory arrest Recipient BMI Recipient creatinine at transplant ECMO at transplant Hospital status at transplant Primary disease Sex Mismatch

Lung	90 day graft survival (death with a functioning graft censored)	Adult, lung only, DBD and DCD transplants (re-grafts included?)	Donor CMV Donor history of smoking Recipient daily dose of prednisolone at registration Donor:recipient predicted TLC mismatch Recipient FVC at registration ECMO at transplant Recipient bilirubin at registration Recipient cholesterol at registration Recipient age at transplant Ischaemia time (hours) Transplant type Primary disease group Transplant type*Primary disease group
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