**Decline of Increased Risk Donor Offers Increases Waitlist Mortality in Pediatric Heart Transplantation**

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**SUPPLEMENTAL MATERIALS**

Supplemental Table 1. Reasons for refusal of IRD organs

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| --- | --- |
| Refusal Reasons | N (%) |
| Patient’s condition improved, transplant not needed | 2 (0.2) |
| Patient ill, unavailable, refused, or temporarily unsuitable | 24 (2.9) |
| Multiple organ transplant or different laterality is required | 5 (0.6) |
| Patient transplanted | 12 (1.6) |
| Positive crossmatch | 8 (1.0) |
| Number of HLA mismatches unacceptable | 5 (0.6) |
| No serum | 8 (1.0) |
| Unacceptable Antigens | 42 (5.1) |
| High PRA | 1 (0.1) |
| Heavy workload | 3 (0.4) |
| Exceeded one hour response time | 1 (0.1) |
| Distance to travel or ship | 12 (1.4) |
| Operational – transplant center | 3 (0.4) |
| Donor age or quality | 361 (43.5) |
| Donor size/weight | 134 (16.2) |
| Donor social history | 159 (19.2) |
| Positive serological tests | 4 (0.5) |
| Organ preservation | 2 (0.2) |
| Organ anatomical damage or defect | 3 (0.4) |
| Organ-specific donor issue | 24 (2.9) |
| Other | 15 (1.8) |

Supplemental Table 2. Reasons for candidate removal from the waitlist

|  |  |
| --- | --- |
| Removal Reason | N (%) |
| Deceased donor transplant, removed by transplant center | 663 (84.6) |
| Refused transplant | 2 (0.3) |
| Transferred to another center | 14 (1.8) |
| Candidate condition improved, transplant no longer needed | 21 (2.7) |
| Candidate condition deteriorated, too ill to transplant | 20 (2.6) |
| Death | 44 (5.6) |
| Death during transplant procedure | 3 (0.4) |
| Other | 17 (2.2) |

Supplemental Table 3. Characteristics of candidates receiving IRD donor offers but not included in the study cohort (received offers after the first 10 match runs). Values listed are either mean(sd) or n(%). BMI=Body mass index, ICU=Intensive care unit, IRD=Increased Risk Donor, LVAD = Left ventricular assist device, LVEF=Left ventricular ejection fraction, HLA = Human leukocyte antigen

\* denotes non-normally distributed data

|  |  |  |  |
| --- | --- | --- | --- |
|  | Included Cohort-Offers received in first 10 match runs  (N=1,067) | Excluded Cohort—Offers received after the first 10 match runs (N=276) | P |
| ***Recipient Characteristics*** |  |  |  |
| Age at listing (years) | 9.2 (6.4) | 13.7 (2.7) | <0.001 |
| Male gender | 610 (57%) | 175 (63%) | 0.07 |
| Ethnicity |  |  | 0.14 |
| White | 588 (55%) | 139 (50%) |  |
| Black | 235 (22%) | 73 (26%) |  |
| Asian | 29 (3%) | 8 (3%) |  |
| Hispanic | 181 (17%) | 53 (19%) |  |
| Other | 34 (3%) | 3 (2%) |  |
| Diagnosis |  |  | 0.015 |
| Cardiomyopathy | 503 (47%) | 156 (57%) |  |
| Congenital Heart Disease | 437 (41%) | 82 (30%) |  |
| Coronary Artery Disease | 9 (1%) | 2 (1%) |  |
| Re-Transplantation | 88 (8%) | 25 (9%) |  |
| Other | 30 (3%) | 11 (3%) |  |
| BMI (kg/m2) | 20.5 (5.8) | 22.5 (6.1) | <0.001 |
| Serum bilirubin (mg/dL) | 0.6 [ 0.4, 1.1] | 0.8 [0.5, 1.3] | \* |
| Serum creatinine (mg/dL) | 0.7 (0.7) | 0.9 (1.3) | 0.001 |
| Ventilator at transplant | 788 (88%) | 211 (94%) | 0.007 |
| LVAD at transplant | 191 (21%) | 55 (25%) | 0.34 |
| Waitlist time (days) | 245.9 (382) | 348 (507.6) | <0.001 |
| Status 1A time (days) | 90.7 (121.7) | 61.3 (89.2) | <0.001 |
| Status 1B time (days) | 46.1 (174) | 51.6 (125.4) | 0.62 |
| Status 2 time (days) | 64.84 (193.7) | 165.4 (364.7) | <0.001 |
| ABO Match |  |  | 0.024 |
| Identical | 707 (66%) | 190 (19%) |  |
| Compatible | 168 (16%) | 34 (12%) |  |
| Incompatible | 24 (2%) | 0 (0%) |  |
| Number of HLA Mismatches | 4.7 (1.1) | 4.7 (1.1) | 0.451 |
| Organ Sequence Number | 3.3 (2.4) | 89.4 (154.6) | <0.001 |
| ***Donor Characteristics*** |  |  |  |
| Age (years) | 12.9 (9.1) | 18.0 (6.5) | <0.001 |
| Male gender | 575 (54%) | 146 (53%) | 0.44 |
| Ethnicity |  |  | 0.81 |
| White | 524 (58%) | 134 (60%) |  |
| Black | 193 (22%) | 42 (19%) |  |
| Hispanic | 162 (18%) | 45 (19%) |  |
| Asian | 10 (1%) | 2 (1%) |  |
| Other | 10 (1%) | 1 (1%) |  |
| BMI (kg/m2) | 21.4 (5.2) | 23.9 (5.1) | <0.001 |
| History of cigarette use | 11 (1%) | 3 (1%) | 0.88 |
| History of cocaine use | 24 (2%) | 7 (3%) | 0.97 |
| History of alcohol use | 29 (3%) | 13 (5%) | 0.18 |
| History of other drug use | 155 (15%) | 50 (18%) | 0.032 |
| Serum creatinine (mg/dL) | 1.0 (1.1) | 1.0 (0.9) | 0.45 |
| LVEF % | 64 (7.6) | 63 (8.0) | 0.34 |
| Coronary angiography |  |  | 0.79 |
| Not Performed | 884 (98%) | 219 (97%) |  |
| Performed, Normal | 13 (1%) | 4 (2%) |  |
| Performed, Abnormal | 2 (1%) | 1 (1%) |  |
| Donor Mechanism of Death |  |  | 0.16 |
| Drowning | 27 (3%) | 3 (1%) |  |
| Seizure | 13 (1%) | 2 (1%) |  |
| Drug Intoxication | 21 (2%) | 3 (1%) |  |
| Asphyxiation | 75 (8%) | 18 (8%) |  |
| Cardiovascular | 63 (7%) | 14 (6%) |  |
| Penetrating injury | 165 (18%) | 59 (26%) |  |
| Blunt Injury | 395 (45%) | 98 (44%) |  |
| Sudden infant death syndrome | 6 (1%) | 0 (0%) |  |
| Intracranial Hemorrhage/Stroke | 88 (10%) | 22 (10%) |  |
| Other | 46 (5%) | 5 (3%) |  |
| Donor hospital distance to transplant center (miles) | 292.2 (249.7) | 257.2 (237.4) | 0.059 |
| ***Operative and Post-Operative Characteristics*** |  |  |  |
| Ischemic time (hours) | 3.5 (1.1) | 3.5 (1.0) | 0.54 |
| Length of stay (days) | 27.4 (32.5) | 23.4 (21.5) | 0.09 |
| Dialyzed prior to discharge | 64 (6%) | 17 (6%) | 0.691 |
| Pacemaker prior to discharge | 14 (1%) | 4 (1%) | 0.68 |
| Stroke prior to discharge | 33 (3%) | 5 (2%) | 0.11 |
| Treated for acute rejection within 1 year | 158 (15%) | 43 (16%) | 0.92 |

Supplemental Figure 1. Temporal trends in the response to IRD donor offers

\*2017 data was only collected through March

Supplemental Figure 2. Survival of Candidates based on IRD Donor Sequence Number

