Statistical Report - Sandeep Sainathan

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# Introduction and Objective

# Methods

## Statistical Analysis

# Appendix

| Variable | Overall (N = 7772)1 | N (N = 7166)1 | Y (N = 606)1 | p-value2 |
| --- | --- | --- | --- | --- |
| **Age (years)** | 5.0 (0.0, 13.0) | 5.0 (0.0, 13.0) | 3.0 (0.0, 11.0) | <0.001 |
| **Gender** |  |  |  | 0.045 |
| F | 3,513 (45%) | 3,215 (45%) | 298 (49%) |  |
| M | 4,259 (55%) | 3,951 (55%) | 308 (51%) |  |
| **Gender mismatch** | 3,652 (47%) | 3,359 (47%) | 293 (48%) | 0.5 |
| **Race** |  |  |  | 0.2 |
| 1 | 4,231 (54%) | 3,893 (54%) | 338 (56%) |  |
| 2 | 1,560 (20%) | 1,428 (20%) | 132 (22%) |  |
| 3 | 1,412 (18%) | 1,317 (18%) | 95 (16%) |  |
| 4 | 313 (4.0%) | 285 (4.0%) | 28 (4.6%) |  |
| Other | 256 (3.3%) | 243 (3.4%) | 13 (2.1%) |  |
| **Race mismatch** | 4,535 (58%) | 4,181 (58%) | 354 (58%) | >0.9 |
| Missing | 3 | 3 | 0 |  |
| **Weight (kg)** | 18 (8, 44) | 18 (8, 44) | 14 (6, 36) | <0.001 |
| Missing | 15 | 14 | 1 |  |
| **Weight mismatch** | 4,418 (57%) | 4,080 (57%) | 338 (56%) | 0.6 |
| Missing | 27 | 25 | 2 |  |
| **Height (cm)** | 107 (68, 152) | 108 (69, 152) | 92 (64, 142) | <0.001 |
| Missing | 48 | 41 | 7 |  |
| **Height mismatch** | 1,488 (19%) | 1,366 (19%) | 122 (20%) | 0.5 |
| Missing | 66 | 58 | 8 |  |
| **BMI** | 16.7 (14.8, 19.7) | 16.7 (14.8, 19.8) | 16.5 (14.6, 19.0) | 0.034 |
| Missing | 56 | 48 | 8 |  |
| **BMI mismatch** | 2,989 (39%) | 2,744 (39%) | 245 (41%) | 0.3 |
| Missing | 85 | 75 | 10 |  |
| **Recipient primary diagnosis** |  |  |  | 0.4 |
| CONGENITAL HEART DEFECT | 3,340 (43%) | 3,063 (43%) | 277 (46%) |  |
| DILATED MYOPATHY | 3,038 (39%) | 2,811 (39%) | 227 (37%) |  |
| HEART RE-TX/GF | 436 (5.6%) | 410 (5.7%) | 26 (4.3%) |  |
| HYPERTROPHIC CARDIOMYOPATHY | 223 (2.9%) | 205 (2.9%) | 18 (3.0%) |  |
| OTHER | 302 (3.9%) | 282 (3.9%) | 20 (3.3%) |  |
| RESTRICTIVE MYOPATHY | 433 (5.6%) | 395 (5.5%) | 38 (6.3%) |  |
| **Total prior sternotomies** |  |  |  | 0.7 |
| 0 | 697 (59%) | 663 (59%) | 34 (61%) |  |
| 1 | 236 (20%) | 227 (20%) | 9 (16%) |  |
| 1+ | 250 (21%) | 237 (21%) | 13 (23%) |  |
| Missing | 6,589 | 6,039 | 550 |  |
| **Recipient in ICU** |  |  |  | 0.3 |
| N | 36 (55%) | 33 (52%) | 3 (100%) |  |
| Y | 30 (45%) | 30 (48%) | 0 (0%) |  |
| Missing | 7,706 | 7,103 | 603 |  |
| **Heart failure type Congenital** |  |  |  | 0.5 |
| N | 172 (99%) | 153 (99%) | 19 (95%) |  |
| Y | 2 (1.1%) | 1 (0.6%) | 1 (5.0%) |  |
| Missing | 7,598 | 7,012 | 586 |  |
| **Presence of VAD at listing** | 1,506 (22%) | 1,395 (22%) | 111 (20%) | 0.2 |
| Missing | 921 | 877 | 44 |  |
| **Implantable defibrillator at registration** |  |  |  | 0.7 |
| N | 7,087 (93%) | 6,535 (93%) | 552 (93%) |  |
| Y | 562 (7.3%) | 521 (7.4%) | 41 (6.9%) |  |
| Missing | 123 | 110 | 13 |  |
| **Creatine** | 0.50 (0.30, 0.70) | 0.50 (0.30, 0.70) | 0.42 (0.30, 0.70) | 0.002 |
| Missing | 443 | 415 | 28 |  |
| **O2 Requirement at Listing** | NA (NA, NA) | NA (NA, NA) | NA (NA, NA) |  |
| Missing | 7,772 | 7,166 | 606 |  |
| **Any previous malignacy** |  |  |  | >0.9 |
| N | 7,586 (98%) | 6,993 (98%) | 593 (98%) |  |
| Y | 145 (1.9%) | 134 (1.9%) | 11 (1.8%) |  |
| Missing | 41 | 39 | 2 |  |
| **Recipient functional status at registration** |  |  |  | 0.7 |
| Performs activities of daily living with NO assistance. | 188 (2.4%) | 178 (2.5%) | 10 (1.7%) |  |
| Performs activities of daily living with SOME assistance. | 223 (2.9%) | 211 (2.9%) | 12 (2.0%) |  |
| Performs activities of daily living with TOTAL assistance | 20 (0.3%) | 18 (0.3%) | 2 (0.3%) |  |
| Not Applicable (patient < 1 year old) | 3,067 (39%) | 2,806 (39%) | 261 (43%) |  |
| Unknown | 239 (3.1%) | 217 (3.0%) | 22 (3.6%) |  |
| 10% - No play; does not get out of bed | 442 (5.7%) | 412 (5.8%) | 30 (5.0%) |  |
| 20% - Often sleeping; play entirely limited to very passi | 179 (2.3%) | 168 (2.3%) | 11 (1.8%) |  |
| 30% - In bed; needs assistance even for quiet play | 220 (2.8%) | 204 (2.8%) | 16 (2.6%) |  |
| 40% - Mostly in bed; participates in quiet activities | 516 (6.6%) | 481 (6.7%) | 35 (5.8%) |  |
| 50% - Can dress but lies around much of day; no active pl | 311 (4.0%) | 290 (4.0%) | 21 (3.5%) |  |
| 60% - Up and around, but minimal active play; keeps busy | 774 (10.0%) | 715 (10.0%) | 59 (9.7%) |  |
| 70% - Both greater restriction of and less time spent in | 524 (6.7%) | 482 (6.7%) | 42 (6.9%) |  |
| 80% - Active, but tires more quickly | 641 (8.2%) | 589 (8.2%) | 52 (8.6%) |  |
| 90% - Minor restrictions in physically strenuous activity | 224 (2.9%) | 210 (2.9%) | 14 (2.3%) |  |
| 100% - Fully active, normal | 203 (2.6%) | 184 (2.6%) | 19 (3.1%) |  |
| Missing | 1 | 1 | 0 |  |
| **IV inotropes at transplant** | 3,859 (50%) | 3,553 (50%) | 306 (50%) | 0.7 |
| **ECMO at transplant** | 399 (5.1%) | 360 (5.0%) | 39 (6.4%) | 0.2 |
| **Mechanical ventilator support** |  |  |  | >0.9 |
| N | 62 (94%) | 59 (94%) | 3 (100%) |  |
| Y | 4 (6.1%) | 4 (6.3%) | 0 (0%) |  |
| Missing | 7,706 | 7,103 | 603 |  |
| **Hemodynamics at time of transplant: Mean PA (mm/Hg) pressure** | 22 (17, 31) | 22 (17, 31) | 22 (16, 28) | 0.023 |
| Missing | 3,236 | 2,973 | 263 |  |
| **Hemodynamics at time of transplant: CO (L/min)** | 2.73 (1.73, 3.90) | 2.75 (1.77, 3.90) | 2.49 (1.50, 3.94) | 0.069 |
| Missing | 4,453 | 4,109 | 344 |  |
| **Recipient ECMO at 72 Hours** | 0 (NA%) | 0 (NA%) | 0 (NA%) |  |
| Missing | 7,772 | 7,166 | 606 |  |
| **Peak PRA class I at transplant** | 24 (9, 59) | 24 (9, 59) | 26 (9, 60) | 0.7 |
| Missing | 6,794 | 6,276 | 518 |  |
| **Peak PRA class II at transplant** | 36 (11, 72) | 36 (11, 73) | 38 (12, 69) | 0.7 |
| Missing | 7,035 | 6,491 | 544 |  |
| **Recipient blood type** |  |  |  | >0.9 |
| A | 2,885 (37%) | 2,663 (37%) | 222 (37%) |  |
| A1 | 6 (<0.1%) | 6 (<0.1%) | 0 (0%) |  |
| A2 | 2 (<0.1%) | 2 (<0.1%) | 0 (0%) |  |
| A2B | 1 (<0.1%) | 1 (<0.1%) | 0 (0%) |  |
| AB | 321 (4.1%) | 298 (4.2%) | 23 (3.8%) |  |
| B | 1,025 (13%) | 949 (13%) | 76 (13%) |  |
| O | 3,532 (45%) | 3,247 (45%) | 285 (47%) |  |
| **Donor-recipient ABO match level** |  |  |  | 0.2 |
| Identical | 5,933 (76%) | 5,476 (76%) | 457 (75%) |  |
| Compatible | 1,456 (19%) | 1,346 (19%) | 110 (18%) |  |
| Incompatible | 383 (4.9%) | 344 (4.8%) | 39 (6.4%) |  |
| **Recipient CMV status at transplant** |  |  |  | 0.2 |
| Not Reported | 323 (4.2%) | 302 (4.2%) | 21 (3.5%) |  |
| Negative | 4,203 (54%) | 3,847 (54%) | 356 (59%) |  |
| Not Done | 34 (0.4%) | 32 (0.4%) | 2 (0.3%) |  |
| Positive | 2,901 (37%) | 2,694 (38%) | 207 (34%) |  |
| Unknown | 311 (4.0%) | 291 (4.1%) | 20 (3.3%) |  |
| **Total days on waitlist** | 51 (18, 118) | 52 (18, 117) | 50 (17, 118) | 0.8 |
| **Days in status: Status 1A** | 22 (4, 63) | 22 (4, 63) | 25 (5, 65) | 0.3 |
| **Days in status: Status 1B** | 0 (0, 2) | 0 (0, 2) | 0 (0, 1) | 0.2 |
| **Days in status: Status 2** | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) | 0.4 |
| **Distance from donor hospital to transplant center (Nautical Miles)** | 300 (126, 463) | 296 (122, 461) | 350 (173, 472) | <0.001 |
| Missing | 113 | 110 | 3 |  |
| **Ischemic time in hours** | 3.58 (2.95, 4.23) | 3.57 (2.93, 4.23) | 3.65 (3.02, 4.18) | 0.3 |
| Missing | 292 | 268 | 24 |  |
| **Length of stay post transplant** | 18 (12, 33) | 18 (12, 33) | 20 (13, 35) | 0.010 |
| Missing | 335 | 311 | 24 |  |
| **Events prior to discharge: Dialysis** |  |  |  | >0.9 |
| N | 7,128 (93%) | 6,569 (93%) | 559 (93%) |  |
| Y | 523 (6.8%) | 483 (6.8%) | 40 (6.7%) |  |
| Missing | 121 | 114 | 7 |  |
| **Events prior to discharge: Pacemaker** |  |  |  | >0.9 |
| N | 7,559 (99%) | 6,968 (99%) | 591 (99%) |  |
| Y | 69 (0.9%) | 64 (0.9%) | 5 (0.8%) |  |
| Missing | 144 | 134 | 10 |  |
| **Events prior to discharge: Stroke** |  |  |  | >0.9 |
| N | 7,347 (97%) | 6,772 (97%) | 575 (97%) |  |
| Y | 255 (3.4%) | 236 (3.4%) | 19 (3.2%) |  |
| Missing | 170 | 158 | 12 |  |
| **Most Recent Patient Status** |  |  |  | 0.4 |
| Alive | 5,754 (74%) | 5,294 (74%) | 460 (76%) |  |
| Dead | 1,981 (26%) | 1,836 (26%) | 145 (24%) |  |
| Missing | 37 | 36 | 1 |  |
| **Treated for rejection within 1 year** |  |  |  | 0.2 |
| N | 4,518 (75%) | 4,147 (74%) | 371 (77%) |  |
| Y | 1,533 (25%) | 1,425 (26%) | 108 (23%) |  |
| Missing | 1,721 | 1,594 | 127 |  |
| 1Median (IQR); n (%) | | | | |
| 2Kruskal-Wallis rank sum test; Pearson's Chi-squared test | | | | |

| Variable | Overall (N = 7772)1 | N (N = 7166)1 | Y (N = 606)1 | p-value2 |
| --- | --- | --- | --- | --- |
| **Age (years)** | 6 (1, 16) | 7 (1, 16) | 3 (0, 12) | <0.001 |
| **Race** |  |  |  | 0.005 |
| 1 | 4,247 (55%) | 3,934 (55%) | 313 (52%) |  |
| 2 | 1,668 (21%) | 1,502 (21%) | 166 (27%) |  |
| 3 | 1,553 (20%) | 1,446 (20%) | 107 (18%) |  |
| 4 | 136 (1.7%) | 125 (1.7%) | 11 (1.8%) |  |
| Other | 168 (2.2%) | 159 (2.2%) | 9 (1.5%) |  |
| **Gender** |  |  |  | 0.5 |
| F | 3,181 (41%) | 2,942 (41%) | 239 (39%) |  |
| M | 4,591 (59%) | 4,224 (59%) | 367 (61%) |  |
| **BMI** | 18.5 (16.0, 22.0) | 18.5 (16.0, 22.0) | 18.3 (16.0, 21.2) | 0.061 |
| Missing | 31 | 29 | 2 |  |
| **Height (cm)** | 120 (79, 163) | 122 (80, 163) | 101 (69, 155) | <0.001 |
| Missing | 20 | 19 | 1 |  |
| **Weight (cm)** | 24 (11, 57) | 25 (11, 58) | 16 (9, 47) | <0.001 |
| Missing | 12 | 11 | 1 |  |
| **Intracranial cancer** |  |  |  | >0.9 |
| N | 7,555 (100%) | 6,961 (100%) | 594 (100%) |  |
| Y | 20 (0.3%) | 19 (0.3%) | 1 (0.2%) |  |
| Missing | 197 | 186 | 11 |  |
| **Mechanism of death** |  |  |  | <0.001 |
| DROWNING | 502 (6.5%) | 442 (6.2%) | 60 (9.9%) |  |
| SEIZURE | 140 (1.8%) | 137 (1.9%) | 3 (0.5%) |  |
| DRUG INTOXICATION | 143 (1.8%) | 133 (1.9%) | 10 (1.7%) |  |
| ASPHYXIATION | 751 (9.7%) | 648 (9.0%) | 103 (17%) |  |
| CARDIOVASCULAR | 732 (9.4%) | 635 (8.9%) | 97 (16%) |  |
| ELECTRICAL | 4 (<0.1%) | 2 (<0.1%) | 2 (0.3%) |  |
| GUNSHOT WOUND | 737 (9.5%) | 691 (9.6%) | 46 (7.6%) |  |
| STAB | 10 (0.1%) | 10 (0.1%) | 0 (0%) |  |
| BLUNT INJURY | 3,042 (39%) | 2,868 (40%) | 174 (29%) |  |
| SIDS | 128 (1.6%) | 108 (1.5%) | 20 (3.3%) |  |
| INTRACRANIAL HEMORRHAGE/STROKE | 879 (11%) | 835 (12%) | 44 (7.3%) |  |
| DEATH FROM NATURAL CAUSES | 229 (2.9%) | 221 (3.1%) | 8 (1.3%) |  |
| NONE OF THE ABOVE | 473 (6.1%) | 434 (6.1%) | 39 (6.4%) |  |
| Missing | 2 | 2 | 0 |  |
| **Terminal creatinine** | 0.50 (0.30, 0.90) | 0.52 (0.30, 0.90) | 0.50 (0.30, 0.80) | 0.002 |
| Missing | 17 | 17 | 0 |  |
| **Cigarette use in past at > 20pack years** |  |  |  | 0.032 |
| N | 7,562 (98%) | 6,963 (98%) | 599 (99%) |  |
| Y | 181 (2.3%) | 175 (2.5%) | 6 (1.0%) |  |
| Missing | 29 | 28 | 1 |  |
| **Heavy Alcohol Use (2+ drinks/day)** |  |  |  | 0.3 |
| N | 6,233 (98%) | 5,702 (98%) | 531 (99%) |  |
| Y | 117 (1.8%) | 111 (1.9%) | 6 (1.1%) |  |
| Missing | 1,422 | 1,353 | 69 |  |
| **Cocaine use (recent 6 mo use)** |  |  |  | >0.9 |
| N | 70 (46%) | 64 (46%) | 6 (50%) |  |
| Y | 82 (54%) | 76 (54%) | 6 (50%) |  |
| Missing | 7,620 | 7,026 | 594 |  |
| **HLA mismatch level: A locus** |  |  |  | 0.9 |
| 0 | 455 (6.9%) | 421 (6.9%) | 34 (6.7%) |  |
| 1 | 2,753 (42%) | 2,545 (42%) | 208 (41%) |  |
| 2 | 3,377 (51%) | 3,112 (51%) | 265 (52%) |  |
| Missing | 1,187 | 1,088 | 99 |  |
| **HLA mismatch level: B locus** |  |  |  | 0.14 |
| 0 | 125 (1.9%) | 121 (2.0%) | 4 (0.8%) |  |
| 1 | 1,641 (25%) | 1,508 (25%) | 133 (26%) |  |
| 2 | 4,820 (73%) | 4,450 (73%) | 370 (73%) |  |
| Missing | 1,186 | 1,087 | 99 |  |
| **HLA mismatch level: DR locus** |  |  |  | >0.9 |
| 0 | 291 (4.4%) | 268 (4.4%) | 23 (4.5%) |  |
| 1 | 2,636 (40%) | 2,436 (40%) | 200 (39%) |  |
| 2 | 3,648 (55%) | 3,364 (55%) | 284 (56%) |  |
| Missing | 1,197 | 1,098 | 99 |  |
| **CMV by nucleic acid** |  |  |  |  |
| Not Reported | 7,772 (100%) | 7,166 (100%) | 606 (100%) |  |
| **Clinical infection** |  |  |  | <0.001 |
| N | 3,462 (46%) | 3,234 (46%) | 228 (39%) |  |
| Y | 4,112 (54%) | 3,752 (54%) | 360 (61%) |  |
| Missing | 198 | 180 | 18 |  |
| **Arginine vesopressin within 24h pre cruss clamp** |  |  |  | 0.006 |
| N | 1,819 (29%) | 1,638 (28%) | 181 (34%) |  |
| Y | 4,543 (71%) | 4,189 (72%) | 354 (66%) |  |
| Missing | 1,410 | 1,339 | 71 |  |
| **Inotropic medications at procurement** |  |  |  | 0.7 |
| N | 3,608 (54%) | 3,305 (54%) | 303 (55%) |  |
| Y | 3,103 (46%) | 2,851 (46%) | 252 (45%) |  |
| Missing | 1,061 | 1,010 | 51 |  |
| **Diuretics within 24 hrs procurement** |  |  |  | 0.002 |
| N | 3,496 (46%) | 3,185 (45%) | 311 (52%) |  |
| Y | 4,111 (54%) | 3,825 (55%) | 286 (48%) |  |
| Missing | 165 | 156 | 9 |  |
| **LV ejection fraction (%)** | 65 (60, 70) | 65 (60, 70) | 64 (58, 70) | 0.9 |
| Missing | 560 | 508 | 52 |  |
| **LV posterior wall thickness (cm)** | 0.60 (0.50, 0.80) | 0.60 (0.50, 0.80) | 0.60 (0.40, 0.80) | 0.053 |
| Missing | 4,706 | 4,324 | 382 |  |
| **Segmental wall abnormality** |  |  |  | 0.2 |
| N | 261 (91%) | 232 (90%) | 29 (100%) |  |
| Y | 25 (8.7%) | 25 (9.7%) | 0 (0%) |  |
| Missing | 7,486 | 6,909 | 577 |  |
| **Global wall abnormality** |  |  |  | >0.9 |
| N | 260 (95%) | 232 (94%) | 28 (97%) |  |
| Y | 15 (5.5%) | 14 (5.7%) | 1 (3.4%) |  |
| Missing | 7,497 | 6,920 | 577 |  |
| **Coronary angiogram** |  |  |  | 0.3 |
| No | 7,636 (99%) | 7,042 (99%) | 594 (98%) |  |
| Yes, normal | 94 (1.2%) | 84 (1.2%) | 10 (1.7%) |  |
| Yes, not normal | 4 (<0.1%) | 3 (<0.1%) | 1 (0.2%) |  |
| Missing | 38 | 37 | 1 |  |
| **Ischemic time in hours** | 3.58 (2.95, 4.23) | 3.57 (2.93, 4.23) | 3.65 (3.02, 4.18) | 0.3 |
| Missing | 292 | 268 | 24 |  |
| **Antihypertensives within 24h pre-cross clamp** |  |  |  | 0.005 |
| N | 6,485 (84%) | 6,004 (84%) | 481 (80%) |  |
| Y | 1,269 (16%) | 1,145 (16%) | 124 (20%) |  |
| Missing | 18 | 17 | 1 |  |
| **Chest Trauma** |  |  |  | 0.060 |
| N | 4,941 (90%) | 4,509 (89%) | 432 (92%) |  |
| Y | 569 (10%) | 533 (11%) | 36 (7.7%) |  |
| Missing | 2,262 | 2,124 | 138 |  |
| **UNOS Region of recovery** |  |  |  | <0.001 |
| 1 | 260 (3.3%) | 236 (3.3%) | 24 (4.0%) |  |
| 2 | 638 (8.2%) | 565 (7.9%) | 73 (12%) |  |
| 3 | 1,247 (16%) | 1,161 (16%) | 86 (14%) |  |
| 4 | 648 (8.3%) | 617 (8.6%) | 31 (5.1%) |  |
| 5 | 1,262 (16%) | 1,216 (17%) | 46 (7.6%) |  |
| 6 | 241 (3.1%) | 234 (3.3%) | 7 (1.2%) |  |
| 7 | 673 (8.7%) | 594 (8.3%) | 79 (13%) |  |
| 8 | 832 (11%) | 765 (11%) | 67 (11%) |  |
| 9 | 538 (6.9%) | 471 (6.6%) | 67 (11%) |  |
| 10 | 682 (8.8%) | 620 (8.7%) | 62 (10%) |  |
| 11 | 751 (9.7%) | 687 (9.6%) | 64 (11%) |  |
| **Graft failure** | 2,391 (31%) | 2,218 (31%) | 173 (29%) | 0.2 |
| Missing | 37 | 36 | 1 |  |
| **Graft lifespan** | 1,794 (550, 3,408) | 1,800 (552, 3,457) | 1,661 (499, 3,249) | 0.2 |
| Missing | 37 | 36 | 1 |  |
| 1Median (IQR); n (%) | | | | |
| 2Kruskal-Wallis rank sum test; Pearson's Chi-squared test | | | | |