**Supplementary Table 1: Patient Characteristics, by Recurrent CS-AKI**

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| --- | --- | --- | --- | --- | --- |
| **Demographics**  N(%) or median (IQR) | **Total Cohort**  N=203 | **No CS-AKI**  N=140 | **1 CS-AKI**  N=53 | **>1 CS-AKI**  N=10 | **p-value** |
| Male | 118 (58) | 82 (59) | 28 (53) | 8 (80) | 0.29 |
| Birthweight, kg (mean, SD) | 3.1 (0.6) | 3.1 (0.6) | 3.1 (0.5) | 3.2 (0.6) | 0.96 |
| Gestational age (weeks) | 38 (37, 39) | 38 (37, 39) | 38 (38, 39) | 38 (37, 39) | 1.000 |
| English Speaking | 150 (74) | 100 (71) | 42 (79) | 8 (89) | 0.41 |
| Hospital LOS (days)\* | 35 (19, 69) | 32 (18, 55) | 52 (26, 88) | 183 (88,223) | <0.001 |
| CICU LOS (days)\* | 10 (5, 23) | 8 (5, 17) | 14 (6, 32) | 117 (43, 185) | <0.001 |
| Age at 1st cardiac surgery (days) | 12 (6, 59) | 11 (6, 45) | 21 (7, 73) | 6 (4, 15) | 0.23 |
| >1 cardiac surgeries\* | 73 (36) | 45 (32.1) | 18 (34) | 10 (100) | <0.001 |
| CPB (y/n) | 175 (86.2) | 114 (81) | 51 (96) | 10 (100) | 0.01 |
| CPB±\* | 190 (110, 280) | 175 (96, 241) | 248 (161, 329) | 400 (337,561) | <0.001 |
| CC±\* | 96 (55, 139) | 82 (44, 125) | 122 (87, 171) | 162 (108, 248) | <0.001 |
| DHCA±\* | 0 (0, 7) | 0 (0, 4) | 0 (0, 7) | 13 (10, 15) | <0.001 |
| Anesthesia±\* | 707 (482, 1144) | 646 (458,1004) | 833 (510,1206) | 1898 (1643,2368) | <0.001 |
| Intubated Days\* | 4 (2, 7) | 3 (1, 5) | 5 (2, 9) | 25 (8, 61) | <0.001 |
| Benzodiazepine (mg)\* | 7 (1, 36) | 3.7 (1, 15.3) | 23.3 (2, 94) | 94.9 (170.9,2206.8) | <0.001 |
| Opiate (mg)\* | 14.2 (4.6, 48.8) | 10.8 (3.5, 36) | 30.1 (8, 125.1) | 1101.2 (346.1, 3530.3) | <0.001 |
| STAT |  |  |  |  | 0.26 |
| 1-2 | 64 (32) | 48 (34) | 15 (28) | 1 (10) |  |
| 3-5 | 139 (69) | 92 (66) | 38 (72) | 9 (90) |  |
| Post-op seizures | 10 (5) | 6 (4) | 3 (6) | 1 (10) | 0.40 |
| ECMO/VAD/CPR | 6 (3) | 0 | 3 (6) | 3 (30) | <0.001 |
| Non-Hispanic White | 81 (40) | 54 (39) | 21 (40) | 6 (60) | 0.43 |
| Delay |  |  |  |  |  |
| Receptive Language | 89 (44) | 58 (42) | 23 (44) | 8 (80) | 0.07 |
| Expressive Language | 96 (48) | 60 (43) | 28 (53) | 8 (80) | 0.06 |
| Fine Motor | 49 (25) | 29 (22) | 13 (26) | 7 (70) | 0.005 |
| Gross Motor | 50 (27) | 30 (24) | 14 (29) | 6 (75) | 0.009 |
| Severe Delay |  |  |  |  |  |
| Receptive Language | 31 (15) | 21 (15) | 4 (8) | 6 (60) | 0.001 |
| Expressive Language | 41 (20) | 23 (17) | 13 (25) | 5 (50) | 0.03 |
| Fine Motor | 19 (10) | 9 (7) | 7 (14) | 3 (30) | 0.03 |
| Gross Motor | 20 (11) | 11 (9) | 7 (15) | 2 (25) | 0.15 |

*IQR* interquartile range; *LOS* Length of Stay; *CPB* Cardiopulmonary Bypass; *CC* Cross Clamp; *STAT* The Society of Thoracic Surgeons-European Association for Cardio-Thoracic Surgery; *CPR* cardiopulmonary resuscitation; *ECMO* extracorporeal membrane oxygenation; *VAD* ventricular assist device

\*: cumulative data the first year of life

±: units in minutes