**Supplemental Digital Content 8A:** Postoperative Deterioration Event Summary - Training/Validation Cohort - Patient Level

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|  |  |  | **Deterioration Events - Postoperative Timing** |
|  | **All Deterioration Patients,****n (%)** |  | 24-48 hours postoperative,n (%) | 48-96 hours postoperative, n (%) | 96 hours - 7 days postoperative, n (%) | >7 days postoperative, n (%) |
| **All Deterioration Patients** | **103 (100%)** |  | 73 (71%) | 29 (28%) | 12 (12%) | 14 (14%) |
|    Mortality | 4 (4%) |  | 1 (1%) | 0 (0%) | 1 (8%) | 2 (14%) |
|    Cardiac Index <2.0 L/min/m2 | 63 (61%) |  | 53 (73%) | 13 (45%) | 5 (42%) | 0 (0%) |
|    Mean Arterial Pressure <55 mmHg for >120 minutes | 15 (15%) |  | 5 (7%) | 6 (21%) | 2 (17%) | 4 (29%) |
|    Epinephrine bolus ≥1 mg | 5 (5%) |  | 2 (3%) | 3 (10%) | 0 (0%) | 0 (0%) |
|    Inotrope Infusion Initiated | 12 (12%) |  | 6 (8%) | 3 (10%) | 1 (8%) | 3 (21%) |
|    Inotrope Infusion Escalated ≥100% | 7 (7%) |  | 3 (4%) | 1 (3%) | 1 (8%) | 2 (14%) |
|    Vasopressor Infusion Initiated | 9 (9%) |  | 4 (5%) | 2 (7%) | 1 (8%) | 2 (14%) |
|    Vasopressor Infusion Escalated ≥100% | 13 (13%) |  | 2 (3%) | 4 (14%) | 3 (25%) | 5 (36%) |

**Supplemental Digital Content 8B:** Postoperative Deterioration Event Summary - Temporal Holdout Test Cohort - Patient Level

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|  |  |  | **Deterioration Events - Postoperative Timing** |
|  | **All Deterioration Patients,****n (%)** |  | 24-48 hours postoperative,n (%) | 48-96 hours postoperative, n (%) | 96 hours - 7 days postoperative, n (%) | >7 days postoperative, n (%) |
| **All Deterioration Patients** | **82 (100%)** |  | 42 (51%) | 16 (20%) | 17 (21%) | 22 (27%) |
|    Mortality | 10 (12%) |  | 1 (2%) | 2 (13%) | 0 (0%) | 7 (32%) |
|    Cardiac Index <2.0 L/min/m2 | 45 (55%) |  | 30 (71%) | 11 (69%) | 8 (47%) | 5 (23%) |
|    Mean Arterial Pressure <55 mmHg for >120 minutes | 7 (9%) |  | 3 (7%) | 1 (6%) | 0 (0%) | 3 (14%) |
|    Epinephrine bolus ≥1 mg | 3 (4%) |  | 0 (0%) | 0 (0%) | 2 (12%) | 1 (5%) |
|    Inotrope Infusion Initiated | 17 (21%) |  | 4 (10%) | 1 (6%) | 4 (24%) | 8 (36%) |
|    Inotrope Infusion Escalated ≥100% | 8 (10%) |  | 1 (2%) | 2 (13%) | 4 (24%) | 1 (5%) |
|    Vasopressor Infusion Initiated | 6 (7%) |  | 3 (7%) | 0 (0%) | 0 (0%) | 3 (14%) |
|    Vasopressor Infusion Escalated ≥100% | 1 (1%) |  | 0 (0%) | 0 (0%) | 0 (0%) | 1 (5%) |