| Short Reference | Endpoint | Predictors used | Further specific Inclusion/Exclusion criteria | Development cohort size | Model Type | Q1 | Q2 |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Gerotziafas (1) | IMV | sP-Selectin, D-DIMER, TFPI, TF activity, Factor XII, IL-6 |  | 118 | t-SNE | ✘ | ✘ |
| Arina (2) | IMV or death | CRP, BNP | CPAP use for at least six hours in a 24-hour period | 93 | Logistic regression | ✔ | ✔ |
| Cao (3) | Death | Urea, hs-CRP | IMV | 77 | Logistic regression | ✔ | ✔ |
| Pan (4) | Death | LDH; Prothrombin time; Creatinine; Lymphocyte percentage; Total bilirubin; Albumin level; Neutrophil percentage; Eosinophil percentage |  | 98 | XGBoost | ✘ | ✔ |
| Popadic(5) | Death | Albumin, IL-6, D-DIMER |  | 160 | Logistic regression | ✔ | ✘ |
| Vaid, Jaladanki (6) | Death | Not reported | IMV<48h after ICU admission | 4029 | Multiple | ✘ | ✘ |
| Vaid, Somani (7) | Death | Not reported | IMV<48h after ICU admission | 4098 | XGBoost | ✘ | ✘ |
| Vassiliou (8) | Death | Soluble E-selectin, sP-selectin, Ang-2, sICAM-1, von Willebrand factor |  | 38 | Unclear | ✘ | ✘ |
| Wang (9) | Death | Age; Aspartate transaminase; Urea, Chest tightness |  | 104 | Logistic regression | ✔ | ✘ |
| Falandry (10) | Death within 30 days | Age, IADL-8 | Age≥60 | 231 | Logistic regression | ✔ | ✘ |
| Leoni, Lombardelli (11) | Death censored at 28 days | Age, Obesity, Procalcitonin, SOFA, PaO2/FiO­2 | IMV or FiO2>60% | 229 | Cox regression | ✔ | ✔ |
| Leoni, Moschini (12) | Death censored 28 days | Mnutric, hs-CRP, Neutrophils |  | 98 | Cox regression | ✔ | ✔ |
| Moisa (13) | Death censored at 28 days | Age, NLR, SOFA |  | 425 | Cox regression | ✔ | ✔ |
| Ang-2, angiopoietin-2; BNP, N-terminal pro B-type natriuretic peptide; hs-CRP, high sensitivity C-reactive protein; IALD-8, Instrumental activities of daily living scale 8; IL-6, interleukin 6; IMV, invasive mechanical ventilation; LDH, Lactate dehydrogenase; Mnutric, modified nutritional risk in critically ill; NLR, neutrophil-to-lymphocyte ratio; sICAM-1, Soluble intercellular adhesion molecule-1; SOFA, serial organ failure assessment; TF, tissue factor; TFPI, tissue factor pathway inhibitor; t-SNE, t-distributed stochastic neighbor embedding. | | | | | | | |

**Table 1: Study Characteristics**

|  | All patients N=302 | Pre-dexamethasone N=55 |
| --- | --- | --- |
| Age (yr) | 57.5 (49.8-66.2) | 57.0 (49.5-70.0) |
| Male | 207 (67.2%) | 40 (72.7%) |
| Ethnicity |  |  |
| White | 123 (39.9%) | 28 (50.9%) |
| Asian | 88 (28.6%) | 14 (25.5%) |
| Black | 54 (17.5%) | 9 (16.4%) |
| Other | 6 (1.9%) | 2 (3.6%) |
| Not stated | 37 (12.0%) | 2 (3.6%) |
| BMI (kg/m²) | 29.4 (26.2-35.2) | 27.8 (25.1-32.5) |
| Obese (BMI>30) | 147 (47.7%) | 20 (36.4%) |
| SOFA Score | 6.0 (3.0-8.0) | 5.5 (3.0-8.8) |
| mNUTRIC score | 4.0 (2.0-5.0) | 4.0 (3.0-5.0) |
| CRP (mg/L) | 121.0 (71.2-189.8) | 156.0 (102.0-239.0) |
| Lymphocytes (x10⁹/L) | 0.70 (0.50-0.90) | 0.70 (0.50-1.00) |
| Neutrophils (x10⁹/L) | 7.9 (5.6-10.5) | 7.4 (6.0-10.0) |
| NLR | 12.4 (7.6-19.4) | 12.4 (7.6-19.4) |
| Procalcitonin (ng/mL) | 0.30 (0.14-0.92) | 0.60 (0.22-1.30) |
| Urea (mmol/L) | 6.8 (4.9-10.4) | 6.2 (3.9-12.1) |
| IMV | 143 (46.4%) | 23 (41.8%) |
| Died | 132 (42.9%) | 28 (50.9%) |
| N is all patients included in one of the four models being externally validated. See Supplementary tables 1 and 2 for demographics of patients included in each validation. Data reported as N (%) or median (IQR). Pre-dexamethasone era defined as prior to 16th June 2020. BMI, body mass index; CRP, C-reactive protein; IMV, invasive mechanical ventilation; mNUTRIC, modified Nutrition Risk in the Critically ill; NLR, neutrophil-to-lymphocyte ratio; SOFA, sequential organ failure assessment. | | |

**Table 2: Patient Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Original publication | | Pre-dexamethasone era | | All patients | |
| Reference | N | Reported C | N | C | N | C |
| Arina (2) | 93 | 0.804  (0.728 - 0.880) | 27 | 0.793  (0.618-0.968) | 103 | 0.596  (0.482-0.710) |
| Cao (3) | 77 | 0.857  (0.77–0.94) | 22 | 0.567  (0.321-0.813) | 141 | 0.558  (0.460-0.655) |
| Leoni, Lombardelli (11) | 229 | 0.821  (0.766–0.876) | 33 | 0.605  (0.471-0.739) | 204 | 0.564  (0.506-0.622) |
| Leoni, Moschini (12) | 98 | 0.720  (0.67-0.79) | 34 | 0.560  (0.428-0.692) | 201 | 0.546  (0.484-0.608) |
| Moisa (13) | 425 | 0.697  (0.755–0.833) | 53 | 0.672  (0.574-0.770) | 291 | 0.686  (0.640-0.732) |
| *C, concordance statistic* | | | | | | |

**Table 3: Results of model validations**

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