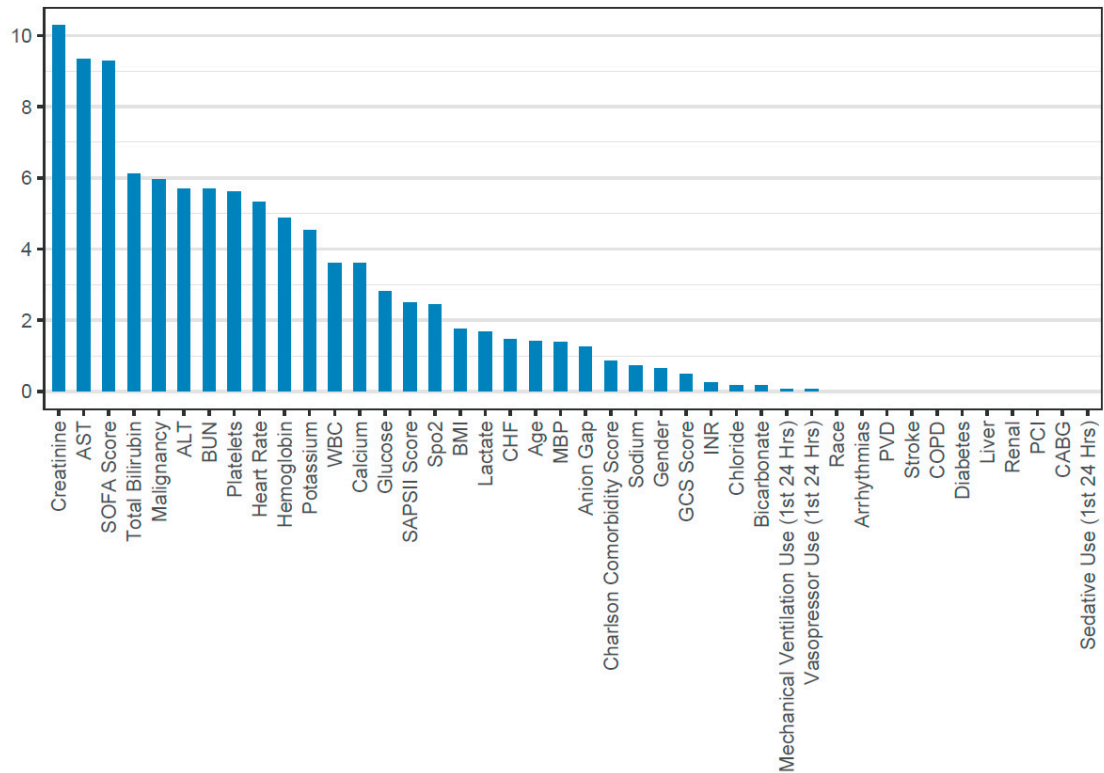
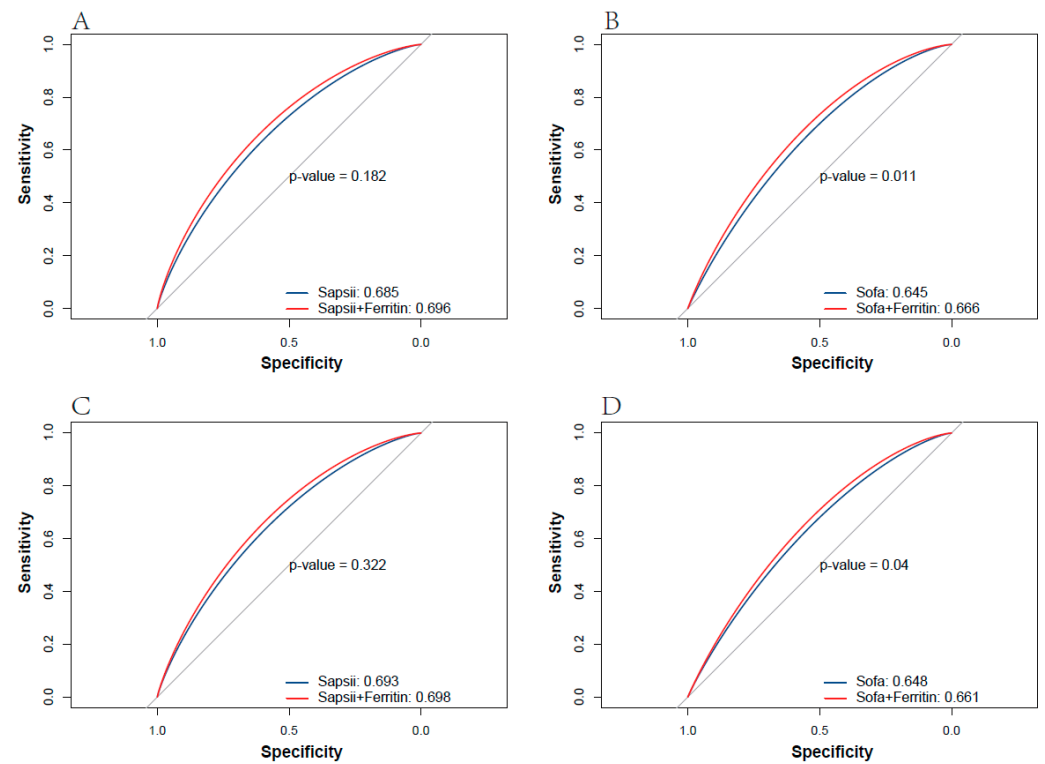


**Supplementary Figure S1.** comparing the covariate between the original and adjusted (weighted) cohorts using standardized mean differences.



**Supplementary Figure S2.** Relative influence factor of covariates. The relative influence factor measures how discriminative the 42 covariates of the propensity score model is when predicting the likelihood of ferritin with Iron overload.



**Supplementary Figure S3.** Area under ROC curve of Ferritin combined with various scores for 90-day mortality and 1-year mortality. **A** Discrimination of 90-day mortality using Sapsii scores with and without Ferritin. **B** Discrimination of 90-day mortality using Sofa scores with and without Ferritin. **C** Discrimination of 1-year mortality using Sapsii scores with and without Ferritin. **D** Discrimination of 1-year mortality using Sofa scores with and without Ferritin.

**Supplementary Table S1.** Patient Demographic Characteristics and Proportion of Missing Data at Baseline before and after Imputation.

|  | Raw Data         | Imputed Data     | P    | Missing.percent (100%) |
|--|------------------|------------------|------|------------------------|
| NO.                                      | 1173             | 1173             |      |                        |
| Age (mean (SD))                          | 71.8 (12.54)     | 71.8 (12.54)     | 1.00 | 0                      |
| Gender (female)(%)                       | 438 (62.66%)     | 438 (62.66%)     | 1.00 | 0                      |
| BMI (mean (SD))                          | 29.23 (7.56)     | 29.29 (7.58)     | 0.85 | 28.9                   |
| Race (White) (%)                         | 776 (66.16%)     | 776 (66.16%)     | 1.00 | 0                      |
| SAPSII Score (mean (SD))                 | 41.16 (13.32)    | 41.16 (13.32)    | 1.00 | 0                      |
| SOFA Score (mean (SD))                   | 6.48 (3.85)      | 6.48 (3.85)      | 1.00 | 0                      |
| Charlson Comorbidity Score (mean(SD))    | 7.61 (2.59)      | 7.61 (2.59)      | 1.00 | 0                      |
| GCS Score (mean (SD))                    | 13.74 (2.59)     | 13.74 (2.58)     | 0.97 | 0.34                   |
| MBP(1st 24h) (mean (SD))                 | 56.11 (12.6)     | 56.14 (12.61)    | 0.93 | 0.26                   |
| Heart Rate(1st 24h) (mean (SD))          | 104.08 (22.14)   | 104.07 (22.12)   | 1.00 | 0.26                   |
| CHF (%)                                  | 731 (62.32%)     | 731 (62.32%)     | 1.00 | 0                      |
| Arrhythmias (%)                          | 731 (62.32%)     | 731 (62.32%)     | 1.00 | 0                      |
| PVD (%)                                  | 248 (21.14%)     | 248 (21.14%)     | 1.00 | 0                      |
| Stroke (%)                               | 173 (14.75%)     | 173 (14.75%)     | 1.00 | 0                      |
| COPD (%)                                 | 405 (34.53%)     | 405 (34.53%)     | 1.00 | 0                      |
| Diabetes (%)                             | 512 (43.65%)     | 512 (43.65%)     | 1.00 | 0                      |
| Liver (%)                                | 168 (14.32%)     | 168 (14.32%)     | 1.00 | 0                      |
| Renal (%)                                | 482 (41.09%)     | 482 (41.09%)     | 1.00 | 0                      |
| Malignancy (%)                           | 139 (11.85%)     | 139 (11.85%)     | 1.00 | 0                      |
| PCI (%)                                  | 112 (9.55%)      | 112 (9.55%)      | 1.00 | 0                      |
| CABG (%)                                 | 117 (9.97%)      | 117 (9.97%)      | 1.00 | 0                      |
| Sedative Use (1st 24h) (%)               | 501 (42.71%)     | 501 (42.71%)     | 1.00 | 0                      |
| Vasopressor Use (1st 24h) (%)            | 497 (42.37%)     | 497 (42.37%)     | 1.00 | 0                      |
| Mechanical Ventilation Use (1st 24h) (%) | 369 (31.46%)     | 369 (31.46%)     | 1.00 | 0                      |
| Spo2 (mean (SD))                         | 91.62 (6.58)     | 91.62 (6.58)     | 1.00 | 0                      |
| Lactate (mean (SD))                      | 2.8 (2.47)       | 2.68 (2.36)      | 0.17 | 14.75                  |
| WBC (mean (SD))                          | 14.21 (9.39)     | 14.21 (9.38)     | 0.97 | 0.17                   |
| Hemoglobin (mean (SD))                   | 9.21 (2.11)      | 9.21 (2.12)      | 1.00 | 0.17                   |
| Platelet (mean (SD))                     | 188.34 (102.79)  | 188.56 (102.84)  | 0.95 | 0.17                   |
| ALT (mean (SD))                          | 158.19 (564.53)  | 146.89 (536.06)  | 0.55 | 14.58                  |
| AST (mean (SD))                          | 257.13 (1022.43) | 243.02 (1020.92) | 0.54 | 13.9                   |
| Total Bilirubin (mean (SD))              | 1.49 (3.23)      | 1.45 (3.1)       | 0.81 | 12.96                  |
| BUN (mean (SD))                          | 41.5 (30.25)     | 41.57 (30.33)    | 0.97 | 0.09                   |
| Creatinine (mean (SD))                   | 2.22 (2.37)      | 2.23 (2.37)      | 0.98 | 0.09                   |
| Glucose (mean (SD))                      | 187.5 (107.93)   | 187.5 (107.93)   | 1.00 | 0                      |
| Cholesterol(tested) (%)                  | 192 (16.37%)     | 192 (16.37%)     | 1.00 | 0                      |
| Sodium (mean (SD))                       | 139.48 (5.09)    | 139.48 (5.09)    | 1.00 | 0                      |
| Potassium (mean (SD))                    | 4.74 (0.88)      | 4.74 (0.88)      | 1.00 | 0                      |
| Calcium (mean (SD))                      | 8.41 (1.45)      | 8.41 (1.44)      | 0.94 | 0.6                    |
| Bicarbonate (mean (SD))                  | 21 (5.33)        | 20.99 (5.34)     | 0.97 | 0.09                   |
| Chloride (mean (SD))                     | 104.54 (6.73)    | 104.54 (6.73)    | 1.00 | 0                      |

|                                  |                 |                 |      |       |
|----------------------------------|-----------------|-----------------|------|-------|
| Anion Gap (mean (SD))            | 17.71 (5.19)    | 17.71 (5.19)    | 0.98 | 0.09  |
| INR (mean (SD))                  | 1.74 (1.21)     | 1.73 (1.2)      | 0.88 | 4.52  |
| Iron (mean (SD))                 | 51.33 (47.82)   | 52.13 (48.7)    | 0.86 | 21.48 |
| Creatinine Kinase(tested) (%)    | 770 (65.64%)    | 770 (65.64%)    | 1.00 | 0     |
| Creatinine Kinase-MB(tested) (%) | 781 (66.58%)    | 781 (66.58%)    | 1.00 | 0     |
| Troponin(tested) (%)             | 752 (64.11%)    | 752 (64.11%)    | 1.00 | 0     |
| BNP(tested) (%)                  | 338 (28.82%)    | 338 (28.82%)    | 1.00 | 0     |
| Survival day (mean (SD))         | 326.31 (435.52) | 326.31 (435.52) | 1.00 | 0     |
| Length Of Stay (mean (SD))       | 6.82 (8.74)     | 6.82 (8.74)     | 1.00 | 0     |
| 90_Day Mortality (%)             | 357 (30.43%)    | 357 (30.43%)    | 1.00 | 0     |
| 1_Year Mortality(%)              | 492 (41.94%)    | 492 (41.94%)    | 1.00 | 0     |
| In-Hospital Death                | 209 (17.82%)    | 209 (17.82%)    | 1.00 | 0     |

**Supplementary Table S2.** Elucidating the Association between Different Serum Ferritin Level Groups and All-Cause Mortality.

| Rawdata Analysis        |           |            |            |                |
|-------------------------|-----------|------------|------------|----------------|
| <b>90-Day Mortality</b> |           |            |            |                |
| <b>Cox Regression</b>   | <b>HR</b> | <b>CIL</b> | <b>CIU</b> | <b>P-value</b> |
| <b>Model 1</b>          | 2.03      | 1.62       | 2.55       | <0.001         |
| <b>Model 2</b>          | 2.10      | 1.67       | 2.64       | <0.001         |
| <b>Model 3</b>          | 1.61      | 1.23       | 2.11       | <0.001         |
| <b>1-Year Mortality</b> |           |            |            |                |
| <b>Cox Regression</b>   | <b>HR</b> | <b>CIL</b> | <b>CIU</b> | <b>P-value</b> |
| <b>Model 1</b>          | 1.79      | 1.46       | 2.20       | <0.001         |
| <b>Model 2</b>          | 1.89      | 1.54       | 2.32       | <0.001         |
| <b>Model 3</b>          | 1.49      | 1.17       | 1.90       | <0.001         |

**Model 1:** unadjusted **Model 2:** adjusted for age, gender, race; **Model 3:** adjusted for age, gender, race, SAPSII score, SOFA score, charlson comorbidity score, CHF, arrhythmias, stroke, COPD, liver, malignancy, CABG, mechanical ventilation use, Spo2, lactate, WBC, hemoglobin, platelet, total bilirubin, AST, BUN, creatinine, chloride, INR; Abbreviations: HR hazard ratio, CIL confidence interval lower; CIU: confidence interval upper.

Supplementary Table S3. Demographic Profiles of 1173 Patients with Ischemic Heart Disease by tertiles of Ferritin

|  | ALL<br>N=1173 | Low<br>N=391    | Moderate<br>N=391 | High<br>N=391   | <i>P</i> value |
|--|---------------|-----------------|-------------------|-----------------|----------------|
| Ferritin                               | 307 [129;729] | 85.0 [44.0;129] | 307 [240;406]     | 1097 [730;1718] | <0.001         |
| <b>Demographic</b>                     |               |                 |                   |                 |                |
| Age (mean (SD))                        | 71.8 (12.5)   | 73.0 (12.7)     | 71.7 (13.0)       | 70.6 (11.8)     | 0.026          |
| Gender (Female %)                      | 438 (37.3%)   | 176 (45.0%)     | 131 (33.5%)       | 131 (33.5%)     | 0.001          |
| BMI (mean (SD))                        | 29.0 (7.51)   | 29.0 (7.19)     | 29.2 (7.43)       | 28.9 (7.90)     | 0.805          |
| Race (White %)                         | 776 (66.2%)   | 262 (67.0%)     | 257 (65.7%)       | 257 (65.7%)     | 0.909          |
| <b>Severity of Illness</b>             |               |                 |                   |                 |                |
| SAPSI Score (mean (SD))                | 41.2 (13.3)   | 37.5 (11.9)     | 40.3 (12.5)       | 45.6 (14.2)     | <0.001         |
| SOFA Score (mean (SD))                 | 6.48 (3.85)   | 5.23 (3.20)     | 6.14 (3.59)       | 8.07 (4.14)     | <0.001         |
| Charlson Comorbidity Score (mean (SD)) | 7.61 (2.59)   | 7.47 (2.53)     | 7.50 (2.59)       | 7.87 (2.65)     | 0.054          |
| GCS Score (mean (SD))                  | 13.7 (2.58)   | 13.9 (2.26)     | 13.7 (2.65)       | 13.6 (2.80)     | 0.111          |
| MBP (1st 24h) (mean (SD))              | 56.1 (12.6)   | 57.1 (11.7)     | 55.6 (12.1)       | 55.7 (13.8)     | 0.198          |
| Heart Rate (1st 24h) (mean (SD))       | 104 (22.1)    | 102 (20.1)      | 103 (22.3)        | 108 (23.4)      | <0.001         |
| Spo2 (mean (SD))                       | 91.6 (6.58)   | 91.8 (5.99)     | 92.0 (6.49)       | 91.1 (7.19)     | 0.129          |
| <b>Comorbidities</b>                   |               |                 |                   |                 |                |
| CHF (%)                                | 731 (62.3%)   | 256 (65.5%)     | 250 (63.9%)       | 225 (57.5%)     | 0.053          |
| Arrhythmias (%)                        | 731 (62.3%)   | 243 (62.1%)     | 239 (61.1%)       | 249 (63.7%)     | 0.759          |
| PVD (%)                                | 248 (21.1%)   | 80 (20.5%)      | 78 (19.9%)        | 90 (23.0%)      | 0.530          |
| Stroke (%)                             | 173 (14.7%)   | 58 (14.8%)      | 56 (14.3%)        | 59 (15.1%)      | 0.954          |
| COPD (%)                               | 405 (34.5%)   | 149 (38.1%)     | 125 (32.0%)       | 131 (33.5%)     | 0.171          |
| Diabetes (%)                           | 512 (43.6%)   | 177 (45.3%)     | 178 (45.5%)       | 157 (40.2%)     | 0.232          |
| Liver (%)                              | 168 (14.3%)   | 45 (11.5%)      | 56 (14.3%)        | 67 (17.1%)      | 0.080          |
| Renal (%)                              | 482 (41.1%)   | 153 (39.1%)     | 167 (42.7%)       | 162 (41.4%)     | 0.588          |
| Malignancy (%)                         | 139 (11.8%)   | 31 (7.93%)      | 38 (9.72%)        | 70 (17.9%)      | <0.001         |
| <b>Interventions</b>                   |               |                 |                   |                 |                |
| PCI (%)                                | 112 (9.55%)   | 41 (10.5%)      | 40 (10.2%)        | 31 (7.93%)      | 0.407          |
| CABG (%)                               | 117 (9.97%)   | 48 (12.3%)      | 37 (9.46%)        | 32 (8.18%)      | 0.148          |
| Sedative Use (1st 24h) (%)             | 501 (42.7%)   | 140 (35.8%)     | 168 (43.0%)       | 193 (49.4%)     | 0.001          |
| Vasopressor Use (1st 24h) (%)          | 497 (42.4%)   | 153 (39.1%)     | 150 (38.4%)       | 194 (49.6%)     | 0.002          |
| Mechanical Ventilation Use (1st 24h)   | 369 (31.5%)   | 102 (26.1%)     | 114 (29.2%)       | 153 (39.1%)     | <0.001         |
| <b>Laboratory Tests</b>                |               |                 |                   |                 |                |
| Lactate (mean (SD))                    | 2.67 (2.35)   | 2.51 (1.88)     | 2.44 (2.00)       | 3.08 (2.96)     | <0.001         |
| WBC (mean (SD))                        | 14.2 (9.38)   | 12.9 (6.63)     | 14.0 (8.17)       | 15.8 (12.2)     | <0.001         |

|                                   |             |             |             |             |        |
|-----------------------------------|-------------|-------------|-------------|-------------|--------|
| Hemoglobin (mean (SD))            | 9.22 (2.12) | 9.22 (2.07) | 9.36 (2.12) | 9.09 (2.17) | 0.206  |
| Platelet (mean (SD))              | 188 (103)   | 193 (96.6)  | 195 (101)   | 178 (110)   | 0.036  |
| ALT (mean (SD))                   | 147 (531)   | 111 (435)   | 97.9 (294)  | 233 (749)   | <0.001 |
| AST (mean (SD))                   | 238 (960)   | 171 (698)   | 135 (426)   | 409 (1435)  | <0.001 |
| Total Bilirubin (mean (SD))       | 1.45 (3.12) | 0.91 (1.11) | 1.27 (2.12) | 2.17 (4.76) | <0.001 |
| BUN (mean (SD))                   | 41.5 (30.3) | 37.1 (27.4) | 42.9 (30.1) | 44.6 (32.7) | 0.001  |
| Creatinine (mean (SD))            | 2.23 (2.37) | 1.70 (1.40) | 2.21 (2.03) | 2.78 (3.20) | <0.001 |
| Glucose (mean (SD))               | 187 (108)   | 176 (82.9)  | 188 (119)   | 198 (117)   | 0.018  |
| Cholesterol(tested) (mean (SD))   | 192 (16.4%) | 73 (18.7%)  | 64 (16.4%)  | 55 (14.1%)  | 0.220  |
| Sodium (mean (SD))                | 139 (5.09)  | 140 (5.07)  | 139 (5.41)  | 140 (4.76)  | 0.083  |
| Potassium (mean (SD))             | 4.74 (0.88) | 4.71 (0.90) | 4.75 (0.88) | 4.76 (0.88) | 0.660  |
| Calcium (mean (SD))               | 8.42 (1.45) | 8.52 (1.42) | 8.40 (1.46) | 8.33 (1.46) | 0.195  |
| Bicarbonate (mean (SD))           | 21.0 (5.33) | 22.3 (5.12) | 20.9 (4.98) | 19.7 (5.57) | <0.001 |
| Chloride (mean (SD))              | 105 (6.73)  | 105 (6.74)  | 105 (6.82)  | 105 (6.64)  | 0.994  |
| Anion Gap (mean (SD))             | 17.7 (5.21) | 16.5 (4.74) | 17.6 (4.70) | 19.1 (5.80) | <0.001 |
| INR (mean (SD))                   | 1.73 (1.21) | 1.67 (1.07) | 1.75 (1.24) | 1.78 (1.30) | 0.418  |
| Iron (mean (SD))                  | 51.2 (48.1) | 48.1 (45.8) | 45.5 (40.7) | 59.8 (55.6) | <0.001 |
| Creatinine Kinase(tested) (%)     | 770 (65.6%) | 239 (61.1%) | 259 (66.2%) | 272 (69.6%) | 0.044  |
| Creatinine Kinase-MB (tested) (%) | 781 (66.6%) | 245 (62.7%) | 262 (67.0%) | 274 (70.1%) | 0.087  |
| Troponin(tested) (%)              | 752 (64.1%) | 233 (59.6%) | 247 (63.2%) | 272 (69.6%) | 0.013  |
| BNP (tested) (%)                  | 338 (28.8%) | 132 (33.8%) | 106 (27.1%) | 100 (25.6%) | 0.027  |
| Length of Stay                    | 6.82 (8.74) | 4.77 (5.93) | 6.44 (7.72) | 9.23 (11.2) | <0.001 |
| 90-Day Mortality                  | 357 (30.4%) | 86 (22.0%)  | 115 (29.4%) | 156 (39.9%) | <0.001 |
| 1-Year Mortality                  | 492 (41.9%) | 126 (32.2%) | 165 (42.2%) | 201 (51.4%) | <0.001 |
| In-Hospital Mortality             | 209 (17.8%) | 42 (10.7%)  | 62 (15.9%)  | 105 (26.9%) | <0.001 |

Data are presented as mean±SD or as n (%)

The patients were stratified by ferritin tertiles: low (<174, reference group), moderate (174–543), high (>544)

P-value for the test of the difference across tertiles of ferritin using the chi-square test (categorical variables), analysis of variance (continuous variables), or Kruskal–Wallis H test (nonparametric comparisons)

Abbreviations: BMI, body mass index; SAPSII Score: simplified acute physiology score; SOFA Score: sequential organ failure assessment score; GCS Score: glasgow coma scale score ; MBP: mean blood pressure; CHF: congestive heart failure; PVD: peripheral vascular disease; COPD: chronic pulmonary disease; PCI: percutaneous coronary intervention; CABG: coronary artery bypass grafting; Spo2: partial pressure of oxygen; WBC: white blood cell; ALT: alanine aminotransferase; AST: aspartate aminotransferase; BUN: blood urea nitrogen; INR: international normalized ratio; BNP: B-type natriuretic peptide.

Supplementary Table S4. Elucidating the Association Between Different Serum Ferritin Tertiles and Primary Outcomes

| Primary Analysis   | Events/No. | Model 1         |         | Model 2         |         | Model 3         |         |
|--------------------|------------|-----------------|---------|-----------------|---------|-----------------|---------|
|                    |            | HR (95% CI)     | P value | HR (95% CI)     | P value | HR (95% CI)     | P value |
| 90-Day Mortality   |            |                 |         |                 |         |                 |         |
| Low (<174)         | 86(391)    | ref             |         | ref             |         | ref             |         |
| Moderate (175~543) | 115(391)   | 1.39(1.05-1.84) | 0.020   | 1.42(1.07-1.88) | 0.014   | 1.25(0.94-1.67) | 0.127   |
| High (>544)        | 156(391)   | 2.04(1.57-2.66) | <0.001  | 2.13(1.63-2.78) | <0.001  | 1.52(1.13-2.03) | 0.005   |
| P for trend        |            |                 | <0.001  |                 | <0.001  |                 | 0.005   |
| 1-Year Mortality   |            |                 |         |                 |         |                 |         |
| Low (<174)         | 126(391)   | ref             |         | ref             |         | ref             |         |
| Moderate (175~543) | 165(391)   | 1.40(1.11-1.76) | 0.005   | 1.44(1.14-1.82) | 0.002   | 1.29(1.02-1.64) | 0.035   |
| High (>544)        | 201(391)   | 1.89(1.51-2.36) | <0.001  | 2.00(1.60-2.50) | <0.001  | 1.44(1.13-1.84) | 0.004   |
| P for trend        |            |                 | <0.001  |                 | <0.001  |                 | 0.004   |

**Model 1:** unadjusted **Model 2:** adjusted for age, gender, race; **Model 3:** adjusted for age, gender, race, SAPSII score, SOFA score, charlson comorbidity score, CHF, arrhythmias, stroke, COPD, liver, malignancy, CABG, mechanical ventilation use, Spo2, lactate, WBC, hemoglobin, platelet, total bilirubin, AST, BUN, creatinine, chloride, INR; Abbreviations: Coef. coefficient;

Supplementary Table S5. Elucidating the Association Between Different Serum Ferritin Tertiles and Secondary Outcomes.

| Primary Analysis      | Model 1         |         | Model 2         |         | Model 3         |         |
|-----------------------|-----------------|---------|-----------------|---------|-----------------|---------|
| Length of Stay in ICU |                 |         |                 |         |                 |         |
| Linear Gegression     | Coef            | P value | Coef            | P value | Coef            | P value |
| Low (<174)            | ref             |         | ref             |         | ref             |         |
| Moderate (175~543)    | 1.67            | 0.006   | 1.58            | 0.010   | 1.11            | 0.043   |
| High (>544)           | 4.45            | <0.001  | 4.31            | <0.001  | 2.46            | <0.001  |
| In-Hospital Mortality |                 |         |                 |         |                 |         |
| Logistic Gegression   | HR (95% CI)     | P value | HR (95% CI)     | P value | HR (95% CI)     | P value |
| Low (<174)            | ref             |         | ref             |         | ref             |         |
| Moderate (175~543)    | 1.57(1.03-2.39) | 0.036   | 1.59(1.04-2.44) | 0.032   | 1.43(0.91-2.30) | 0.125   |
| High (>544)           | 3.05(2.08-4.55) | <0.001  | 3.19(2.16-4.79) | <0.001  | 2.04(1.29-3.24) | 0.002   |
| P for trend           |                 | <0.001  |                 | <0.001  |                 | 0.002   |

**Model 1:** unadjusted **Model 2:** adjusted for age, gender, race; **Model 3:** adjusted for age, gender, race, SAPSII score, SOFA score, charlson comorbidity score, CHF, arrhythmias, stroke, COPD, liver, malignancy, CABG, mechanical ventilation use, Spo2, lactate, WBC, hemoglobin, platelet, total bilirubin, AST, BUN, creatinine, chloride, INR; Abbreviations: Coef. coefficient;