**Additional Tables**

Sepsis-1.0 was defined as having a suspected or confirmed site of infection, ≥ 2 systemic inflammatory response syndrome criteria (SIRS). Severe sepsis was defined as sepsis plus at least one sepsis-induced organ dysfunction. Septic shock was defined as severe sepsis associated with refractory hypotension; despite at least 2 h of adequate volume resuscitation, a systolic blood pressure (SBP) < 90 mmHg or a reduction of ≥40 mmHg from baseline level or a mean arterial pressure < 65 mmHg in the absence of other causes of hypotension or the need for vasopressors to maintain SBP ≥ 90 mmHg.

**Table S1.** The definition of Sepsis-1

|  |
| --- |
| Systemic inflammatory response syndrome criteria (SIRS) ≥ 2 criteria |
| Temperature > 38.3°C or < 36°C  |
| Heart rate > 90/min |
| WBC count > 12,000/μL or < 4000/μL or Normal WBC count > 10% immature forms |
| Respiratory rate ≧20/min or PaCO2 ≦ 32 mmHg, or on mechanical ventilation |
| Severe sepsis: sepsis + at least one organ dysfunction  |
| Systolic blood pressure (SBP) < 90 mmHg or mean arterial pressure (MAP) < 65 mmHg or SBP decrease > 40mm Hg from patient’s baseline SBP |
| Creatinine > 2.0mg/dL |
| Acute oliguria (urine output < 0.5 mL/kg/hr for at least 2 hrs) |
| Hyperbilirubinemia (plasma total bilirubin > 2 mg/dL) |
| Thrombocytopenia (platelet count < 100,000/μL) |
| Hyperlactatemia ( > 2 mmol/L or 18.0mg/dL) |
| Coagulopathy (international normalized ratio > 1.5)  |
| Acute lung injury with PaO2/FIO2 (P/F) < 250 mmHg in the absence of pneumonia as infection source |
| Acute lung injury with P/F < 200 in the presence of pneumonia as infection source |
| Septic shock: severe sepsis associated with hypotension |
| SBP < 90 mmHg or MBP < 65 mmHg or SBP decrease > 40mm Hg from baseline  |

**Table S2.** Baseline characteristics and outcomes of the patients with sepsis according to sepsis-1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | All (n=2286) | Sepsis (n=438) | Severe sepsis (n=619) | Septic shock (n=1229) | P value |
| Age, Mean ±SD | 62.3±18.0 | 60.8±18.1 | 62.2±18.3 | 62.9±17.7 | 0.117 |
| Sex, male (%) | 1497 (65.5) | 289 (66.0) | 427 (69.0) | 781(63.5) | 0.066 |
| Severity on admission |  |  |  |  |  |
| APACHEII, median (IQR) | 19.0 (13.0- 25.0) | 15.0 (11.0- 20.0) | 17.0 (12.0- 23.0) | 21.0 (16.0-27.0) | <0.001 |
| SOFA, median (IQR) | 8.0 (5.0- 11.0) | 5.0 (3.0- 8.0) | 8.0 (5.0- 10.0) | 9.0 (6.0- 13.0) | <0.001 |
| Source of admission, n (%) |  |  |  |  | <0.001 |
| Emergency Department | 542 (23.7) | 111 (25.3) | 203 (32.8) | 228 (18.6) |  |
| General wards | 820 (35.9) | 146 (33.3) | 197 (31.8) | 477 (38.8) |  |
| Emergency surgery | 299 (13.1) | 76 (17.4) | 77 (12.4) | 146 (11.9) |  |
| Elective surgery | 202 (8.8) | 54 (12.3) | 84 (13.6) | 64 (5.2) |  |
| Other ICU | 43 (1.9) | 9 (2.1) | 17 (2.7) | 17 (1.4) |  |
| Other hospital | 380 (16.6) | 42 (9.6) | 41 (6.6) | 297 (24.4) |  |
| Comorbidities, n (%) |  |  |  |  |  |
| Respiratory disease | 348 (15.2) | 52 (11.9) | 64 (10.3) | 232 (18.9) | <0.001 |
| Cardiovascular disease | 427 (18.7) | 72 (16.4) | 115 (18.6) | 240 (19.5) | 0.361 |
| Hypertension  | 839 (36.7) | 147 (33.6) | 242 (39.1) | 450 (36.6) | 0.184 |
| Diabetes mellitus  | 457 (20.0) | 94 (21.5) | 134 (21.6) | 229 (18.6) | 0.215 |
| Chronic renal failure  | 299 (13.1) | 41 (9.4) | 57 (9.2) | 201 (16.4) | <0.001 |
| Cancer  | 230 (10.1) | 28 (6.4) | 52 (8.4) | 50 (12.2) | 0.001 |
| Cirrhosis  | 48 (2.1) | 5 (1.1) | 18 (2.9) | 25 (2.0) | <0.001 |
| None  | 640 (28.0) | 162 (37.0) | 214 (34.6) | 264 (21.5) | <0.001 |
| Treatment during ICU |  |  |  |  |  |
| MV, n (%)  | 1733 (75.8) | 286 (65.3) | 421 (68.0) | 1026 (83.5) | <0.001 |
| RRT, n (%)  | 418 (18.3) | 33 (7.5) | 91 (14.7) | 294 (23.9) | <0.001 |
| Vasopressor, (%)  | 2770 (56.4) | 1165 (41.3) | 1605 (76.9) |  | <0.001 |
| Length of stay, days, median (IQR) |  |  |  |  |
| ICU  | 8.0 (4.0 - 16.0) | 5.0 (3.0-11.0) | 7.0 (4.0- 15.0) | 9.0 (4.0- 17.0) | <0.001 |
| Hospital  | 18.0 (10.0- 28.0) | 17.0 (10.0- 27.0) | 18.0 (9.0- 28.0) | 19.0 (12.0-29.0) | 0.006 |
| Mortality, n (%) |  |  |  |  |  |
| ICU | 579 (25.3) | 32 (7.3) | 84 (13.6) | 463 (37.7) | <0.001 |
| Hospital | 709 (31.0) | 48 (11.0) | 129 (20.8) | 532 (43.3) | <0.001 |
| SD, standard deviation; APACHE II, Acute Physiology and Chronic Health Evaluation; SOFA, Sequential Organ Failure Assessment; IQR, interquartile range; MV, mechanical ventilation; RRT, renal replacement therapy. ICU, intensive care unit; ARDS, acute respiratory distress syndrome; AKI, acute kidney injure. |

**Table S3.** The distribution of isolated organisms in patients with positive cultures according to the type of infection

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Lung(n=786) | Pleura(n=91) | Abdomen(n=276) | Urinary tract(n=68) | Bloodstream(n=101) | Catheter-related (n=14) | Wound/soft tissue (n=56) | CNS(n=18) | Unknown(n=180) |
| Gram-positive, n (%) | 262 (33.3) | 34 (37.4) | 105 (38.0) | 27 (39.7) | 46 (45.5) | 7 (50.0) | 32 (57.1) | 4 (22.2) | 34 (37.4) |
| Staphylococcus | 168 (21.4) | 15 (16.5) | 42 (15.2) | 13 (19.1) | 25 (24.8) | 3 (21.4) | 15 (26.8) | 4 (22.2) | 15 (16.5) |
| Enterococcus | 66 (8.4) | 18 (19.8) | 62 (22.5) | 10 (14.7) | 20 (19.8) | 3 (21.4) | 11 (19.6) | 0 (0.0) | 18 (19.8) |
| Gram-negative, n (%) | 602 (76.6) | 78 (85.7) | 217 (78.6) | 52 (76.5) | 78 (77.2) | 8 (57.1) | 41 (73.2) | 15 (83.3) | 78 (85.7) |
| Acinetobacter | 296 (37.7) | 39 (42.9) | 61 (22.1) | 15 (22.1) | 30 (29.7) | 6 (42.9) | 10 (17.9) | 9 (50.0) | 39 (42.9) |
| Escherichia | 122 (15.5) | 15 (16.5) | 94 (34.1) | 26 (38.2) | 26 (25.7) | 2 (14.3) | 10 (17.9) | 1 (5.6) | 15 (16.5) |
| Klebsiella | 104 (13.2) | 16 (17.6) | 37 (13.4) | 7 (10.3) | 15 (14.9) | 1 (7.1) | 6 (10.7) | 2 (11.1) | 16 (17.6) |
| Pseudomonas | 200 (25.4) | 22 (24.2) | 51 (18.5) | 10 (14.7) | 19 (18.8) | 5 (35.7) | 12 (21.4) | 3 (16.7) | 22 (24.2) |
| Fungi§, n (%) | 79 (10.1) | 28 (30.8) | 61 (22.1) | 29 (42.6) | 24 (23.8) | 5 (35.7) | 9 (16.1) | 4 (22.2) | 28 (30.8) |
| Candida | 12 (1.5) | 21 (23.1) | 49 (17.8) | 24 (35.3) | 19 (18.8) | 3 (18.8) | 5 (8.9) | 4 (22.2) | 21 (23.2) |
| Aspergillus | 25 (3.2) | 2 (2.2) | 3 (1.1) | 2 (2.9) | 1 (1.1) | 1 (7.1) | 1 (7.1) | 0 (0.0) | 2 (2.2) |

§Candida, yeasts, Aspergillus and Pneumocystis carinii were included.

**Table S4.** Types of isolated organisms in patients with positive cultures according to geographical region

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Isolated organisms$＆ | Northeast(n=81) | North China(n=647) | East China(n=22) | South China(n=63) | Central China(n=24) | Northwest(n=44) | Southwest(n=394) | All(n=1275) | P value |
| Gram-positive, n (%)  | 27(33.3) | 194 (30.0) | 8 (36.4) | 20 (31.7) | 24 (45.8) | 25 (56.8) | 122 (31.0) | 407 (31.9) | 0.012 |
| Staphylococcus | 12 (14.8) | 135 (20.9) | 2 (9.1) | 12 (19.0) | 2 (8.3) | 10 (22.7) | 59 (15.0) | 232 (18.2) | <0.001 |
| Enterococcus | 12(14.8) | 45 (7.0) | 5 (22.7) | 5 (7.9) | 8 (33.3) | 9 (20.5) | 48 (12.2) | 132 (10.4) | 0.533 |
| Gram-negative, n (%) | 64 (79.0) | 451 (69.7) | 18 (81.8) | 34 (54.0) | 16 (66.7) | 32 (72.7) | 334 (84.8) | 949 (74.4) | <0.001 |
| Acinetobacter | 20 (24.7) | 139 (21.5) | 2 (9.1) | 21 (33.3) | 5 (20.8) | 11(25.0) | 172 (43.7) | 370 (29.0) | 0.013 |
| Escherichia  | 20 (24.7) | 117 (18.1) | 11 (50.0) | 2 (3.2) | 7 (29.2) | 5 (11.4) | 94 (23.9) | 256 (20.1) | 0.037 |
|  Klebsiella | 13 (16.0) | 69 (10.7) | 5 (22.7) | 1 (1.6) | 2 (8.3) | 8 (18.2) | 49 (12.4) | 147 (11.5) | <0.001 |
|  Pseudomonas | 12 (14.8) | 162 (25.0) | 5 (22.7) | 7 (11.1) | 2 (8.3) | 14 (31.8) | 78 (20.1) | 281(22.0) | 0.129 |
| Fungi§, n (%)  | 18 (22.2) | 165 (25.5) | 4 (18.2) | 20 (31.7) | 3 (12.5) | 10 (22.7) | 106 (26.9) | 326 (25.6) | <0.001 |
| Candida | 17 (21.0) | 123 (19.0) | 3 (13.6) | 16 (25.4) | 3 (12.5) | 4 (9.1) | 83 (21.1) | 249 (19.5) | 0.371 |
| Aspergillus | 1 (1.2) | 24 (3.7) | 0 (0.0) | 2 (3.2) | 0 (0.0) | 2 (4.5) | 6 (1.5) | 35 (2.7) | 0.318 |
| $percentage is not equal to 100 because patients may have one or more sites of infection.＆Patients may have more than one organisms isolated. §Candida, yeasts, Aspergillus and Pneumocystis carinii were included. ICU, intensive care unit. |

**Table S5.** Characteristics of the patients with septic shock according to survival status

|  |  |  |  |
| --- | --- | --- | --- |
|  | Survivors(n=692) | Non-survivors(n=442) | P value |
| Age, Mean ±SD | 59.1±17.6 | 69.5±15.9 | <0.001 |
| Sex, male (%) | 430 (62.1) | 288 (65.2) | 0.303 |
| Severity on admission |  |  |  |
| APACHE II, median (IQR) | 19.0 (14.0- 23.0) | 27.0 (22.0- 31.0) | <0.001 |
| SOFA-initial, median (IQR) | 8.0 (6.0- 11.5) | 11.0 (8.0- 14.0) | <0.001 |
| Comorbidities, n (%) |  |  |  |
| Respiratory disease | 124 (17.9) | 97 (21.9) | 0.095 |
| Cardiovascular disease | 118 (17.1) | 107 (24.2) | 0.003 |
| Hypertension  | 217 (31.4) | 196 (44.3) | <0.001 |
| Diabetes mellitus  | 108 (15.6) | 104 (23.5) | 0.001 |
| Chronic renal failure | 128 (18.5) | 63 (14.3) | 0.063 |
| Cancer  | 80 (11.6) | 61 (13.8) | 0.265 |
| Cirrhosis  | 12 (1.7) | 12 (2.7) | 0.263 |
| None | 149 (21.5) | 81 (18.3) | 0.190 |
| Treatment  |  |  |  |
| MV, n (%)  | 554 (80.1) | 398 (90.0) | <0.001 |
| RRT, n (%)  | 98 (14.2) | 173 (39.1) | <0.001 |
| Length of Stay, days (IQR) |  |  |  |
| ICU  | 8.5 (5.0-16.0) | 9.0 (4.0- 19.0) | 0.554 |
|  Hospital  | 14.0 (5.5- 24.0) | 19.0 (10.0- 30.0) | <0.001 |
| ARDS, n (%) | 153 (22.1) | 173 (39.2) | <0.001 |
| AKI, n (%) | 292 (42.2) | 277 (62.7) | <0.001 |

SD, standard deviation; APACHE II, Acute Physiology and Chronic Health Evaluation; SOFA, Sequential Organ Failure Assessment; IQR, interquartile range; MV, mechanical ventilation; RRT, renal replacement therapy. ICU, intensive care unit; ARDS, acute respiratory distress syndrome; AKI, acute kidney injure.

**Table S6.** The mortality of the entire cohort according to geographical region

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Northeast | North China | East China | South China | Central China | Northwest | Southwest | P |
| All participants  | 671 | 2121 | 327 | 449 | 165 | 196 | 981 |  |
|  ICU mortality, n (%) | 63 (9.4) | 473 (22.4) | 13 (4.0) | 47 (10.5) | 6 (3.7) | 23 (11.7) | 211 (21.5) | <0.001 |
|  Hospital mortality, n (%) | 86 (12.8) | 561 (26.4) | 16(4.9) | 66 (14.7) | 13 (7.9) | 31 (15.8) | 284 (29.0) | <0.001 |
| Non-sepsis | 522 (77.8) | 1069 (50.4) | 266 (81.3) | 241 (53.7) | 126 (76.4) | 125 (63.8) | 475 (48.4) |  |
|  ICU mortality, n (%) | 31 (5.9) | 148 (13.9) | 6 (2.3) | 13 (5.4) | 1 (0.8) | 13 (10.4) | 55 (11.6) | <0.001 |
|  Hospital mortality, n (%) | 44 (8.4) | 190 (17.8) | 6 (2.3) | 19 (7.9) | 1 (0.8) | 17 (13.6) | 93 (19.5) | <0.001 |
| Sepsis  | 76 (11.3) | 329 (15.5) | 46(14.1) | 148 (33.0) | 16 (9.7) | 47 (24.0) | 290 (29.6) |  |
|  ICU mortality, n (%) | 10 (13.2) | 50 (15.2) | 4 (8.7) | 12 (8.1) | 0 (0) | 1 (2.1) | 48 (16.6) | <0.001 |
|  Hospital mortality, n (%) | 14 (18.4) | 65 (19.8) | 6 (13.0) | 21 (14.2) | 3 (18.8) | 3 (6.4) | 72 (24.8) | <0.001 |
| Septic shock | 73 (10.9) | 723 (34.1) | 15 (4.6) | 60 (13.3) | 23 (13.9) | 24 (12.2) | 216 (22.0) |  |
|  ICU mortality, n (%) | 22 (30.1) | 273 (37.8) | 3 (20.0) | 22 (36.7) | 5 (21.7) | 9 (37.5) | 108 (50.0) | <0.001 |
|  Hospital mortality, n (%) | 28 (38.4) | 307 (42.5) | 4 (26.7) | 26 (43.3) | 9 (39.1) | 11 (45.8) | 119 (55.1) | <0.001 |
| ICU, intensive care unit. |

**Additional Figures**

**Fig S1.** Frequency of organ dysfunction and ICU mortality according to the severity of illness



**Fig S2.** Kaplan Meier survival curve of 28-day mortality according to the severity of sepsis