**SUPPLEMENTAL MATERIAL**

**Supplemental Table 1.** Etiologies of adult respiratory distress syndrome (ARDS) in mechanically ventilated patients with cirrhosis (some patients had multiple etiologies).

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| **Etiology of ARDS** | **Number and percentage** |
| Sepsis  Pneumonia  Aspiration  Transfusion related acute lung injury  Massive transfusion  Other  Unknown | 19 (54%)  16 (46%)  10 (29%)  2 (6%)  2 (6%)  4 (11%)  2 (6%) |

**Supplemental Table 2.** The etiology of respiratory failure, infections and diastolic dysfunction in mechanically ventilated patients with cirrhosis, comparing those with and without ARDS. The data are reported as mean ± standard deviation or percentages, unless otherwise specified.

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| **Clinical variable** | **ARDS**  **(n=35)** | **Non-ARDS**  **(n=146)** | **P-value** |
| Etiology of Respiratory Failure (%):   * Respiratory failure * Altered mental status * Gastrointestinal bleed * Sepsis * Elective for procedures | 66%  9%  6%  20%  None | 18%  33%  31%  7%  12% | <.001 |
| Suspected infection number and (%) | 30 (86%) | 77 (53%) | <.001 |
| Culture proven infection | 23 of 30 (77%) | 47 of 81 (58%) | .07 |
| Culture results in patients with culture proven infection (%)   * Gram negative * Resistant bacteria gram negative * Gram positive * Resistant bacteria gram positive * Fungal | 34%  3%  14%  17%  6% | 6%  1.4%  16%  6%  3% | 0.8  .03  <.001  .5  .4 |
| Infection source in patients with culture proven infection (%)   * Pulmonary * Bloodstream * Abdominal * Genitourinary * Skin/Soft Tissue | 63%  34%  20%  20%  6% | 25%  16%  16%  11%  2% | <.001  .013  .5  .15  .2 |
| Diastolic dysfunction when evaluated | 10 of 53 (19%) | None of 21 | .03 |

Abbreviations: ARDS, Acute Respiratory Distress Syndrome

**Supplemental Table 3 –** A description of the Chronic Liver Failure-Sequential Organ Failure Assessment (CLIF-SOFA Score)**. 17**

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| Organ/System | 0 | 1 | 2 | 3 | 4 |
| Liver (bilirubin, mg/dL) | <1.2 | ≥1.2 to <2.0 | ≥2.0 to <6.0 | ≥6.0 to <12 | **≥12.0** |
| Kidney (creatinine, mg/dL) | <1.2 | ≥1.2 to <2.0 | ≥2.0 to <3.5 | **≥3.5 to <5** | **≥5.0**  **Or use of RRT** |
| Cerebral (HE grade) | No HE | I | II | **III** | **IV** |
| Coagulation (International normalized ratio) | <1.1 | ≥1.1 to <1.25 | ≥1.25 to <5.0 | ≥1.5 to <2.5 | **≥2.5 or platelet count ≤20x109/L** |
| Circulation (mean arterial pressure, mm Hg) | ≥70 | <70 | **Dopamine ≤5 or dobutamine or terlipressin** | **Dopamine>5 or E≤0.1 or NE≤0.1** | **Dopamine>15 or E>0.1 or NE >0.1** |
| Lungs  PaO2/FiO2 or  SpO2/FiO2 | >400  >512 | >300 to ≤400  >357 to ≤512 | >200 to ≤400  >214 to ≤357 | **>100 to ≤200**  **>89 to ≤214** | **≤100**  **≤89** |

Abbreviations: CLIF-SOFA, Chronic Liver Failure-Sequential Organ Failure Assessment; E, epinephrine; FiO2, Fraction of inspired oxygen; HE, Hepatic encephalopathy; NE, norepinephrine; PaO2, Partial pressure of oxygen in arterial blood; RRT, renal replacement therapy; SpO2, peripheral capillary oxygen saturation

Note: Please note the original SOFA score by Vincent et al18 The CLIF-SOFA score includes subscores ranging from 0 to 4 for each of 6 components (liver, kidneys, brain, coagulation, circulation, and lungs), with higher scores indicating more severe organ impairment. Aggregate scores range from 0 to 24 and provide information on overall severity. The text in bold indicates the diagnostic criteria for organ failures.

**Supplemental Table 4** – A description of the Model for end-stage liver disease (MELD) Score**13,19**

**MELD** = 3.78×ln[serum bilirubin (mg/dL)] + 11.2×ln[INR] + 9.57×ln[serum creatinine (mg/dL)] 6.43.

|  |  |
| --- | --- |
| **MELD Score** | **3-Month Mortality** |
| ≤9 | 1.9% |
| 10-19 | 6.0% |
| 20-29 | 19.6% |
| 30-39 | 52.6% |
| ≥40 | 71.3% |

Abbreviations: INR, international normalized ratio; MELD, Model for end-stage liver disease

**Supplemental Table 5 –** Area under the curve (AUC) analysis for CLIF-SOFA and MELD for predicting hospital and 90-day mortality in all patients and in patients with and without ARDS. Data are reported as the c-statistic with associated 95% confidence interval and p-value.

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| --- | --- | --- |
| **Model (patients)** | **Hospital Mortality**  **(95% CI)** | **90-Day Mortality**  **(95% CI)** |
| **CLIF-SOFA**  **(All)** | 0.78 (0.70-0.86)  p<.001 | 0.78 (0.71-0.86)  p<.001 |
| **CLIF-SOFA**  **(No ARDS)** | 0.76 (0.66-0.86)  p<.001 | 0.78 (0.70-0.87)  p<.001 |
| **CLIF-SOFA**  **(ARDS)** | 0.77 (0.60-0.94)  p=.008 | 0.73 (0.56-0.90)  p=.023 |
| **MELD**  **(All)** | 0.80 (0.72-0.87)  p<.001 | 0.80 (0.74-0.87) p<.001 |
| **MELD**  **(No ARDS)** | 0.76 (0.67-0.86)  p<.001 | 0.80 (0.72-0.88)  p<.001 |
| **MELD**  **(ARDS)** | 0.89 (0.78-0.99)  p<.001 | 0.80 (0.65-0.95)  p<.001 |

Abbreviations: ARDS, Acute Respiratory Distress Syndrome, CLIF-SOFA, Chronic Liver Failure-Sequential Organ Failure Assessment; MELD, Model for End-Stage Liver Disease.