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Sepsis

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June 2026

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1. Evaluation of Sepsis Management in a Regional Community Hospital.

Authors: Abdelaziz, Hani;Thibeault, Patrick;Laporte, Marjolaine Maher;Bernard, Maryse;Cormier, Nancy;Landry, Daniel;Steeves, Julie;Boucher, Cederic and Johnston, Gary

Publication Date: 2026

Journal: Journal of Global Infectious Diseases 18(1), pp. 19–26

Abstract: Introduction: Sepsis remains a leading cause of global mortality. Despite established guidelines by the Surviving Sepsis Campaign (SSC), adherence to time compliance with the SSC bundle is often inconsistent. In New Brunswick hospitals, this compliance has not been studied. This study evaluates compliance with the SSC bundle in a regional community hospital in New Brunswick (NB), Canada, and its impact on clinical outcomes. Methods: A retrospective, single-center observational study was conducted to review sepsis and septic shock cases over 6 months. Patients were categorized into two groups: group A (sepsis or septic shock diagnosed at initial assessment) and Group B (diagnosed retrospectively based on SSC screening criteria and a Sequential Organ Failure Assessment score >=2). The primary outcome was time compliance with SSC bundle components, while secondary outcomes included mortality, length of hospital stay, and quantity of crystalloid fluid administered. Results: Of 44 patient charts reviewed, 20 met inclusion criteria (13 Group A and 7 Group B). Initial ordering compliance for the SSC bundle within 1 h was 45%, but processing compliance was only 5%. In an extended analysis, the time frame for antibiotic administration was broadened to 3 h, increasing overall compliance with the SSC bundle to 15%. When the analysis was extended to 3 hours for all bundle measures, ordering compliance rose to 60%, and processing compliance increased to 40%. Median time to antibiotic administration was 188 min, and median time to fluid initiation was 69 min. No significant differences in primary or secondary outcomes were

observed between Group A and Group B. Conclusions: Delays in processing SSC bundle components highlight critical gaps in sepsis care. Implementing standardized protocols, enhancing communication, and utilizing real-time alert systems could improve compliance and patient outcomes in NB hospitals. DOI: 10.4103/jgid.jgid_37_25 URL:

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2. Evaluation of the Efficacy of Serum Lactate-to-Albumin Ratio as a Prognostic Marker for Sepsis and Its Comparison With the Sequential Organ Failure Assessment (SOFA) Score.

Authors: Balle, Gowtham Naidu;Biradar, Siddanagouda M. and Kadagud, Anuja M.

Publication Date: Mar ,2026

Journal: Cureus 18(3), pp. e105549

Abstract: INTRODUCTION: Sepsis is a condition resulting from an abnormal host response to infection that leads to acute organ dysfunction. Early identification of patients at high risk of adverse outcomes is essential. This study aimed to evaluate the prognostic value of the serum lactate-to-albumin (L/A) ratio for sepsis and compare its performance with the Sequential Organ Failure Assessment (SOFA) score in predicting clinical outcomes. MATERIALS AND METHODS: This prospective observational study was conducted at a tertiary care centre from June 2024 to December 2025 and included 90 adult patients diagnosed with sepsis. Serum lactate, serum albumin, and the SOFA scores were recorded on day one and day three. Patients were followed until discharge or in-hospital death. The primary endpoint was in-hospital mortality, while secondary endpoints included the requirement for mechanical ventilation, the need for vasopressor therapy, and length of hospital stay. Statistical analysis was performed using SPSS Statistics version 26 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean +/-standard deviation and compared using the Mann-Whitney U test or the Wilcoxon signed-rank test, while categorical variables were analysed using the chi-square test. Receiver operating characteristic (ROC) curve analysis was performed to evaluate predictive ability. RESULTS: Mortality was seen in 42 (46.7%) patients, with a predominance of those aged 61 to 80 years (41, 45.6%) and of the male gender (55, 61.1%). Non-survivors had significantly higher SOFA scores. While the baseline L/A ratio was not significant (p = 0.625), the day three L/A ratio and its change were significantly higher in non-survivors (p : Mortality was seen in 42 (46.7%) patients, with a predominance of those aged 61 to 80 years (41, 45.6%) and of the male gender (55, 61.1%). Non-survivors had significantly higher SOFA scores. While the baseline L/A ratio was not significant (p = 0.625), the day three L/A ratio and its change were significantly higher in non-survivors (p : Mortality was seen in 42 (46.7%) patients, with a predominance of those aged 61 to 80 years (41, 45.6%) and of the male gender (55, 61.1%). Non-survivors had significantly higher SOFA scores. While the baseline L/A ratio was not significant (p = 0.625), the day three L/A ratio and its change were significantly higher in non-survivors (p CONCLUSION: Serial measurement of the L/A ratio provides meaningful prognostic information comparable to the SOFA score and may serve as a practical risk stratification tool for sepsis. DOI: 10.7759/cureus.105549 URL:

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3. Gut Microbiota as a Key Modulator in the Pathophysiology of Sepsis: SURVEIL Project.

Authors: Bazzano, Chiara;Caramaschi, Alice;Massa, Nadia;Collani, Silvio;Mellai, Marta;Barizzone, Nadia;Rocchetti, Andrea;Bottino, Paolo;Caroppo, Maria Simona;Bonato, Valeria;Vaschetto, Rosanna;Scaglione, Sara;Francese, Alessia;Gholami, Narges;Caria, Claudio;Bianchi, Paola;Lauritano, Cristiano;Castello, Luigi;Roveta, Annalisa;Maconi, Antonio, et al

Publication Date: Jun ,2026

Journal: MicrobiologyOpen 15(3), pp. e70301

Abstract: Sepsis is a life-threatening condition frequently associated with gut dysbiosis and bacterial colonization by multidrug-resistant organisms. However, the interplay between gut microbiota, colonization patterns, and sepsis onset remains poorly defined. The authors analyzed longitudinal gut

microbiota profiles from 132 hospitalized patients enrolled in the SURVEIL study. Rectal swabs were collected at three time points (baseline, sepsis onset, and discharge). Bacterial colonization status and MDR strains were determined through culture-based methods, while microbiota composition was assessed via 16S rDNA sequencing. Diversity indices, taxonomic and functional profiles, and differential abundance analyses (LEfSe) were integrated with clinical metadata, including age and sepsis status. At baseline, colonized patients-particularly those harboring Gram-positive taxa-exhibited significantly reduced alpha diversity compared to non-colonized individuals. Aging further modulated diversity and beta diversity patterns independently. Sepsis was associated with profound dysbiosis, characterized by enrichment in opportunistic genera (e.g., Finegoldia sp., Anaerococcus sp., Parabacteroides sp.), reduced microbial diversity, and distinct beta diversity trajectories. Functional predictions revealed enhanced representation of anaerobic metabolism, nitrogen/sulfur cycling, and host-adaptive traits in colonized states. MDR strains partially overlapped with bloodstream pathogens in septic patients, suggesting a possible link between intestinal colonization and bloodstream infection that warrants mechanistic validation. Our findings demonstrate that bacterial colonization and sepsis are strongly associated with compositional and functional shifts in the gut microbiota. Age and MDR carriage further shape microbiota dynamics. Early microbial signatures, such as Finegoldia sp. enrichment in colonized non-septic patients, may represent early markers of microbial destabilization and sepsis risk. DOI: 10.1002/mbo3.70301 URL:

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4. Early albumin infusion and mortality in elderly patients with sepsis based on analysis of the Medical Information Mart for Intensive Care-IV (MIMIC-IV) database.

Authors: Chen, Jinmin and Lu, Yuanqiang

Publication Date: Mar 21 ,2026

Journal: Journal of Zhejiang University SCIENCE B 27(4), pp. 390–401

Abstract: As the impact of early albumin infusion on the prognosis of elderly individuals diagnosed with sepsis remains uncertain, this study aimed to investigate this effect in elderly patients with sepsis in the intensive care unit (ICU). We identified the information of elderly patients with sepsis requiring ICU admission from the Medical Information Mart for Intensive Care-IV (MIMIC-IV) database. They were divided into hypoalbuminemia group and control group, and the primary outcome was 90-d mortality. A multivariate logistic regression model and a multivariate Cox proportional-hazards model were used to analyze the correlation between hypoalbuminemia and patient prognosis. Kaplan-Meier survival curve and log-rank test were performed to analyze the survival outcomes. Propensity score matching (PSM) was implemented to determine the precise effect of early albumin infusion on the prognosis of elderly ICU patients with sepsis, and subgroups of patients were identified to explore the factors influencing the relationship. Early hypoalbuminemia was strongly associated with an increased risk of adverse clinical outcomes in elderly patients with sepsis in the ICU. In-hospital mortality (28.6% vs. 19.1%, PPPP<0.001) ,PSM , , 90 , , 90 . Language: Chinese DOI: 10.1631/jzus.B2400268 URL

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5. Diagnostic and prognostic value of LAMB2 in sepsis patients admitted to the intensive care unit.

Authors: Feng, Chencheng;Ye, Haoming;Lv, Mengyao;Wang, Ruojue;Wang, Heng;Cao, Limian and Shao, Min

Publication Date: Jun ,2026

Journal: Respiratory Medicine 257, pp. 108787

Abstract: OBJECTIVE: Sepsis is a major cause of mortality in intensive care unit (ICU) patients. The LAMB2 gene encodes laminin beta2, a critical basement membrane component involved in maintaining tissue and organ integrity. However, the clinical significance of LAMB2 expression in sepsis diagnosis

and prognosis remains unclear. This study aimed to evaluate the potential of LAMB2 as a biomarker for sepsis. METHODS: A total of 172 sepsis patients admitted to the ICU of the First Affiliated Hospital of Anhui Medical University between June 2023 and September 2024, and 39 non-septic healthy controls undergoing routine health examinations at the same hospital, were enrolled. All patients met the Sepsis 3.0 diagnostic criteria and were divided into sepsis (n=88) and septic shock (n=84) groups. Serum and monocyte LAMB2 levels were measured using ELISA and RT-qPCR, respectively. We also queried The Human Protein Atlas (HPA) datasets to profile baseline LAMB2 expression across human immune cell subsets. The diagnostic and prognostic value of LAMB2 was assessed via multivariate regression, ROC curve, and Kaplan-Meier survival analysis. RESULTS: Patients with septic shock showed significantly lower LAMB2 mRNA and serum levels compared to sepsis patients and healthy controls (p: Patients with septic shock showed significantly lower LAMB2 mRNA and serum levels compared to sepsis patients and healthy controls (p: Patients with septic shock showed significantly lower LAMB2 mRNA and serum levels compared to sepsis patients and healthy controls (p: Patients with septic shock showed significantly lower LAMB2 mRNA and serum levels compared to sepsis patients and healthy controls (pCONCLUSION: Reduced LAMB2 levels were associated with organ dysfunction and poor outcomes in sepsis. Serum LAMB2 may serve as an independent predictor of disease severity and 28-day mortality. DOI: 10.1016/j.rmed.2026.108787 URL:

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6. A twenty-year retrospective analysis on sepsis and septic shock incidence and mortality.

Authors: Guarino M.;Perna B.;Guerzoni F.;Rapino A.;Ceccuzzi G.;Maroncelli G.;Costanzini A.;Maritati M.;Contini C.;Spampinato M.D. and De Giorgio, R.

Publication Date: 2026

Journal: Advances in Traditional Medicine (pagination), pp. Date of Publication: 2026

Abstract: Sepsis and septic shock are major causes of global mortality. Analyzing trends in incidence, in-hospital mortality (IHM), and length of stay (LOS) is critical to improve patient outcomes. This retrospective study examined the impact of sepsis on patients admitted to St. Anna University Hospital in Ferrara, Italy, from 2003 to 2022. Inclusion criteria were patients aged >= 18, admitted through the Emergency Department with a confirmed diagnosis of sepsis or septic shock. We evaluated trends in incidence, IHM, LOS, sepsis etiology, and changes during the SARS-CoV-2 pandemic, assessing mortality correlations with underlying causes across age groups. Among 461,241 patients, 15,238 (3.3%) developed sepsis or septic shock. Sepsis incidence (p DOI: 10.1007/s13596-026-00895-5 URL:

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7. The prognostic nutritional index predicts all-cause mortality in extensively burned patients with sepsis.

Authors: Hu, Gaozhong;Shu, Ziqin;Cheng, Xia;Yang, Lei;Zhu, Wei and Song, Huapei

Publication Date: Jun ,2026

Journal: Burns 52(5), pp. 107976

Abstract: OBJECTIVE: The aim of this study was to investigate the predictive value of the prognostic nutritional index (PNI) for 28-day mortality in extensively burned patients with sepsis. METHODS: The clinical data of extensively burned patients with sepsis who were admitted to the First Affiliated Hospital of the Army Medical University from January 1, 2014, to December 31, 2021, were retrospectively analysed. Patients who lived were compared with those who died by independent-samples Mann-Whitney U test or chi-square test. Then the significantly different indicators between the two groups were subjected to multivariate regression analyses. A receiver operating characteristic (ROC) curve was drawn to obtain the corresponding cut-off value. Differences between the two groups of patients separated according to the cut-off value were analyzed. Kaplan-Meier survival analysis was performed.

RESULTS: In total, 172 extensively burned patients with sepsis who met the inclusion criteria were included and divided into a survival group (n=135 patients) and a nonsurvival group (n=37 patients). Multivariate Cox regression analysis of the 28-day all-cause mortality of extensively burned patients with sepsis suggested that PNI was a protective factor for the outcomes of extensively burned patients with sepsis (P =31.85) was significantly higher than that of patients with a low PNI (=31.85) was significantly higher than that of patients with a low PNI (CONCLUSION: A low PNI is an independent risk factor for mortality in extensively burned patients with sepsis, and outperforms WBC and PLT. Timely and effective intervention treatments should be performed, when the PNI indicates a poor prognosis with the value less than 31.85. DOI: 10.1016/j.burns.2026.107976 URL:

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8. Prediction of In-Hospital Mortality in Sepsis Using Advanced Predictive Models: Comparison with Traditional Severity Scores.

Authors: Jain K.;Bharate P.B.;Patil A.;Wadde S.;Kinge A. and Bagul, D.

Publication Date: 2026

Journal: International Journal of Drug Delivery Technology 16(2), pp. 435–441

Abstract: Background: Sepsis remains a leading cause of in-hospital mortality worldwide, and early identification of high-risk patients is essential for timely intervention. Traditional severity scoring systems such as SOFA and APACHE II have limited predictive accuracy in heterogeneous clinical settings. Machine-learning (ML) approaches offer the potential to improve mortality prediction by modeling complex, nonlinear relationships in routinely collected clinical data. Method(s): This retrospective observational study included 500 adult patients admitted with sepsis to a tertiary care hospital. In-hospital mortality was the primary outcome. Demographic characteristics, clinical variables, laboratory parameters, comorbidities, treatment-related factors, and established severity scores were extracted from medical records. Multiple ML models, including logistic regression, naive Bayes, k-nearest neighbors, support vector machine, random forest, AdaBoost, and extreme gradient boosting (XGBoost), were developed and evaluated. Model performance was assessed using the area under the receiver operating characteristic curve (AUROC), calibration measures, and decision curve analysis, and was compared with traditional severity scores. Result(s): Of the 500 patients, 170 (34%) died while 330 (66%) survived during hospitalization. Non-survivors were older and had higher severity scores and worse physiological and laboratory parameters at admission. Among the ML models, XGBoost demonstrated the best performance, achieving the highest AUROC and superior calibration compared with other ML algorithms and traditional scores. The XGBoost model outperformed SOFA, APACHE II, and NEWS2 in predicting in-hospital mortality. Feature importance analysis identified serum lactate, SOFA score, renal dysfunction, hypotension, vasopressor requirement, thrombocytopenia, and age as key predictors of mortality. Conclusion(s): Machine-learning models, particularly gradient-boosting approaches, provide more accurate prediction of in-hospital mortality in sepsis than conventional severity scores. These findings support the potential role of ML-based tools in early risk stratification and personalized decision support for sepsis care. DOI: 10.25258/ijddt.16.2.48 URL:

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9. A Comparative Analysis of Modified Shock Index, Shock Index, & Age Shock Index ToDetermine Whether Patients with Sepsis Need Mechanical Ventilation.

Authors: Kashamshetty K.;Galagali S.;Kattimani B.P.;Chandakavathe V.M. and Kumbar, U.

Publication Date: 2026

Journal: International Journal of Life Sciences Biotechnology and Pharma Research 15(4), pp. 329–338

Abstract: Introduction: Sepsis remains a major global health concern associated with substantial morbidity and mortality, frequently necessitating intensive care support. Early identification of patients at risk for respiratory failure is essential to optimize outcomes. The Shock Index (SI), Modified Shock Index (MSI), and Age Shock Index (ASI) have been proposed as simple bedside indicators of disease severity.Aim and Objective:The primary objective of this study was to evaluate the predictive accuracy of SI, MSI, and ASI for the requirement of mechanical ventilation in patients with sepsis. The secondary objective was to determine the most reliable prognostic index for use in intensive care settings.Materials and Methods:This prospective observational study included 235 adult patients diagnosed with sepsis and admitted to the ICCU, SICU, and CCU at Shri B. M. Patil Medical College Hospital and Research Centre, Vijayapura, from March 2024 to December 2025. Patient selection was based on SIRS criteria and qSOFA scores. Clinical, biochemical, and hemodynamic parameters were recorded at admission and at 24 and 48 hours. Statistical analysis was performed using SPSS version 20.0, employing ANOVA, Chi-square, and Kruskal-Wallis tests. A p-value Result(s): Of the study population, 68% required mechanical ventilation, most commonly within the first 24 hours of admission. SI and MSI demonstrated high sensitivity (90-100%) and excellent negative predictive value (>98%), outperforming ASI in terms of predictive accuracy and specificity for ventilatory requirement. Conclusion(s): SI and MSI are reliable prognostic indices for excluding the need for mechanical ventilation in patients with sepsis. Their simplicity, rapid bedside applicability, and low cost make them valuable tools for early risk stratification and timely clinical decision-making in critical care settings.Copyright ©2025 Int. J. Life Sci. Biotechnol. Pharma. Res. DOI: 10.69605/ijlbpr_15.4.2026.49 URL:

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10. Evaluation of Early Predictors of Sepsis-Associated Liver Injury in Adult Patients in Intensive Care Unit.

Authors: Kilic I. and Akar, M.

Publication Date: 2026

Journal: International Journal of Clinical Practice 2026(1) (pagination), pp. Article Number: 8836086. Date of Publication: 2026

Abstract: Background: Sepsis-associated liver injury (SALI) is a poor prognostic manifestation in intensive care unit (ICU) patients. Therefore, early prediction of the patients who will progress to SALI is very critical. This study aimed to investigate possible demographic, clinical, and laboratory features that may early predict SALI in patients with sepsis in the ICU. Method(s): The study was conducted on adult patients with sepsis admitted to the ICU of a tertiary hospital between January 2022 and December 2022. Demographic, clinical, and laboratory data within the initial 24 h of admission to the ICU were recorded. These data were compared between the patients with and without SALI. Result(s): A total of 264 eligible patients (median age 73 years, 56.4% male) with sepsis were included in the study, 39 (14.8%) of whom had SALI. Prothrombin time, total bilirubin, alkaline phosphatase, and heart rate within the initial 24 h of admission to the ICU were statistically significantly higher in the patients with SALI compared to the patients without SALI ($p = 0.023$, $p = 0.008$, $p = 0.036$, and $p = 0.006$, respectively), while hematocrit and bicarbonate levels were lower ($p = 0.034$ and $p = 0.049$, respectively). Conclusion(s): Elevated prothrombin time, alkaline phosphatase, heart rate, and total bilirubin and low bicarbonate and hematocrit levels in the initial 24 h of the ICU admission are associated with SALI in the adult patients with sepsis.Copyright © 2026 Isa Kilic and Mustafa Akar. International Journal of Clinical Practice published by John Wiley & Sons Ltd. DOI: 10.1155/ijcp/8836086 URL:

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11. Association of Electrocardiogram Abnormalities with Clinical Outcomes in Emergency Department Sepsis Patients.

Authors: Kotruchin, Praew;Chuehongthong, Mingkamon;Tangpaisarn, Thanat;Serewiwattana, Nattapat;Phungoen, Pariwat;Mitsungnern, Thapanawong and Buranasakda, Marturod

Publication Date: Feb 11 ,2026

Journal: The Western Journal of Emergency Medicine 27(2), pp. 387–395

Abstract: INTRODUCTION: Sepsis, a critical condition caused by dysregulated host responses to infection, frequently involves cardiac complications. Electrocardiogram (ECG) provides valuable insights into the cardiovascular status of sepsis patients and may guide early interventions. However, comprehensive data on ECG patterns in sepsis patients within the emergency department (ED) is limited. In this study we aimed to identify common ECG rhythms and patterns in sepsis patients presenting to the ED and analyze their association with poor clinical outcomes, including intensive care unit (ICU) admission, prolonged hospital stay (> 14 days), and in-hospital mortality. METHODS: We conducted a retrospective observational study using data from 3,598 adult sepsis patients presenting to the ED of Srinagarind Hospital, Khon Kaen, Thailand, between January-December 2023. ECG abnormalities were extracted from the automated ECG interpretation system. Cardiologists reviewed only ECGs flagged as potential acute infarction or ST elevation to confirm acute coronary syndrome patterns. We analyzed associations between ECG abnormalities and clinical outcomes using univariate logistic regression models. RESULTS: Common ECG rhythms in sepsis patients included sinus rhythm (41.7%), sinus tachycardia (39.0%), and atrial fibrillation/flutter (8.8%). The automated algorithm identified prolonged QT intervals (54.4%) and ST elevation in 10.4% of patients; however, only 1.7% met cardiologist-confirmed criteria for acute coronary syndrome. Compared with patients with better outcomes, those with poor outcomes more frequently had atrial fibrillation/flutter (14.9 vs. 7.5%), new-onset atrial fibrillation/flutter (6.0 vs. 2.8%), QT prolongation (61.6 vs. 52.9%), and abnormal T waves (10.9 vs. 8.4%), corresponding to odds ratios of 2.19 (95% CI, 1.77-2.69), 2.24 (1.50-3.28), 1.43 (1.20-1.70), and 1.34 (1.01-1.76), respectively. CONCLUSION: Certain ECG abnormalities in sepsis patients are associated with adverse clinical outcomes. Incorporating ECG assessments into sepsis protocols may enhance the early identification of high-risk patients and improve management strategies in the ED. DOI: 10.5811/westjem.50775 URL

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12. Analysis of the prevalence and risk factors of post-intensive-care syndrome and post-sepsis syndrome in survivors of sepsis.

Authors: Li, Yuanqing;Liu, Anhao;Zhang, Xuehui;Lv, Ningkang;Chen, Tianqi;Hao, Cuiping and Wu, Dongmei

Publication Date: 2026

Journal: Science Progress 109(2), pp. 368504261442885

Abstract: Objective In the intensive care unit (ICU), sepsis is a leading cause of mortality, and survivors frequently experience serious long-term sequelae. In addition to identifying risk variables influencing post-sepsis syndrome (PSS) and post-intensive care syndrome (PICS), this study sought to present comprehensive data on the three-month prognostic and functional outcomes of sepsis patients in the ICU-a demographic frequently overlooked in long-term recovery discourse. Methods A prospective cohort study was conducted in the intensive care units of Jining Medical University Affiliated Hospital between April 2024 and July 2025, enrolling patients diagnosed with sepsis or septic shock. Follow-up assessments were conducted one and three months post-discharge via telephone or outpatient visits. The frequency of each dimension in PICS and PSS was investigated, alongside patients' health-related quality of life. Risk factors for the two syndromes were analyzed using multivariable logistic regression and stepwise multiple linear regression. Results Sepsis survivors included in the one-and three-month follow-ups totaled 147 and 132, respectively. PICS and PSS had overall respective prevalence rates of 93.2-98.6% and 61.4-77.6%. Multivariable analyses revealed that body mass index (BMI), red blood cell (RBC) count, partial pressure of oxygen (PO2), and globulin levels were independent predictors for PSS. For PICS severity, Glasgow Coma Scale (GCS) score, venous thromboembolism (VTE) risk score, bicarbonate (HCO3-) levels, and specific infection sites were identified as independent predictors. Sepsis survivors' quality of life improves over the three

months following discharge; however, PICS and PSS maintain a high prevalence, with a notable symptom overlap between the two syndromes. Clinicians must be mindful of specific in-hospital risk factors to tailor post-discharge care. Conclusion This study highlights the profound and persistent risks for ICU sepsis survivors. The results indicate that early multidisciplinary intervention is necessary, which may potentially reduce long-term sequelae and improve recovery trajectories. DOI: 10.1177/00368504261442885 URL:

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13. Machine learning for prediction of in-ICU mortality in sepsis: an observational study using the MIMIC IV database.

Authors: Liu S.;Gong L.;Hu W.;Cai J.;Yang Y.;Chen S.;Mi B.;Zhao Y.;Pei L. and Chen, F.

Publication Date: 2026

Journal: Archives of Medical Science 22(1), pp. 270–281

Abstract: Introduction: The aim of the study was to identify the key risk factors influencing in-intensive care unit (ICU) mortality of patients with sepsis and develop prognosis prediction models for culture-positive sepsis (CPS) and culture-negative sepsis (CNS) patients. Material(s) and Method(s): Data were extracted from the MIMIC-IV database, which included 9288 patients with sepsis. The whole sample was divided into CPS (6622 patients) and CNS groups (2666 patients). We established six machine learning models-DT, RF, NB, XGB, GBDT, and NNET-to predict in-ICU death for all study samples, as well as for CPS and CNS subgroups. Model performance was assessed using AUC, accuracy, sensitivity, and specificity. SHapley Additive exPlanations (SHAP) values were used to explain the effect of variables on model results. Result(s): The in-ICU mortality rate was 54.58% for the whole study sample; the difference in in-ICU mortality between the CPS (55.19%) and CNS (53.04%) groups was not statistically significant. The main significant influential factors identified included Charlson Comorbidity Index (CCI), number of days in hospital, Glasgow Coma Scale (GCS), older age, and total bilirubin (TBil). The XGB model performed best in the overall sample (AUC = 0.782), while the GBDT model was most effective for the CPS group (AUC = 0.7813) and the CNS group (AUC = 0.7582). Conclusion(s): This study identified key risk factors for in-ICU death in patients with sepsis and highlighted differences in clinical characteristics between patients with CPS and CNS. These findings may contribute to the development of personalized treatment strategies and risk assessment, thereby improving the prognosis of septic patients, especially patients with CNS. DOI: 10.5114/aoms/197307 URL

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14. Performance of sequential organ failure assessment 1 versus 2 for sepsis identification in patients with suspected infection: a multicenter retrospective cohort study.

Authors: Liufu, Rong;Fu, Xiao-Yun;Shi, Xian-Qing;Shen, Feng;Wu, Yao;Cao, Maomao;Wang, Yi-Fan;Peng, Jin-Min;Jiang, Wei;Hu, Xiao-Yun;Wang, Yang-Yan-Qiu;Weng, Li;Zhou, Xiang and Du, Bin

Publication Date: 2026

Journal: Critical Care (London, England)

Abstract: OBJECTIVE: The revised Sequential Organ Failure Assessment (SOFA-2) score was recently developed to update definitions of acute organ dysfunction in intensive care units (ICU). This study aimed to evaluate performance between SOFA-1 and SOFA-2 definition for sepsis identification in patients with suspected infection. METHODS: We analyzed 24,510 patients with suspected infection in Chinese multicenter cohort and validated in the MIMIC-IV database. Patients were divided into four categories based on concordance between SOFA versions: SOFA-1(-)/SOFA-2(-), SOFA-1(+)/SOFA-2(+), SOFA-1(-)/SOFA-2(+), and SOFA-1(+)/SOFA-2(-). Kaplan-Meier analyses and cox proportional hazards models assessed the associations with in-hospital mortality. RESULTS: Most patients met sepsis criteria under both SOFA versions (18,179/24,510; 74.2%[95% confidential interval (CI), 73.6%-74.7%]), while 9.9% (95% CI, 9.53%-10.2%) were classified as SOFA-1(+)/SOFA-2(-), 5.5% (95% CI,

5.2%-5.8%) as SOFA-1(-)/SOFA-2(+), and 10.2% (95% CI, 9.8%-10.6%) as SOFA-1(-)/SOFA-2(-). Patients in SOFA-1(-)/SOFA-2(+) group were younger, more often male, higher rates of pneumonia, gastrointestinal infection, and neurologic infection. Superior discrimination for in-hospital mortality was observed in SOFA-2 [area under the receiver operating characteristic curve (AUROC) 0.746; 95% confidence interval (CI) 0.737-0.756] compared with SOFA-1 (0.679; 95% CI 0.668-0.689). In-hospital mortality was markedly higher in SOFA-2 (+) groups [2.9% in SOFA-1(-)/SOFA-2(-), 3.3% in SOFA-1(+)/SOFA-2(-), 10.6% in SOFA-1(-)/SOFA-2(+), and 14.3% in SOFA-1(+)/SOFA-2(+); p : Most patients met sepsis criteria under both SOFA versions (18,179/24,510; 74.2%[95% confidential interval (CI), 73.6%-74.7%]), while 9.9% (95% CI, 9.53%-10.2%) were classified as SOFA-1(+)/SOFA-2(-), 5.5% (95% CI, 5.2%-5.8%) as SOFA-1(-)/SOFA-2(+), and 10.2% (95% CI, 9.8%-10.6%) as SOFA-1(-)/SOFA-2(-). Patients in SOFA-1(-)/SOFA-2(+) group were younger, more often male, higher rates of pneumonia, gastrointestinal infection, and neurologic infection. Superior discrimination for in-hospital mortality was observed in SOFA-2 [area under the receiver operating characteristic curve (AUROC) 0.746; 95% confidence interval (CI) 0.737-0.756] compared with SOFA-1 (0.679; 95% CI 0.668-0.689). In-hospital mortality was markedly higher in SOFA-2 (+) groups [2.9% in SOFA-1(-)/SOFA-2(-), 3.3% in SOFA-1(+)/SOFA-2(-), 10.6% in SOFA-1(-)/SOFA-2(+), and 14.3% in SOFA-1(+)/SOFA-2(+); p CONCLUSION: SOFA-2-based sepsis identified a clinically meaningful higher-risk subgroup, with consistent results across sensitivity analyses. Nevertheless, cohort-specific differences emphasize the need for cautious interpretation and further validation in diverse clinical settings. Copyright © 2026. The Author(s). DOI: 10.1186/s13054-026-05981-3 URL

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15. Responsible AI for Sepsis Prediction: Bridging the Gap Between Machine Learning Performance and Clinical Trust.

Authors: Oliveira T.Q.;Carvalho L.A.;Sousa F.R.C.;Filho J.B.F.;Oliveira K.F. and Tavares, D. A. B.

Publication Date: 2026

Journal: Journal of Clinical Medicine 15(6) (pagination), pp. Article Number: 2251. Date of Publication: 01 Mar 2026

Abstract: Background: Sepsis remains a leading cause of mortality in intensive care units (ICUs) worldwide. Machine learning models for clinical prediction must be accurate, fair, transparent, and reliable to ensure that physicians feel confident in their decision-making processes. Method(s): We used the MIMIC-IV (version 3.1) database to evaluate several machine learning architectures, including Logistic Regression, XGBoost, LightGBM, LSTM (Long Short-Term Memory) networks and Transformer models. We predicted three main clinical targets-hospital mortality, length of stay, and septic shock onset-using artificial intelligence algorithms, with respect for responsible AI principles. Model interpretability was assessed using Shapley Additive Explanations (SHAP). Result(s): The XGBoost model demonstrated superior performance in prediction tasks, particularly for hospital mortality (AUROC 0.874), outperforming traditional LSTM networks, Transformers, and linear baselines. The importance analysis of the variables confirmed the clinical relevance of the model. Conclusion(s): While XGBoost and ensemble algorithms demonstrate superior predictive power for sepsis prognosis, their clinical adoption necessitates robust explainability mechanisms to gain trust among doctors.Copyright © 2026 by the authors. DOI: 10.3390/jcm15062251 URL:

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16. Early detection of glycocalyx and microvascular damage in suspected sepsis in the emergency department: the EDGE study.

Authors: Scarbeck, Melina Mascha;Kunnemann, Marc-David;Hunkemoller, Anna M.;Drost, Carolin Christina;Lukasz, Alexander;Birkner, Marcel;Fobker, Manfred;Nofer, Jerzy-Roch;Vink, Hans;Pavenstadt, Hermann;Kumpers, Philipp and Rovas, Alexandros

Publication Date: 2026

Journal: Critical Care (London, England)

Abstract: BACKGROUND: The prompt identification of clinical deterioration in emergency department (ED) patients presenting with infection is crucial yet challenging. Microvascular dysfunction has been linked to poor clinical outcome in critically ill patients, but it remains unclear whether its detection can predict clinical deterioration in early sepsis. This study aims to evaluate the utility of quantitative microvascular videomicroscopy for predicting clinical deterioration in patients with suspected sepsis. METHODS: In this prospective observational study, 299 ED patients with suspected infection or sepsis were enrolled, with the addition of 50 healthy volunteers, 14 non-infected ED patients and 34 intensive care unit (ICU) patients with sepsis as controls. All participants underwent sublingual sidestream darkfield videomicroscopy. The GlycoCheck TM software quantified vascular density, perfused boundary region (PBR; inverse marker of endothelial glycocalyx (eGC) thickness), and the Microvascular Health Score (MVHS TM), which integrated capillary density and eGC dimensions. The primary outcome was disease progression within the first week, defined as progression from infection to sepsis or increase in SOFA score in septic patients. Secondary outcomes included in-hospital and 90-day mortality, ICU admission, or a composite outcome of progression or in-hospital death. RESULTS: Sublingual videomicroscopy revealed significant differences in all microvascular variables between ED patients, healthy volunteers and control groups, correlating with disease severity. ED patients with disease progression showed lower capillary density, higher PBR, and lower MVHS at baseline than non-progressors. In patients presenting with infection without sepsis, MVHS demonstrated strong predictive discrimination for progression (AUC 0.79, p : Sublingual videomicroscopy revealed significant differences in all microvascular variables between ED patients, healthy volunteers and control groups, correlating with disease severity. ED patients with disease progression showed lower capillary density, higher PBR, and lower MVHS at baseline than non-progressors. In patients presenting with infection without sepsis, MVHS demonstrated strong predictive discrimination for progression (AUC 0.79, p : Sublingual videomicroscopy revealed significant differences in all microvascular variables between ED patients, healthy volunteers and control groups, correlating with disease severity. ED patients with disease progression showed lower capillary density, higher PBR, and lower MVHS at baseline than non-progressors. In patients presenting with infection without sepsis, MVHS demonstrated strong predictive discrimination for progression (AUC 0.79, p CONCLUSION: Quantitative sublingual videomicroscopy predicts early disease progression within the first week and stratifies patients with suspected sepsis into high and low-risk groups at ED presentation. TRIAL REGISTRATION: Clinicaltrials.gov Identifier NCT03126032, Registration Date 20.02.2017. Copyright © 2026. The Author(s). DOI: 10.1186/s13054-026-05989-9 URL:

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17. Association of implementation of an EHR-based sepsis alert system with sepsis-associated acute kidney injury.

Authors: Takeuchi, Tomonori;Renzi, Stefania;Glanding, Kimberly L.;Hirata, Kaiho;Rehman, Aqeeb Ur;Ekrikpo, Udeme E.;Tolwani, Ashita J. and Neyra, Javier A.

Publication Date: 2026

Journal: American Journal of Emergency Medicine 105, pp. 129–135

Abstract: PURPOSE: Given the limited evidence, this study aimed to determine the impact of an electronic health record (EHR)-based sepsis alert on the incidence of sepsis-associated acute kidney injury (SA-AKI), adherence to the 3-h sepsis bundle, and other clinical outcomes. METHODS: This single-center, pre/post-implementation study analyzed adult patients who were admitted from the Emergency Department to the intensive care unit with sepsis at a tertiary hospital in the United States from January 2021 to December 2023. A total of 7137 patients were included in our analysis. We used interrupted time series models, adjusted for seasonality, to assess changes following the implementation of a sepsis screening and alert system at Emergency Department on July 1, 2022. The primary outcome was the incidence of SA-AKI. RESULTS: After implementation, there was no

significant immediate change in SA-AKI incidence (0.26%; 95% CI,-4.02 to 4.55), but a significant decreasing monthly trend was observed (-0.47% per month; 95% CI,-0.87 to-0.07). Adherence to the 3-h sepsis bundle showed a significant immediate increase (3.78%; 95% CI, 1.38 to 6.18). However, no significant changes were observed in in-hospital mortality or non-recovery from SA-AKI. CONCLUSIONS: The sepsis alert tool was associated with a progressive reduction in SA-AKI incidence and improved bundle adherence but was not associated with changes in mortality or renal recovery. DOI: 10.1016/j.ajem.2026.04.015 URL

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18. Development and Validation of a Prediction Model for Intensive Care Unit-Acquired Weakness in Adult Patients with Sepsis: A Prospective, Observational, Single-Center Study.

Authors: Wang B.;Liu Y.;He G.;Sun S.;Han J.;Zhang M.;He L. and Meng, S.

Publication Date: 2026

Journal: International Journal of General Medicine 19(pagination), pp. Article Number: 569937. Date of Publication: 2026

Abstract: Purpose: This study aimed to develop and validate a clinical prediction model for intensive care unit-acquired weakness (ICU-AW) in sepsis patients, in order aid the early identification of high-risk patients and enable targeted intervention measures. Patients and Methods: This prospective observational study was a single-center study conducted in a tertiary hospital in Shenzhen, China. Eligible inpatients diagnosed with sepsis between January 2023 and June 2024 were enrolled. The least absolute shrinkage and selection operator (LASSO) regression model was used to optimize the feature selection for the risk prediction model for ICU-AW in sepsis patients. Multivariable logistic regression analysis was applied to build a predicting model that incorporated the features selected in the LASSO regression model. Receiver operating characteristic (ROC) and calibration curves, and decision curve analysis (DCA) were applied to assess the model. Result(s): A total of 344 patients were included in the present study. Among these patients, 257 and 87 patients were assigned to the modeling and validation groups, respectively. Six independent predictors were identified: age, multiple organ dysfunction syndrome (MODS), use of neuromuscular blocking agents (NMBAs), duration of mechanical ventilation, duration of sedation, and Acute Physiology and Chronic Health Evaluation II (APACHE II) score. The nomogram revealed good performance, with an area under the ROC curve (AUC) of 0.905 (95% CI: 0.871-0.940) for the modeling group and 0.861 (95% CI: 0.784-0.939) for the validation group. The calibration curves indicated a good agreement between the predicted and observed outcomes. The DCA demonstrated a broad benefit threshold and good clinical effectiveness. Conclusion(s): The risk prediction model constructed in the present study demonstrated good predictive performance, providing a valuable reference for clinical practitioners to identify the risk of ICU-AW in patients with sepsis and implement prompt intervention. DOI: 10.2147/IJGM.S569937 URL:

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19. Sepsis induced coagulopathy (SIC): is it monolithic?.

Authors: Wang L.;Zhou X.;Hu Z.;Yang Z.;Lin G.;Chen Z.;Xu L.;Jiang D.;Xu H.;Liu J.;Yang X.;Wan L.;Duan M.;Wu W.;Yan J.;Xie X.;Ai Y.;Li S.;Shen F.;Qiu H., et al

Publication Date: 2026

Journal: Thrombosis Journal 24(1) (pagination), pp. Article Number: 35. Date of Publication: 01 Dec 2026

Abstract: Introduction: Sepsis-induced coagulopathy (SIC) is known to be linked with an increased mortality of sepsis. Method(s): We designed this study to investigate whether there is heterogeneity in the clinical manifestations of SIC between cases with international normalized ratio (INR) as the dominant factor and those with platelet (PLT) as the dominant factor. In this survey, 1421 SIC patients admitted to Peking Union Medical College Hospital were enrolled. External verification was conducted

using data from 4732 SIC patients in the Medical Information Mart for Intensive Care IV (MIMIC-IV) database. According to the difference of INR and PLT, SIC was divided into four subtypes: SIC-severe (PLT 1.4), SIC-INR (PLT >= 100 and INR > 1.4), SIC-PLT (PLT 1.4), SIC-INR (PLT >= 100 and INR > 1.4), SIC-PLT (PLT 1.4), SIC-INR (PLT >= 100 and INR > 1.4), SIC-PLT (PLT 1.4), SIC-INR (PLT >= 100 and INR > 1.4), SIC-PLT (PLT 1.4), SIC-INR (PLT >= 100 and INR > 1.4), SIC-PLT (PLT 1.4), SIC-INR (PLT >= 100 and INR > 1.4), SIC-PLT (PLT 1.4), SIC-INR (PLT >= 100 and INR > 1.4), SIC-PLT (PLT Main Result(s): The incidence of SIC in sepsis patients was 48.70% (1421/2918). Compared with the SIC-INR group, the SIC-PLT group had shorter activated partial thromboplastin time, lower fibrinogen levels, lower lactate levels, and lower blood glucose levels (P Main Result(s): The incidence of SIC in sepsis patients was 48.70% (1421/2918). Compared with the SIC-INR group, the SIC-PLT group had shorter activated partial thromboplastin time, lower fibrinogen levels, lower lactate levels, and lower blood glucose levels (P Main Result(s): The incidence of SIC in sepsis patients was 48.70% (1421/2918). Compared with the SIC-INR group, the SIC-PLT group had shorter activated partial thromboplastin time, lower fibrinogen levels, lower lactate levels, and lower blood glucose levels (P Main Result(s): The incidence of SIC in sepsis patients was 48.70% (1421/2918). Compared with the SIC-INR group, the SIC-PLT group had shorter activated partial thromboplastin time, lower fibrinogen levels, lower lactate levels, and lower blood glucose levels (P Main Result(s): The incidence of SIC in sepsis patients was 48.70% (1421/2918). Compared with the SIC-INR group, the SIC-PLT group had shorter activated partial thromboplastin time, lower fibrinogen levels, lower lactate levels, and lower blood glucose levels (P Main Result(s): The incidence of SIC in sepsis patients was 48.70% (1421/2918). Compared with the SIC-INR group, the SIC-PLT group had shorter activated partial thromboplastin time, lower fibrinogen levels, lower lactate levels, and lower blood glucose levels (P Conclusion(s): SIC with PLT change as the dominant factor and SIC with INR change as the dominant factor exhibited significant heterogeneity.Copyright © The Author(s) 2026. DOI: 10.1186/s12959-026-00845-w URL:

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20. Geriatric nutritional risk index as a predictor of 28-day and 365-day mortality in patients with heart failure complicated by sepsis: A retrospective cohort study using the MIMIC-IV database.

Authors: Wang M.;Wang L.;Tang Q.;Wang Y.;Teng X. and Jin, L.

Publication Date: 2026

Journal: Journal of Acute Disease 15(1) (pagination), pp. Article Number: 5. Date of Publication: 01 Mar 2026

Abstract: Objective: To evaluate the association between the Geriatric Nutritional Risk Index (GNRI) at ICU admission and mortality in patients with heart failure complicated by sepsis, a high-risk population in which the prognostic value of this validated malnutrition risk assessment tool remains underexplored. Method(s): Patients with heart failure and sepsis were identified from the Medical Information Mart for Intensive Care (MIMIC-IV) database and stratified into four GNRI groups. The primary endpoints were 28-day and 365-day all-cause mortality. Survival analysis used Kaplan-Meier curves and Cox proportional hazards models. Linearity was assessed using restricted cubic splines (RCS), while GNRI's predictive performance was evaluated using receiver operating characteristic (ROC) curves. Result(s): Altogether, 1713 patients with heart failure complicated by sepsis were identified in the present study. Kaplan-Meier analysis revealed 28-day mortality rates of 40.44% (high-risk) vs. 25.27% (no-risk) (PResult(s): Altogether, 1713 patients with heart failure complicated by sepsis were identified in the present study. Kaplan-Meier analysis revealed 28-day mortality rates of 40.44% (high-risk) vs. 25.27% (no-risk) (PResult(s): Altogether, 1713 patients with heart failure complicated by sepsis were identified in the present study. Kaplan-Meier analysis revealed 28-day mortality rates of 40.44% (high-risk) vs. 25.27% (no-risk) (PResult(s): Altogether, 1713 patients with heart failure complicated by sepsis were identified in the present study. Kaplan-Meier analysis revealed 28-day mortality rates of 40.44% (high-risk) vs. 25.27% (no-risk) (PResult(s): Altogether, 1713 patients with heart failure complicated by sepsis were identified in the present study. Kaplan-Meier analysis revealed 28-day mortality rates of

40.44% (high-risk) vs. 25.27% (no-risk) (PConclusion(s): Admission GNRI is an independent risk factor for in-hospital mortality in ICU patients with heart failure complicated by sepsis. GNRI scores serve as a valuable prognostic indicator for assessing mortality risk in this patient population.Copyright © 2026 Journal of Acute Disease. DOI: 10.4103/jad.jad_149_25 URL:

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21. Development and Validation of a Prediction Model for Intensive Care Unit-Acquired Weakness in Adult Patients with Sepsis: A Prospective, Observational, Single-Center Study.

Authors: Wang, Binghan;Liu, Yuting;He, Guilan;Sun, Sha;Han, Jianqiang;Zhang, Min;He, Linna and Meng, Siya

Publication Date: 2026

Journal: International Journal of General Medicine 19, pp. 569937

Abstract: Purpose: This study aimed to develop and validate a clinical prediction model for intensive care unit-acquired weakness (ICU-AW) in sepsis patients, in order aid the early identification of high-risk patients and enable targeted intervention measures. Patients and Methods: This prospective observational study was a single-center study conducted in a tertiary hospital in Shenzhen, China. Eligible inpatients diagnosed with sepsis between January 2023 and June 2024 were enrolled. The least absolute shrinkage and selection operator (LASSO) regression model was used to optimize the feature selection for the risk prediction model for ICU-AW in sepsis patients. Multivariable logistic regression analysis was applied to build a predicting model that incorporated the features selected in the LASSO regression model. Receiver operating characteristic (ROC) and calibration curves, and decision curve analysis (DCA) were applied to assess the model. Results: A total of 344 patients were included in the present study. Among these patients, 257 and 87 patients were assigned to the modeling and validation groups, respectively. Six independent predictors were identified: age, multiple organ dysfunction syndrome (MODS), use of neuromuscular blocking agents (NMBAs), duration of mechanical ventilation, duration of sedation, and Acute Physiology and Chronic Health Evaluation II (APACHE II) score. The nomogram revealed good performance, with an area under the ROC curve (AUC) of 0.905 (95% CI: 0.871-0.940) for the modeling group and 0.861 (95% CI: 0.784-0.939) for the validation group. The calibration curves indicated a good agreement between the predicted and observed outcomes. The DCA demonstrated a broad benefit threshold and good clinical effectiveness. Conclusion: The risk prediction model constructed in the present study demonstrated good predictive performance, providing a valuable reference for clinical practitioners to identify the risk of ICU-AW in patients with sepsis and implement prompt intervention. Copyright © 2026 Wang et al.; plain-language-summary A multivariable model was established to predict the ICU-AW in septic patients, with easily obtainable predictive factors accessible from hospital information systems.The nomogram revealed good discriminative ability, calibration, and clinical utility, serving as a valuable tool for early identification and intervention.The limitations included the single-center design (restricting generalizability), small external validation cohort, and Medical Research Council (MRC) score-based ICU-AW diagnosis (only for conscious/cooperative patients), which potentially induced selection bias, and restricted the applicability to Chinese populations. Language: English DOI: 10.2147/IJGM.S569937 URL:

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22. Prediction model for quality of life in sepsis survivors one year after discharge.

Authors: Yao Y.;Li W.;Hong D.;Chen Z.;Peng K. and Zhao, G.

Publication Date: 2026

Journal: World Journal of Emergency Medicine 17(2), pp. 105–112

Abstract: BACKGROUND: Sepsis survivors experience poor long-term quality of life post-discharge. The aim of this study was to analyze the factors that impact the long-term quality of life of sepsis survivors and develop a clinical prediction model. METHOD(S): A total of 442 sepsis patients from the

Emergency Intensive Care Unit of a tertiary hospital in Wenzhou were included. These patients were assigned to the training set or the validation set at a ratio of 7:3. The European Quality of Life 5 Dimensions 5 Level Version (EQ-5D-5L) questionnaire was used to evaluate the quality of life in sepsis survivors one year after discharge. Multivariate logistic regression analysis was used to identify predictors, which were then used to develop the prediction model and subsequently derive a scoring system. The model's effectiveness was assessed using an area under the receiver operating characteristic curve, calibration curves, and clinical decision analysis. RESULT(S): Of the 442 patients included, 70 died one year after discharge, and 372 completed the questionnaire. A total of 46.6% of sepsis survivors have poor quality of life one year after discharge in the training set. Multivariate logistic regression revealed that age, platelet, serum albumin, serum urea, and C-reactive protein were independent risk factors for poor quality of life in sepsis survivors. The area under the curve of the scoring system was 0.777 (95% CI: 0.726-0.828). The calibration curves showed that it was well calibrated. Decision curve analysis indicated that the scoring system provided good clinical usefulness. The internal validation also demonstrated its effectiveness. CONCLUSION(S): The prediction model incorporating five risk factors may predict quality of life one year after discharge in sepsis survivors, which provides a measure to develop post-discharge rehabilitation and follow-up plans for this patient population. DOI: 10.5847/wjem.j.1920-8642.2026.015 URL:

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23. Testing the Transportability of Sepsis Subtypes to Patients With ARDS for Postdischarge Outcomes.

Authors: Flick, Robert J.;Valley, Thomas S.;Armstrong-Hough, Mari and Iwashyna, Theodore J.

Publication Date: Dec ,2025

Journal: CHEST Critical Care 3(4)

Abstract: Background: Survivors of ARDS experience significant morbidity and mortality after hospital discharge. A latent class analysis (LCA) proposed 5 sepsis survivor subtypes that may be of use for ARDS patients as well, but did not include an operationalization algorithm for assigning patients to subtypes. Research Question: Can the Taylor sepsis survivor subtypes be operationalized in an ARDS population, and does such operationalizations distinguish patients at varying risk of post-discharge mortality and readmission? Study Design and Methods: We conducted a secondary analysis of adults with acute respiratory distress syndromes requiring mechanical ventilation enrolled in the Reevaluation of Systemic Early Neuromuscular Blockade (ROSE) trial. We compared two methods of operationalizing subtype to develop an assignment rule: transported subtypes based on an algorithm developed using five variables from the previously published derivation cohort, and de novo subtypes derived from a new latent class analysis (LCA). Random-effect logit models were used to estimate the association between subtype and the primary outcome of mortality at 12 months. Results: 580 participants were assigned to five subtypes using the transported approach. In age-adjusted regression, transported subtype was significantly associated with mortality at 12 months (p=0.027) and readmission at 3 months (p=0.043). A de novo LCA identified 5 distinct subtypes as the optimal solution; subtypes were associated with mortality at 3, 6, and 12 months (p: 580 participants were assigned to five subtypes using the transported approach. In age-adjusted regression, transported subtype was significantly associated with mortality at 12 months (p=0.027) and readmission at 3 months (p=0.043). A de novo LCA identified 5 distinct subtypes as the optimal solution; subtypes were associated with mortality at 3, 6, and 12 months (pInterpretation: Sepsis survivor subtypes can be transported and operationalized in ARDS patients. Different approaches to operationalization yield similar but not identical subgroups classifications. Both approaches assign individuals to groups that are significantly associated with patient-important outcomes among ARDS survivors. Optimal strategies to transport externally derived subtypes, versus internal rederivation, may depend on the specific use case. DOI: 10.1016/j.chstcc.2025.100203

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