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January 2026

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1. **Prognostic value of the lactate-to-albumin ratio for in-hospital mortality in severe acute pancreatitis with acute kidney injury: A retrospective cohort study.**

Authors: Zhu Q.;Geng P.;Ling B. and Chen, K.

Publication Date: 2026

Journal: American Journal of Emergency Medicine 99, pp. 207–214

Abstract: Background: Severe acute pancreatitis (SAP) complicated by acute kidney injury (AKI) carries a high mortality risk, and reliable early prognostic markers are needed. This study investigated the prognostic value of the lactate-to-albumin ratio (LAR) for in-hospital mortality in SAP patients with AKI. Method(s): We retrospectively analyzed 309 SAP patients with AKI admitted to a tertiary hospital between January 2016 and December 2024. Baseline demographics, laboratory data, and outcomes were collected. Logistic regression models identified independent risk factors for mortality. Receiver operating characteristic (ROC) curves, Kaplan-Meier survival analysis, and subgroup analyses evaluated the discriminative ability of LAR. Smooth curve fitting and two-piecewise linear regression assessed non-linear associations. Result(s): The overall in-hospital mortality was 24.9 %. Non-survivors had significantly higher LAR than survivors (0.94 vs. 0.59, P Result(s): The overall in-hospital mortality was 24.9 %. Non-survivors had significantly higher LAR than survivors (0.94 vs. 0.59, P Result(s): The overall in-hospital mortality was 24.9 %. Non-survivors had significantly higher LAR than survivors (0.94 vs. 0.59, P Conclusion(s): LAR is an independent and practical biomarker for predicting in-hospital mortality in SAP patients with AKI, outperforming lactate and albumin alone. Incorporating LAR into clinical assessment may improve early risk stratification and guide management decisions.Copyright © 2025 Elsevier Inc.

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2. **The Safety of Apixaban Compared to Warfarin in Hospitalized Patients with Acute Kidney Injury.**

Authors: Al Yami M.S.;Alfehaid L.;Alshehri A.M.;Alqahtani N.;Almuaither G.;Alonazi S.H.;Alzahrani M.Y.;Badawoud A.M. and Almohammed, O. A.

Publication Date: 2025

Journal: Journal of Clinical Medicine 14(13) (pagination), pp. Article Number: 4685. Date of Publication: 01 Jul 2025

Abstract: Background/Objectives: Apixaban is favored over warfarin for atrial fibrillation (Afib) and venous thromboembolism (VTE) due to its effectiveness, safety, and lack of routine monitoring. However, managing anticoagulation in hospitalized patients with acute kidney injury (AKI) is challenging due to altered pharmacokinetics and limited safety data. This study assesses the safety and efficacy of apixaban versus warfarin in these patients. Method(s): This retrospective chart review at King Abdulaziz Medical City in Riyadh included adult patients (>=18 years) with AKI, as defined by the Kidney Disease Improving Global Outcome (KDIGO) guideline. Primary outcomes were rates of major and minor bleeding within 30 days, as defined by the International Society on Thrombosis and Haemostasis (ISTH), and thrombotic events. Secondary outcomes included 30-day rates of all-cause mortality and hospital readmissions. Result(s): Among 513 patients, 294 received apixaban and 219 received warfarin. Major bleeding within 30 days was significantly lower in the apixaban group (3.4%) compared to warfarin (7.3%) (p = 0.0461). Minor bleeding rates were similar (6.5% apixaban vs. 5.5% warfarin; p = 0.616). Thrombotic events occurred in 6.8% of patients, with no significant difference between apixaban (6.5%) and warfarin (7.3%) (p = 0.739). Mortality rates were 8.0%, with no significant difference (8.8% apixaban vs. 6.8% warfarin; p = 0.3846). Readmission rates were comparable (38.8% for apixaban vs. 39.7% for warfarin; p = 0.9499). Conclusion(s): In hospitalized AKI patients, apixaban was associated with a lower major bleeding risk compared to warfarin, with similar rates of thrombotic events, mortality, and readmissions, suggesting apixaban may be a safer option, warranting further research.

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3. **Incidence and Risk Factors for Acute Kidney Injury After Spine Surgery.**

Authors: Castillo H.;Lingampalli N.;Ekweariri N.R.;Baksh N. and Wojewnik, B.

Publication Date: 2025

Journal: Clinical Spine Surgery (pagination), pp. Date of Publication: 07 Oct 2025

Abstract: STUDY DESIGN: This was a retrospective review using the ACS-NSQIP database. OBJECTIVE(S): To investigate the incidence of acute kidney injury (AKI) in elective spine surgery and identify risk factors associated with its development. SUMMARY OF BACKGROUND DATA: Spine surgery is the most common type of surgery in the United States, with AKI being a frequent postoperative complication. AKI is linked to increased morbidity, prolonged hospital stays, and higher costs. However, limited data exist on specific risk factors for AKI in spine surgery patients. METHOD(S): Patients undergoing elective spine surgery were identified using CPT codes from the ACS-NSQIP database. AKI was defined based on perioperative laboratory values. Propensity matching was applied to identify associated risk factors. Univariate and multivariate analyses were performed on the matched cohort to assess preoperative characteristics and postoperative outcomes. RESULT(S): Among 351,998 elective spine procedures, the incidence of postoperative AKI was 0.10% (373 patients). AKI patients were more likely to be non-Hispanic Black (14.7% vs. 9.5%, P=0.033), have a higher BMI (33.2 vs. 31.5, P=0.006), anemia (49.3% vs. 33.6%, PRESULT(S): Among 351,998 elective spine procedures, the incidence of postoperative AKI was 0.10% (373 patients). AKI patients were more likely to be non-Hispanic Black (14.7% vs. 9.5%, P=0.033), have a higher BMI (33.2 vs. 31.5, P=0.006), anemia (49.3% vs. 33.6%, PRESULT(S): Among 351,998 elective spine procedures, the incidence of postoperative AKI was 0.10% (373 patients). AKI patients were more likely to be non-Hispanic Black (14.7% vs. 9.5%, P=0.033), have a higher BMI (33.2 vs. 31.5, P=0.006), anemia (49.3% vs. 33.6%, PRESULT(S): Among 351,998 elective spine procedures, the incidence of postoperative AKI was 0.10% (373 patients). AKI patients were more likely to be non-Hispanic Black (14.7% vs.

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4. **Outcomes In Acute Kidney Injury Requiring Haemodialysis - A Retrospective Cohort Study.**

Authors: Chetcuti S. and Masengu, A.

Publication Date: 2025

Journal: Ulster Medical Journal 94(2), pp. 77–82

Abstract: Background Acute kidney injury (AKI) requiring intermittent haemodialysis (AKI-IHD) is associated with significant morbidity and high mortality. There is limited data regarding clinical outcomes in individuals with AKI-IHD in Northern Ireland. The aim of this study was to explore clinical outcomes in a cohort of individuals with AKI-IHD, including rates of recovery to self-sustaining kidney function, mortality rates at 30 days and 2 years from start of haemodialysis, and to investigate potential predictors of these key outcomes. Methods The Acute Haemodialysis Unit in the Royal Victoria Hospital, Belfast, Northern Ireland, was established in 2011 to provide onsite inpatient intermittent haemodialysis (IHD) to individuals requiring this supportive treatment. A retrospective review of 188 incident IHD patients in the Royal Victoria Hospital from January 2018-December 2022 was undertaken. Demographic and clinical outcome information on 12th May 2023 was obtained from the nephrology electronic database eMed (Mediqal) and the Northern Ireland Electronic Care Record. Results 188 individuals commenced IHD for the first time as a consequence of life-threatening complications of AKI during the 5-year period (January 2018-December 2022). 75% of these patients were not previously known to the nephrology service, (GROUP A, n=142, mean age 63 years, mean baseline serum creatinine 99 micromol/L) while 25% (GROUP B, n=46, mean age 67 years, mean baseline creatinine 278 micromol/L) had been attending a Nephrology Clinic for at least 12 months. A significant proportion of AKI developed during the inpatient admission rather than at initial presentation (GROUP A 47%, GROUP B 50%). 92% of GROUP A recovered self-sustaining kidney function before discharge, compared to 59% of GROUP B. A lower baseline serum creatinine was the only predictor of kidney recovery in GROUP B, p value=0.02. No predictors for kidney recovery were identified in GROUP A. The diagnosis of either AKI and/or dialysis was documented in 80% of electronic discharge letters for patients in GROUP A but only 54% of letters for patients in GROUP B. The 30-day mortality (from IHD start) in GROUP A was 14% compared to 9% in GROUP B. Individuals with a diagnosis of heart failure were four times more likely to die before discharge (p value=0.02) and those aged >= 70 years twice as likely to die before discharge (p value=0.049). The two-year mortality rate in the two groups was similar (GROUP A 35% vs. GROUP B 37%) despite GROUP B being significantly older. Conclusion In this cohort of individuals with AKI-IHD, managed in the Royal Victoria Hospital, Belfast, the majority recovered self-sustaining kidney function. The mortality rates at 30 days were lower than reported in the literature and may be due to careful patient selection. The poorer outcomes associated with AKI-IHD support and a concomitant diagnosis of heart failure or age >= 70 years (or both) are useful in guiding clinical and patient expectations and decision making.

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5. **Impact of early acute kidney injury on 30-day mortality in intensive care unit patients with chronic obstructive pulmonary disease: a retrospective study using MIMIC-IV.**

Authors: Chi C.;Zhou J. and Hou, S.

Publication Date: 2025

Journal: Journal of Thoracic Disease 17(9), pp. 6404–6415

Abstract: Background: Chronic obstructive pulmonary disease (COPD) is one of the leading causes of death worldwide, and acute kidney injury (AKI) is one of the most common comorbidities in patients with COPD. However, the impact of AKI occurring within 2 days of COPD diagnosis is unclear. Therefore, this study aimed to assess the impact of a 2-day onset of AKI on COPD patient outcomes using the Medical Information Mart for Intensive Care-IV (MIMIC-IV) database. Method(s): This retrospective study is based on version 2.2 of the MIMIC-IV database. We collected clinical data and 30-day all-cause mortality data for patients with COPD in the intensive care unit (ICU), who met the diagnostic criteria for COPD upon admission between 2008 and 2019. We used the International Classification of Diseases, 10th Revision (ICD-10) (codes J44, J440, J441, and J449) to identify COPD. Kaplan-Meier analysis was used to compare 30-day all-cause mortality in COPD patients with and without 2-day AKI. A Cox proportional hazards model was employed to investigate risk factors associated with 30-day all-cause mortality in COPD patients. Result(s): This study included 2,609 patients with COPD, of whom 1,514 (58.03%) developed AKI within 2 days, while 1,095 (41.97%) did not. Patients with COPD, those who developed AKI within 2 days were older than those who did not develop AKI within 2 days [median: 72.7 (65.1, 80.0) vs. 70.6 (63.2, 79.6), P=0.005] and had a higher Simplified Acute Physiology Score III (SAPSIII) score [median: 50.0 (37.0, 67.8) vs. 37.0 (28.0, 48.0), PResult(s): This study included 2,609 patients with COPD, of whom 1,514 (58.03%) developed AKI within 2 days, while 1,095 (41.97%) did not. Patients with COPD, those who developed AKI within 2 days were older than those who did not develop AKI within 2 days [median: 72.7 (65.1, 80.0) vs. 70.6 (63.2, 79.6), P=0.005] and had a higher Simplified Acute Physiology Score III (SAPSIII) score [median: 50.0 (37.0, 67.8) vs. 37.0 (28.0, 48.0), PResult(s): This study included 2,609 patients with COPD, of whom 1,514 (58.03%) developed AKI within 2 days, while 1,095 (41.97%) did not. Patients with COPD, those who developed AKI within 2 days were older than those who did not develop AKI within 2 days [median: 72.7 (65.1, 80.0) vs. 70.6 (63.2, 79.6), P=0.005] and had a higher Simplified Acute Physiology Score III (SAPSIII) score [median: 50.0 (37.0, 67.8) vs. 37.0 (28.0, 48.0), PResult(s): This study included 2,609 patients with COPD, of whom 1,514 (58.03%) developed AKI within 2 days, while 1,095 (41.97%) did not. Patients with COPD, those who developed AKI within 2 days were older than those who did not develop AKI within 2 days [median: 72.7 (65.1, 80.0) vs. 70.6 (63.2, 79.6), P=0.005] and had a higher Simplified Acute Physiology Score III (SAPSIII) score [median: 50.0 (37.0, 67.8) vs. 37.0 (28.0, 48.0), PConclusion(s): The occurrence of 2-day AKI was an independent risk factor for 30-day all-cause mortality in patients with COPD. Clinically, these findings highlight the importance of providing early kidney protection for patients with COPD.

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6. **Acute kidney injury is associated with elevated urinary endotrophin.**

Authors: Clark, Amanda J.;Mendoza Flores, Brenda;Saade, Marie Christelle;Vu, Kyle Q.;Pence, Isaac J.;Zhang, Ningyan;An, Zhiqiang;Bu, Dawei;Scherer, Philipp E. and Parikh, Samir M.

Publication Date: Nov 01 ,2025

Journal: American Journal of Physiology - Renal Physiology 329(5), pp. F685–F689

Abstract: Acute kidney injury (AKI) is prevalent among hospitalized patients. Novel biomarkers are needed to diagnose AKI and target therapies. Endotrophin (ETP) is a molecule released during collagen type VI formation that may promote injury and fibrosis. Although serum ETP elevation has been associated with adverse outcomes in AKI, urinary ETP has not been assessed in AKI, nor has ETP been evaluated in a pediatric population. Urine samples were collected from a tertiary children's hospital. Medical records were reviewed, and patients who met criteria were sorted into three categories: 1) AKI; 2) hospitalized controls; and 3) outpatient controls. ETP was measured using ELISA, and results were corrected to urine creatinine (uETP:Cre). A multivariate linear regression assessed whether demographic variables were independently associated with uETP:Cre. Odds of AKI

were assessed in serial uETP:Cre tertiles using a multivariate logistic regression model that adjusted for patient variables. uETP:Cre was elevated in patients with AKI compared with hospitalized patients without AKI (P P NEW & NOTEWORTHY Endotrophin (ETP) is a molecule released during the formation of type VI collagen that may promote fibrosis and inflammation. Serum ETP is elevated in acute kidney injury (AKI) and associates with adverse outcomes. Urine ETP during AKI has never been assessed. For the first time, this study demonstrates that urine ETP is also elevated during episodes of AKI, representing a novel, noninvasive AKI biomarker that may be clinically actionable.

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7. **Study on the link between neutrophil percentage to albumin ratio and acute kidney injury in severe ischemic stroke patients during hospitalization.**

Authors: Dong C.;Tang Z.;Bai X.;Que F.;Bai L.;Huang Y.;He S. and Pang, R.

Publication Date: 2025

Journal: Frontiers in Neurology 16(pagination), pp. Article Number: 1580248. Date of Publication: 2025

Abstract: Background: This study aimed to investigate the association between the neutrophil percentage-to-albumin ratio (NPAR) and the occurrence of acute kidney injury (AKI) in patients with severe ischemic stroke. Method(s): Based on the EICU Clinical Research Database (EICU-CRD), 1,027 patients with severe ischemic stroke were enrolled (AKI group: 137 cases, non-AKI group: 890 cases). Data description: Non-normally distributed variables were expressed as median (IQR), and categorical variables were presented as frequency (weighted percentage). Statistical analysis: Intergroup comparisons were performed using the Wilcoxon rank-sum test and Rao-Scott chi-square test. Multivariate logistic regression and trend analysis were employed to evaluate the predictive value of NPAR for AKI, with adjustments for confounding factors. Result(s): 1. NPAR levels: The AKI group exhibited significantly higher NPAR than the control group (29+/-10 vs. 24+/-7, pResult(s): 1. NPAR levels: The AKI group exhibited significantly higher NPAR than the control group (29+/-10 vs. 24+/-7, pConclusion(s): Elevated NPAR levels significantly increase the risk of acute kidney injury in patients with severe ischemic stroke, demonstrating a clear dose-response relationship. These findings suggest that NPAR may serve as a potential biomarker.

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8. **Discovery of a resistant cohort to acute kidney injury: insights from patients with septic shock.**

Authors: Fuhrman D.Y.;Libermann T.A.;Hukriede N.A.;Molinari L.;Parikh S.M. and Kellum, J. A.

Publication Date: 2025

Journal: Critical Care 29(1) (pagination), pp. Article Number: 427. Date of Publication: 01 Dec 2025

Abstract: Background: Acute kidney injury (AKI) is a significant complication among critically ill patients, particularly those with sepsis, yet no specific therapies exist. Progress in some diseases has been achieved by analyzing individuals who appear resistant. This study sought to develop a framework to investigate AKI resistance using clinical phenotyping and biomarkers and applied this framework to a large cohort of patients with septic shock. Method(s): We performed a retrospective analysis of patients enrolled in the Protocolized Care for Early Septic Shock (ProCESS) trial. We measured urinary tissue inhibitor of metalloproteinase-2 (TIMP-2), insulin-like growth factor binding protein 7 (IGFBP7), and kidney injury molecule 1 (KIM-1) 6 h after the start of resuscitation. AKI was defined first as high risk by [TIMP-2]*[IGFBP7] > 1.0 (ng/mL)2/1000 and either meeting Kidney Disease Improving Global Outcomes Criteria (KDIGO) criteria within 7 days after the start of resuscitation or having [KIM-1] > 2.0 ng/ml. AKI resistance was defined as the combination of (a) high-risk by [TIMP-2]*[IGFBP7] > 1.0 (ng/mL)2/1000 but without meeting (b) KDIGO AKI criteria nor (c) [KIM-1] > 2.0 ng/ml. We compared clinical characteristics and outcomes across three groups: AKI-resistant, AKI, and reduced risk, which was defined as [TIMP-2]*[IGFBP7] Method(s): We performed a retrospective

analysis of patients enrolled in the Protocolized Care for Early Septic Shock (ProCESS) trial. We measured urinary tissue inhibitor of metalloproteinase-2 (TIMP-2), insulin-like growth factor binding protein 7 (IGFBP7), and kidney injury molecule 1 (KIM-1) 6 h after the start of resuscitation. AKI was defined first as high risk by [TIMP-2]*[IGFBP7] > 1.0 (ng/mL)2/1000 and either meeting Kidney Disease Improving Global Outcomes Criteria (KDIGO) criteria within 7 days after the start of resuscitation or having [KIM-1] > 2.0 ng/ml. AKI resistance was defined as the combination of (a) high-risk by [TIMP-2]*[IGFBP7] > 1.0 (ng/mL)2/1000 but without meeting (b) KDIGO AKI criteria nor (c) [KIM-1] > 2.0 ng/ml. We compared clinical characteristics and outcomes across three groups: AKI-resistant, AKI, and reduced risk, which was defined as [TIMP-2]*[IGFBP7] Result(s): Among 573 patients, 339 (59.2%) had reduced risk, 194 (33.9%) developed AKI, and 40 (7%) were AKI-resistant. Median (IQR) non-renal SOFA scores were lower for patients at reduced risk for AKI (5 [2-7]) than for those with AKI resistance (6 [4.5-8], P Result(s): Among 573 patients, 339 (59.2%) had reduced risk, 194 (33.9%) developed AKI, and 40 (7%) were AKI-resistant. Median (IQR) non-renal SOFA scores were lower for patients at reduced risk for AKI (5 [2-7]) than for those with AKI resistance (6 [4.5-8], P Result(s): Among 573 patients, 339 (59.2%) had reduced risk, 194 (33.9%) developed AKI, and 40 (7%) were AKI-resistant. Median (IQR) non-renal SOFA scores were lower for patients at reduced risk for AKI (5 [2-7]) than for those with AKI resistance (6 [4.5-8], P Conclusion(s): Despite greater illness severity, AKI-resistant patients had similar mortality and length of stay as lower-risk patients but better outcomes than those with AKI. Studying these patients may reveal novel therapeutic targets for AKI prevention and treatment.Copyright © The Author(s) 2025.

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9. **Severe Acute Kidney Injury Associated With Intestinal Ostomies.**

Authors: Gomez-Fregoso, Juan A.;Zaragoza, Jose J.;Gonzalez-Duarte, Juan Alberto;Nuno-Guzman, Carlos M.;Hernandez-Barajas, Eduardo M.;Andrade-Jorge, Zarahi;Leon, Juarez Correa-de;Padilla-Armas, Jorge L.;Ornelas-Ruvalcaba, Rebeca Lizzete;Cabrera-Aguilar, Jose Said;Chavez-Alonso, Gael;Villalvazo-Maciel, Estefania;Orozco-Chan, Carlos E.;Rodriguez-Garcia, Gonzalo;Navarro-Blackaller, Guillermo;Medina-Gonzalez, Ramon;Gallardo-Gonzalez, Alejandro Martinez;Alcantar-Vallin, Luz;Abundis-Mora, Gabriela J.;Garcia-Garcia, Guillermo, et al

Publication Date: Oct ,2025

Journal: Kidney Medicine 7(10), pp. 101093

Abstract: Rationale & Objective: People with ostomies can experience high output, a risk of acute kidney injury (AKI). We evaluated patients with AKI associated with ostomies (ostomy-AKI) and compared with AKI of other etiologies (general-AKI) with the objective of describing their clinical presentation and their association with major adverse kidney events at 10 and 30-90 days (major adverse kidney events [MAKE] 10 and 30-90, respectively). Study Design: A retrospective cohort study. Setting & Participants: Conducted at the Hospital Civil of Guadalajara. We included patients with Ostomy-AKI and General-AKI. Exposures or Predictors: Ostomy-AKI. Outcomes: Describing and differentiating their clinical presentation and their association with MAKE 10 and MAKE 30-90, in addition to its individual components, as death, new requirement for dialysis, or >=25% decline in the estimated glomerular filtration rate from baseline. Analytical Approach: Analyzed the risk by logistic regression model and a multivariate Cox proportional hazard. Results: From February 2020 to October 2023, 84 patients with ostomy-AKI and 348 with general-AKI were included. Most ostomy-AKI were male (78.7 vs 56.2%), the mean ostomy output was 980 mL/day (760-1,700), 82.9% requiring fluid adjustment. Ostomies had been created for cancer (46%) 2.3 months before AKI. The etiology of ostomy-AKI, compare to general-AKI, was more frequently due to hypovolemia (48.9% vs 24.5%) and was of greater AKI severity (stage 3, 82.9% vs 63.9%). Both groups had the same frequency of MAKE 10 (94%), and their individual components. MAKE 30-90 occurred more frequently in ostomy-AKI (65.9% vs 49.3%) as well as mortality (59.5% vs 37%), doubling this risk (OR 2.403; 95% CI, 1.090-5.299; P = 0.03 and OR 2.757; 95% CI, 1.273-5.973; P = 0.01, respectively). Limitations: A retrospective cohort, residual confounding, and small sample size. Conclusions: In comparison with general-AKI, patients with ostomy-AKI present more often with hypovolemia and greater AKI stage, had a higher mortality at 30-90 day follow-up, and a 2.5-fold increase in risk of MAKE. Copyright © 2025 The Authors.; plain-language-summary Hypovolemia is a frequently observed in patients with high

output ostomy. In such cases, the risk of developing acute kidney injury (AKI) is elevated. This complication is strongly related to adverse clinical outcomes. However, the major adverse kidney events during mid-term follow-up have not been adequately explored. In this cohort of patients with AKI, we observed that those with ostomy-related AKI, compared with those without ostomy presented more frequent with hypovolemia attributed to a high output stoma and more severe AKI stages. The risk of major adverse kidney events at 30-90 days was significantly higher, particularly in terms of mortality. Language: English

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10. **Longitudinal modeling of red blood cell distribution width dynamics and mortality risk in critically Ill patients with sepsis-associated acute kidney injury.**

Authors: He R.;Liao Y.;Men L.;Liu J.;Li Z.;Xue R.;Lu J.;Bao K.;Zeng Y. and Yang, S.

Publication Date: 2025

Journal: Plos One 20(10 October) (pagination), pp. Article Number: e0333605. Date of Publication: 01 Oct 2025

Abstract: Background Sepsis-associated acute kidney injury (SA-AKI) is a critical condition with high mortality. Red cell distribution width (RDW) has emerged as a potential dynamic biomarker, but longitudinal RDW changes in SA-AKI remain underexplored. Methods This retrospective cohort study analyzed adult SA-AKI patients from the MIMIC-IV database (2008-2022). Group-Based Trajectory Modeling (GBTM) identified distinct longitudinal RDW patterns. Primary outcome was 28-day all-cause mortality. Secondary outcomes included 90-day mortality, continuous renal replacement therapy (CRRT) requirement, and ICU length of stay. Multivariable Cox models assessed associations. adjustment for any transfusion and any major hemorrhage, and an exclusion analysis in which all transfused patients were removed. Results Among 6,694 patients (mean age 65.5 years, 57.7% male), 28-day mortality was 22.5%. Four RDW trajectory groups were identified: Stable Low (27.8%), Gradual Increase (38.5%), Continuous Increase (27.6%), and Rapid Increase (6.1%). The Rapid Increase group demonstrated highest disease severity scores and poorest laboratory profiles. Compared to the Stable Low group, the Rapid Increase group had significantly elevated 28-day mortality risk after full adjustment (HR 4.27, PCopyright © 2025 He et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

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11. **Acute kidney injury in very old patients-incidence, severity, risk factors and short-term outcomes.**

Authors: HergetRosenthal S.;Stille K.;Albrecht K.;Findeisen H.;Scharpenberg M. and Kribben, A.

Publication Date: 2025

Journal: Nephrology Dialysis Transplantation 40(10), pp. 1949–1960

Abstract: Background and hypothesis. Although old age is a risk factor for acute kidney injury (AKI), data on AKI in individuals >=80 years is limited. We aimed to provide data on AKI incidence, severity and outcomes to identify risk factors for AKI and 30-day mortality in those >=80 years old. Methods. This was a cohort study of 2132 patients admitted to hospital. AKI was defined and classified by extended KDIGO criteria to detect community-acquired AKI, frailty as a clinical frailty score >=5. Primary endpoints were AKI and its stages, secondary endpoints 30-day mortality and major adverse kidney events (MAKE30), a composite of mortality, new renal replacement therapy or serum creatinine values >=200% of baseline, all at 30 days. Results. Median age was 86 years. AKI was frequent (35.3%) and predominately community-acquired (80.2%). The incidence rate of AKI rose with increasing age, reaching the maximum in patients 95 years old. Some 48.9% of AKI patients developed stage 1, while 27.0% and 24.1% reached stages 2 and 3, respectively. Frailty was identified as an independent AKI risk factor {adjusted odds ratio (aOR) 2.42 [95% confidence interval (CI) 1.93-3.03]}. The 30-day mortality rate was significantly higher in AKI compared with non-AKI patients (25.4% vs

7.6%), 44.4% of AKI patients developed MAKE30. Among others, AKI and frailty were risk factors for 30-day mortality [aOR 3.02 (95% CI 2.25-4.07) and 1.53 (95% CI 1.16-2.02)], with frailty exceeding AKI in patients >=90 years. Conclusions. AKI occurs frequently, increases with age, is severe and is predominately community-acquired in individuals >=80 years admitted to hospital. Frailty is a risk factor for AKI besides established factors. Very old patients with AKI more frequently died or developed a high rate of the composite endpoint MAKE30. AKI and frailty are risk factors for 30-day mortality. The effect of frailty on mortality exceeded that of AKI in nonagenarians.

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12. **Effect of acute kidney injury care bundles on patient prognosis: a systematic review and meta-analysis.**

Authors: Huang Y.;Guan L. and Sun, C.

Publication Date: 2025

Journal: BMC Nephrology 26(1) (pagination), pp. Article Number: 519. Date of Publication: 01 Dec 2025

Abstract: Background: Acute kidney injury (AKI) is a severe complication among hospitalized patients. This study aimed to investigate the effect of care bundles on the prognosis of AKI patients. Method(s): Electronic databases were searched from January 2012 to December 2023. Randomized controlled trials and cohort studies evaluating the effect of AKI care bundles were included. A meta-analysis using a random-effects model was conducted to explore the efficacy of the AKI care bundle. Result(s): A total of 12 studies with 30,152 participants were included. Based on the random-effects model, the AKI care bundles significantly improved the AKI severity (RR: 0.77, 95% CI: 0.60-0.98, I2 = 64%) and the need for renal replacement therapy (RR: 0.66, 95% CI: 0.46-0.94, I2 = 14%). However, our study did not find a statistically significant impact of AKI care bundle on the incidence of AKI incidence (RR: 0.95, 95% CI: 0.81-1.13, I2 = 87%), major adverse kidney events (RR: 1.06, 95% CI: 0.65-1.73), in-hospital mortality (RR: 0.93, 95% CI: 0.81-1.07, I2 = 19%), and length of hospital stay (MD: -0.16, 95% CI: -0.80, 0.47). Conclusion(s): This systematic review indicates that the implementation of the AKI bundle is a promising care model for AKI patients. There is a need for more high-quality prospective studies on AKI and patients at high risk of AKI to further determine feasible and standardized models of AKI bundle care. Clinical trial number: Not applicable.

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13. **Sex-specific AKI risk in acute myocardial infarction patients with type 2 diabetes mellitus.**

Authors: Huang, Xiaorui;Wang, Haichen and Yuan, Wei

Publication Date: 2025

Journal: Frontiers in Endocrinology 16, pp. 1654587

Abstract: Background/objectives: While sex differences in cardiovascular outcomes are recognized, their role in the risk and clinical outcomes of acute kidney injury (AKI) among acute myocardial infarction (AMI) comorbid with type 2 diabetes mellitus (T2DM) remains unstratified in clinical guidelines. The aim of this study is to explore the sex differences in the occurrence of AKI among AMI-T2DM patients, so as to provide ideas for the precision management of these patients. Methods: This retrospective cohort study enrolled AMI patients with T2DM from The First Affiliated Hospital of Xi'an Jiaotong University from 2018 to 2022. Clinical data and medication information were collected through the hospital's biospecimen information resource center. Patients enrolled were divided into male group and female group. The primary outcome is AKI during hospitalization. Results: Among 2,631 AMI patients complicated with T2DM (76.1% male, median age 67.0 years (55.9-78.1), acute kidney injury occurred in 13.3% (n = 351) of the cohort. It shows higher AKI incidence in females (17.2% vs. 12.1%, P = 0.026) with distinct sex-specific risks: Higher HbA1c was paradoxically protective in both sexes (female OR = 0.73; male OR = 0.81), hyperkalemia impact (OR = 5.88 vs. 4.02), and HDL protection (OR = 0.16); males exhibited hyperphosphatemia hazard(OR = 14.32). STEMI unexpectedly reduced

AKI risk in both sexes (female OR = 0.36; male OR = 0.64). Univariate regression analysis shows the association between electrolyte imbalances, particularly hyperphosphatemia, and AKI risk was significantly stronger in males (OR = 14.3) than in females (OR = 5.2). Conversely, abnormalities in lipid metabolism demonstrated a significant protective effect against AKI exclusively in females. Additionally, advanced age, higher Killip class, hypoalbuminemia, and elevated fibrinogen were significant predictors of AKI development in both sexes. Conclusions: This study reveals significant sex disparities in AKI risk among T2DM-AMI patients: females show higher incidence, while hyperphosphatemia strongly predicts risk in males and hyperkalemia/Killip class in females. Elevated HbA1c paradoxically reduced risk in both. We recommend sex-specific management: monitor phosphorus in males and potassium with hemodynamics in females. Future work should develop sex-stratified risk models and clarify mechanisms. Copyright © 2025 Huang, Wang and Yuan.

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14. **The Impact of Nurse Staffing and Education on 30-Day Mortality Among Patients Hospitalized for Acute Kidney Injury.**

Authors: Iroegbu C.;KutneyLee A.;Chittams J.;Leak S. and BrooksCarthon, M.

Publication Date: 2025

Journal: Research in Nursing & Health (pagination), pp. Date of Publication: 29 Se 2025

Abstract: Acute kidney injury (AKI) affects approximately 20% of hospitalized patients and is associated with higher mortality, extended hospital stay, and increased costs. While various strategies have been proposed to improve AKI management, the impact of nursing resources on AKI outcomes has not been explored. We sought to examine the association between nursing resources and 30-day mortality among patients hospitalized with AKI. Using a cross-sectional study design, we linked data from the CMS Medicare Provider Analysis and Review file, American Hospital Association Annual Survey, and RN4CAST-NY/IL survey of registered nurses. We identified 24,368 Medicare beneficiaries aged 18-99 years with a primary diagnosis of AKI hospitalized in 155 hospitals in New York and Illinois in 2021. The primary outcome was 30-day mortality. Key independent variables included nurse staffing (patient-to-nurse ratio) and nurse education (proportion of nurses holding a bachelor's degree or higher). Covariates were patient demographics, comorbidities, and hospital characteristics. The 30-day mortality rate was 10.5%. In adjusted logistic regression models, each additional patient per RN increased the odds of 30-day mortality by 7% (OR = 1.07, 95% CI [1.01-1.13], p Copyright © 2025 The Author(s). Research in Nursing & Health published by Wiley Periodicals LLC.

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15. **Long-Term Outcomes of Acute Kidney Injury**

Authors: Jacquemyn X., Ganduboina R., Sa M., SernaGallegos D., Hasan I., Ogami T., Singh M. and Sultan, I.
Patients with Type B Aortic Dissection: a Systematic Review and Meta-Analysis

Publication Date: 2025

Publication Details: Canadian Journal of Cardiology. Conference: Canadian Journal of Cardiology. Quebec Canada. 41(10 Supplement) (pp S217); Elsevier Inc.,

Abstract: BACKGROUND: Acute kidney injury (AKI) is a common complication in critically ill patients and frequently occurs in patients with acute aortic syndromes. However, it has not been extensively studied in the context of acute type B aortic dissection (TBAD). AKI in TBAD can arise from several mechanisms, including hypotension, renal malperfusion and preexisting kidney dysfunction. In some cases, thoracic endovascular aortic repair (TEVAR) is performed to treat complicated TBAD and select uncomplicated TBAD with high-risk features. We sought to evaluate the incidence and long-term impact of AKI in patients with TBAD. METHODS AND RESULTS: We performed a study-level meta-analysis of reconstructed time-to-event data from Kaplan-Meier curves of studies published between 2000-2024. Eligibility criteria included populations with TBAD who received either medical therapy or TEVAR, and the outcome was overall survival during longitudinal follow-up. This meta-analysis was designed

according to the PECOS framework and conducted in compliance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The study protocol was prospectively registered in the PROSPERO database (CRD420250654959). In total, 4 studies met our eligibility criteria and included a total of 1,051 patients with TBAD included in the Kaplan-Meier curves. Among these, 390 patients (37.1%) presented with AKI at the time of hospitalization. Overall, the presence of AKI was associated with a significantly increased risk of mortality compared to patients without AKI (HR: 1.59; 95% CI: 1.23-2.06; P CONCLUSION(S): AKI is prevalent in TBAD patients and associated with increased mortality, emphasizing the need for further investigation into its underlying mechanisms and the formulation of targeted management strategies to enhance patient outcomes. [Formula presented]

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16. **Spinal cord injury is an independent risk factor for acute kidney injury in traumatic spine-injured patients in the National Trauma Data Bank.**

Authors: Kanter J.H.;Raja V.;Bonney P.A.;Gumbel J.H.;Tarapore P.E.;Huang M.C.;Manley G.T. and DiGiorgio, A. M.

Publication Date: 2025

Journal: Journal of Spinal Cord Medicine (pagination), pp. Date of Publication: 2025

Abstract: Introduction: Patients with spine injuries are at risk of acute kidney injury (AKI) through several mechanisms. Objective(s): This study aims to assess the rate of severe AKI in a nationally representative sample of patients with spine injuries and determine whether SCI is an independent risk factor. Method(s): We conducted a cohort study utilizing the National Trauma Databank (NTDB) Patients included were 18 years or older with cervical or thoracic spine injuries (spine fractures and/or spinal cord injury) based on International Classification of Disease (ICD) codes from 2017 to 2022. Patients with pre-existing renal impairment were excluded. Logistic regression was used to determine the association between demographic and injury variables with incident AKI. Result(s): 313,838 spinal injury patients were analyzed, of which 3,288 (1.05%) developed AKI. Patients with AKI were older (61 +/- 19 vs. 55 +/- 21 years, P Result(s): 313,838 spinal injury patients were analyzed, of which 3,288 (1.05%) developed AKI. Patients with AKI were older (61 +/- 19 vs. 55 +/- 21 years, P Result(s): 313,838 spinal injury patients were analyzed, of which 3,288 (1.05%) developed AKI. Patients with AKI were older (61 +/- 19 vs. 55 +/- 21 years, P Result(s): 313,838 spinal injury patients were analyzed, of which 3,288 (1.05%) developed AKI. Patients with AKI were older (61 +/- 19 vs. 55 +/- 21 years, P Result(s): 313,838 spinal injury patients were analyzed, of which 3,288 (1.05%) developed AKI. Patients with AKI were older (61 +/- 19 vs. 55 +/- 21 years, P Conclusion(s): AKI is associated with morbidity and mortality in patients with spine injuries. Comorbidities and more severe injuries, including the presence of SCI, are associated with AKI. More work is warranted to understand mechanisms of AKI in these patients.

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17. **Admission Blood Gas Variables and Electrolytes in Predicting Significant Endpoints in Intensive Care Unit Patients with Emerging Acute Kidney Injury.**

Authors: Khader B.;Lehmann R.;Marahrens B.;Ritter O. and Patschan, D.

Publication Date: 2025

Journal: Kidney & Blood Pressure Research 50(1), pp. 732–738

Abstract: INTRODUCTION: Acute kidney injury (AKI) is a prevalent issue in intensive care units (ICUs). There is a paucity of data regarding the use of blood gas and electrolyte measurements in predicting the risk of significant endpoints (kidney replacement therapy [KRT], death) in emerging, yet undiagnosed AKI. METHOD(S): Retrospective, observational, single-center study. The study documented 4 admission electrolytes (serum sodium, potassium, ionized calcium, and phosphate) and 3 admission blood gas variables (arterial pH, actual bicarbonate, pCO_2). The endpoints of the study were the need for KRT and death in the ICU. RESULT(S): A total of 213 patients were included in the

study. The ICU mortality rate was 31%, and 22.5% of all subjects required at least one individual KRT session. There were significant differences in admission serum sodium and phosphate levels between survivors and non-survivors (both lower in survivors), and in arterial pH and actual bicarbonate levels (both higher in survivors). The majority of all tested variables were identified as independent predictors of either the need for KRT or ICU death. CONCLUSION(S): Integrating admission electrolytes and blood gas variables may potentially aid in identifying subsets of AKI patients at risk of death.Copyright © 2025 The Author(s). Published by S. Karger AG, Basel.

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18. **Explainable AI identifies key biomarkers for acute kidney injury prediction in the ICU.**

Authors: Koozi H.;Engstrom J.;Friberg H. and Frigyesi, A.

Publication Date: 2025

Journal: Intensive Care Medicine Experimental 13(1) (pagination), pp. Article Number: 106. Date of Publication: 01 Dec 2025

Abstract: Background: Early identification of acute kidney injury (AKI) in the intensive care unit (ICU) remains challenging. We aimed to identify key predictors of new-onset AKI within 48 h after ICU admission and renal replacement therapy (RRT) need within 7 days, using explainable artificial intelligence (XAI) with eXtreme Gradient Boosting (XGBoost). We also assessed whether XGBoost improved predictive performance. Method(s): A retrospective cohort study across four ICUs was conducted as part of the SWECRIT biobank project. Blood samples were prospectively obtained at ICU admission and retrospectively analysed. AKI was defined by the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. XAI models were compared with logistic regression models, incorporating emerging biomarkers and routine clinical data at ICU admission. SHapley Additive exPlanations (SHAP) were used to identify key predictors. Discrimination was assessed using the mean area under the receiver operating characteristic curve (AUC). Result(s): The study included 4732 admissions, with 2603 analysed for new-onset AKI and 4716 for RRT. Top predictors of new-onset AKI were urine output, endostatin, baseline creatinine, lactate, and albumin. Top predictors of RRT were creatinine, urine output, endostatin, neutrophil gelatinase-associated lipocalin (NGAL), and the Simplified Acute Physiology Score (SAPS) 3. Several clinically relevant non-linear relationships were revealed. XGBoost outperformed logistic regression for both new-onset AKI (mean AUC 0.76, 95% CI 0.70-0.81 vs. 0.74, 95% CI 0.68-0.81; p Result(s): The study included 4732 admissions, with 2603 analysed for new-onset AKI and 4716 for RRT. Top predictors of new-onset AKI were urine output, endostatin, baseline creatinine, lactate, and albumin. Top predictors of RRT were creatinine, urine output, endostatin, neutrophil gelatinase-associated lipocalin (NGAL), and the Simplified Acute Physiology Score (SAPS) 3. Several clinically relevant non-linear relationships were revealed. XGBoost outperformed logistic regression for both new-onset AKI (mean AUC 0.76, 95% CI 0.70-0.81 vs. 0.74, 95% CI 0.68-0.81; p Result(s): The study included 4732 admissions, with 2603 analysed for new-onset AKI and 4716 for RRT. Top predictors of new-onset AKI were urine output, endostatin, baseline creatinine, lactate, and albumin. Top predictors of RRT were creatinine, urine output, endostatin, neutrophil gelatinase-associated lipocalin (NGAL), and the Simplified Acute Physiology Score (SAPS) 3. Several clinically relevant non-linear relationships were revealed. XGBoost outperformed logistic regression for both new-onset AKI (mean AUC 0.76, 95% CI 0.70-0.81 vs. 0.74, 95% CI 0.68-0.81; p Conclusion(s): XGBoost identified key predictors of early new-onset AKI and RRT need in the ICU, highlighting both emerging (endostatin, NGAL) and established biomarkers (lactate, albumin), alongside known clinical predictors. It also improved predictive accuracy for both outcomes. Further clinical evaluation of these biomarkers and XAI models is warranted.Copyright © The Author(s) 2025.

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19. **Leveraging artificial intelligence for early detection and prediction of acute kidney injury in clinical practice.**

Authors: Liang B.;Ma C. and Lei, M.

Publication Date: 2025

Journal: Frontiers in Physiology 16(pagination), pp. Article Number: 1612900. Date of Publication: 2025

Abstract: Introduction: Acute kidney injury (AKI) is a severe and rapidly developing condition characterized by a sudden deterioration in renal function, impairing the kidneys' ability to excrete metabolic waste and regulate fluid balance. Timely detection of AKI poses a significant challenge, largely due to the reliance on retrospective biomarkers such as elevated serum creatinine, which often manifest after substantial physiological damage has occurred. The deployment of AI technologies in healthcare has advanced early diagnostic capabilities for AKI, supported by the predictive power of modern machine learning frameworks. Nevertheless, many traditional approaches struggle to effectively model the temporal dynamics and evolving nature of kidney impairment, limiting their capacity to deliver accurate early predictions. Method(s): To overcome these challenges, we propose an innovative framework that fuses static clinical variables with temporally evolving patient information through a Long Short-Term Memory (LSTM)-based deep learning architecture. This model is specifically designed to learn the progression patterns of kidney injury from sequential clinical data-such as serum creatinine trajectories, urine output, and blood pressure readings. To further enhance the model's temporal sensitivity, we incorporate an attention mechanism into the LSTM structure, allowing the network to prioritize critical time segments that carry higher predictive value for AKI onset. Result(s): Empirical evaluations confirm that our approach surpasses conventional prediction methods, offering improved accuracy and earlier detection. Discussion(s): This makes it a valuable tool for enabling proactive clinical interventions. The proposed model contributes to the expanding landscape of AI-enabled healthcare solutions for AKI, supporting the broader initiative to incorporate intelligent systems into clinical workflows to improve patient care and outcomes.

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20. **Integrating Pre- and Postoperative Systemic Inflammatory Markers for Acute Kidney Injury Prediction Following Radical Cystectomy: A Multi-Center Retrospective Study.**

Authors: Liu, Zhongqi;Fan, Peng;Lu, Yanan;Cao, Minghui;Yao, Weifeng;Chen, Dongtai and Ji, Fengtao

Publication Date: 2025

Journal: Journal of Inflammation Research 18, pp. 13335–13345

Abstract: Purpose: The present study aimed to investigate the association of perioperative dynamic changes of systemic inflammation markers with AKI after radical cystectomy and their predictive value through machine learning algorithms. Patients and Methods: Patients undergoing radical cystectomy with urinary diversion for bladder cancer from 2013 to 2022 at three university-affiliated tertiary hospitals were gathered. Perioperative dynamic changes of systemic inflammatory markers were calculated based on peripheral blood cell counts from pre- and post-operative values and categorized using restricted cubic splines (RCS). The number of positive changes in these markers was recorded as the perioperative inflammation index. Multivariable logistic regression was utilized to identify risk factors for AKI after radical cystectomy. AKI prediction models were constructed through various supervised machine learning algorithms and evaluated by the area under the receiver operating characteristic curve (AUROC). Results: 727 patients were finally enrolled in the study, with 151 (20.8%) patients experiencing AKI following radical cystectomy. Postoperative hemoglobin (p = 0.003; OR, 0.977; 95% CI, 0.962-0.992), albumin level (p = 0.007; OR, 0.906; 95% CI, 0.843-0.974), intraoperative fluid infusion rate (p : 727 patients were finally enrolled in the study, with 151 (20.8%) patients experiencing AKI following radical cystectomy. Postoperative hemoglobin (p = 0.003; OR, 0.977; 95% CI, 0.962-0.992), albumin level (p = 0.007; OR, 0.906; 95% CI, 0.843-0.974), intraoperative fluid infusion rate (p : 727 patients were finally enrolled in the study, with 151 (20.8%) patients experiencing AKI following radical cystectomy. Postoperative hemoglobin (p = 0.003; OR, 0.977; 95% CI, 0.962-0.992), albumin level (p = 0.007; OR, 0.906; 95% CI, 0.843-0.974), intraoperative fluid infusion rate (p Conclusion: The association between perioperative dynamic changes of inflammatory markers and AKI after radical cystectomy reinforced the necessity of perioperative inflammatory evaluation. AKI predictive models, integrating perioperative metrics, enable early identification and optimize

perioperative management for AKI prevention. Copyright © 2025 Liu et al.

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21. **Aspirin use is associated with attenuated risk of severe acute kidney injury in septic patients: a dual-center retrospective analysis from MIMIC-IV and eICU cohorts.**

Authors: Luo Y.;Li H.;Li J.;Li D.;Qiu Z.;Lei S.;Fu Q. and Xia, Z.

Publication Date: 2025

Journal: Renal Failure 47(1) (pagination), pp. Article Number: 2568650. Date of Publication: 2025

Abstract: Sepsis is a systemic inflammatory response syndrome caused by infection, and sepsis-associated acute kidney injury (AKI) markedly increases mortality. Although aspirin's anti-inflammatory properties show therapeutic promise in sepsis, its specific renal protective effects in septic patients remain underexplored. This study investigated the association between aspirin exposure and severe acute kidney injury in septic patients using two databases: MIMIC-IV (73,181 ICU stays, 2008-2022), and eICU (200,859 ICU stays, 2014-2015). Among 45,562 septic patients, cohorts were stratified by aspirin exposure, and outcome variables were compared using multiple statistical adjustment methods including multivariable regression and propensity score analysis. The primary outcome was severe AKI incidence, with secondary outcomes including overall AKI, continuous renal replacement therapy (CRRT), and mortality. Our study suggests that aspirin exposure was associated with significantly lower severe AKI incidence in both databases (adjusted OR 0.35 in MIMIC-IV; 0.84 in eICU), representing risk reductions ranging from 16% to 65%. Secondary outcomes showed that aspirin exposure was associated with reduced kidney injury incidence, mortality rates and continuous renal replacement therapy requirements. These protective associations were consistent with sensitivity analyses and subgroup analyses. Furthermore, these protective effects were observed across different aspirin doses and formulations. However, aspirin may also increase the risk of thrombocytopenia and gastrointestinal bleeding. Our findings suggest that aspirin may be associated with reduced risk of sepsis-related kidney injury and mortality. Nevertheless, prospective randomized controlled trials are needed to confirm these associations, and individualized risk-benefit assessments remain essential before clinical application.Copyright © 2025 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

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22. **Perioperative acute kidney injury: current prevention, detection, and management strategies.**

Authors: Mangano N.;Nguyen N.;Davis M.;Key B.;Feit A. and Bergese, S. D.

Publication Date: 2025

Journal: Journal of Anesthesia (pagination), pp. Date of Publication: 2025

Abstract: Acute kidney injury (AKI) is a common and serious perioperative complication with several diverse etiologies. Elderly surgical patients are particularly vulnerable, experiencing higher rates of AKI and suffering worse outcomes, including multiorgan dysfunction, elevated mortality rates, and a heightened risk of developing chronic kidney disease (CKD) or end-stage renal disease (ESRD). AKI also imposes a significant economic burden, increasing healthcare costs due to prolonged hospitalizations and increased resource utilization. Given the limited treatment options for AKI, prevention is paramount. This involves identifying and optimizing modifiable patient, surgical, and anesthetic risk factors, implementing evidence-based care bundles in high-risk patients, avoiding potential causes of kidney insult, and employing novel preventive strategies such as remote-ischemic preconditioning. Early diagnosis is crucial when prevention fails, allowing timely intervention before irreversible kidney damage occurs. Novel diagnostic tools show promise in improving the accuracy and timeliness of AKI detection, facilitating prompt management. While renal-replacement therapy (RRT) remains the only definitive treatment for AKI, more refined criteria for its initiation are needed to enhance its delivery and improve patient outcomes.Copyright © The Author(s), under exclusive licence to Japanese Society of Anesthesiologists 2025.

23. **Energy drink-induced acute kidney injury: a case report and review of the literature.**

Authors: Murt, A.

Publication Date: 2025

Journal: Journal of Medical Case Reports 19(1) (pagination), pp. Article Number: 522. Date of Publication: 01 Dec 2025

Abstract: Background: Nephrotoxic insults are among the most common causes of acute kidney injuries. The offending drug or agent should be defined swiftly and must be stopped. In some situations, the culprit agent may not be obvious. Energy drink consumption has reportedly increased in recent years, with ads claiming that energy drinks strengthen physical and mental performance. However, when consumed in uncontrolled amounts, they may have negative effects on health. An energy drink-induced acute kidney injury is reported in this case presentation. There have been only four similar cases in the literature. Case presentation: A 21-year-old male patient of Turkish origin applied to the emergency department with nausea, vomiting, and malaise. He was admitted, because the laboratory values revealed that he had stage 3 acute kidney injury. He did not have any medical or surgical histories. He did not use any drugs, but he stated that he has consumed 2 L of an energy drink product per day for the past month. Differential diagnosis work-up pointed to an energy drink-induced acute kidney injury. His serum creatinine increased to a level as high as 10.32 mg/dL, but he did not need any renal replacement therapy. Creatinine levels normalized in about 2 weeks after withholding energy drinks. Conclusion(s): Depending on their content and consumption amount, energy drinks may cause acute kidney injury. There have been four previous cases in the literature and they were reviewed for a comparison with this case.

24. **Prevention and Management of Perioperative Acute Kidney Injury: A Narrative Review.**

Authors: O'Dell Duplechin M.;Folds G.T.;Duplechin D.P.;Ahmadzadeh S.;Myers S.H.;Shekoohi S. and Kaye, A. D.

Publication Date: 2025

Journal: Diseases 13(9) (pagination), pp. Article Number: 295. Date of Publication: 01 Se 2025

Abstract: Acute kidney injury is a common complication in the perioperative setting, especially among patients undergoing high-risk surgeries such as cardiac, abdominal, or orthopedic procedures. Characterized by a sudden decline in renal function, perioperative acute kidney injury is typically diagnosed based on rising serum creatinine or reduced urine output. Its incidence varies depending on the surgical type and patient risk factors, but even mild cases are linked to significant consequences, including prolonged hospital stays, enhanced healthcare costs, and higher mortality rates. Despite advances in surgical and anesthetic care, acute kidney injury remains a major cause of morbidity. The development of acute kidney injury in the perioperative period often results from a complex interplay of hypoperfusion, ischemia-reperfusion injury, inflammation, and exposure to nephrotoxic agents. While some predictive models and biomarkers, such as neutrophil gelatinase-associated lipocalin (NGAL), have shown promise in identifying patients at risk, widespread adoption remains inconsistent, and standardized prevention protocols are lacking. This narrative review synthesizes current evidence on the pathophysiology, risk factors, and prevention strategies for perioperative acute kidney injury. It explores emerging tools for risk stratification and early diagnosis, including novel biomarkers and learning-based models. Additionally, it highlights pharmacologic and non-pharmacologic measures to reduce acute kidney injury incidence, such as balanced fluid management, renal-protective anesthetic strategies, and bundle-based care approaches. Emphasizing a multidisciplinary and personalized model of care, this review highlights the need for coordinated efforts between anesthesiologists, surgeons, and nephrologists to identify modifiable risks and improve outcomes. Reducing the incidence of perioperative acute kidney injury has the potential to enhance recovery, preserve long-term kidney function, and ultimately improve surgical safety.

25. **Association of appropriate empiric antimicrobial therapy with acute kidney injury in gram-negative sepsis.**

Authors: Ohnuma T.;Khandelwal S.;Chihara S.;Treggiari M.;Privratsky J.R.;Wongsripuemtet P.;Messina J.A.;Raghunathan K. and Krishnamoorthy, V.

Publication Date: 2025

Journal: Journal of the Intensive Care Society (pagination)

Abstract: Background: Despite advances in sepsis management, the relationship between appropriate empiric antibiotic therapy and acute kidney injury (AKI) in sepsis remains unclear. This study aimed to examine the association of appropriate empiric antimicrobial therapy with AKI in early onset sepsis caused by gram-negative bloodstream infections. Method(s): We conducted a retrospective study of gram-negative bloodstream infection episodes in adult patients with early onset sepsis, using the Premier Healthcare Database from 2016 to 2020. The exposure was appropriate empiric antibiotic therapy determined by antibiotic regiments and antimicrobial susceptibilities of pathogens. The primary outcome was development of AKI or death by day 7 after the onset of sepsis. AKI was defined using the Kidney Disease Improving Global Outcome criteria based on serum creatinine levels, as urine output data were not available. The multivariable regression analysis was used to examine the association between appropriate empiric antibiotic therapy and the outcomes. Result(s): We identified 8565 patients with gram negative sepsis. In the total sample, the proportion of appropriate empiric antibiotic therapy was 93.2%, and the prevalence of AKI was 85.3%. Appropriate empiric antibiotic therapy was associated with decreased risk of AKI or death (adjusted odds ratio 0.70, 95% CI 0.52-0.94). For secondary outcomes, appropriate empiric antibiotic therapy was associated with lower AKI, shorter hospital LOS, lower C. difficile infections. However, it was not associated with in-hospital mortality. Conclusion(s): Appropriate empiric antibiotic therapy was associated with lower AKI in gram-negative sepsis. Early administration of appropriate antibiotics may prevent development of AKI.

26. **'Point-of-Care Ultrasound (POCUS) guided volume management and the effect of cirrhotic cardiomyopathy on acute kidney injury outcomes in cirrhosis'.**

Authors: Premkumar M.;Kajal K.;Roy A.;Izzy M.;Divyaveer S.;Kulkarni A.V.;Artru F.;Sharma P.;Sandhu A.;Sihag B.;Bahl A.;De A.;Verma N.;Taneja S.;Duseja A.K.;Pal A.;Bhujade H. and Reddy, K. R.

Publication Date: 2025

Journal: Hepatology (Baltimore, Md.) (pagination), pp. Date of Publication: 23 Se 2025

Abstract: BACKGROUND AIMS: Point-of-care ultrasound(POCUS) helps in assessing volume status and cirrhotic cardiomyopathy(CCM). We evaluated POCUS-guided volume management and explored clinical predictors, including CCM, of acute kidney injury(AKI) reversal and need for renal replacement therapy(RRT), and survival, in cirrhosis and AKI between January 2023 and November 2024. Exclusions were patients with structural cardiac disease, portopulmonary hypertension, acute variceal bleeding, and septic shock. METHOD(S): POCUS was performed at ICU admission(Timezero), 24h,48h,72h, and as needed to guide volume management, and determine inferior vena cava(IVC) indices and cardiac index. CCM was defined by >=3 of 4 variables(septal e' velocity, E/e' integral, left atrial volume index, tricuspid regurgitant velocity); clinical data were collected. RESULT(S): 372 patients with AKI [84.7% men, aged 50.3+/-12 years, MELD-Na 23.9+/-5.1]; 296(79.6%), 42(11.3%), and 34(9.1%) were classified as hypovolemic, euvolemic, and hypervolemic at Timezero. Following POCUS-guided volume management, 231(62%) had pre-renal AKI; 61(16.4%) hepatorenal syndrome(HRS-AKI); 25(6.7%) HRS-AKD; 32(8.6%) HRS-CKD, while 23(6.2%) had a multifactorial etiology. CCM was diagnosed in 34.7%; 32.9% of pre-renal AKI, 75.4% in HRS-AKI, and 28% in HRS-AKD(pRESULT(S): 372 patients with AKI [84.7% men, aged 50.3+/-12 years, MELD-Na 23.9+/-5.1];

296(79.6%), 42(11.3%), and 34(9.1%) were classified as hypovolemic, euvolemic, and hypervolemic at Timezero. Following POCUS-guided volume management, 231(62%) had pre-renal AKI; 61(16.4%) hepatorenal syndrome(HRS-AKI); 25(6.7%) HRS-AKD; 32(8.6%) HRS-CKD, while 23(6.2%) had a multifactorial etiology. CCM was diagnosed in 34.7%; 32.9% of pre-renal AKI, 75.4% in HRS-AKI, and 28% in HRS-AKD(pRESULT(S): 372 patients with AKI [84.7% men, aged 50.3+/-12 years, MELD-Na 23.9+/-5.1]; 296(79.6%), 42(11.3%), and 34(9.1%) were classified as hypovolemic, euvolemic, and hypervolemic at Timezero. Following POCUS-guided volume management, 231(62%) had pre-renal AKI; 61(16.4%) hepatorenal syndrome(HRS-AKI); 25(6.7%) HRS-AKD; 32(8.6%) HRS-CKD, while 23(6.2%) had a multifactorial etiology. CCM was diagnosed in 34.7%; 32.9% of pre-renal AKI, 75.4% in HRS-AKI, and 28% in HRS-AKD(pCONCLUSION(S): POCUS facilitates volume management and AKI reversal in cirrhosis. CCM predicts poor outcomes in HRS-AKI, need for RRT, and mortality.

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27. **Using Predictive Models and AI for AKI Research.**

Authors: Rajagopal M.;Chan L. and Nadkarni, G. N.

Publication Date: 2025

Journal: Seminars in Nephrology (pagination)

Abstract: Acute kidney injury (AKI), a drop in kidney function with multiple etiologies, is a common complication in hospitalized patients and is associated with poorer patient outcomes. With the advent of electronic health records, machine learning algorithms have been developed that can predict the incidence and severity of AKI, AKI persistence, as well as patient outcomes like mortality and the need for kidney replacement therapies. Furthermore, it can risk-stratify patients based on early presentations to aid with clinical management. Newer technologies like natural language processing and generative artificial intelligence (AI) (e.g., ChatGPT) also show promise in the realm of AKI prediction and management. This review provides an overview of the role of AI in adults with AKI, as well as explores some limitations and ethical considerations that need to be addressed as we move forward. Semin Nephrol 36:x-xx

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28. **Prevalence and prognostic significance of malnutrition in critically ill patients with acute kidney injury.**

Authors: Shi Y.;Duan H.;Liu J.;Shi X.;Zhao M.;Fang Y. and Zhang, Y.

Publication Date: 2025

Journal: Journal of Renal Nutrition : The Official Journal of the Council on Renal Nutrition of the National Kidney Foundation (pagination), pp. Date of Publication: 01 Oct 2025

Abstract: BACKGROUND: Malnutrition is a significant factor associated with adverse outcomes in various diseases. However, the prevalence of malnutrition among critically ill patients with acute kidney injury (AKI) and its impact on outcomes have not been thoroughly investigated. The purpose of this study was to investigate the prevalence and prognostic significance of malnutrition in critically ill patients with AKI. METHOD(S): Critically ill patients with AKI were selected from the Medical Information Mart for Intensive Care IV through a retrospective cohort study. The nutritional status of these patients was assessed using Prognostic Nutrition Index (PNI), Geriatric Nutritional Risk Index (GNRI), and Controlled Nutritional Status (CONUT). Cox proportional hazard model, Kaplan-Meier analysis and limited cubic spline were used to evaluate the association between malnutrition risk and 28-day mortality. Additionally, logistic regression, Cox regression and linear regression utilized to assess the correlation between malnutrition risk and in-hospital mortality, 90-day mortality and hospital length of stay, respectively. RESULT(S): Of the 1129 patients enrolled, 49.6%, 80.0%, and 57.7% were found to have moderate to severe malnutrition based on PNI, GNRI, and CONUT scores, respectively. Higher risk of malnutrition was associated with lower hemoglobin, lymphocytes, serum albumin, total cholesterol, higher creatinine,BUN, SOFA, SAPS II, higher mortality, and longer hospital stay. Among

the patients, 215 (19.04%) patients died within 28 days of ICU admission. Malnutrition was significantly associated with 28-day mortality risk compared with good nutrition (adjusted hazard ratio for severe malnutrition: PNI:HR 1.57, 95% CI 1.15-2.14; GNRI:HR 1.62, 95% CI 1.01-2.55; CONUT:HR 2.51, 95% CI 1.31-4.80). These nutritional measures further enhanced the predictive accuracy of 28-day mortality, with the CONUT score demonstrating the strongest association. Furthermore, logistic regression, Cox regression, and linear regression models respectively revealed that malnutrition risk was significantly associated with in-hospital mortality, 90-day mortality, and hospital length of stay. CONCLUSION(S): Malnutrition is prevalent among critically ill patients with AKI and significantly correlates with 28-day mortality, in-hospital mortality, 90-day mortality and hospital length of stay. Further research is necessary to evaluate the impact of malnutrition screening and nutritional interventions on improving adverse outcomes.

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29. **Risk factors, outcomes, and early prediction of cardiac surgery-associated acute kidney injury: a post hoc subgroup analysis of the Epidemiology of Surgery Associated Acute Kidney Injury study.**

Authors: Strauss C.;Albert F.;Bormann E.;Engelman D.T.;Bellomo R. and Zarbock, A.

Publication Date: 2025

Journal: British Journal of Anaesthesia (pagination), pp. Date of Publication: 2025

Abstract: Background: Cardiac surgery-associated acute kidney injury (CSA-AKI) is a common and important complication. The risk factors for CSA-AKI remain poorly described. We aimed to identify risk factors for CSA-AKI and develop a risk score for persistent CSA-AKI. Method(s): We performed a post hoc subgroup analysis restricted to patients who underwent cardiac surgery within the Epidemiology of Surgery Associated Acute Kidney Injury (EPIS-AKI) study. CSA-AKI was defined as AKI (according to the Kidney Disease: Improving Global Outcomes criteria) within 72 h after surgery. Persistent CSA-AKI was defined as CSA-AKI lasting >48 h. We performed multivariable logistic regression analyses to identify risk factors for CSA-AKI and related outcomes. Result(s): The original EPIS-AKI study included 3101 cardiac surgery patients. Of these, 802 (25.9%) developed CSA-AKI. On follow-up, 279 of the 802 patients (34.8%) developed persistent CSA-AKI. We identified independent risk factors for CSA-AKI, moderate/severe CSA-AKI, and persistent CSA-AKI. Patients with persistent CSA-AKI had a higher ICU and hospital mortality compared with patients with transient CSA-AKI. We developed a risk score for predicting persistent CSA-AKI with an area under the receiver operating characteristic curve of 0.79 (95% confidence interval, 0.7355-0.8457). Conclusion(s): Overall, 25% of cardiac surgery patients developed CSA-AKI, and 33% of these patients experienced persistent CSA-AKI, which was associated with poor outcomes. We developed a risk score for predicting persistent CSA-AKI, the 'EPIS CSA-AKI risk score'. Pending further external validation, the score might be used to identify patients who have a high risk for developing persistent CSA-AKI.

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30. **The association of systemic inflammatory response syndrome with 30-day mortality in critically ill cirrhosis patients with acute kidney injury: An analysis of the Medical Information Mart for Intensive Care-IV database.**

Authors: Tian J.;Zhou T.;Cui R.;Sun J. and Du, X.

Publication Date: 2025

Journal: Science Progress 108(4), pp. 368504251387229

Abstract: ObjectivesTo evaluate the association between systemic inflammatory response syndrome (SIRS) and 30-day mortality in critically ill cirrhosis patients with acute kidney injury (AKI).MethodsThis retrospective cohort study utilized the Medical Information Mart for Intensive Care-IV database. Multivariable Cox proportional hazard regression, with covariates selected by Least Absolute Shrinkage and Selection Operator regression, was employed to assess the association. Model performance was evaluated with the Brier score, and the additive predictive value of SIRS to the model for end-stage

liver disease (MELD) and sequential organ failure assessment (SOFA) scores was compared using the DeLong test.ResultsAmong the 1797 enrolled patients, the 30-day mortality rate was 38.23% (n = 687). A higher SIRS was independently associated with increased 30-day mortality (adjusted hazard ratio: 1.31; 95% confidence interval: 1.20-1.43). This association remained consistent across subgroups stratified by age, gender, albumin infusion, sepsis, AKI stage, and etiology (all p < 0.05). The predictive performance for mortality was significantly improved when SIRS was combined with MELD or SOFA scores compared to each score alone [areas under the curve: SIRS + MELD vs. MELD, 0.711 vs. 0.697; SIRS + SOFA vs. SOFA, 0.635 vs. 0.617].ConclusionAn elevated SIRS score was associated with a higher risk of short-term mortality in critically ill cirrhosis patients with AKI. As an easily obtainable bedside metric, SIRS represents a valuable tool for identifying high-risk patients, potentially enabling timely clinical interventions.

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31. **Relationship between frailty and acute kidney injury after hip fracture surgery in the elderly.**

Authors: Ye S.J.;Zhang K.H.;Sun X.M.;Zhang H.K.;Huang Z.L.;Yang D. and Zhang, L. S.

Publication Date: 2025

Journal: Medical Journal of Chinese People's Liberation Army 50(7), pp. 831–838

Abstract: ObjectiveTo analyze the relationship between frailty and acute kidney injury (AKI) after hip fracture surgery in the elderly. MethodsA total of 405 elderly patients who underwent hip fracture surgery in Jieyang People's Hospital from August 2021 to January 2023 were retrospectively analysed. According to the modified frailty index (mFI), they were divided into frail group (mFI>=0.27, n=112) and non-frail group (mFI.27, n=293). Postoperative AKI was defined according to the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. After 1:1 propensity score matching (PSM), 100 cases in each group were successfully matched. Univariable and multivariable logistic regression models, propensity score adjustment, PSM, inverse probability of treatment weighting (IPTW), standardized mortality ratio weighting (SMRW), pairwise algorithm (PA) weighting, and overlap weighting (OW) methods were used to analyze the relationship between frailty and postoperative AKI. Stratified analyses were performed according to age (>=80 orreceptor antagonists (ARB) were used, and whether intraoperative hypotension occurred. ResultsAfter PSM, there were no significant differences between the two groups in age, sex, surgical type, ACEI/ARB, blood urea nitrogen, serum creatinine, intraoperative blood loss, and intraoperative hypotension [standardized mean difference (SMD) 0.05). ConclusionIn elderly patients with hip fractures, preoperative frailty may be a risk factor for postoperative AKI.

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32. **Causal deep learning for real-time detection of cardiac surgery-associated acute kidney injury: derivation and validation in seven time-series cohorts.**

Authors: Zhong Q.;Cheng Y.;Li Z.;Wang D.;Rao C.;Jiang Y.;Li L.;Wang Z.;Liu P.;Che H.;Li P.;Lu X.;Suo J. and He, K.

Publication Date: 2025

Journal: The Lancet.Digital Health , pp. 100901

Abstract: BACKGROUND: Cardiac surgery-associated acute kidney injury (CSA-AKI) is a complex complication substantially contributing to an increased risk of mortality. Effective CSA-AKI management relies on timely diagnosis and interventions. However, many cases are detected too late. Despite the advancements in novel biomarkers and data-driven predictive models, existing practices are primarily constrained due to the limited discriminative and generalisation capabilities and stringent application requirements, presenting major challenges to the timely and effective diagnosis and interventions in CSA-AKI management. This study aimed to develop a causal deep learning architecture, named REACT, to achieve precise and dynamic predictions of CSA-AKI within the subsequent 48 h. METHOD(S): In this retrospective model development and prospective validation study, we included adult patients (aged >=18 years) from seven distinct cohorts undergoing major open-heart surgery for

model training and validation. Data for model development and internal validation were sourced from electronic health records of two large centres in Beijing, China, between Jan 1, 2000, and Dec 31, 2022. External validation was conducted on three independent centres in China between Jan 1, 2000, and Dec 31, 2022, along with cross-national data from the public databases MIMIC-IV and eICU in the USA. To facilitate implementation, we also developed a publicly accessible web calculator and applet. The model's prospective application was validated from June 1, to Oct 31, 2023, at two centres in Beijing and Nanjing, China. FINDINGS: The final derivation cohort included 14 513 eligible patients with a median age of 56 years (IQR 45-65), 5515 (38.0%) patients were female, and 3047 (21.0%) developed CSA-AKI. The external validation dataset included 20 813 patients from China and 28 023 from the USA. REACT reduced 1328 input variables to six essential causal factors for CSA-AKI prediction. In internal validation, REACT achieved an average area under the receiver operating characteristic curve (AUROC) of 0.930 (SD 0.032), outperforming state-of-the-art deep learning architectures, specifically transformer-based and long short-term memory-based models, which rely on more complex variables. The model consistently outperformed in external validation across different centres (average AUROC 0.920 [SD 0.036]) and regions (0.867 [0.073]), as well as in prospective validation (0.896 [0.023]). Compared with guideline-recommended pathways, REACT detected CSA-AKI on average 16.35 h (SD 2.01) earlier in external validation. INTERPRETATION: We proposed a causal deep learning approach to predict CSA-AKI risk within 48 h, distilling the complex temporal interactions between variables into only a few universal, relatively cost-effective inputs. The approach shows great potential for deployment across hospitals with minimum data requirements and provides a general framework for causal deep learning and early detection of other conditions. FUNDING: The Construction Project and the National Natural Science Foundation of China.

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33. **Association between red cell distribution width-to-albumin ratio and acute kidney injury in acute pancreatitis: A retrospective cohort study from the MIMIC-IV database.**

Authors: Zhou C.J.;Lin S.M. and Zheng, J. T.

Publication Date: 2025

Journal: Medicine 104(40), pp. e44810

Abstract: This study aimed to evaluate the association between the red cell distribution width-to-albumin ratio (RAR) and the early onset of Acute Kidney Injury (AKI) in patients diagnosed with acute pancreatitis (AP). A retrospective cohort study was conducted using data from the Medical Information Mart for Intensive Care IV database, focusing on the first 24 hours following admission to the intensive care unit (ICU). The primary outcome was the incidence of AKI within 7 days of ICU admission, as defined by the Kidney Disease: Improving Global Outcomes criteria. Logistic regression models were employed to assess the association, with subgroup analyses considering variables such as age, sex, renal disease, diabetes, sepsis, use of mechanical ventilation, and sequential organ failure assessment scores. The analysis included 599 patients. Each unit increase in RAR was linearly associated with a 62% greater likelihood of AKI within 7 days of ICU admission (odds ratio = 1.62, 95% confidence interval [CI]: 1.34-1.96, P

Sources Used:

The following databases are used in the creation of this bulletin: EMBASE and Medline.

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