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April 2025

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Book a session today at https://forms.office.com/e/HyiSXfDaYV (these sessions will be held on a monthly basis)

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1. **Epidemiology, trajectories and outcomes of acute kidney injury among hospitalized patients: a large retrospective multicenter cohort study.**

Authors: Adiyeke E.;Ren Y.;Fogel S.;Rashidi P.;Segal M.;Shenkman E.A.;Bihorac A. and OzrazgatBaslanti, T.

Publication Date: 2025

Journal: Journal of Nephrology (pagination)

Abstract: Background: Acute kidney injury (AKI) is a clinical syndrome affecting almost one-fifth of hospitalized patients, as well as over half of the patients who are admitted to the intensive care unit (ICU). Stratifying AKI patients into groups based on severity and duration would facilitate targeted efforts for treating AKI. Method(s): In a retrospective, multicenter longitudinal cohort study of 2,187,254 hospital encounters from 935,679 patients who were admitted between 2012 and 2020 to health centers in the OneFlorida + Network, we analyzed the impact of AKI trajectories (i.e. rapidly reversed AKI, persistent AKI with renal recovery, and persistent AKI without renal recovery) on patients' clinical outcomes, including hospital, 30-day, 1-year, and 3-year mortality, kidney replacement therapy, new chronic kidney disease (CKD) within 90 days or 1-year of discharge, CKD progression within 1-year of discharge, resource utilization, hospital disposition, and major complications during hospitalization. Result(s): Among all encounters, 14% of patients had AKI, of whom 63%, 21%, and 16% had Stage 1, 2, and 3, respectively, as the worst AKI stage. The fraction of patients with persistent AKI was 31%. Patients with AKI had worse clinical outcomes and increased resource utilization compared to patients without the condition. One-year mortality was 5 times greater for patients with persistent AKI compared to those without AKI. Conclusion(s): Persistent AKI was associated with prolonged hospitalization, increased ICU admission and greater mortality compared to the other groups. This may emphasize the critical need for devising strategies targeting effective management of AKI and prevention of persisting AKI.

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2. **Dobutamine-Induced Myoclonus in a Patient With Acute Decompensated Heart Failure and Acute Kidney Injury: A Case Report and Literature Review.**

Authors: Alzghari, Saeed K.;Moore, Markus D. and Mitchell, Jacob C.

Publication Date: Jan ,2025

Journal: Cureus 17(1), pp. e78295

Abstract: Dobutamine is a potent beta1 and a weak beta2 adrenergic agonist used in the treatment of patients with acute decompensated heart failure or cardiogenic shock. Its positive inotropic effects enhance myocardial contractibility, leading to increased cardiac output. Myoclonus in patients receiving dobutamine is a rare adverse event that is not completely understood but seems to occur more commonly in patients with renal insufficiency. We present the unique case of a 61-year-old female receiving treatment for acute decompensated heart failure with acute kidney injury (AKI) who developed cortical myoclonus after 26 hours of a dobutamine infusion. Resolution occurred 36 hours after discontinuation of the dobutamine infusion. Valproic acid and diazepam were given to relieve the myoclonus. Clinicians should be aware that dobutamine-associated myoclonus is possible in patients with AKI. Copyright © 2025, Alzghari et al.

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3. **Causes and Clinical Outcomes of Acute Kidney Injury After Cardiac Arrest: A Retrospective Cohort Study.**

Authors: Aslan M.;Yilmaz R.;Birtane D. and Cukurova, Z.

Publication Date: 2025

Journal: Medicina (Kaunas, Lithuania) 61(2) (pagination), pp. Date of Publication: 14 Feb 2025

Abstract: Background and Objectives: The development of acute kidney injury (AKI) in the post-cardiopulmonary resuscitation (post-CPR) period is a common pathology that has not been adequately investigated but contributes significantly to morbidity and mortality. We aimed to investigate the causes of AKI in the early post-CPR period. Material(s) and Method(s): This study was performed retrospectively in 82 adult patients who survived for at least 2 days out of 312 patients admitted to the intensive care unit after cardiac arrest in 2013-2022. AKI developed in 40 (48.7%) of these 82 patients (AKI 1-3 patient, respectively: 14, 13, 13). Binary logistic regression analysis was performed separately to determine the risk factors for AKI and mortality. Result(s): Each unit increase in BMI increased the risk of developing AKI by 1.272-fold, and the increase was statistically significant [OR (95%CI) = 1.272 (1.089-1486); p = 0.002]. The use of VSP and INO treatment alone increased the risk of AKI by approximately 14-fold, and this increase was statistically significant [OR (95%CI) = 14.225 (1.172-172.669); p = 0.037]. The combined use of VSP and INO treatment increased the risk of AKI by approximately 42-fold, and this increase was statistically significant [OR (95%CI) = 42.089 (2.683-660.201); p = 0.008]. The COVID-19 period alone increased the risk of developing AKI by 2.8-fold compared to the non-COVID-19 period, but the statistical significance of this increase was limited [OR (95%CI) = 2.801 (0.859-9.126); p = 0.088]. The development of AKI was not associated with mortality [OR (95%CI) = 2.194 (0.700-6.872); p = 0.178]. Conclusion(s): Having VSP and/or INO support and high BMI in the post-CPR period are the most important reasons for the development of AKI. COVID-19 may also increase the risk of developing AKI.

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4. **Acute kidney injury in acute heart failure-when to worry and when not to worry?.**

Authors: Banerjee D.;Ali M.A.;Wang A.Y.M. and Jha, V.

Publication Date: 2025

Journal: Nephrology Dialysis Transplantation 40(1), pp. 10–18

Abstract: Acute kidney injury is common in patients with acute decompensated heart failure. It is more common in patients with acute heart failure who suffer from chronic kidney disease. Worsening renal function is often defined as a rise in serum creatinine of more than 0.3 mg/dL (26.5 mumol/L) which, by

definition, is acute kidney injury (AKI) stage 1. Perhaps the term AKI is more appropriate than worsening renal function as it is used universally by nephrologists, internists and other medical practitioners. In health, the heart and the kidney support each other to maintain the body's homeostasis. In disease, the heart and the kidney can adversely affect each other's function, causing further clinical deterioration. In patients presenting with acute heart failure and fluid overload, therapy with diuretics for decongestion often causes a rise in serum creatinine and AKI. However, in the longer term the decongestion improves survival and prevents hospital admissions despite rising serum creatinine and AKI. It is important to realize that renal venous congestion due to increased right-sided heart pressures in acute heart failure is a major cause of kidney dysfunction and hence decongestion therapy improves kidney function in the longer term. This review provides a perspective on the acceptable AKI with decongestion therapy, which is associated with improved survival, as opposed to AKI due to tubular injury related to sepsis or nephrotoxic drugs, which is associated with poor survival.

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5. **To Study the Risk Factors, Treatment and Outcomes of Acute Kidney Injury in Intensive Care Unit Patients.**

Authors: Barik D. and Ishwarya, S.

Publication Date: 2025

Journal: European Journal of Cardiovascular Medicine 15(2), pp. 560–565

Abstract: Background: Acute Kidney Injury (AKI) in ICU patients significantly impacts morbidity and mortality. This study aimed to analyze the risk factors, treatment modalities, and outcomes of AKI in an ICU setting. Method(s): A prospective cohort study was conducted involving 100 ICU patients with AKI, classified per KDIGO criteria. Data on demographics, contributing factors, AKI causes, treatments, and outcomes were collected and analyzed. Result(s): The mean age of participants was 48+/-15.7 years, with a male predominance (74%). Hypovolemia was the leading cause of AKI at 45%, followed by drug-induced (17%). Pre-renal AKI was most common (82%), with 35% of patients requiring Renal Replacement Therapy (RRT). Comorbidities like diabetes mellitus (18%) and hypertension (12%) significantly influenced RRT need (pResult(s): The mean age of participants was 48+/-15.7 years, with a male predominance (74%). Hypovolemia was the leading cause of AKI at 45%, followed by drug-induced (17%). Pre-renal AKI was most common (82%), with 35% of patients requiring Renal Replacement Therapy (RRT). Comorbidities like diabetes mellitus (18%) and hypertension (12%) significantly influenced RRT need (pConclusion(s): The study highlights the importance of considering demographics and specific risk factors in managing AKI in ICU settings. While immediate outcomes were positive, the potential for long-term renal impairment necessitates ongoing vigilance and research.

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6. **XGBoost-Based Prediction of ICU Mortality in Sepsis-Associated Acute Kidney Injury Patients Using MIMIC-IV Database with Validation from eICU Database.**

Authors: Chen S.;Fan J.;Pishgar E.;Alaei K.;Placencia G. and Pishgar, M.

Publication Date: 2025

Journal: medRxiv (pagination), pp. Date of Publication: 25 Feb 2025

Abstract: Background: Sepsis-Associated Acute Kidney Injury (SA-AKI) leads to high mortality in intensive care. This study develops machine learning models using the Medical Information Mart for Intensive Care IV (MIMIC-IV) database to predict Intensive Care Unit (ICU) mortality in SA-AKI patients. External validation is conducted using the eICU Collaborative Research Database. Method(s): For 9,474 identified SA-AKI patients in MIMIC-IV, key features like lab results, vital signs, and comorbidities were selected using Variance Inflation Factor (VIF), Recursive Feature Elimination (RFE), and expert input, narrowing to 24 predictive variables. An Extreme Gradient Boosting (XGBoost) model was built for in-hospital mortality prediction, with hyperparameters optimized using GridSearch. Model

interpretability was enhanced with SHapley Additive exPlanations (SHAP) and Local Interpretable Model-agnostic Explanations (LIME). External validation was conducted using the eICU database. Result(s): The proposed XGBoost model achieved an internal Area Under the Receiver Operating Characteristic curve (AUROC) of 0.878 (95% Confidence Interval: 0.859-0.897). SHAP identified Sequential Organ Failure Assessment (SOFA), serum lactate, and respiratory rate as key mortality predictors. LIME highlighted serum lactate, Acute Physiology and Chronic Health Evaluation II (APACHE II) score, total urine output, and serum calcium as critical features. Conclusion(s): The integration of advanced techniques with the XGBoost algorithm yielded a highly accurate and interpretable model for predicting SA-AKI mortality across diverse populations. It supports early identification of high-risk patients, enhancing clinical decision-making in intensive care. Future work needs to focus on enhancing adaptability, versatility, and real-world applications.

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7. **Machine Learning to Assist in Managing Acute Kidney Injury in General Wards: Multicenter Retrospective Study.**

Authors: Cho N.J.;Jeong I.;Ahn S.J.;Gil H.W.;Kim Y.;Park J.H.;Kang S. and Lee, H.

Publication Date: 2025

Journal: Journal of Medical Internet Research 27(pagination), pp. Article Number: e66568. Date of Publication: 2025

Abstract: Background: Most artificial intelligence-based research on acute kidney injury (AKI) prediction has focused on intensive care unit settings, limiting their generalizability to general wards. The lack of standardized AKI definitions and reliance on intensive care units further hinder the clinical applicability of these models. Objective(s): This study aims to develop and validate a machine learning-based framework to assist in managing AKI and acute kidney disease (AKD) in general ward patients, using a refined operational definition of AKI to improve predictive performance and clinical relevance. Method(s): This retrospective multicenter cohort study analyzed electronic health record data from 3 hospitals in South Korea. AKI and AKD were defined using a refined version of the Kidney Disease: Improving Global Outcomes criteria, which included adjustments to baseline serum creatinine estimation and a stricter minimum increase threshold to reduce misclassification due to transient fluctuations. The primary outcome was the development of machine learning models for early prediction of AKI (within 3 days before onset) and AKD (nonrecovery within 7 days after AKI). Result(s): The final analysis included 135,068 patients. A total of 7658 (8%) patients in the internal cohort and 2898 (7.3%) patients in the external cohort developed AKI. Among the 5429 patients in the internal cohort and 1998 patients in the external cohort for whom AKD progression could be assessed, 896 (16.5%) patients and 287 (14.4%) patients, respectively, progressed to AKD. Using the refined criteria, 2898 cases of AKI were identified, whereas applying the standard Kidney Disease: Improving Global Outcomes criteria resulted in the identification of 5407 cases. Among the 2509 patients who were not classified as having AKI under the refined criteria, 2242 had a baseline serum creatinine level below 0.6 mg/dL, while the remaining 267 experienced a decrease in serum creatinine before the onset of AKI. The final selected early prediction model for AKI achieved an area under the receiver operating characteristic curve of 0.9053 in the internal cohort and 0.8860 in the external cohort. The early prediction model for AKD achieved an area under the receiver operating characteristic curve of 0.8202 in the internal cohort and 0.7833 in the external cohort. Conclusion(s): The proposed machine learning framework successfully predicted AKI and AKD in general ward patients with high accuracy. The refined AKI definition significantly reduced the classification of patients with transient serum creatinine fluctuations as AKI cases compared to the previous criteria. These findings suggest that integrating this machine learning framework into hospital workflows could enable earlier interventions, optimize resource allocation, and improve patient outcomes.

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8. **Acute kidney injury in the pandemic years revisited: distinct patterns of staging and recovery in patients with and without COVID-19.**

Authors: de Faria N.P.;Suassuna J.H.R.;de Souza C.A.M.;Freire S.M. and Gomes, C. L. R.

Publication Date: 2025

Journal: Journal of Nephrology 38(2), pp. 609–620

Abstract: Background: Acute kidney injury (AKI) is a frequent and severe complication in COVID-19 patients, associated with poor outcomes. This study evaluates the characteristics and outcomes of AKI in COVID-19-positive versus negative patients during the pandemic in an emerging country, emphasizing differences in incidence, recovery, and healthcare resource utilization. Method(s): We conducted a retrospective cohort study including 9112 intensive care unit (ICU) patients from two major hospitals in Brazil, hospitalized between March 2020 and April 2022. Statistical analyses included logistic regression, Kaplan-Meier survival analysis, and time series analysis of AKI trends across COVID-19 waves. Result(s): 2333 patients (25.6%) tested positive for COVID-19. AKI incidence (79.7% vs. 52.6%, p Result(s): 2333 patients (25.6%) tested positive for COVID-19. AKI incidence (79.7% vs. 52.6%, p Result(s): 2333 patients (25.6%) tested positive for COVID-19. AKI incidence (79.7% vs. 52.6%, p Result(s): 2333 patients (25.6%) tested positive for COVID-19. AKI incidence (79.7% vs. 52.6%, p Result(s): 2333 patients (25.6%) tested positive for COVID-19. AKI incidence (79.7% vs. 52.6%, p Conclusion(s): COVID-19 significantly affects AKI incidence, severity, and recovery, particularly in resource-limited settings. These findings emphasize the need for targeted strategies to manage kidney complications during pandemics and stress the importance of healthcare system preparedness in emerging countries.

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9. **Central Venous Pressure as a Predictor of Acute Kidney Injury in Cardiac Surgery: A Systematic Review of Observational Studies**

Authors: Griva, Panagiota;Griva, Vasiliki;Samara, Dimitra;Talliou, Christina;Panagouli, Konstantina and Roungeris, Loizos

Publication Date: Feb 21 ,2025

Journal: Diagnostics 15(5)

Abstract: Background/Objectives: Acute kidney injury (AKI) is a syndrome characterized by impaired kidney function, which is associated with reduced survival and increased morbidity. Central venous pressure (CVP) is a widely used hemodynamic parameter for assessing the volume status of patients and evaluating their response to fluid resuscitation. This systematic review aims to analyze various prospective and retrospective observational and controlled trials to determine the association between CVP and the risk of developing AKI in patients undergoing cardiac surgery. Additionally, it examines whether elevated CVP serves as an accurate predictor of AKI in this patient population. Methods: A systematic review was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, using PubMed as the primary database. The search focused on studies published after 2014 that included adult patients undergoing cardiac surgery with reported measurements of CVP and kidney function assessment. Studies conducted on animals, pediatric populations, those published before 2014, or in languages other than English were excluded from the review. Results: Through the analysis of 21 studies, a clear association between higher CVP and increased AKI risk emerged. The most critical CVP thresholds identified were 10 mmHg, 12 mmHg, 14 mmHg, and 20 mmHg, with risk increasing progressively beyond these values. CVP >= 10 mmHg was the most commonly reported cutoff for elevated AKI risk, showing 1.42 to 4.53 times increased odds. CVP >= 12 mmHg further amplified the risk, while CVP >= 14 mmHg was consistently associated with severe AKI and the need for RRT. The highest threshold (CVP >= 20 mmHg) showed the greatest risk escalation, linked to fluid overload, right heart failure, and mortality. Studies also suggest an optimal CVP range of 6-8 mmHg to minimize AKI incidence. Conclusions: Elevated CVP is an independent risk factor for the development of AKI in patients undergoing cardiac surgery. These findings suggest that CVP monitoring can play a significant role in predicting AKI and guiding perioperative management

strategies.

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10. **Postoperative Acute Kidney Injury in Total Joint Arthroplasty: A Review of the Literature**

Authors: Haider, Muhammad A.;Cardillo, Casey;Connolly, Patrick and Schwarzkopf, Ran

Publication Date: Apr ,2025

Journal: Orthopedic Clinics of North America 56(2), pp. 145–153

Abstract: Total hip arthroplasty and total knee arthroplasty are among the most successful orthopedic procedures, with increasing numbers performed annually in the United States. However, adverse perioperative complications like acute kidney injury (AKI) can adversely affect patient outcomes and increase health care costs. The incidence of AKI post-total joint arthroplasty varies widely, with large-scale studies reporting less than 2% and smaller studies indicating rates as high as 21.9%. Holding angiotensin converting enzyme inhibitors, aldosterone receptor blockers, NSAIDs, diuretics, and avoiding nephrotoxic antibiotics can help mitigate the risk.

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11. **Molecular mechanisms and therapeutic interventions in acute kidney injury: a literature review**

Authors: He, Jiajia;Chen, Yanqin;Li, Yi and Feng, Yunlin

Publication Date: Mar 22 ,2025

Journal: BMC Nephrology 26(1), pp. 144

Abstract: Acute kidney injury (AKI) is a clinical challenge characterized by elevated morbidity and a substantial impact on individual health and socioeconomic factors. A comprehensive examination of the molecular pathways behind AKI is essential for its prevention and management. In recent years, vigorous research in the domain of AKI has concentrated on pathophysiological characteristics, early identification, and therapeutic approaches across many aetiologies and highlighted the principal themes of oxidative stress, inflammatory response, apoptosis, necrosis, and immunological response. This review comprehensively reviewed the molecular mechanisms underlying AKI, including oxidative stress, inflammatory pathways, immune cell-mediated injury, activation of the renin-angiotensin-aldosterone (RAAS) system, mitochondrial damage and autophagy, apoptosis, necrosis, etc. Inflammatory pathways are involved in the injuries in all four structural components of the kidney. We also summarized therapeutic techniques and pharmacological agents associated with the aforementioned molecular pathways. This work aims to clarify the molecular mechanisms of AKI thoroughly, offer novel insights for further investigations of AKI, and facilitate the formulation of efficient therapeutic methods to avert the progression of AKI.

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12. **Association between the lactate-to-albumin ratio (LAR) index and risk of acute kidney injury in critically ill patients with sepsis: analysis of the MIMIC-IV database.**

Authors: Hua Y.;Ding N.;Jing H.;Xie Y.;Wu H.;Wu Y. and Lan, B.

Publication Date: 2025

Journal: Frontiers in Physiology 16(pagination), pp. Article Number: 1469866. Date of Publication: 2025

Abstract: Background: Lactate-to-albumin ratio (LAR) is an emergency predictive indicator of sepsis-related mortality. An elevated LAR is associated with poor outcomes in critically ill patients. However, its predictive value for acute kidney injury (AKI) in patients with sepsis remains unclear. Therefore, this study aimed to investigate the relationship between LAR and AKI in patients with sepsis. Method(s):

The study population was derived from the Medical Information Mart for Intensive Care-IV (2.0) database and stratified into quartiles based on the LAR. The primary endpoint was the occurrence of AKI. The secondary endpoints were the use of renal replacement therapy (RRT) and in-hospital mortality. Kaplan-Meier survival analysis and Cox proportional hazards models were used to assess the association between the LAR index and risk of AKI in patients with sepsis. Result(s): In this study, 5,222 patients with sepsis were included, of whom 3,029 were male (58%). Kaplan-Meier survival analysis demonstrated significant differences in the cumulative incidence of AKI and cumulative usage rate of RRT among patients with sepsis based on the quartiles of the LAR index. Additionally, Cox proportional hazards analysis adjusted for confounding factors showed a significant association between the LAR index and incidence of AKI in patients with sepsis. Conclusion(s): Our study indicated that a high LAR index can serve as an independent predictor of AKI in patients with sepsis.

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13. **Aspirin increases the risk of acute kidney injury in critical patients with chest trauma: a retrospective cohort study.**

Authors: Huang Y.;Xu H.;Xiang F.;Feng W.;Ma Y. and Jin, L.

Publication Date: 2025

Journal: International Journal of Emergency Medicine 18(1) (pagination), pp. Article Number: 38. Date of Publication: 01 Dec 2025

Abstract: Purpose: Non-steroidal anti-inflammatory drugs (NSAIDs) are increasingly utilized in trauma patients, particularly those with critical chest trauma who are susceptible to significant blood loss, leading to renal hypoperfusion. Acute kidney injury (AKI) is known to carry a poor prognosis in chest trauma patients. Therefore, investigating the potential association between NSAID use and AKI risk in critical patients with chest trauma is crucial. Method(s): We selected patients admitted to the intensive care unit (ICU) with chest trauma from the Medical Information Mart for Intensive Care III (MIMIC-III) dataset (2001-2012) and the Medical Information Mart for Intensive Care IV (MIMIC-IV) dataset (2013-2019). Propensity score matching (PSM) was used to match patients receiving NSAIDs with those not receiving treatment. Logistic regression was employed to assess the association between different types of NSAIDs and AKI in these patients. Result(s): In MIMIC-IV, NSAID use significantly increased the risk of AKI in critical patients with chest trauma (OR 1.99; 95% CI 1.04 to 3.85). Subgroup analysis revealed that aspirin significantly increased AKI risk in both MIMIC-III (OR 1.81; 95% CI 1.02 to 3.2) and MIMIC-IV (OR 2.47; 95% CI 1.26 to 4.85). However, ibuprofen and ketorolac use were not associated with AKI in these patients. Conclusion(s): We observed a significant association between aspirin use and an elevated risk of AKI in critical patients with chest trauma. These findings suggest that pain management strategies involving ibuprofen and ketorolac may be more appropriate for this patient population.

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14. **Risk factors for postoperative acute kidney injury in colorectal cancer: a systematic review and meta-analysis**

Authors: Huang, Lumei;Xiao, Aifang and Li, Yufeng

Publication Date: Mar 18 ,2025

Journal: International Journal of Colorectal Disease 40(1), pp. 70

Abstract: PURPOSE: To thoroughly examine the risk factors that may predispose patients with colorectal cancer to postoperative acute kidney injury (AKI). METHODS: To find relevant studies (from the beginning up to May 2024), two researchers searched PubMed, Web of Science, the Cochrane Library, and Embase databases. Two researchers evaluated the quality of the literature using the Newcastle-Ottawa Scale (NOS) and extracted data individually. Data analysis was performed using the Review Manager 5.4. RESULTS: Our meta-analysis included 23 studies, encompassing a total of 167,904 patients. The identified risk factors for postoperative AKI in colorectal cancer patients were

male sex, older age, body mass index (BMI) >= 25 kg/m2, hypertension, diabetes mellitus (DM), chronic kidney disease (CKD), hypoalbuminemia, emergency surgery, open surgery, prolonged operation time, American Society of Anesthesiologists (ASA) score >= 3, and intraoperative transfusion. In contrast, anemia and elevated creatinine levels did not emerge as significant risk factors for AKI in this population. CONCLUSION: To mitigate the incidence of postoperative AKI among these patients, healthcare professionals must proactively identify these risk factors and implement appropriate preventive measures. Copyright © 2025. The Author(s).

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15. **Combination of urinary biomarkers can predict cardiac surgery-associated acute kidney injury: a systematic review and meta-analysis**

Authors: Kiss, Nikolett;Papp, Marton;Turan, Caner;Koi, Tamas;Madach, Krisztina;Hegyi, Peter;Zubek, Laszlo and Molnar, Zsolt

Publication Date: Mar 29 ,2025

Journal: Annals of Intensive Care 15(1), pp. 45

Abstract: INTRODUCTION: Acute kidney injury (AKI) develops in 20-50% of patients undergoing cardiac surgery (CS). We aimed to assess the predictive value of urinary biomarkers (UBs) for predicting CS-associated AKI. We also aimed to investigate the accuracy of the combination of UB measurements and their incorporation in predictive models to guide physicians in identifying patients developing CS-associated AKI. METHODS: All clinical studies reporting on the diagnostic accuracy of individual or combined UBs were eligible for inclusion. We searched three databases (MEDLINE, EMBASE, and CENTRAL) without any filters or restrictions on the 11th of November, 2022 and reperformed our search on the 3rd of November 2024. Random and mixed effects models were used for meta-analysis. The main effect measure was the area under the Receiver Operating Characteristics curve (AUC). Our primary outcome was the predictive values of each individual UB at different time point measurements to identify patients developing acute kidney injury (KDIGO). As a secondary outcome, we calculated the performance of combinations of UBs and clinical models enhanced by UBs. RESULTS: We screened 13,908 records and included 95 articles (both randomised and non-randomised studies) in the analysis. The predictive value of UBs measured in the intraoperative and early postoperative period was at maximum acceptable, with the highest AUCs of 0.74 [95% CI 0.68, 0.81], 0.73 [0.65, 0.82] and 0.74 [0.72, 0.77] for predicting severe CS-AKI, respectively. To predict all stages of CS-AKI, UBs measured in the intraoperative and early postoperative period yielded AUCs of 0.75 [0.67, 0.82] and 0.73 [0.54, 0.92]. To identify all and severe cases of acute kidney injury, combinations of UB measurements had AUCs of 0.82 [0.75, 0.88] and 0.85 [0.79, 0.91], respectively. CONCLUSION: The combination of urinary biomarkers measurements leads to good accuracy. Copyright © 2025. The Author(s).

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16. **Effect of COVID-19 with or without acute kidney injury on inpatient mortality in England: a national observational study using administrative data.**

Authors: Kolhe, Nitin V.;Fluck, Richard and Taal, Maarten

Publication Date: Mar 15 ,2025

Journal: BMJ Open 15(3), pp. e095020

Abstract: OBJECTIVES: To evaluate hospital outcomes and their predictors during the pandemic for patients with and without COVID-19, stratified by the presence of acute kidney injury (AKI). DESIGN: Retrospective observation study using the Hospital Episodes Statistics database for England. PARTICIPANTS: 2 385 337 unique hospital admissions of adult patients from March 2020 to March 2021 in England. MAIN OUTCOME MEASURES: COVID-19 cases were identified by the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) code of U07.1. Patients with suspected COVID-19 (U07.2 code) and patients with end-stage kidney disease on chronic dialysis (N18.6 and Z99.2) were excluded. AKI cases were identified by the ICD10 code. Patients were

categorised into four groups based on COVID-19 and AKI diagnoses: Group 1-neither; Group 2-COVID-19 only; Group 3-AKI only; Group 4-both. A multivariable logistic regression model was created with in-hospital mortality as the outcome, including diagnostic groups, demographics, admission methods, comorbidity severity, deprivation index and intensive therapy unit (ITU) admission. RESULTS: Among 2 385 337 admissions involving 663 628 patients, 856 544 had AKI (N17 codes) and 1 528 793 did not. Among patients without AKI, there were 1,008,774 admissions among 133,988 individuals without COVID-19 (Group 1) and 520,019 admissions among 256,037 individuals with COVID-19 (Group 2). Among patients with AKI, there were 630,342 admissions among 218,270 individuals without COVID-19 (Group 3) and 226,202 admissions among 55,333 individuals with COVID-19 (Group 4). Patients in group 4 were older (75.4 +/- 13.8 years) and had greater length of stay (17.1 +/- 17 days) than all other groups. They also had and had a greater proportion of males, ethnic minorities and comorbidities than other groups. Mortality was highest in Group 4 (28.7%) and lowest in Group 1 (1.1%). The increased risk of death persisted after controlling for multiple baseline factors (OR for death vs Group 1: Group 4-22.28, Group 2-9.67, Group 3-6.44). ITU admission was least required in Group 1 (1.2%) and most in Group 4 (10.9%), with mortality at 4.8% versus 47.8%, respectively. CONCLUSIONS: Patients with COVID-19 and AKI have a high risk of mortality and should be recognised early and provided with optimal support. Planning for future pandemics should ensure adequate critical care and acute dialysis capacity. TRIAL REGISTRATION NUMBER: NCT04579562.

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17. **Acute kidney injury stage 1a increases mortality of patients with cirrhosis: a prospective multicenter cohort study.**

Authors: Mattos A.Z.;Dornelles C.M.R.;Schiavon L.D.L.;Mendes L.S.C.;de Carvalho Filho R.J.;Codes L.;Farias A.Q.;AlvaresdaSilva M.R.;Terra C.;Pereira G.;Manica M.;Bischoff H.M.;NarcisoSchiavon J.L.;Romeres S.G.B.;Garcia J.B.;Bittencourt P.L.;Ximenes R.O.;Arrojo R.S. and Mattos, A. A.

Publication Date: 2025

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

Abstract: Background and aims: Acute kidney injury is a severe complication of cirrhosis. However, the impact of mild decreases in renal function is controversial. This study aims to evaluate the prognosis of the different stages of acute kidney injury in cirrhosis. Method(s): This is a multicenter prospective cohort study of patients hospitalized for acute decompensation of cirrhosis, with serum creatinine values measured at least twice. Primary outcome was mortality (in-hospital, 30 days, 90 days and 12 months). Result(s): Nine hundred twenty-eight patients were included in the study. Acute kidney injury was diagnosed in 505 patients (stages 1a-21.6%, 1b-27.5%, 2-28.1%, 3-22.8%). Mortality rates of patients with acute kidney injury stage 1a were significantly higher than those of individuals without acute kidney injury (in-hospital-19.3% vs 4.7%; 30-day-21.8% vs 6.7%; 90-day-35.2% vs 17.5%; 12-month-54.1% vs 37.1%; p Result(s): Nine hundred twenty-eight patients were included in the study. Acute kidney injury was diagnosed in 505 patients (stages 1a-21.6%, 1b-27.5%, 2-28.1%, 3-22.8%). Mortality rates of patients with acute kidney injury stage 1a were significantly higher than those of individuals without acute kidney injury (in-hospital-19.3% vs 4.7%; 30-day-21.8% vs 6.7%; 90-day-35.2% vs 17.5%; 12-month-54.1% vs 37.1%; p Result(s): Nine hundred twenty-eight patients were included in the study. Acute kidney injury was diagnosed in 505 patients (stages 1a-21.6%, 1b-27.5%, 2-28.1%, 3-22.8%). Mortality rates of patients with acute kidney injury stage 1a were significantly higher than those of individuals without acute kidney injury (in-hospital-19.3% vs 4.7%; 30-day-21.8% vs 6.7%; 90-day-35.2% vs 17.5%; 12-month-54.1% vs 37.1%; p Result(s): Nine hundred twenty-eight patients were included in the study. Acute kidney injury was diagnosed in 505 patients (stages 1a-21.6%, 1b-27.5%, 2-28.1%, 3-22.8%). Mortality rates of patients with acute kidney injury stage 1a were significantly higher than those of individuals without acute kidney injury (in-hospital-19.3% vs 4.7%; 30-day-21.8% vs 6.7%; 90-day-35.2% vs 17.5%; 12-month-54.1% vs 37.1%; p Conclusion(s): Patients hospitalized for acute decompensation of cirrhosis who develop acute kidney injury have significantly higher mortality rates than those who do not develop this complication. This is true even for the mildest stages of acute kidney injury (stage 1a) and remains so at different time-points, supporting

recommendations for earlier treatments.

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18. **Venous excess ultrasound score association with acute kidney injury in critically ill patients: a systematic review and meta-analysis of observational studies.**

Authors: Melo R.H.;GioliPereira L.;Melo E. and Rola, P.

Publication Date: 2025

Journal: Ultrasound Journal 17(1) (pagination), pp. Article Number: 16. Date of Publication: 01 Dec 2025

Abstract: Background: Systemic venous congestion assessed by the venous excess ultrasound score (VExUS), has been associated with acute kidney injury (AKI) in patients undergoing cardiac surgery. However, there is a lack of evidence of this association in the general critically ill patients. Study Design and Methods: PubMed, Embase, and Cochrane databases were searched for observational prospective studies that included critically ill patients and analyzed VExUS score on the first day of admission to the ICU. The main outcome was occurrence of AKI. Secondary outcome was all-cause mortality. Statistical analysis was performed using Review Manager 5.4.1. Odds ratios (OR) with 95% confidence interval were pooled using a random-effects model. The Quality in Prognosis Studies (QUIPS) tool was used to assess risk of bias. Publication bias was assessed via funnel plot and heterogeneity was examined with I2 statistics. Result(s): Our analysis included 1036 patients from nine studies, of whom 17.4% presented venous congestion according to VExUS definition. In critically ill patients presenting with venous congestion (VExUS score >= 2), the incidence of AKI was significantly higher as compared with those without congestion (OR 2.63, 95% CI 1.06-6.54; p = 0.04; I2 = 74%). The association was notably stronger in cardiac surgery patients (OR 3.86, 95% CI 2.32-6.42; p = 74%). The association was notably stronger in cardiac surgery patients (OR 3.86, 95% CI 2.32-6.42; p 2 = 0%). There was no significant association between venous congestion and all-cause mortality (OR 1.25, 95% CI 0.71-2.19; p = 0.44; i2 = 8%). Conclusion(s): These findings suggest that VExUS score may correlate with an elevation in the incidence AKI in critically ill patients, with a more pronounced effect observed within the subgroup of patients undergoing cardiac surgery. There was no statistically significant association between VExUS score and all-cause mortality. Clinical Trial Registration: PROSPERO under protocol number CRD535513.

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19. **Impact of Nafamostat Mesylate Combined with Continuous Renal Replacement Therapy on Clinical Outcomes, Immune Function, and Oxidative Stress Markers in Patients with Sepsis-Associated Acute Kidney Injury.**

Authors: Miao M. and Chen, Z.

Publication Date: 2025

Journal: British Journal of Hospital Medicine (London, England : 2005) 86(2), pp. 1–13

Abstract: Aims/Background Sepsis is a prevalent critical condition associated with acute kidney injury (AKI). Nafamostat mesylate (NM), a serine protease inhibitor, has anticoagulant and anti-inflammatory properties. This study aimed to investigate the effects of NM combined with continuous renal replacement therapy (CRRT) on clinical efficacy, immune function, and oxidative stress markers in patients with sepsis-associated acute kidney injury (SA-AKI). Methods A total of 98 patients diagnosed with SA-AKI and treated at The People's Hospital of Pingyang between January 2022 and January 2024 were included. Patients were divided into two groups based on their treatment regimen: a CRRT group (n = 48) and a NM+CRRT group (n = 50). Clinical outcomes, including length of stay in the intensive care unit (ICU) and Acute Physiology and Chronic Health Evaluation II (APACHE II) scores, were analyzed. Changes in clinical efficacy, immune function, renal function, and oxidative stress markers were assessed before and after treatment. Adverse reactions were also compared between the groups. Results The total effective rate in the NM+CRRT group was significantly higher than in the

CRRT group (p 0.05). SCr and BUN levels improved significantly in the two groups post-treatment, with significant reductions observed in the NM+CRRT group (p 0.05), but were significantly higher in the NM+CRRT group after treatment (p 0.05). After treatment, MDA levels decreased, and GSH-Px levels improved in the two groups, with more significant improvements in the NM+CRRT group. The incidence of adverse reactions was 26.00% in the NM+CRRT group and 16.67% in the CRRT group, with no statistically significant difference (p > 0.05). Conclusion NM combined with CRRT significantly enhances clinical efficacy, immune function, and renal function in patients with SA-AKI and reduces oxidative stress. The therapy demonstrates an acceptable safety profile and is suitable for clinical application.

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20. **Frequency of Acute Kidney Injury After the Initiation of Vitamin D Receptor Activators: A Multicenter Retrospective Observational Study.**

Authors: Nakanishi M.;Mizuno T.;Sakai S.;Hira D.;Koseki T.;Matsubara T.;Yokoi H.;Yanagita M.;Terada T.;Yamada S. and Tsuboi, N.

Publication Date: 2025

Journal: Clinical Drug Investigation (pagination)

Abstract: Background and Objectives: Vitamin D receptor activators (VDRAs) are widely used in patients with osteoporosis; however, the frequency of acute kidney injury (AKI) due to VDRAs is unclear. This study aimed to investigate whether the incidence of AKI after VDRA initiation differed among patients with different renal functions. Method(s): The medical records of Japanese patients who were newly prescribed with VDRAs for osteoporosis at the Fujita Health University Hospital or Kyoto University Hospital between April 2012 and March 2022 were retrospectively reviewed in this study. The RIFLE (Risk, Injury, Failure, Loss of function, End-stage kidney disease) criteria were used to assess the incidence of AKI within 7 days after initiation of VDRA therapy. Additionally, the AKI algorithm was used to assess the incidence of AKI from 8 to 365 days after initiation of VDRA therapy. Result(s): The incidence of AKI, as defined by the RIFLE criteria, was significantly higher in patients with normal renal function or end-stage renal failure than in those with mild renal decline (p Result(s): The incidence of AKI, as defined by the RIFLE criteria, was significantly higher in patients with normal renal function or end-stage renal failure than in those with mild renal decline (p Conclusion(s): The incidence of AKI after the initiation of VDRA therapy was high, even if renal function was normal. Thus, our results suggest that monitoring serum calcium levels before the initiation of VDRA therapy is necessary, regardless of renal function.

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21. **Global epidemiology of acute kidney injury in hospitalised patients with decompensated cirrhosis: the International Club of Ascites GLOBAL AKI prospective, multicentre, cohort study.**

Authors: Patidar, Kavish R.;Ma, Ann T.;Juanola, Adria;Barone, Anna;Incicco, Simone;Kulkarni, Anand V.;Hernandez, Jose Luis Perez;Wentworth, Brian;Asrani, Sumeet K.;Alessandria, Carlo;Abdelkader, Nadia Abdelaaty;Wong, Yu Jun;Xie, Qing;Pyrsopoulos, Nikolaos T.;Kim, Sung-Eun;Fouad, Yasser;Torre, Aldo;Cerda, Eira;Ferrer, Javier Diaz;Maiwall, Rakhi, et al

Publication Date: May ,2025

Journal: The Lancet.Gastroenterology & Hepatology 10(5), pp. 418–430

Abstract: BACKGROUND: Acute kidney injury (AKI) is a serious complication of cirrhosis. A systematic, global characterisation of AKI occurring in patients with cirrhosis is lacking. We therefore aimed to assess global differences in the characteristics, management, and outcomes of AKI in hospitalised patients with cirrhosis. METHODS: In this prospective, multicentre, cohort study, we enrolled adults (>=18 years) with decompensated cirrhosis who were hospitalised for a cirrhosis-related complication, with or without AKI, at 65 centres across five continents. We captured AKI prevalence, stage, phenotype, and details on AKI management and clinical course. Universal health coverage

index and gross national income per capita were also collected. The primary outcome was 28-day mortality. Multivariable models including demographic and clinical variables, cirrhosis cause, cirrhosis severity, AKI severity, AKI management variables, universal health coverage, and gross national income were used to analyse independent associations with 28-day mortality. Secondary outcomes were AKI classification, progression, and resolution. This study is complete and registered with ClinicalTrials.gov (NCT05387811). FINDINGS: Between July 1, 2022, and May 31, 2023, we enrolled 3821 patients who were hospitalised for decompensated cirrhosis. Mean age was 57.7 years (SD 13.1), 2467 (64.6%) were men, and 1354 (35.4%) were women. Most patients were White (2128 [55.7%]). 1456 (38.1%, 95% CI 36.6-39.6) of 3821 patients had AKI (943 [64.8%] men and 513 [35.2%] women). Globally, patients presented with similar AKI stages, but patients from North America and Asia had the highest MELD-Na scores at presentation and the highest rates of peak AKI stage 3. Overall, hypovolaemic AKI was the most common phenotype (858 [58.9%] of 1456), followed by HRS-AKI (253 [17.4%]) and acute tubular necrosis (216 [14.8%]). The prevalences of hypovolaemic AKI and HRS-AKI were similar across regions, but acute tubular necrosis was more frequent in Asia (p: Between July 1, 2022, and May 31, 2023, we enrolled 3821 patients who were hospitalised for decompensated cirrhosis. Mean age was 57.7 years (SD 13.1), 2467 (64.6%) were men, and 1354 (35.4%) were women. Most patients were White (2128 [55.7%]). 1456 (38.1%, 95% CI 36.6-39.6) of 3821 patients had AKI (943 [64.8%] men and 513 [35.2%] women). Globally, patients presented with similar AKI stages, but patients from North America and Asia had the highest MELD-Na scores at presentation and the highest rates of peak AKI stage 3. Overall, hypovolaemic AKI was the most common phenotype (858 [58.9%] of 1456), followed by HRS-AKI (253 [17.4%]) and acute tubular necrosis (216 [14.8%]). The prevalences of hypovolaemic AKI and HRS-AKI were similar across regions, but acute tubular necrosis was more frequent in Asia (p: Between July 1, 2022, and May 31, 2023, we enrolled 3821 patients who were hospitalised for decompensated cirrhosis. Mean age was 57.7 years (SD 13.1), 2467 (64.6%) were men, and 1354 (35.4%) were women. Most patients were White (2128 [55.7%]). 1456 (38.1%, 95% CI 36.6-39.6) of 3821 patients had AKI (943 [64.8%] men and 513 [35.2%] women). Globally, patients presented with similar AKI stages, but patients from North America and Asia had the highest MELD-Na scores at presentation and the highest rates of peak AKI stage 3. Overall, hypovolaemic AKI was the most common phenotype (858 [58.9%] of 1456), followed by HRS-AKI (253 [17.4%]) and acute tubular necrosis (216 [14.8%]). The prevalences of hypovolaemic AKI and HRS-AKI were similar across regions, but acute tubular necrosis was more frequent in Asia (pINTERPRETATION: This study found important regional differences in AKI severity, phenotype, management, and outcomes in patients with decompensated cirrhosis. Health-care coverage remains an important driver of survival in patients with cirrhosis and AKI. FUNDING: European Association Study for the Study of the Liver and the Italian Society of Internal Medicine.

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22. **Recovery of kidney function in acute kidney injury.**

Authors: Patschan D.;Stasche F.;Erfurt S.;Matyukhin I.;Ritter O. and Safi, W.

Publication Date: 2025

Journal: Journal of Nephrology 38(2) (pp 445-456), pp. Article Number: e0299131. Date of Publication: 01 Mar 2025

Abstract: Acute kidney injury (AKI) is associated with a significant burden of mortality worldwide. Each episode of AKI increases the long-term risk of death, especially if there is no recovery or insufficient renal recovery (i.e. restoration of kidney function). This narrative review summarizes relevant studies on the definition and prediction of renal recovery. The following databases were searched for references: PubMed, Web of Science, Cochrane Library, Scopus. The period lasted from 1990 until 2024. The currently available criteria for renal recovery have been identified and discussed. Regarding restoration of kidney function prediction, seven studies on alternative or novel biomarkers have been reviewed. In the context of kidney replacement therapy and renal recovery, findings from four large, prospective randomized studies have been summarized. A standardized definition of renal recovery is presently not available. Specific biomarkers allow for an estimation of the likelihood of renal recovery under certain conditions. According to current knowledge, no dialysis method has been definitively

shown to be advantageous for the recovery process.Copyright © The Author(s) 2025.

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23. **Acute kidney injury negatively affects short and long-term outcomes of mechanical thrombectomy in acute ischaemic stroke.**

Authors: Sawczynska K.;Wrona P.;Zdrojewska K.;Wrobel D.;Wezyk K.;Sarba P.;Popiela T.;Slowik A. and Krzanowski, M.

Publication Date: 2025

Journal: Neurologia i Neurochirurgia Polska (pagination), pp. Date of Publication: 27 Feb 2025

Abstract: AIM OF STUDY: We aimed to assess the impact of acute kidney injury (AKI) during hospitalisation on short- and long-term outcomes of mechanical thrombectomy (MT) in patients with acute ischaemic stroke (AIS). CLINICAL RATIONALE FOR STUDY: AKI is a common complication in AIS patients treated with MT. Some studies examining its impact on prognosis have shown an association of AKI with worse MT outcomes, but observations exceeding three months are lacking. MATERIAL AND METHODS: To this observational cohort study, we included all AIS patients treated with MT in the University Hospital in Krakow from 2019 to 2021. AKI during hospitalisation was diagnosed based on serum creatinine concentration levels according to the KDIGO (Kidney Disease Improving Global Outcomes) guidelines. We compared patients with and without AKI in terms of mortality and functional outcome (assessed with modified Rankin scale, mRS) at discharge, and at 90 and at 365 days from stroke onset. Good functional outcome was defined as mRS 0-2. We identified factors associated with mortality and a good functional outcome using univariate logistic regression analysis, with statistically significant variables subsequently included into multivariate analyses. RESULT(S): Among 593 MT-treated AIS patients, AKI was found in 12.6%. Patients with AKI had significantly higher mortality and worse functional outcome at discharge, and at 90, and at 365 days from stroke onset. AKI was an independent factor associated with mortality and worse functional outcome at discharge, and at 90, and at 365 days from stroke onset. AKI remained independently associated with a lower chance of a good functional outcome in a 365-day follow-up when the analysis was limited to patients who survived until discharge (OR = 0.244, 95% CI: 0.095-0.624, p = 0.003). CONCLUSIONS AND CLINICAL IMPLICATIONS: AKI during hospitalisation is an independent risk factor of short- and long-term mortality and poor functional outcome in patients with AIS undergoing MT. There is a need to create a protocol to monitor kidney function and ensure prompt AKI treatment in MT-treated AIS patients.

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24. **Prognosis of critically ill patients with early and late sepsis-associated acute kidney injury: an observational study based on the MIMIC-IV.**

Authors: Shi B.;Ye J.;Chen W.;Liao B.;Gu W.;Yin H. and Lyu, J.

Publication Date: 2025

Journal: Renal Failure 47(1) (pagination), pp. Article Number: 2441393. Date of Publication: 2025

Abstract: Objective: The Acute Disease Quality Initiative (ADQI) working group recently released a consensus definition of sepsis-associated acute kidney injury (SA-AKI), but the prognosis and risk factors for early and late SA-AKI have not been studied. Method(s): This was a retrospective cohort study based on the Medical Information Mart for Intensive Care IV (MIMIC-IV) database (v2.2). First, SA-AKI patients that met the new definition from the ADQI were screened, and then, the relationships between SA-AKI occurrence time and relevant clinical parameters were analyzed. Result(s): After propensity score matching, 1,090 early SA-AKI (AKI occurring within 48 h of sepsis diagnosis) cases and late SA-AKI (AKI occurring between 48 h and 7 days after sepsis diagnosis) cases were identified. Compared with late SA-AKI patients, early SA-AKI patients had no significant differences in all-cause mortality at 28 days, 60 days or 180 days, renal replacement therapy (RRT) rates; or major adverse kidney events at 30 days (MAKE-30). However, the renal recovery of early SA-AKI patients was significantly better than that of late SA-AKI patients, their lengths of hospital stay and intensive care

unit stay were significantly shorter, and the number of patients with positive fluid balance was lower, but the use of nonsteroidal anti-inflammatory drugs (NSAIDs) and nephrotoxic antibiotics and the incidence of septic shock were higher. In addition, there was a difference in the number of patients with early and late SA-AKI at highest AKI stages 1 and 3. Data analysis also revealed that liver disease, cancer, highest AKI stage 3 and septic shock were associated with renal nonrecovery. Conclusion(s): Although there was no significant difference in mortality between early and late SA-AKI patients, there were significant differences in renal recovery, positive fluid balance, nephrotoxic antibiotic use, septic shock and AKI stage. Therefore, the classification of early and late SA-AKI has certain scientific and rational validity, but whether the two have different clinical outcomes and pathogeneses requires further study.

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25. **Epidemiology of sepsis-associated acute kidney injury in the ICU with contemporary consensus definitions.**

Authors: Takeuchi T.;Flannery A.H.;Liu L.J.;Ghazi L.;CamaOlivares A.;Fushimi K.;Chen J.;Huen S.C.;Tolwani A.J. and Neyra, J. A.

Publication Date: 2025

Journal: Critical Care 29(1) (pagination), pp. Article Number: 128. Date of Publication: 01 Dec 2025

Abstract: Background: The definition of sepsis-associated acute kidney injury (SA-AKI) was updated in 2023. This study aims to describe the epidemiology of SA-AKI using updated consensus definition and to evaluate clinical outcomes. Method(s): The study was a retrospective cohort analysis conducted at two academic medical centers. Adult patients admitted to intensive care units (ICU) between 2010 and 2022 were included and categorized as SA-AKI, sepsis alone, or AKI alone. SA-AKI was further classified by time of onset (early Method(s): The study was a retrospective cohort analysis conducted at two academic medical centers. Adult patients admitted to intensive care units (ICU) between 2010 and 2022 were included and categorized as SA-AKI, sepsis alone, or AKI alone. SA-AKI was further classified by time of onset (early Result(s): 187,888 adult ICU patients were included, and SA-AKI was found in nearly half of sepsis patients and about 1 in 6 ICU admissions. 1 in 4 patients with SA-AKI died during hospitalization and 37.7% experienced at least one MAKE by hospital discharge. Compared to sepsis or AKI alone, SA-AKI was associated with higher mortality (adjusted HR 1.59; 95% CI 1.51-1.66) and higher odds of MAKE (adjusted OR 3.35; 95% CI 3.19-3.51). The early clinical phenotype of SA-AKI was most common, with incident AKI decreasing daily from sepsis onset. The presence of septic shock significantly worsened outcomes. Conclusion(s): Applying updated consensus definitions highlights the high prevalence of SA-AKI in the ICU and its significant associated morbidity and mortality. Outcomes differ based on clinical phenotypes, including the timing of SA-AKI onset and the presence of shock.

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26. **Novel biological risk factors for 7-day postoperative kidney injury in elective major non-cardiac surgery: a retrospective observational study.**

Authors: Worrall R.E.;Mughal S.J.;Parekh D.;Patel J.M.;McNulty D. and Bangash, M. N.

Publication Date: 2025

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

Abstract: Introduction: Few UK studies have explored the epidemiology of postoperative acute kidney injury after diverse types of elective major non-cardiac surgery. Fewer still have compared postoperative acute kidney injury risk factors with conditions such as peri-operative myocardial injury that might have similar pathophysiology. This study aimed to characterise postoperative acute kidney injury and its clinical consequences in elective major non-cardiac surgery, and to assess risk factors for postoperative acute kidney injury including those related to peri-operative myocardial injury. Method(s): All elective major non-cardiac surgical episodes, occurring between 2015 and 2020, were identified

retrospectively. Patients without measured peri-operative renal parameters were not studied. Our primary outcome was 7-day postoperative acute kidney injury rate, defined using Kidney Disease Improving Global Outcomes criteria. Multivariable logistic regression modelling was used to assess risk factors for postoperative acute kidney injury. Result(s): Postoperative acute kidney injury occurred in 1334/13,790 (9.7%) episodes, with 663 (49.7%) occurring on day 1. Postoperative acute kidney injury was associated with increased peri-operative complications (OR 1.8, 95%CI 1.6-2.1, p Result(s): Postoperative acute kidney injury occurred in 1334/13,790 (9.7%) episodes, with 663 (49.7%) occurring on day 1. Postoperative acute kidney injury was associated with increased peri-operative complications (OR 1.8, 95%CI 1.6-2.1, p Result(s): Postoperative acute kidney injury occurred in 1334/13,790 (9.7%) episodes, with 663 (49.7%) occurring on day 1. Postoperative acute kidney injury was associated with increased peri-operative complications (OR 1.8, 95%CI 1.6-2.1, p Result(s): Postoperative acute kidney injury occurred in 1334/13,790 (9.7%) episodes, with 663 (49.7%) occurring on day 1. Postoperative acute kidney injury was associated with increased peri-operative complications (OR 1.8, 95%CI 1.6-2.1, p Discussion(s): Postoperative acute kidney injury is common and is associated with adverse outcomes. Prevalence peaks initially within the first 48 h, with a secondary rise seen from day 5 onwards, suggesting a different aetiology. It is determined by a combination of patient and surgical risk factors, with the former relating to physiological, rather than chronological, renal age. In common with peri-operative myocardial injury, postoperative acute kidney injury is independently associated with factors affecting autonomic tone and myeloid skewing.Copyright © 2025 The Author(s). Anaesthesia published by John Wiley & Sons Ltd on behalf of Association of Anaesthetists.

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27. **Association between pre-ICU statin use and acute kidney injury and in hospital mortality in obese patients with sepsis.**

Authors: Xiong X. and Liu, Y.

Publication Date: 2025

Journal: International Urology and Nephrology (pagination)

Abstract: Background: Acute kidney injury (AKI), a common complication in sepsis, especially for obese patients, is linked to increased morbidity and mortality. Statins, known for their lipid-lowering effects, also exhibit anti-inflammatory and immunomodulatory properties, suggesting potential benefits in sepsis and AKI. Material(s) and Method(s): This retrospective cohort study leveraged data from the MIMIC-IV database. The study population was stratified into survivors and non-survivors based on in-hospital mortality. Demographic data, comorbidities, laboratory parameters, and treatment modalities were extracted. Multivariate logistic regression models were conducted to evaluate the relationship between statin use and outcomes, with adjustments for confounders. Subgroup analyses and propensity score-matching (PSM) were undertaken for further validation. Result(s): In this study of 8,921 sepsis patients, pre-ICU statin use was associated with significantly improved outcomes. Univariate analysis showed that statin use reduced the risk of AKI by 69% (OR = 0.31, 95% CI 0.27-0.44, p Result(s): In this study of 8,921 sepsis patients, pre-ICU statin use was associated with significantly improved outcomes. Univariate analysis showed that statin use reduced the risk of AKI by 69% (OR = 0.31, 95% CI 0.27-0.44, p Result(s): In this study of 8,921 sepsis patients, pre-ICU statin use was associated with significantly improved outcomes. Univariate analysis showed that statin use reduced the risk of AKI by 69% (OR = 0.31, 95% CI 0.27-0.44, p Result(s): In this study of 8,921 sepsis patients, pre-ICU statin use was associated with significantly improved outcomes. Univariate analysis showed that statin use reduced the risk of AKI by 69% (OR = 0.31, 95% CI 0.27-0.44, p Result(s): In this study of 8,921 sepsis patients, pre-ICU statin use was associated with significantly improved outcomes. Univariate analysis showed that statin use reduced the risk of AKI by 69% (OR = 0.31, 95% CI 0.27-0.44, p Conclusion(s): Pre-ICU statin therapy is associated with a lower risk of AKI and improved in-hospital survival among obese patients with sepsis, suggesting its potential role as a protective measure in this high-risk population.Copyright © The Author(s), under exclusive licence to Springer Nature B.V. 2025

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28. **Association of hemoglobin-to-red blood cell distribution width ratio with mortality in critically Ill patients with heart failure and acute kidney injury: insights from the MIMIC-IV**

database.

Authors: Xu X.;Yang R.;Yin Y.;Zhu Y.;Si J. and Xu, Y.

Publication Date: 2025

Journal: BMC Cardiovascular Disorders 25(1) (pagination), pp. Article Number: 214. Date of Publication: 01 Dec 2025

Abstract: Background: The association between the hemoglobin-to-red cell distribution width ratio (HRR) and mortality in critically ill patients with heart failure (HF) and acute kidney injury (AKI) remains uncertain. This research focuses on exploring the association between HRR and both short-term and long-term all-cause mortality in these patients. Method(s): Participants were selected from the Medical Information Mart for Intensive Care IV (MIMIC-IV) database and categorized into tertiles based on HRR values. The primary endpoint was 28-days ICU all-cause mortality. Secondary endpoints included 28-days hospital and 90-days hospital all-cause mortality. Cox proportional hazards models and restricted cubic splines were used to analyze the association between HRR and mortality in patients with HF and AKI. Kaplan-Meier survival analysis estimated endpoint differences across tertiles. Result(s): A total of 7561 patients were included, with 55.5% being male (n=4199). Cox proportional hazards analysis showed a significant link between HRR and both short-term and long-term mortality in critically ill patients with HF and AKI. This association remained significant after adjusting for confounders. The restricted cubic splines model demonstrated a linear relationship between a higher HRR index and a reduced mortality risk. Kaplan-Meier survival analysis revealed significant differences in short-term and long-term mortality among the tertile groups. Conclusion(s): The study results show a strong association between lower HRR and increased short-term and long-term mortality in critically ill patients with heart failure and AKI. HRR proves to be a valuable and cost-effective marker for identifying high-risk patients.

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29. **Impact of urinary tract infection requiring hospital admission on short-term, mid-term and long-term renal outcomes in adult CKD patients - A potentially modifiable factor for CKD progression.**

Authors: Yang, Deng-Chi;Chao, Jo-Yen;Hsiao, Chih-Yen;Tseng, Chien-Tzu;Lin, Wei-Hung;Kuo, Te-Hui and Wang, Ming-Cheng

Publication Date: May ,2025

Journal: Journal of Infection and Public Health 18(5), pp. 102712

Abstract: BACKGROUND: Urinary tract infection (UTI) or acute pyelonephritis can lead to renal scarring and impact the subsequent renal function progression. The aims of this study were to investigate the changes in renal function related to UTI requiring hospital admission (UTI/HA) and the association between UTI/HA and long-term renal outcomes in patients with chronic kidney disease (CKD). METHODS: This was a multicenter, retrospective observational study. Renal events and renal function before and after UTI/HA in CKD patients were analyzed for short-term and mid-term renal outcomes. A case-control study with multivariate logistic regression analysis was used to investigate the association between clinical characteristics and risk of long-term renal outcomes (kidney replacement therapy or death, KRT/death) in adult CKD patients. RESULTS: This study included 1062 adult CKD patients, with 340 KRT and 76 deaths identified during a median follow-up of 105 months. Among 174 patients with UTI/HA, 59 (33.9%) had bacteremia, 90 (51.7%) acute kidney injury (AKI), and one in-hospital mortality. There was a faster decline rate of estimated glomerular filtration rate (eGFR) after UTI/HA compared to the pre-UTI/HA period [median (IQR) 0.37 (0.17-0.72) versus 0.19 (0.06-0.36) ml/min/1.73 m2 per month, P per month, PCONCLUSIONS: This study highlights the impact of UTI/HA on renal function and renal outcomes in adult CKD patients. It demonstrates a high incidence of in-hospital AKI but low mortality, and accelerated deterioration of renal function following UTI/HA. Long-term renal outcomes were influenced by the baseline renal function and progression rate, and the frequency of hospital admission. UTI/HA may be regarded as a potentially modifiable

factor for CKD progression. However, there is a need for further analysis to isolate the impact of UTI/HA from pre-existing renal function decline on long-term renal outcomes.

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30. **Advances in the diagnosis of early biomarkers for acute kidney injury: a literature review**

Authors: Yang, Hongsha;Chen, Yanqin;He, Jiajia;Li, Yi and Feng, Yunlin

Publication Date: Mar 05 ,2025

Journal: BMC Nephrology 26(1), pp. 115

Abstract: Acute kidney injury (AKI) is a critical condition with diverse manifestations and variable outcomes. Its diagnosis traditionally relies on delayed indicators such as serum creatinine and urine output, making early detection challenging. Early identification is essential to improving patient outcomes, driving the need for novel biomarkers. Recent advancements have identified promising biomarkers across various biological processes. Tubular injury markers, including neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1), N-acetyl-beta-D-glucosaminidase (NAG), and liver-type fatty acid-binding protein (L-FABP), offer insights into early tubular damage. Inflammatory and repair-associated biomarkers, such as interleukin-18 (IL-18), monocyte chemotactic protein-1 (MCP-1), osteopontin (OPN), and C-C motif chemokine ligand 14 (CCL14), reflect ongoing injury and recovery processes. Additionally, stress and repair markers like tissue inhibitor of metalloproteinase-2 (TIMP-2) and insulin-like growth factor-binding protein-7 (IGFBP-7), alongside filtration markers such as cystatin C (CysC) and proenkephalin (PenKid R) e.tal, further enhance diagnostic precision. Oxidative stress-related markers, including Superoxide Dismutase 1 (SOD1), also contribute valuable information. Emerging candidates, such as microRNAs, soluble urokinase plasminogen activator receptor (SuPAR), and chitinase-3-like protein 1 (CHI3L1), hold substantial promise for AKI detection and prognosis. This review summarizes the progress in AKI biomarker research, highlighting their clinical utility and exploring their potential to refine early diagnosis and management strategies. These findings offer a new perspective for integrating novel biomarkers into routine clinical practice, ultimately improving AKI care. Copyright © 2025. The Author(s)

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31. **Efficacy of the Renal-guard system in the prevention of contrast-induced nephropathy following cardiac interventions among patients with chronic kidney disease.**

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Abstract: Background: Contrast-induced nephropathy (CIN), also called as contrast associated-acute kidney injury (CA-AKI) is a common complication following cardiac procedures. KDIGO guidelines define CIN as a >=25% increase in serum creatinine or an absolute increase of at least 0.5 mg/dl 48-72 h post-contrast administration. The single most effective measure in preventing CIN is peri-procedural intravascular hydration typically from 12 h before to 24 h after contrast media exposure but has limitations. Recently, the RenalGuard (RG) system has emerged as a new tool, demonstrating safer and more efficient hydration and reducing the incidence of AKI caused by CIN. Aims: We conducted this meta-analysis on the effectiveness of the RG system in preventing CIN in patients undergoing cardiac interventions. Methods: A comprehensive literature search of PubMed (MEDLINE), Science Direct, and Embase was conducted from its inception until February 2024 for randomized controlled trials (RCTs) including patients aged >18 years undergoing cardiac procedures with underlying chronic kidney disease (CKD), estimated glomerular filtration rate (eGFR) 20-60 ml/min/1.73 m2 and left ventricular ejection fraction (LVEF) >50%. The outcomes of interest were risk of CIN, risk of renal replacement therapy (RRT), in-hospital mortality and 30-day mortality, major adverse cardiovascular events (MACE), changes in serum creatinine (sCr) levels, and incidence of pulmonary edema. A

random-effects meta-analysis was performed using Review Manager (RevMan) [Computer Program] Version 5.4 Cochrane Collaboration. Results: A total of 9 RCTs including 3,215 patients with CKD undergoing cardiac procedures on volume expansion strategies were included with 1,802 patients on the RG system and 1,413 patients using alternate volume expansion techniques. Pooled analysis of 9 RCTs reported a significantly lower risk of CIN in patients using the RG system vs. control [OR 0.51 (0.35, 0.74), P = 0.0004; I2 = 55%]. There was no significant difference in the risks of RRT, in-hospital mortality, 30-day MACE, pulmonary edema, or change in sCr levels. Conclusion: This meta-analysis indicates the beneficial utilization of the RG system in populations with moderate-to-high risk and underlying CKD undergoing cardiac interventions in preventing CIN. However, it did not demonstrate a notable impact on mortality, RRT, MACE, pulmonary edema, and sCr levels when compared to the control group.

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32. **Association between the triglyceride-glucose index and acute kidney injury in patients undergoing percutaneous coronary: a retrospective analysis of the MIMIC-IV database.**

Authors: Zhang F.;Zhan S.;Zhang L.;Zheng X.;Li X. and Wang, Y.

Publication Date: 2025

Journal: Diabetology and Metabolic Syndrome 17(1) (pagination), pp. Article Number: 74. Date of Publication: 01 Dec 2025

Abstract: Background: Acute kidney injury (AKI) is a common complication that affects the outcomes of patients undergoing percutaneous coronary intervention (PCI). The triglyceride-glucose (TyG) index, a metric computed from fasting blood triglyceride and glucose levels, is closely associated with poor PCI outcomes. This study examined the association between the TyG index and incidence of AKI in patients undergoing PCI. Method(s): Clinical information was obtained from the Medical Information Mart for Intensive Care IV database, which contains clinical data on 70,000 patients admitted to the intensive care unit at Beth Israel Deaconess Medical Center from 2008 to 2019. In total, 435 patients who underwent PCI were enrolled in this retrospective study, and they were categorized according to their AKI status, TyG quartiles, and diabetes mellitus (DM) history to analyze their baseline characteristics. The association of the TyG index with the risk of AKI was assessed using restricted cubic spline regression and logistic regression models. Subgroup analyses were also performed in patients with and without DM. Result(s): Compared with the non-AKI population, patients with AKI who underwent PCI had a higher mean TyG index (p = 0.004). The restricted cubic spline regression model revealed a linear correlation between the TyG index and AKI risk (p for nonlinear = 0.123) in patients undergoing PCI. A high TyG index was a risk factor for AKI in non-DM subgroup, as well as in patients with BMI Result(s): Compared with the non-AKI population, patients with AKI who underwent PCI had a higher mean TyG index (p = 0.004). The restricted cubic spline regression model revealed a linear correlation between the TyG index and AKI risk (p for nonlinear = 0.123) in patients undergoing PCI. A high TyG index was a risk factor for AKI in non-DM subgroup, as well as in patients with BMI Conclusion(s): This study highlighted the role of the TyG index as a predictive biomarker for AKI in patients without DM undergoing PCI, providing clinicians with a tool for identifying high-risk individuals for early intervention.

Sources Used:

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

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