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1. **Success in Reducing Acute Kidney Injury Post-Percutaneous Coronary Intervention.**

Authors: Anthuvan, Jacob;Blake, Patricia;Blais, Danielle;Lima, Jorge;Logan, Don and Boudoulas, Konstantinos Dean

Publication Date: Nov 12 ,2025

Journal: JACC.Case Reports 30(36), pp. 105320

Abstract: BACKGROUND: Acute kidney injury (AKI) after percutaneous coronary intervention (PCI) contributes to short- and long-term adverse events. In 2018, our rate for AKI was in the lower quartile for several quarters compared to other hospitals in the American College of Cardiology National Cardiovascular Data Registry Cath/PCI Registry. PROJECT RATIONALE: Our quality initiative (QI) project was to understand factors contributing to AKI and opportunities to improve this outcome. PROJECT SUMMARY: A significant delay to the initiation and volume of hydration administered in patients with AKI as compared to without AKI post-PCI was discovered. Lack of understanding hydration order set, fear of volume overload, hydration communication handoff deficiencies, and order-release process variation were contributing factors. Appropriate and sustainable interventions were made improving AKI post-PCI. TAKE-HOME MESSAGES: A successful QI project requires a multidisciplinary team identifying barriers and deriving solutions. Our QI project resulted in AKI post-PCI improving to the 90th percentile for 9 consecutive quarters.

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2. **Long-Term Outcomes After Acute Kidney Injury During Hospitalization: A Systematic Review and Meta-Analysis of Matched Controls Studies.**

Authors: Fresilli S.;Labanca R.;Losiggio R.;Asiller OO.;Baiardo Redaelli M.;Yavorovskiy A.G.;Vives M.;Beretta L.;Bellomo R. and Landoni, G.

Publication Date: 2025

Journal: Critical Care Medicine (pagination), pp. Date of Publication: 17 Nov 2025

Abstract: OBJECTIVES: The impact of acute kidney injury (AKI) on long-term outcomes of hospital survivors is controversial. We conducted a systematic review and meta-analysis of all studies reporting such outcomes in patients with AKI and including a control population. DATA SOURCES: We included original studies published in peer-reviewed journals that compared long-term outcomes (survival, need for dialysis, chronic kidney disease [CKD]) among hospitalized patients with vs. without AKI. STUDY SELECTION: Pertinent articles enrolled patients who experienced and survived a defined episode of AKI, included a control group without AKI, and reported at least one long-term outcome (mortality, dialysis, or CKD), with a minimum follow-up of 1 year. DATA EXTRACTION: Two independent investigators extracted data on study characteristics, patient populations, follow-up duration, and long-term outcomes. Discrepancies were resolved by consensus. DATA SYNTHESIS: We identified 14 studies for a total of 1,058,109 overall matched patients with a median duration of follow-up of 3 years. Patients who experienced an episode of AKI and survived hospital discharge had a significant increase in long-term mortality at the longest follow-up available for each study (137,506/519,672 [26.4%] vs. 93,702/530,663 [17.6%]; relative risk [RR], 1.42; 95% CI, 1.13-1.78; p = 0.002), compared with controls. They also had a greater risk of receiving dialysis (1,928/42,529 [4.5%] vs. 854/42,529 [2.0%]; RR, 2.48; 95% CI, 1.79-3.43; p CONCLUSION(S): Compared with controls, patients who experienced an episode of AKI and survived to hospital discharge have an increased risk of death, dialysis, and CKD.

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3. **Perioperative approach to nephrotoxicity in cytoreductive surgery and hyperthermic intraperitoneal chemotherapy.**

Authors: Goksu, Senay and Duzgun, Ozgul

Publication Date: Oct 27 ,2025

Journal: World Journal of Gastrointestinal Surgery 17(10), pp. 111885

Abstract: BACKGROUND: Combining cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) is a promising treatment approach for peritoneal carcinomatosis (PC). However, intraperitoneal chemotherapeutic agents significantly increase the risk of acute kidney injury (AKI). Identifying perioperative risk factors plays a critical role in preserving renal function. AIM: To evaluate postoperative renal outcomes in patients with PC who underwent CRS + HIPEC. METHODS: Patients who underwent CRS + HIPEC for PC between 2017 and 2024 were included in this retrospective cohort study. Demographic data, preoperative estimated glomerular filtration rate, HIPEC agents used (cisplatin, mitomycin C, oxaliplatin), intraoperative fluid management, vasopressor use, and postoperative creatinine levels were recorded. AKI was defined according to the 2012 Kidney Disease: Improving Global Outcomes criteria. Independent predictors were identified through multivariate logistic regression analysis. RESULTS: AKI developed in 61 of 445 patients (13.7%). Among them, 62.0% were stage I, 24.6% were stage II, and 13.1% were stage III. The highest AKI rate was observed in the cisplatin group (21.4%), with lower rates in the oxaliplatin group (9.6%) and the mitomycin C group (6.5%). Independent risk factors included cisplatin use [odds ratio (OR) = 2.8; 95% confidence interval: 1.6-4.9; P P = 0.02), vasopressor requirement (OR = 1.9; P = 0.03), and preoperative estimated glomerular filtration rate = 0.03), and preoperative estimated glomerular filtration rate 2 (OR = 2.3; P = 0.01). AKI was associated with a prolonged hospital stay. Three patients (0.7%) progressed to chronic kidney disease. CONCLUSION: Independent risk factors such as cisplatin use, inadequate fluid replacement, vasopressor requirement, and preoperative renal function should be considered during perioperative planning to reduce AKI risk following CRS + HIPEC.

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4. **Effects of Higher Versus Lower Protein Intake in Critically Ill Patients: A Systematic Review**

and Meta-Analysis.

Authors: Li S.;Hou Y.;Jin H.;Fu L.;Wang S.;Li X.;Sun M.;Hou H.;Song D.;Dai B.;Wang W.;Zhao H.;Kang J. and Tan, W.

Publication Date: 2025

Journal: SSRN (pagination), pp. Date of Publication: 21 Oct 2025

Abstract: Objectives: The impact of higher-dose protein during critical illness remains unclear; our study evaluated its clinical effects, including in patient subgroups. Method(s): We systematically searched PubMed, Embase, Web of Science, Scopus, and Cochrane Central Register of Controlled Trials for randomized controlled trials (RCTs) evaluating protein delivery in critically ill patients (published up to June 2025). Primary outcome was cumulative mortality. Secondary outcomes included mechanical ventilation (MV) duration, ICU length of stay (LOS), muscle outcomes, quality of life, biochemical markers, and adverse events. Finding(s): Thirty-six RCTs (11,335 patients) were included, with higher-protein groups receiving 1.2-2.2 g/kg/day and controls 0.2-1.5 g/kg/day. No significant differences founded between the higher- and lower-protein groups in cumulative mortality (RR 1.02, 95% CI 0.97 to 1.08); 30-, 60-, 90-, or 180-day mortality; MV duration; or ICU LOS. Subgroup analyses showed higher protein + physical rehabilitation linked to lower mortality (RR 0.68, 95% CI 0.50-0.93) and shorter MV duration (MD -0.23, 95% CI -0.76-0.31); higher intake did not improve mortality but shortened MV duration in the trauma, burn, and overweight subgroups(MD -0.90, 95% CI -1.64 to -0.15); conversely, it increased mortality in acute kidney injury (AKI) patients (RR 1.45, 95% CI 1.10-1.90). Higher protein increased adverse events, except in the trauma, burn, and overweight subgroups. Interpretation(s): Higher-dose protein did not significantly improve most outcomes in general critically ill patients. However, it reduced mortality when combined with rehabilitation; trauma, burn, and overweight subgroups experienced shorter MV duration, while AKI patients showed higher mortality. These subgroup-specific effects warrant targeted RCTs for further study.

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5. **Acute Kidney Injury Among Patients Undergoing Orthopedic Surgery and Admitted to the ICU: A Retrospective Analysis of Nonoperative Risk Factors.**

Authors: Lin, Xuezhen;Zhang, Xiaobo;Zhang, Yunli;Duan, Yuchen;Qin, Wenbo and Huang, Zhai

Publication Date: Nov 06 ,2025

Journal: Medical Science Monitor 31, pp. e950802

Abstract: BACKGROUND Acute kidney injury (AKI) is a critical complication following orthopedic surgery, yet patient-specific and perioperative non-surgical risk factors remain insufficiently characterized. We hypothesized that AKI is primarily influenced by pre-existing conditions interacting with perioperative stressors. This study aimed to evaluate AKI incidence and identify its clinical and laboratory predictors in post-orthopedic ICU patients. MATERIAL AND METHODS We conducted a retrospective cohort study using the Medical Information Mart for Intensive Care IV database (2008-2019), including 1791 orthopedic patients admitted to the ICU of a tertiary hospital in the United States. Multivariable logistic regression, Kaplan-Meier analysis, and ROC curves were used to assess risk factors and predictive performance. RESULTS AKI incidence was 71.0%. Kaplan-Meier analysis showed significantly worse survival in AKI patients compared with non-AKI patients. The AKI group had higher illness severity scores and longer ICU and hospital stays. Multivariate analysis identified 7 independent risk factors: weight (OR=1.03), ICU stay (OR=1.42), OASIS (OR=1.05), SOFA (OR=1.13), SAPS II (OR=1.03), and age (OR=1.02). ROC analysis showed SOFA score (AUC=0.764) and ICU stay (AUC=0.764) had the highest predictive value, followed by OASIS (AUC=0.707), SAPS II (AUC=0.709), and weight (AUC=0.635). Optimal thresholds were 3.5 points for SOFA (sensitivity=0.670, specificity=0.726) and 2.77 days for ICU stay (sensitivity=0.540, specificity=0.838). CONCLUSIONS AKI is common in postoperative orthopedic surgery ICU patients and associated with worse outcomes. Key predictors include illness severity, ICU stay length, and patient-specific factors.

Early risk stratification may improve postoperative care and patient outcomes

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6. **The association between coding for chronic kidney disease and kidney replacement therapy incidence at CCG-level in England: an ecological study.**

Authors: Lindemann C.H.;Medcalf J.;Hollinshead J. and Nitsch, D.

Publication Date: 2025

Journal: BJGP Open 9(3) (pagination), pp. Article Number: BJGPO.2024.0171. Date of Publication: 01 Oct 2025

Abstract: Background: With ageing of the population, both prevalence of chronic kidney disease (CKD) and incidence of kidney replacement therapy (KRT) are rising. Existing research suggests that Read-coding for CKD in those affected is associated with better implementation of recommended care and fewer hospitalisations for heart failure. Aim(s): To investigate whether coding for CKD is associated with regional KRT incidence in England. Design & setting: This is an ecological study using the clinical commissioning groups (CCGs) in England as geographical units. Method(s): KRT incidence rates were calculated using UK Renal Registry (UKRR) data from January 2019-December 2021. Data on the percentage of uncoded CKD patients (PUCP), who had laboratory evidence of CKD but lacked a diagnostic code, were obtained from the CVDPREVENT Audit, a national audit that extracts routinely held GP data. Data on confounders and acute kidney injury (AKI) mortality as a marker for population frailty were obtained from CVDPREVENT and the UKRR, respectively. Poisson models assessed the association between PUCP and KRT incidence. Result(s): After adjusting, the PUCP was non-linearly associated with KRT incidence, with the CCGs in the lowest PUCP quintile having a lower KRT incidence than the others. There was evidence that this association was more pronounced in CCGs with high AKI mortality compared with CCGs with low AKI mortality. Conclusion(s): At the geographical level in England, the data suggest that the prevalence of not having formally diagnosed CKD is non-linearly associated with a higher KRT incidence rate, especially in areas with a high AKI mortality.

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7. **Correlation between stress-induced hyperglycemia and postoperative acute kidney injury in nondiabetic patients who underwent acute type A aortic dissection surgery: A retrospective observational study.**

Authors: Liu, Zhang and Huang, Weiqin

Publication Date: Oct ,2025

Journal: Journal of International Medical Research 53(10), pp. 3000605251390098

Abstract: BackgroundAcute type A aortic dissection is more common in acute and severe cases, and hyperglycemia on admission is associated with the risk of adverse outcomes in acute myocardial infarction. However, the impact of admission hyperglycemia on postoperative outcomes in patients who underwent acute type A aortic dissection surgery remains unclear.ObjectiveTo assess the prognostic value of admission hyperglycemia for postoperative outcomes, particularly the development of acute kidney injury, in nondiabetic patients undergoing acute type A aortic dissection surgery. Methods This retrospective study included 322 nondiabetic patients who underwent acute type A aortic dissection surgery at Wuhan Asian Heart Hospital between October 2018 and March 2021. Results There was no significant difference in the incidence of postoperative death between the case and control groups. Sixty-nine patients developed postoperative acute kidney injury, and the incidence of postoperative acute kidney injury was significantly higher in the case group (29.2%) than in the control group (17.2%) ($p = 0.012$). Univariate analysis suggested statistically significant component differences in preoperative stress-induced hyperglycemia, systolic blood pressure, blood urea nitrogen, and intraoperative aortic cross-clamp time between the two groups. Further screening performed by including the above variables in a multifactorial analysis suggested that stress-induced hyperglycemia

and systolic blood pressure might be independent risk factors for postoperative acute kidney injury. Conclusion This study suggests a correlation between preoperative stress-induced hyperglycemia and the incidence of postoperative acute kidney injury in nondiabetic patients who underwent acute type A aortic dissection surgery.

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8. **Factors associated with acute kidney injury in hospitalized elderly: an integrative review.**

Authors: Maciel C.G.;de Vasconcelos E.M.R.;Cavalcanti B.R.V.D.S.;Lins E.N.P. and Borba, A. K. O. T.

Publication Date: 2025

Journal: Ciencia E Saude Coletiva 30(Supplement 2) (pagination), pp. Article Number: e14762023. Date of Publication: 2025

Abstract: The scope of this study was to identify factors associated with acute kidney injury (AKI) in hospitalized elderly people. An integrative review was carried out in the PubMed, LILACS, Web of Science, Embase and Scopus databases, with no time or language restrictions, using the search key "Aged" or "Aged, 80 and over" and "Acute Kidney Injury" and "Hospitalization". A total of 20 articles were selected to make up the final sample, after applying the eligibility criteria. Cohort (n=18) and case-control (n=2) studies with level of evidence IV were predominant. Factors associated with acute kidney injury in hospitalized elderly people included male gender, age group between 70 and 80 years, systemic arterial hypertension, cardiovascular disease/heart failure, estimated blood loss/major bleeding, peri--procedural blood transfusion, estimated glomerular filtration rate

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9. **Frequency of acute kidney injury in post-liver transplantation and associated factors: a systematic review.**

Authors: Moura, Ana Flavia;Costa, Alessandra Lima;Evangelista, Maria Theresa Correa;Guimaraes, Ana Clara de Lemos;Freitas, Arthur Guimaraes de;Vinhaes, Gabriel Pla Cid;Fernandes, Maria Eduarda Serravalle Mata Pires;Moura-Landim, Daniela de Queiroz;Moura-Neto, Jose A. and Cruz, Constanca Margarida Sampaio

Publication Date: 2025

Journal: Jornal Brasileiro De Nefrologia 47(4), pp. e20250022

Abstract: INTRODUCTION: Acute kidney injury (AKI) is a common complication following liver transplantation (LT). It is associated with factors such as perioperative hemodynamic instability, prolonged surgery, and use of nephrotoxic immunosuppressants, contributing to increased mortality, graft failure, and extended hospital stay. METHODS: A systematic search of the databases PubMed, Embase, and the Cochrane Central Register of Controlled Trials was conducted to identify observational studies with samples of at least 50 patients aged 18 years or older who underwent LT and analyzed AKI incidence post-procedure and assess long-term renal outcomes. RESULTS: A total of 30 studies with a total of 13,653 patients were included. The incidence of AKI post-LT was 46% (95% CI: 45%-47%), with significant variation across studies (24% to 84%) and high heterogeneity (I2 = 97%, p : A total of 30 studies with a total of 13,653 patients were included. The incidence of AKI post-LT was 46% (95% CI: 45%-47%), with significant variation across studies (24% to 84%) and high heterogeneity (I2 = 97%, p : A total of 30 studies with a total of 13,653 patients were included. The incidence of AKI post-LT was 46% (95% CI: 45%-47%), with significant variation across studies (24% to 84%) and high heterogeneity (I2 = 97%, p CONCLUSION: AKI and dialysis requirements are frequent complications following LT. Multiple risk factors, including HTN, diabetes, and prolonged hospitalization, are associated with an increased risk of AKI post-LT. The high incidence of AKI underscores the importance of early identification of at-risk patients and multidisciplinary approaches to improve outcomes.

10. **Intraoperative albumin use and postoperative acute kidney injury in patients undergoing noncardiac surgery.**

Authors: Oh, Ah Ran;Park, Jungchan and Lee, Suhyun

Publication Date: Nov 25 ,2025

Journal: Scientific Reports 15(1), pp. 41842

Abstract: The beneficial effects of albumin use have been suggested in various clinical settings including critically ill patients. However, the association between intraoperative albumin administration and acute kidney injury (AKI) after noncardiac surgery is unclear. This is a retrospective, hospital registry-based study including 39,336 adult patients who underwent intermediate to high risk noncardiac surgery between January 2011 and June 2019 at single tertiary hospital. The patients were divided into two groups based on exposure to 5% albumin during intraoperative period. The primary outcome was the incidence of AKI within seven days after surgery. Among 39,336 patients, 1725 (4.4%) patients were administered 5% albumin during the intraoperative period. The incidence of AKI was 3.4% (1285/37,611) in the albumin non-exposure group and 13.0% (225/1725) in the albumin exposure group. After 1:3 propensity score matching, 5221 patients (albumin non-exposures 3697; albumin exposures 1524) were included in the analysis. After propensity score matching and adjustment for residual confounders, albumin exposure was associated with higher risk of postoperative AKI (odds ratio = 1.82; 95% confidence interval, 1.41-2.34; p

11. **Arterial Stiffness and Acute Kidney Injury in the Atherosclerosis Risk in Communities (ARIC) Study.**

Authors: Oh, Ester S.;Surapaneni, Aditya L.;Kendrick, Jessica B.;Tanaka, Hirofumi;Grams, Morgan E.;Jovanovich, Anna J. and Nowak, Kristen L.

Publication Date: Nov ,2025

Journal: Kidney Medicine 7(11), pp. 101124

Abstract: Rationale & Objective: Acute kidney injury (AKI) is associated with prolonged hospitalization and increased in-hospital mortality risk. However, the prediction of incident AKI is inaccurate, and additional predictors of AKI are strongly needed. Arterial stiffness, as measured using carotid-femoral pulse wave velocity (cfPWV), is associated with kidney function decline and may serve as a plausible predictor of AKI. We hypothesized a higher cfPWV at baseline would be independently associated with AKI risk in community-dwelling older adults who participated in the Atherosclerosis Risk in Communities study. Study Design: Observational cohort study. Setting & Participants: Community-dwelling older adults from the Atherosclerosis Risk in Communities study. Predictors: The primary predictor was cfPWV and secondary predictors were heart-femoral pulse wave velocity (PWV), heart-carotid PWV, heart-ankle PWV, and brachial-ankle PWV, and femoral-ankle PWV. Outcomes: Time to AKI, defined by International Classification of Diseases (ICD) codes. Analytical Approach: Cox proportional hazard models were used to examine the association between PWV measures and time to AKI. Given its J-shaped relation with AKI, PWV was modeled as a categorical variable in quartiles (Q), with Q2 serving as the reference category. Results: A total of 4,245 participants (44% male; 77% White; mean +/- SD age 75 +/- 5 years; cfPWV 11.9 +/- 3.9 m/s) were included. There was a J-shaped association between cfPWV and AKI risk (Q1, hazard ratio 1.15 [95% confidence interval 0.90-1.46]; Q4, 1.38 [1.08-1.77] vs Q2 reference) after fully adjusting for demographics, cardiovascular disease risk factors, and markers for kidney function and peripheral artery disease. Limitations: Most of the participants were White; and AKI was defined based on ICD codes. Conclusions: Higher arterial stiffness, measured by cfPWV, may potentially serve as a predictor of AKI risk in community-dwelling older adults. plain-language-summary The prediction of incident acute kidney injury (AKI) is inaccurate, and additional predictors of AKI are strongly needed. This study

investigated the association of arterial stiffness, assessed using carotid-femoral pulse wave velocity, and AKI risk in community-dwelling older adults who participated in the Atherosclerosis Risk in Communities study. We found that higher cfPWV was associated with a higher risk of AKI, suggesting higher arterial stiffness may possibly serve as a predictor of AKI in older adults. Language: English

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12. **Risk factors for postoperative acute kidney injury after cardiac surgery.**

Authors: Piaggio, Ignacio M.;Furmento, Juan F.;Costabel, Juan P.;Navia, Daniel;Olivares, Francisco A.;Sigal, Alan;Vrancic, Mariano;Piccinini, Fernando and Seoane, Leonardo A.

Publication Date: 2025

Journal: Archivos Peruanos De Cardiologia Y Cirugia Cardiovascular 6(3), pp. 129–134

Abstract: Objectives: To describe the frequency of postoperative acute kidney injury (AKI) following cardiac surgery and to analyse risk factors for its development. Materials and Methods: We conducted an observational analytical cohort study using prospective data from adult patients who underwent cardiac surgery between 2003 and 2023 at a high-complexity centre in Argentina. AKI was defined according to KDIGO criteria. Risk factors were assessed using logistic regression. Results: A total of 13,215 patients were analysed, with a mean age of 64 years; most were men (75.7%). The frequency of AKI was 7.3%, with an in-hospital mortality of 4.7%. Independent risk factors included advanced age (OR: 1.05, p: A total of 13,215 patients were analysed, with a mean age of 64 years; most were men (75.7%). The frequency of AKI was 7.3%, with an in-hospital mortality of 4.7%. Independent risk factors included advanced age (OR: 1.05, p: A total of 13,215 patients were analysed, with a mean age of 64 years; most were men (75.7%). The frequency of AKI was 7.3%, with an in-hospital mortality of 4.7%. Independent risk factors included advanced age (OR: 1.05, p: A total of 13,215 patients were analysed, with a mean age of 64 years; most were men (75.7%). The frequency of AKI was 7.3%, with an in-hospital mortality of 4.7%. Independent risk factors included advanced age (OR: 1.05, pConclusions: The frequency of postoperative AKI is comparable to international registries. The main predictors of risk were age, surgical urgency, and use of cardiopulmonary bypass. Identifying risk factors can improve perioperative prevention and management in cardiac surgery.; Publisher Objetivos: Describir la frecuencia de insuficiencia renal aguda (IRA) posoperatoria en cirugia cardiaca y analizar los factores de riesgo para su desarrollo. Materiales y metodos: Se realizo un estudio de cohorte observacional y analitico, utilizando datos prospectivos de pacientes adultos sometidos a cirugia cardiaca entre 2003 y 2023 en un centro argentino de alta complejidad. La IRA se definio segun criterios KDIGO. Los factores de riesgo se evaluaron mediante regresion logistica. Resultados: Se analizaron 13 215 pacientes con una edad promedio de 64 anos, predominando varones (75,7%). La frecuencia de IRA fue del 7,3%, con una mortalidad intrahospitalaria del 4,7%. Los factores de riesgo independientes incluyeron edad avanzada (OR: 1,05, p<0,001), cirugia de urgencia (OR: 2,87, p<0,001), circulacion extracorporea (OR: 1,41, p<0,001) y comorbilidades como enfermedad pulmonar obstructiva cronica y anemia preoperatoria. Como factor protector se observo el estado asintomatico previo a la cirugia. Conclusiones: La frecuencia de IRA posoperatoria es similar a los registros internacionales. Los principales factores predictores de riesgo fueron la edad, la electividad de la cirugia y el uso de bomba de circulacion extracorporea. La identificacion de factores de riesgo permite mejorar la prevencion y manejo perioperatorio en cirugia cardiaca. Language: Spanish

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13. **Abiraterone-Associated Renal Damage in Patients with Advanced Prostate Cancer as a Risk Factor for Mortality and Chronic Kidney Disease.**

Authors: Pujol-Pujol, Marina;Rivero-Martinez, Marta;Puente, Javier;Vidal, Natalia;Calvo, Marta;Riaza, Cristina;Alvarez-Nadal, Marta;Rodriguez-Moreno, Antolina;Sanchez-Fructuoso, Ana I. and Garcia-Carro, Clara

Publication Date: Oct 24 ,2025

Journal: Journal of Clinical Medicine 14(21)

Abstract: Background: Prostate cancer is the most frequent malignancy in men, with an incidence of 21% of all diagnosed tumors in this population in Spain. Between 10 and 20% of patients with prostate cancer develop castration-resistant prostate cancer (CRPC). Abiraterone is widely used in CRPC and metastatic prostate cancer, but data on its renal safety are limited. Methods: We performed a single-center, retrospective observational study including patients with advanced prostate cancer who initiated abiraterone between January 2013 and July 2024 at Hospital Clinico San Carlos (Madrid, Spain). Patients were followed until December 2024. Renal events were defined as acute kidney injury (AKI), electrolyte imbalance, new onset or worsening hypertension (HTN), and/or volume overload. Risk factors and associations with mortality were analyzed using multivariate models. Results: Seventy-nine patients were included (mean age 76 +/- 9.5 years; 70.9% CRPC; 89.9% metastatic disease). Median follow-up was 17 months. Renal events occurred in 63.3% of patients. Independent risk factors were metastatic disease (OR 13.335; 95% CI 1.418-124.444; p p p = 0.05]. Conclusions: Renal events are common in patients treated with abiraterone, especially in those with metastatic disease and hypertension. AKI independently predicted mortality. Close monitoring of renal function and blood pressure is essential in this population

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14. **Stage prediction of acute kidney injury in sepsis patients using explainable machine learning approaches.**

Authors: Quan, Zhen;Han, Zheng;Zeng, Siyao;Wen, Lianghe;Wang, Jingkai;Li, Yue and Wang, Hongliang

Publication Date: 2025

Journal: Frontiers in Medicine 12, pp. 1667488

Abstract: Background: Acute kidney injury (AKI) is a prevalent and serious complication among sepsis patients, closely associated with high mortality rates and substantial disease burden. Early prediction of AKI is vital for prompt and effective intervention and improved prognosis. This research seeks to construct and assess forecasting frameworks that leverage advanced machine learning algorithms to anticipate AKI progression in high-risk sepsis patients. Methods: This study utilized the MIMIC-IV database, a large, publicly available critical care dataset containing comprehensive, de-identified electronic health records of over 70,000 ICU admissions at Beth Israel Deaconess Medical Center, to extract sepsis patient data for model training and test. Following feature selection, various machine learning algorithms were employed, including Decision Tree (DT), Efficient Neural Network (ENet), k-Nearest Neighbor (KNN), Light Gradient Boosting Machine (LightGBM), Multi-Layer Perceptron (MLP), Multinomial Mixture Model (Multinom), Random Forest (RF), and eXtreme Gradient Boosting (XGBoost). A five-fold cross-test strategy was implemented to minimize bias and assess model performance. SHapley Additive exPlanations (SHAP) was used to interpret the results. Results: A total of 6,866 critically ill sepsis patients were analyzed, of whom 5,896 developed AKI during hospitalization The RF model demonstrated superior performance, attaining an average AUC score of 0.89 on the ROC curve. SHAP analysis provided detailed insights into feature importance, including urine output, BMI, SOFA score, and maximum blood urea nitrogen, enhancing the clinical applicability of the model. Conclusion: The machine learning models developed in this study effectively predicted the stages of AKI in severely ill sepsis patients, with the Random Forest model demonstrating optimal performance. SHAP analysis offered crucial insights into the risk factors, facilitating timely and personalized interventions within a clinical setting. Additional multi-center research is essential to confirm the validity of these findings and to ultimately improve patient outcomes and quality of life. Copyright © 2025 Quan, Han, Zeng, Wen, Wang, Li and Wang.

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15. **Factors affecting response to furosemide stress test among critically ill hypoalbuminemic patients with AKI without prior albumin infusion.**

Authors: Soliman, Amin Roshdy;Yousry, Ahmed and Maamoun, Hoda Abdelhamid

Publication Date: Nov 25 ,2025

Journal: BMC Nephrology 26(1), pp. 664

Abstract: BACKGROUND: Acute kidney injury (AKI) is a common and serious condition often associated with hypoalbuminemia, which can influence the pharmacokinetics and efficacy of diuretics like furosemide. In critically ill patients, sepsis is the major cause of AKI, accounting for nearly 50% of cases. OBJECTIVE: To evaluate whether AKI patients with hypoalbuminemia can respond to FST without albumin supplementation. METHODS: This is a prospective quasi-experimental study. Patients were obtained from the intensive care unit of Cairo University Hospital with AKI stages 1 and 2 with hypoalbuminemia. A bolus of furosemide was administered at a dose calculated to be 1-1.5 mg/kg in a single dose to patients without a prior diagnosis of kidney disease and clinical signs of hypovolemia. RESULTS: A total of 41 critically ill patients with AKI were enrolled, aged between 18 and 80 years, of whom 56.10% had diabetes mellitus, 53.70% were on at least one nephrotoxic medication, and 56.10% had sepsis as the cause of AKI. The median (IQR) albumin level was 1.9 g/dL (1.4-2.7). Among 41 hypoalbuminemic AKI patients included, 80.50% responded to FST without prior albumin infusion. Non-responders had significantly lower baseline serum albumin levels, median (IQR) 1(1-2) vs. 2 (1-3) g/dL, p : A total of 41 critically ill patients with AKI were enrolled, aged between 18 and 80 years, of whom 56.10% had diabetes mellitus, 53.70% were on at least one nephrotoxic medication, and 56.10% had sepsis as the cause of AKI. The median (IQR) albumin level was 1.9 g/dL (1.4-2.7). Among 41 hypoalbuminemic AKI patients included, 80.50% responded to FST without prior albumin infusion. Non-responders had significantly lower baseline serum albumin levels, median (IQR) 1(1-2) vs. 2 (1-3) g/dL, p CONCLUSION: AKI patients with mild-to-moderate hypoalbuminemia may still respond to FST without albumin infusion, although response rates decline with the increasing severity of hypoalbuminemia. The FST remains a valuable predictive tool in hypoalbuminemic AKI patients but warrants further investigation to optimize its utility in this population. CLINICAL TRIAL NUMBER: Not applicable. Copyright © 2025. The Author(s).

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16. **Quantifying the impact of clinical coding in chronic kidney disease on risk of death and COVID-19 death.**

Authors: Stewart, Stuart;Kalra, Philip A.;Kontopantelis, Evangelos;Blakeman, Tom;Tilston, George and Sinha, Smeeta

Publication Date: 2025

Journal: PLoS ONE [Electronic Resource] 20(10), pp. e0333881

Abstract: BACKGROUND: Patients with biochemical evidence of chronic kidney disease (CKD) without a diagnostic code (uncoded CKD) in primary care are at increased risk of death, acute kidney injury (AKI), and unplanned hospital care. Uncoded CKD is highly prevalent and there is no data to evaluate whether patients with uncoded CKD were at an increased risk of COVID-19 death. Aim: to assess whether patients with uncoded CKD stages 3-5 were at increased risk of death and COVID-19 deaths. METHODS: Descriptive and inferential analyses to measure adjusted hazard of death, and COVID-19 death in patients with CKD stages 3-5 from 2.85 million primary care patients in Greater Manchester, England. Sensitivity analyses using propensity score matching and competing risk regression. RESULTS: Coded CKD stages 3 and 4 (versus uncoded) were associated with significantly lower adjusted hazards of death (HR 0.81, CIs 0.77-0.86, p=: Coded CKD stages 3 and 4 (versus uncoded) were associated with significantly lower adjusted hazards of death (HR 0.81, CIs 0.77-0.86, p=: Coded CKD stages 3 and 4 (versus uncoded) were associated with significantly lower adjusted hazards of death (HR 0.81, CIs 0.77-0.86, p=CONCLUSION: Our retrospective cohort study suggests that clinical coding is a digital intervention associated with a lower adjusted hazard of death and COVID-19 death in patients with CKD stages 3 and 4, and should be considered a key element in the organisation and delivery of care for people with CKD. Copyright: © 2025 Stewart 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.

17. **Effect of introducing a pharmacist-led support system on the administration rate of vancomycin loading dose and the 0-24-hour area under the concentration-time curve.**

Authors: Tai, Tatsuya;Motoki, Takahiro;Watanabe, Masahiro;Kurokawa, Naohiro;Yamashita, Sayaka;Yamaguchi, Kazunori;Tanaka, Hiroaki;Muraki, Yuichi and Kosaka, Shinji

Publication Date: 2025

Journal: Antimicrobial Stewardship & Healthcare Epidemiology : ASHE 5(1), pp. e266

Abstract: Objective: This study aimed to evaluate the impact of a pharmacist-led support system on the administration rate of vancomycin (VCM) loading dose, 0-24-hour area under the concentration-time curve (AUC0-24), incidence of acute kidney injury (AKI), and all-cause mortality in hospitalized patients. Design: This retrospective study with interrupted time series analysis was conducted from January 2021 to May 2024. Setting: A public tertiary referral center providing acute and specialized inpatient care in Japan. Patients: Among the 587 hospitalized patients who received VCM during the study period, 326 were evaluated. Intervention: The intervention comprised implementation of a pharmacist-led support system involving prospective prescription review and direct intervention when a VCM loading dose (25-30 mg/kg) was not prescribed. Results: The loading dose administration rate increased significantly by 43.2% immediately introducing the support system (95% confidence interval: 8.40-77.90; P = 0.0156), without significant trend change thereafter. AUC0-24 also increased significantly (241.0 vs 307.0; P Conclusions: The support system improved the loading dose administration rate and AUC0-24 without significantly increasing AKI or mortality. The improvement was immediate and sustained over 122 weeks, supporting its use in institutions aiming to optimize VCM loading doses where evidence remains limited. Copyright © The Author(s) 2025.

18. **Factors and outcomes associated with acute kidney injury in brain tumor resection patients: insights from a large US database (2010-2019).**

Authors: Tian, Binbin;Chen, Mingdi;Cheng, Junfen;Wang, Jian;Geng, Boqi;Mo, Junde;Zhong, Guorong and Chen, Zhugui

Publication Date: Dec ,2025

Journal: Renal Failure 47(1), pp. 2587502

Abstract: Acute kidney injury (AKI) is a major perioperative complication following brain tumor resection, yet multi-center studies on this topic remain scarce. This study aimed to determine the incidence, risk factors, and clinical outcomes associated with AKI in patients undergoing brain tumor resection, utilizing a nationally representative dataset. We analyzed brain tumor resection admissions from the United States' National Inpatient Sample database (2010-2019), identifying hospitalizations with and without AKI using International Classification of Diseases, Ninth Revision, Clinical Modification and International Classification of Diseases, Tenth Revision, Clinical Modification codes. Multivariable logistic regression analyses were performed to evaluate the associations between patient/hospital characteristics, comorbidities, complications and AKI. Among more than 40,000 brain tumor resection admissions, AKI occurred in 3.1% of hospitalizations, with prevalence rising from 1.8% in 2010 to 4.4% in 2019. AKI-associated admissions had higher costs (median $171,904 vs. $99,821, p p p p =65 years, Black/Hispanic race, congestive heart failure, diabetes, fluid and electrolyte disorders, other neurological disorders, obesity, and chronic kidney disease excluding end-stage renal disease. Medical complications associated with increased AKI risk included septicemia, deep vein thrombosis, urinary tract infection, pneumonia, and cerebral edema. Female sex and elective admission were protective factors. Prompt identification of these risk factors is crucial for optimizing perioperative management and improving clinical outcomes

19. **Association between oxycodone-acetaminophen use and acute kidney injury in patients with lower extremity fractures: A retrospective cohort study.**

Authors: Tian, Congli;Zhang, Pengju;Niu, Guoyan and Zheng, Jianlong

Publication Date: Nov 14 ,2025

Journal: Medicine 104(46), pp. e45687

Abstract: Mortality rates in individuals suffering from acute kidney injury (AKI) are notably high. The association between the administration of oxycodone-acetaminophen and the onset of AKI remains elusive. We explored the connection between the use of oxycodone-acetaminophen and the development of AKI among hospitalized patients with fractures in the lower limbs. We employed the Critical Care Medical Information Mart (Simulation) IV database and studied the occurrence of AKI in individuals with fractures of the lower extremities. Information on the administration of oxycodone and acetaminophen during the 48 hours following hospitalization was collected. The logistic regression approach was used to analyze the outcomes between the 2 groups, with several models adjusted simultaneously. The reliability of the results was evaluated by conducting both stratified and sensitivity analyses. We conducted a retrospective cohort study involving 2801 patients with lower extremity fractures, including 339 oxycodone-acetaminophen users and 2462 non-users. The overall rate of AKI was 65.6% (1844/2801). The rate for non-users was 64.6% (1591/2462), whereas it was 74.6% (253/339) for non-users. After controlling for confounding variables, the use of oxycodone-acetaminophen was linked to a 38% increased risk of AKI (hazard ratio = 1.38, 95% confidence interval = 1.02-1.87, P .05. The use of oxycodone-acetaminophen within 48 hours of hospitalization may increase the risk of AKI in patients with lower extremity fractures. However, further randomized controlled trials are needed to elucidate this relationship.

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20. **A machine learning predictive model for acute kidney injury among aneurysmal subarachnoid hemorrhage patients.**

Authors: Wang, Ruoran;Qian, Lingzhu;Zeng, Yunhui;Cai, Linrui;He, Min;Xu, Jianguo and Zhang, Yu

Publication Date: Nov 10 ,2025

Journal: BMC Medical Informatics & Decision Making 25(1), pp. 416

Abstract: BACKGROUND: Acute kidney injury (AKI) has been confirmed to be related to the prognosis of aSAH patients. Evaluating the risk of AKI in the early stage is important to avoid the unfavorable outcome of aSAH patients. However, no study has explored the predictive value of machine learning algorithms for AKI after aSAH. This study was designed to develop a machine learning algorithm-based predictive model for AKI among aSAH patients. METHODS: The outcome of this study was the AKI confirmed using the KDIGO criteria. The predictive value of seven machine learning algorithms for the AKI among aSAH patients was explored and verified using the 5-fold cross-validation. The predictive efficiency of machine learning algorithms-based predictive models was evaluated by the area under the receiver operating characteristics curve (AUC). The Shapley Additive explanation method was performed to visualize the importance of features incorporated in machine learning algorithms-based predictive models. RESULTS: 711 aSAH patients were enrolled with an AKI incidence of 7.7%. The AKI group had higher WFNS (p = 0.011), Hunt Hess (p = 0.006), and lower Glasgow Coma Scale (GCS) (p = 0.004). The multiple aneurysm was more frequently observed in the AKI group (p = 0.027). The AKI group had longer length of ICU stay (p : 711 aSAH patients were enrolled with an AKI incidence of 7.7%. The AKI group had higher WFNS (p = 0.011), Hunt Hess (p = 0.006), and lower Glasgow Coma Scale (GCS) (p = 0.004). The multiple aneurysm was more frequently observed in the AKI group (p = 0.027). The AKI group had longer length of ICU stay (p : 711 aSAH patients were enrolled with an AKI incidence of 7.7%. The AKI group had higher WFNS (p = 0.011), Hunt Hess (p = 0.006), and lower Glasgow Coma Scale (GCS) (p = 0.004). The multiple aneurysm was more frequently observed in the AKI group (p = 0.027). The AKI group had longer length of ICU stay (p : 711 aSAH patients were enrolled with an AKI incidence of 7.7%. The AKI group had higher WFNS (p = 0.011), Hunt Hess (p = 0.006), and lower Glasgow Coma Scale (GCS) (p = 0.004). The multiple

aneurysm was more frequently observed in the AKI group (p = 0.027). The AKI group had longer length of ICU stay (p CONCLUSIONS: The random forest model demonstrated superior performance in predicting AKI in aSAH patients, achieving a high AUC value, predictive accuracy, and remarkable stability. This model could help clinicians evaluate the risk of AKI in the early stage and guide therapeutic options among aSAH patients. Copyright © 2025. The Author(s).

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21. **Machine Learning Based Prediction of Postoperative Acute Kidney Injury Risk in Coronary Artery Bypass Grafting Patients.**

Authors: Zhang, Yang;Cai, Dabei;Deng, Ye;Wang, Zhu;Zhang, Zhihan;Zhang, Hu;Wang, Qingjie;Feng, Shoujie;Sun, Ling and Wei, Jun

Publication Date: 2025

Journal: Clinical Interventions in Aging 20, pp. 2033–2048

Abstract: Background: Coronary artery bypass grafting (CABG) is key for severe coronary artery disease, but postoperative acute kidney injury (AKI) may increase mortality and prolong hospital stays. Reliable models for early prediction of post-CABG AKI remain lacking. Methods: Data of 520 CABG patients (September 2021-December 2024) from the Affiliated Hospital of Xuzhou Medical University were collected, and the patients were divided into a training group (70%, for model building) and a validation group (30%). Key variables were screened through Least Absolute Shrinkage and Selection Operator (LASSO) regression, followed by the construction of six machine learning models: Random Forest (RF), eXtreme Gradient Boosting (XGBoost), Logistic Regression (LR), Light Gradient Boosting Machine (LightGBM), Softmax Regression, and Support Vector Machine (SVM). The SHapley Additive exPlanations (SHAP) was used to quantify feature importance. Results: The incidence of post-CABG AKI was 25.96%, and the median age of patients in the AKI group was significantly higher than that in the non-AKI group (66.09 +/- 8.15 vs 64.32 +/- 7.76, p = 0.025). In the training group, the XGBoost model using the top 5 important variables outperformed other models (Area Under the Curve [AUC] = 0.89, 95% Confidence Interval [CI]: 0.86-0.91), followed by the LightGBM model using the top 5 important variables and the RF model using the top 5 important variables (both had an AUC of 0.88; 95% CI: 0.85-0.90 and 0.85-0.91, respectively). In the validation group, the LR model using the top 15 important variables and the Softmax Regression model using the top 15 important variables maintained the highest stability (both had an AUC of 0.86, 95% CI: 0.79-0.92). SHAP analysis confirmed that estimated glomerular filtration rate (eGFR), intraoperative epinephrine use and calcium levels were the top three predictive factors. Conclusion: The machine learning models constructed in this study can effectively predict post-CABG AKI, facilitating early identification of high-risk patients. Copyright © 2025 Zhang et al.

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22. **The association between endothelial activation and stress Index and the development and prognosis of acute kidney injury in elderly patients with critical illness.**

Authors: Zhang, Zhiyuan;Li, Yubo;Wei, Yang;Yang, Yu;Luo, Zixin;Xie, Jiahui;Xu, Qinglin;Zou, Kang and Wang, Jie

Publication Date: Dec ,2025

Journal: Renal Failure 47(1), pp. 2577174

Abstract: This study investigated the link between the endothelial activation and stress index (EASIX) and acute kidney injury (AKI) development and prognosis in elderly critically ill patients. Using the MIMIC-IV database, we conducted a retrospective cohort study including 12,122 ICU patients aged >=65 years, of whom 9,124 developed AKI. Patients were divided into three groups based on EASIX scores. We compared the baseline characteristics, mortality rates, and clinical outcomes across groups. Multivariable Cox regression analysis assessed the association between EASIX and AKI development and short-term outcomes, adjusting for confounders. Kaplan-Meier curves and subgroup analyses were performed. Dose-response modeling, threshold effect analysis, and E-value analysis

were also conducted. Results showed that patients with the highest EASIX scores had significantly higher mortality rates, with HRs for 28-day mortality of 1.69 (95% CI: 1.47-1.95, p p p = 0.003). Kaplan-Meier curves indicated lower survival probabilities with higher EASIX values (log-rank p p < 0.001), suggesting the increased vulnerability to elevated EASIX. In conclusion, elevated EASIX is significantly associated with AKI development and adverse short-term outcomes in elderly critically ill patients, indicating its potential as an index for identifying high-risk patients.

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23. **Perioperative Acute Kidney Injury and Anesthesia: A Narrative Review**

Authors: Cekmen, Nedim;Uslu, Ahmed and Yazar, Cagla

Publication Date: Jul ,2024

Journal: Journal of Clinical Practice and Research 46(4), pp. 311–324

Abstract: Perioperative acute kidney injury (AKI) remains challenging for the anesthesiologist and surgeon. It is one of the most common, heterogeneous, and severe complications. Perioperative AKI is associated with increased morbidity, mortality, the need for renal replacement therapy (RRT), prolonged hospital stays, and escalating costs and healthcare resource utilization. Concomitant comorbidities, age, size, type, timing, the urgency of surgery, improper fluid management, anemia, hyperglycemia, malnutrition, the use of blood and blood products, contrast dyes, diuretics, and exposure to nephrotoxins are the main factors in the development of AKI. The main factors involved in the pathogenesis of perioperative AKI are highly complex and include a combination of hypoperfusion, microcirculatory and endothelial dysfunction, inflammation, and tubular cell damage. The main aim of anesthesiologists should be to identify risk factors in the perioperative period and minimize the incidence of perioperative AKI through appropriate anesthesia management and the necessary protective and preventive strategies. The anesthesia management should include optimization of hemodynamics, adequate organ perfusion and oxygenation, suitable monitoring, correct fluid management, anesthesia, pain control, mechanical ventilation methods, glycemic control, avoiding nephrotoxic drugs, contrast dyes, and blood transfusions, and early RRT and nutritional support. New biomarkers should be used to detect, intervene, and treat AKI promptly. We review the recent literature on the value and importance of comprehensive preoperative evaluation, optimization of risk factors, perioperative monitoring, anesthesia and pain management, preventive methods, and treatment in patients with AKI.

Sources Used:

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

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