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1. **Nephrologist's Perceptions of Risk of Severe Chronic Kidney Disease and Outpatient Follow-up After Hospitalization With AKI: Multinational Randomized Survey Study.**

Authors: Acharya, Dilaram;Scory, Tayler D.;Shommu, Nusrat;Donald, Maoliosa;Harrison, Tyrone G.;Murray, Jonathan S.;Sawhney, Simon;Siew, Edward D.;Pannu, Neesh and James, Matthew T.

Publication Date: 202
Journal: Canadian Journal of Kidney Health & Disease 12, pp. 20543581251336548

Abstract: Background: Patients hospitalized with acute kidney injury (AKI) have variable risks for chronic kidney disease (CKD); however, there is limited knowledge about how this risk influences outpatient follow-up with nephrologists. Objective: This survey study examined the likelihood that nephrologists would recommend outpatient follow-up of patients with varying risk profiles for CKD after hospitalization with AKI and the effect of reporting the predicted risk of severe CKD on their decision-making. Design: A randomized survey study examining the impact of providing predicted risks of severe CKD on nephrologists' follow-up recommendations for patients with AKI. Setting: The study included nephrologists from the United States, the United Kingdom, and Canada between September and December 2023. Patients: Participants reviewed clinical vignettes of patients with AKI and varying risks of severe CKD (G4 or G5), using an externally validated prediction model. Measurements: The primary outcome was the likelihood of recommending nephrologist specialist follow-up for each case, scored on a 7-point Likert scale (1 = "definitely not" and 7 = "definitely would"). Methods: Participants were randomized to receive a version of the survey either with or without the predicted risk of severe CKD included for each vignette. Responses were compared across categories of predicted risk (=50%) using generalized estimating equations. Results: Of the 203 nephrologists who participated, 73 (36%) were from the United Kingdom, 71 (35%) from Canada, and 45 (22%) from the United States. Mean (95% confidence interval [CI]) Likert scores increased from 4.01 (3.68, 4.34) for patients with a = 50% predicted risk of severe CKD. Nephrologists were significantly less likely to recommend outpatient nephrology follow-up for patients with a =50% predicted risk when the risk of severe CKD was reported (mean difference = 0.49 [95% CI = 0.04, 0.93]). Limitations: This study focuses on nephrologists from

high-income countries and relies on hypothetical scenarios rather than real-world practices. Survey respondents may not be representative of all nephrologists, although consistent findings across diverse subgroups strengthen findings. Conclusions: When the predicted risk of severe CKD is reported, nephrologists are less likely to recommend follow-up for lower risk patients with AKI and more likely to recommend follow-up for higher risk patients, leading to better alignment of recommendations for outpatient follow-up with patient risk of severe CKD. Copyright © The Author(s) 2025.; Publisher Contexte: Les patients hospitalises pour insuffisance renale aigue (IRA) presentent un risque variable d'evoluer vers l'insuffisance renale chronique (IRC). On ignore toutefois si ce risque influence la decision des nephrologues de recommander un suivi en ambulatoire. Objectif: Etude par sondage examinant la probabilite que les nephrologues recommandent un suivi en ambulatoire a des patients hospitalises pour IRA et presentant divers profils de risque d'evoluer vers l'IRC. On souhaitait egalement verifier si la mention du risque prevu d'IRC grave influencait la prise de decision. Conception: Etude randomisee examinant l'impact de la divulgation du risque prevu d'IRC grave des patients hospitalises pour IRA sur la possibilite qu'ils soient aiguilles pour un suivi en ambulatoire par un nephrologue. Cadre: Sondage aupres de nephrologues des Etats-Unis, du Royaume-Uni et du Canada entre septembre et decembre 2023. Sujets: A l'aide d'un modele predictif valide en externe, les nephrologues participants ont examine les cas cliniques de patients hospitalises pour IRA et presentant des risques variables d'evoluer vers l'IRC grave (G4 ou G5). Mesures: Pour chaque cas, le principal critere d'evaluation etait la probabilite de recommander un suivi specialise par un nephrologue, evaluee a l'aide d'une echelle de Likert a sept points (1 = >, 7 = >, 7 = >). Methodologie: Les nephrologues participants ont ete repartis aleatoirement pour recevoir une version du sondage avec ou sans mention du risque prevu d'IRC grave pour chaque cas clinique. Les reponses ont ete comparees selon la categorie de risque prevu (=50 %) a l'aide d'equations d'estimation generalisees. Resultats: Des 203 nephrologues participants, 73 (36 %) provenaient du Royaume-Uni, 71 (35 %) du Canada et 45 (22 %) des Etats-Unis. Les scores de Likert moyens sont passes de 4,01 (IC95: 3,68 a 4,34), pour les cas ou le risque prevu d'IRC grave etait inferieur a 10 %, a 6,06 (IC95: 5,76 a 6,37) pour les cas ou ce risque etait egal ou superieur a 50 %. Lorsque le risque prevu d'IRC grave etait indique, les nephrologues etaient significativement moins enclins a recommander un suivi en ambulatoire aux patients presentant un risque prevu inferieur a 10 % (diff. moy.: -0,71 [IC95: -1,19 a - 0,23]) et plus enclins a le faire si ce risque etait d'au moins 50 % (diff. moy.: 0,49 [IC95: 0,04 a 0,93]). Limites: L'etude repose sur des scenarios hypothetiques plutot que sur des pratiques reelles. Seuls des nephrologues provenant de pays a revenu eleve ont ete interroges; ces derniers pourraient ne pas etre representatifs de l'ensemble des nephrologues, bien que des resultats comparables obtenus dans divers sous-groupes renforcent les resultats de la presente etude. Conclusion: Dans les cas ou le risque prevu d'evolution vers l'IRC grave est indique, les nephrologues sont moins enclins a recommander un suivi aux patients hospitalises pour IRA dont le risque prevu d'IRC grave est faible, et plus enclins a le faire pour les patients dont le risque prevu est eleve. Ceci permet une plus grande coherence dans les recommandations de suivi ambulatoire pour les patients presentant un risque d'evoluer vers l'IRC grave. Language: French

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2. **Incidence of major adverse kidney events after ICU admission in COVID-19 and non-COVID-19 ARDS patients.**

Authors: Alenezi F.K.;Mahida R.Y.;Bangash M.N.;Patel J.;Thickett D. and Parekh, D.

Publication Date: 2025

Journal: BMJ Open 15(5) (pagination), pp. Article Number: e094887. Date of Publication: 06 May 2025

Abstract: Objectives To compare the incidence and drivers of major adverse kidney events (MAKEs) between COVID-19 and non-COVID-19 acute respiratory distress syndrome (ARDS) patients, with a focus on long-term kidney outcomes. Design Retrospective cohort study. Setting Single-centre intensive care unit in the Midlands, UK. Participants 708 ARDS patients (458 COVID-19, 250 non-

COVID-19). Primary and secondary outcome measures The primary outcome was MAKE at 365 days (MAKE-365), defined as new renal replacement therapy (RRT), estimated glomerular filtration rate (eGFR)

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3. **Does Metamizole Cause Less Acute Kidney Injury than Non-Steroidal Anti-Inflammatory Drugs When Combined with Diuretics and Antihypertensives?.**

Authors: Calvo, Dulce Maria;Saiz, Luis Carlos;Leache, Leire;Celaya, Maria C.;Gutierrez-Valencia, Marta;Alonso, Alvaro and Erviti, Juan

Publication Date: May 21 ,2025

Journal: Toxics 13(5)

Abstract: The concurrent use of (a) diuretics, (b) renin-angiotensin-aldosterone system inhibitors (RAASIs), and (c) non-steroidal anti-inflammatory drugs (NSAIDs) or metamizole, known as the triple whammy (TW) combination, increases the risk of acute kidney injury (AKI). This study compared TWs including metamizole versus NSAIDs regarding hospitalisation for AKI, need for renal replacement therapy (RRT), and all-cause mortality during hospitalisation. Serum creatinine (sCr) and estimated glomerular filtration rate (eGFR) changes in the first year after TW initiation were also assessed. A nested case-control study was conducted within a cohort of adults receiving TW therapy (2009-2018). Logistic regression models analysed the associations between TW type and outcomes. Among 65,077 individuals (mean age 79.7 years; 26.3% male), TW including an NSAID was associated with a lower risk of AKI-related hospitalisation [adjusted odds ratio (aOR) 0.81, 95%CI 0.74-0.87] and all-cause mortality (aOR 0.64, 95%CI 0.49-0.82) compared to TW including metamizole. No significant differences were found in other variables. These findings suggest that TW including an NSAID may reduce the risk of AKI-related hospitalisation and mortality compared to TW including metamizole, although kidney function parameters remained unaffected. Further research is needed to confirm these results.

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4. **Systematic Review and Meta-Analysis of Machine Learning Models for Acute Kidney Injury Risk Classification.**

Authors: CamaOlivares A.;Braun C.;Takeuchi T.;O'Hagan E.C.;Kaiser K.A.;Ghazi L.;Chen J.;Forni L.G.;KaneGill S.L.;Ostermann M.;Shickel B.;Ninan J. and Neyra, J. A.

Publication Date: 2025

Journal: Journal of the American Society of Nephrology (pagination), pp. Date of Publication: 2025

Abstract: Background: Artificial Intelligence (AI) through machine learning (ML) models appears to provide accurate and precise acute kidney injury (AKI) risk classification in some clinical settings, but their performance and implementation in real-world settings has not been established. Method(s): PubMed, EMBASE, Web of Science, and Scopus were searched until August 2023. Articles reporting on externally validated models for prediction of AKI onset, AKI severity, and post-AKI complications in hospitalized adult and pediatric patients were searched using text words related to AKI, AI, and ML. Two independent reviewers screened article titles, abstracts, and full texts. Areas under the receiver operating characteristic curves (AUCs) were used to compare model discrimination and pooled using a random-effects model. Result(s): Of the 4816 articles initially identified and screened, 95 were included representing 3.8 million admissions. The KDIGO-AKI criteria were the most frequently used to define AKI (72%). We identified 302 models, with the most common being logistic regression (37%), neural networks (10%), random forest (9%), and XGBoost (9%). The most frequently reported predictors of

hospitalized incident AKI were age, sex, diabetes, serum creatinine, and hemoglobin. The pooled AUCs for AKI onset were 0.82 (95% CI, 0.80-0.84) and 0.78 (95% CI, 0.76-0.80) for internal and external validation, respectively. Pooled AUCs across multiple clinical settings, AKI severities, and post-AKI complications ranged from 0.78 to 0.87 for internal validation and 0.73 to 0.84 for external validation. Although data were limited, results in the pediatric population aligned with those observed in adults. Between-study heterogeneity was high for all outcomes (I2 >90%), and most studies presented high-risk of bias (86%) according to the Prediction model Risk Of Bias ASsessment Tool. Conclusion(s): Most externally validated models performed well in predicting AKI onset, AKI severity, and post-AKI complications in hospitalized adult and pediatric populations. However, heterogeneity in clinical settings, study populations, and predictors limits their generalizability and implementation at the bedside.

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5. **Predictive Biomarkers of Acute Kidney Injury in COVID-19: Distinct Inflammatory Pathways in Patients with and Without Pre-Existing Chronic Kidney Disease.**

Authors: Carollo, Caterina;Benfante, Alida;Sorce, Alessandra;Montalbano, Katia;Cirafici, Emanuele;Calandra, Leonardo;Geraci, Giulio;Mule, Giuseppe and Scichilone, Nicola

Publication Date: Apr 29 ,2025

Journal: Life 15(5)

Abstract: BACKGROUND: Acute kidney injury (AKI) has emerged as a significant complication in patients with coronavirus disease 2019 (COVID-19). The pathophysiology of COVID-19-associated AKI is multifactorial, involving both direct viral effects on renal cells and indirect mechanisms such as systemic inflammation and cytokine storms. This highlights the critical need for early detection and effective management strategies to mitigate kidney injury and improve patient outcomes. The aim of our study is to assess the potential predictive role of inflammatory biomarkers in determining the risk of developing COVID-19-associated AKI in patients with and without pre-existing CKD. METHODS: This study included 84 patients stratified by pre-existing chronic kidney disease (CKD) status. Demographic, clinical, and laboratory data were collected, including vital signs, hematological profiles, renal function markers, inflammatory biomarkers, coagulation parameters, and treatments. Outcomes such as acute kidney injury (AKI) and in-hospital mortality were documented. RESULTS: In patients with pre-existing CKD, IL-6 and NLR demonstrated high predictive accuracy for AKI onset. In patients without pre-existing CKD, white blood cell (WBC) count emerged as a significant predictor of AKI onset. CONCLUSIONS: The differential roles of IL-6, NLR, and WBC in predicting AKI onset highlight distinct physiopathological pathways influenced by COVID-19. In CKD+ patients, chronic inflammation and immune dysregulation are key drivers of AKI, with IL-6 and NLR serving as robust markers of this inflammatory state. In contrast, in CKD- patients, AKI may be more influenced by acute inflammatory responses and infectious factors, as reflected by WBC count.

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6. **Hepatorenal Syndrome - AKI in Decompensated Liver Disease: Clinical Characteristics, Risk Factors, Ultrasound Applications, and Outcomes.**

Authors: Dharanidhar Reddy, Yarramachu;Sindhu Singh, K. Sai;Lakshmi Aishwarya, Pavuluri;Jayaram, J. K. and Elayaperumal, Indhumathi

Publication Date: Apr 29 ,2025

Journal: Giornale Italiano Di Nefrologia 42(2)

Abstract: Background. Acute kidney injury (AKI) is a common and serious complication in patients with

decompensated liver disease (DLD), often resulting from ischemic acute tubular necrosis or hepatorenal syndrome. This study examines the role of biochemical markers and ultrasound parameters, such as right atrial pressure, right ventricular hypertrophy, inferior vena cava diameter, hepatic venous flow dynamics, left ventricular diastolic dysfunction, the E/e' ratio, renal peak systolic velocity, renal end-diastolic velocity, and renal resistive index (RI), in predicting AKI severity and outcomes. Methods. A prospective observational study was conducted on 50 DLD patients with AKI, admitted to a tertiary care Hospital. Biochemical parameters including serum creatinine, bilirubin, and albumin along with ultrasound parameters were assessed. AKI was classified according to KDIGO criteria, and renal recovery and mortality were monitored. Diagnostic accuracy was evaluated through ROC analysis. Results. 30% of patients had stage 3 AKI, with 60% of them being male (average age 54 +/- 12 years). Stage 3 AKI was a significant predictor of mortality (OR 3.5, p 30% of patients had stage 3 AKI, with 60% of them being male (average age 54 +/- 12 years). Stage 3 AKI was a significant predictor of mortality (OR 3.5, p Conclusion. The simultaneous assessment of clinical, biochemical, and ultrasound parameters enhances the prediction of AKI severity and patient outcomes in DLD. This approach facilitates earlier detection and better management of AKI in this population. Copyright by Societa Italiana di Nefrologia SIN, Rome,Italy.

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7. **Association between the TyG index and the risk of in-hospital mortality from early sepsis-related acute kidney injury in critically ill patients: a secondary analysis of MIMIC-IV 2008-2022.**

Authors: Feng, Chengyi;Li, Xin;Fan, Zifang;Zhang, Zihan and Di, Jia

Publication Date: May 07 ,2025

Journal: BMJ Open 15(5), pp. e099529

Abstract: OBJECTIVES: This study aims to investigate the relationship between the triglyceride-glucose (TyG) index in patients with early sepsis-associated acute kidney injury (SA-AKI) and the risk of in-hospital mortality. DESIGN: Secondary data analysis. SETTING: This study analysed secondary data from the Medical Information Mart for Intensive Care (MIMIC) 2008-2022. PARTICIPANTS: A total of 1632 participants were enrolled in the final analysis. PRIMARY AND SECONDARY OUTCOME MEASURES: A secondary data analysis study was conducted using data from the MIMIC IV 3.0 database. Participants were divided into four groups based on the quartiles of the TyG index. The primary outcome was all-cause in-hospital mortality. The association between the TyG index and in-hospital mortality among SA-AKI patients was assessed using multivariate COX proportional hazards regression analysis and restricted cubic spline regression analysis. Subgroup and sensitivity analyses were performed to verify the robustness of results. RESULTS: A total of 1632 patients were included in the study. The in-hospital mortality rate was 31.13%, and the intensive care unit (ICU) mortality rate was 25.25%. Multivariate COX regression analysis showed that the TyG index was independently associated with an increased risk of in-hospital mortality (HR 1.14 (95% CI 1.02 to 1.27); p=0.02) and ICU mortality (HR 1.17; (95% CI 1.04 to 1.32); p=0.01). The restricted cubic spline regression model indicated that the risk of in-hospital and ICU mortality increased linearly with the increase in the TyG index. Sensitivity analysis demonstrated that the effect size and direction were consistent across different subgroups, and the results were stable. CONCLUSION: A high TyG index is associated with increased mortality during hospitalisation in patients with SA-AKI. Larger-scale prospective studies are needed to confirm these findings.

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8. **Prognostic value of blood urea nitrogen to albumin ratio in septic patients with acute kidney injury-a retrospective study based on MIMIC database.**

Authors: Han, Kun;Tao, Yuxia;Wang, Jianhao and Lu, Jinshuai

Publication Date: 2025

Journal: Frontiers in Medicine 12, pp. 1510919

Abstract: Objective: To investigate the predictive value of blood urea nitrogen to albumin ratio (BAR) in the prognosis of patients with sepsis-induced acute kidney injury (S-AKI). Methods: A retrospective analysis was conducted on patient data from the MIMIC-IV database that met the S-AKI criteria. Cox regression was employed to analyze the relationship between BAR and 28-day mortality risk. BAR was divided into four quartiles (Q1, Q2, Q3, Q4), and Kaplan-Meier survival analysis was performed to compare the 28-day cumulative survival rates among the four patient groups. Simultaneously, the log-rank test was used for statistical analysis of survival rate differences among the four groups. Subsequently, Cox regression was performed with Q1 (the lowest quartile) as the reference for comparison. Restricted cubic splines (RCS) were utilized to analyze the non-linear association between BAR and mortality risk, with the median BAR of all patients serving as the reference point to define the non-linear effect. Thereafter, correlation analysis and subgroup analysis were conducted to assess the stability of BAR in predicting 28-day prognosis. LASSO regression analysis was applied to select variables related to 28-day prognosis, and relevant variables were screened through univariate and multivariate logistic regression analyses to construct a nomogram model. The area under the receiver operating characteristic curve (AUC), calibration plot, and decision curve analysis (DCA) were used to evaluate the predictive performance of the nomogram for in-hospital mortality in S-AKI patients. Results: A total of 8,666 patients with S-AKI were included, among whom 2,396 died (27.65%). Cox analysis of BAR indicated a positive correlation between BAR and 28-day mortality risk, with an HR of 1.029 (95% CI: 1.026-1.032). Kaplan-Meier curves showed that the 28-day cumulative survival rate was significantly lower in the Q4 group compared to the Q1 group of S-AKI patients (log-rank test, chi2 = 381.5, p P p p Conclusion: BAR, as a simple and convenient biomarker, can effectively predict in-hospital mortality in patients with S-AKI, with its elevation positively correlated with an increased risk of death. The rise in BAR is positively associated with an increased 28-day mortality risk in S-AKI patients, and a higher absolute value of BAR indicates a poorer prognosis for S-AKI patients. The nomogram incorporating BAR demonstrates excellent performance in prediction. Copyright © 2025 Han, Tao, Wang and Lu.

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9. **Temporal trends and clinical characteristics associated with pregnancy-related acute kidney injury in England: a population-based cohort study.**

Authors: Leal L.F.;Filion K.B.;Platt R.W.;Joseph K.S.;Magee L.A.;Bramham K.;Cote A.M. and Mehrabadi, A.

Publication Date: 2025

Journal: AJOG Global Reports 5(2) (pagination), pp. Article Number: 100493. Date of Publication: 01 May 2025

Abstract: Background: Previous studies have reported an increase in pregnancy-related acute kidney injury, but the underlying reasons and patient characteristics associated with this trend are incompletely understood. Objective(s): To describe temporal trends and identify clinical characteristics associated with pregnancy-related acute kidney injury in England. Study design: This population-based cohort study included all live birth and stillbirth pregnancies to persons aged 15 to 45 years, between 1998 and 2017, using general practitioner practices in England linked to hospitalization data. The outcomes were overall acute kidney injury, postpartum acute kidney injury, severe acute kidney injury, and pulmonary oedema. Adjusted risk ratios were estimated for each 5-year period using Poisson regression models. Result(s): Among 324,124 pregnancies (4.3% >= 40 years, 44.1% nulliparous), acute kidney injury increased from 2.9 to 11.2 per 10,000 pregnancies from 1998-2002 to 2013-2017. Severe acute kidney injury increased from 15.9 to 18.5 per 100,000 pregnancies from 1998-2007 to

2008-2017, while pulmonary oedema decreased from 16 to Result(s): Among 324,124 pregnancies (4.3% >= 40 years, 44.1% nulliparous), acute kidney injury increased from 2.9 to 11.2 per 10,000 pregnancies from 1998-2002 to 2013-2017. Severe acute kidney injury increased from 15.9 to 18.5 per 100,000 pregnancies from 1998-2007 to 2008-2017, while pulmonary oedema decreased from 16 to Result(s): Among 324,124 pregnancies (4.3% >= 40 years, 44.1% nulliparous), acute kidney injury increased from 2.9 to 11.2 per 10,000 pregnancies from 1998-2002 to 2013-2017. Severe acute kidney injury increased from 15.9 to 18.5 per 100,000 pregnancies from 1998-2007 to 2008-2017, while pulmonary oedema decreased from 16 to Conclusion(s): There was a marked rise in pregnancy-related acute kidney injury, particularly in last 5 years of the study. The steady rise among those with hypertensive disorders suggests ongoing vigilance is required to ensure optimal care. An investigation of other potential causes or changes in case ascertainment is also warranted given the rise in acute kidney injury among those without hypertensive disorders of pregnancy.

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10. **Association between hemoglobin glycation index and poor prognosis in patients with AKI: a retrospective cohort analysis of the MIMIC-IV database.**

Authors: Liu, Jing;Shi, Yue;Duan, Hangyu;Shi, Xiujie;Zhang, Yu and Zhao, Mingming

Publication Date: Dec ,2025

Journal: Renal Failure 47(1), pp. 2499232

Abstract: BACKGROUND: There have been no investigations on the relationship between hemoglobin glycation index (HGI) and poor prognosis in patients with acute kidney injury (AKI). METHODS: Patients were enrolled from the Medical Information Mart for Intensive Care-IV (MIMIC-IV) database. The HGI was calculated using a linear regression model fitted to glycosylated hemoglobin and fasting plasma glucose (FPG). Kaplan-Meier survival analysis and Cox proportional hazards regression analysis were performed based on HGI quartiles to determine the independent association between HGI and mortality risk. A restricted cubic spline (RCS) was employed to assess the potential nonlinear relationship between HGI and mortality risk. A two-piecewise linear regression model was developed to identify the threshold effect. Additionally, a linear regression model was applied to evaluate the association between HGI and the length of hospital stays. RESULTS: A total of 3684 patients with AKI were included in this study. Among them, 486 patients died within 28 days, and 673 patients died within 90 days. Multivariate Cox regression analysis identified HGI as an independent risk factor for both 28-day mortality (hazard ratio [HR], 1.65 [95% CI 1.26 to 2.16], p p p p p CONCLUSION: In patients with AKI, a low HGI is an independent risk factor for 28-day and 90-day mortality, exhibiting an L-shaped association. HGI may serve as a potential predictor of mortality risk.

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11. **Effectiveness of amino acid supplementation in preventing acute kidney injury following cardiac surgery: A systematic review and meta-analysis of randomized controlled trials.**

Authors: Majeed M.W.;Finnegan E.;Gallo Ruelas M.;Lopes L.M.;Righetto B.B.;Salha I.;Delgado D.;Quiros M.C.;Tomo A.T.J.;Ahmad R.;Andrabi S. and Abujaber, S.

Publication Date: 2025

Journal: Acta Anaesthesiologica Scandinavica 69(6) (pagination), pp. Article Number: e70037. Date of Publication: 01 Jul 2025

Abstract: Introduction: Acute kidney injury (AKI) is a frequent complication of cardiac surgery, contributing to increased morbidity, longer hospital stays, and higher mortality. Evidence suggests amino acid (AA) supplementation may enhance renal blood flow and glomerular filtration rate (GFR), potentially reducing AKI risk; however, findings remain inconclusive. This study evaluated the efficacy

of perioperative AA supplementation in preventing AKI and related complications post-cardiac surgery. Method(s): PubMed, Embase, and Cochrane databases were searched for randomized controlled trials (RCTs) comparing AA supplementation versus standard care in preventing cardiac surgery-associated AKI. Main outcomes included AKI incidence (defined by the Kidney Disease Improving Global Outcomes (KDIGO) criteria), 30-day mortality, and renal replacement therapy (RRT) requirement. Pooled risk ratios (RRs) with 95% confidence intervals (CIs) were calculated using random-effects models. Statistical significance was set at p Method(s): PubMed, Embase, and Cochrane databases were searched for randomized controlled trials (RCTs) comparing AA supplementation versus standard care in preventing cardiac surgery-associated AKI. Main outcomes included AKI incidence (defined by the Kidney Disease Improving Global Outcomes (KDIGO) criteria), 30-day mortality, and renal replacement therapy (RRT) requirement. Pooled risk ratios (RRs) with 95% confidence intervals (CIs) were calculated using random-effects models. Statistical significance was set at p Result(s): Six RCTs involving 4501 cardiac surgery patients were included. AA mixture interventions significantly reduced the risk of AKI stage 1 (RR: 0.56; 95% CI: 0.77-0.96; p =.009; CoE: Moderate) and Stage 3 (RR: 0.53; 95% CI: 0.34-0.83; p =.005; CoE: Moderate), but not stage 2 (RR: 1.24; 95% CI: 0.60-2.55; p =.568; CoE: Low). Preliminary findings from glutamic acid and glutamine (single AA interventions) showed potential benefits in reducing AKI incidence (CoE: Very low) and improving surrogate biomarkers, respectively. No significant effects were observed on mortality or RRT incidence for any intervention. Conclusion(s): AA mixtures likely reduce AKI incidence following cardiac surgery but show limited effects on mortality and RRT. Further trials are needed to confirm the benefits of glutamic acid and glutamine supplementation. Editorial Comment: Use of amino acid supplementation for the prevention of acute kidney injury after cardiac surgery may be effective, but more trial data and confidence in a beneficial effect is needed for this to be implemented in everyday clinical practice.

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12. **Rhabdomyolysis in patients with COVID-19: A cause or consequence of acute kidney injury or mortality?.**

Authors: Mertsoy, Yilmaz;Kavak, Seyhmus;Yildirim, Mehmet Serdar;Kacar, Emrah;Kaya, Sehmuz and Gunay, Emrah

Publication Date: May 02 ,2025

Journal: Medicine 104(18), pp. e42368

Abstract: Rhabdomyolysis can occur due to many traumatic and nontraumatic causes. Rhabdomyolysis has been reported in new type of coronavirus disease (COVID-19) cases. The aim of our study was to examine the effects of rhabdomyolysis on mortality and renal outcomes in patients hospitalized in our hospital's COVID-19 wards. In our single-center and retrospective study, we included patients who were admitted with a diagnosis of COVID-19 by a thorax-computed tomography finding who were older than 18 years of age and with a measured creatinine kinase (CK) > 1000 U/L on any day of hospitalization. The same number of patients hospitalized in COVID-19 services with CK = 4 days, AKI (29.7% vs 65.1%; P = 4 days, AKI (29.7% vs 65.1%; P = 4 days, AKI (29.7% vs 65.1%; P = 4 days, AKI (29.7% vs 65.1%; P

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13. **Impact of SGLT2-inhibitors on acute kidney injury in diabetic patients with severe aortic stenosis undergoing transcatheter aortic valve implantation (TAVI).**

Authors: Paolisso, Pasquale;Belmonte, Marta;Gallinoro, Emanuele;Scarsini, Roberto;Bergamaschi, Luca;Portolan, Leonardo;Armillotta, Matteo;Esposito, Giuseppe;Moscarella, Elisabetta;Montalto, Claudio;de Oliveira, Elayne Kelen;Angeli, Francesco;Orzalkiewicz, Mateusz;Fabroni, Margherita;Galli, Verdiana;Baydaroglu, Nurcan;Di Lenarda, Francesca;Policastro, Pasquale;Terrone, Carlo;Ausiello,

Davide, et al

Publication Date: May 21 ,2025

Journal: Cardiovascular Diabetology 24(1), pp. 221

Abstract: BACKGROUND: Acute kidney injury (AKI) following transcatheter aortic valve implantation (TAVI) is associated with significantly worse outcomes, leading to increased short- and long-term mortality. We sought to evaluate the impact of sodium-glucose cotransporter 2 inhibitors (SGLT2i) on the risk of AKI in patients with type 2 diabetes mellitus (T2DM) and severe aortic stenosis (AS) undergoing TAVI. METHODS: Multicenter international registry of consecutive T2DM patients with severe AS undergoing TAVI between 2021 and 2024. The study population was stratified by the presence of chronic kidney disease (CKD), defined according to the KDIGO guideline, and anti-diabetic therapy at hospital admission (SGLT2i versus no-SGLT2i users). AKI was defined according to the Valve Academy Research Consortium 3 (VARC-3) criteria. RESULTS: The study population consisted of 514 patients stratified into those without CKD (n = 226, 44%), of whom 43 (19%) were treated with SGLT2i, and 288 (56%) with CKD, of whom 71 (24.7%) were on SGLT2i treatment. The median age was 81 [77-84] years, and 60.1% were males. SGLT2i use did not impact renal function in patients without CKD, with AKI occurring in 7.1% of the cases, regardless of SGLT2i use. Among CKD patients, AKI occurred more frequently in no-SGLT2i users compared to those receiving SGLT2i (19.8% versus 8.5%, p = 0.027), with a significant increase in post-TAVI and discharge serum creatinine values for no-SGLT2i users (p = 0.001 after TAVI and p : The study population consisted of 514 patients stratified into those without CKD (n = 226, 44%), of whom 43 (19%) were treated with SGLT2i, and 288 (56%) with CKD, of whom 71 (24.7%) were on SGLT2i treatment. The median age was 81 [77-84] years, and 60.1% were males. SGLT2i use did not impact renal function in patients without CKD, with AKI occurring in 7.1% of the cases, regardless of SGLT2i use. Among CKD patients, AKI occurred more frequently in no-SGLT2i users compared to those receiving SGLT2i (19.8% versus 8.5%, p = 0.027), with a significant increase in post-TAVI and discharge serum creatinine values for no-SGLT2i users (p = 0.001 after TAVI and p : The study population consisted of 514 patients stratified into those without CKD (n = 226, 44%), of whom 43 (19%) were treated with SGLT2i, and 288 (56%) with CKD, of whom 71 (24.7%) were on SGLT2i treatment. The median age was 81 [77-84] years, and 60.1% were males. SGLT2i use did not impact renal function in patients without CKD, with AKI occurring in 7.1% of the cases, regardless of SGLT2i use. Among CKD patients, AKI occurred more frequently in no-SGLT2i users compared to those receiving SGLT2i (19.8% versus 8.5%, p = 0.027), with a significant increase in post-TAVI and discharge serum creatinine values for no-SGLT2i users (p = 0.001 after TAVI and p CONCLUSION: In diabetic patients with CKD undergoing TAVI, SGLT2i therapy was associated with a lower occurrence of AKI compared to those not treated with SGLT2i, suggesting a potential nephroprotective effect in this high-risk population. Copyright © 2025. The Author(s)

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14. **Machine learning models for acute kidney injury prediction and management: a scoping review of externally validated studies.**

Authors: Rehman A.U.;Neyra J.A.;Chen J. and Ghazi, L.

Publication Date: 2025

Journal: Critical Reviews in Clinical Laboratory Sciences (pagination), pp. Date of Publication: 2025

Abstract: Despite advancements in medical care, acute kidney injury (AKI) remains a major contributor to adverse patient outcomes and presents a significant challenge due to its associated morbidity, mortality, and financial cost. Machine learning (ML) is increasingly being recognized for its potential to transform AKI care by enabling early prediction, detection, and facilitating an individualized approach to

patient management. This scoping review aims to provide a comprehensive analysis of externally validated ML models for the prediction, detection, and management of AKI. We systematically searched for relevant literature from inception to 15 February 2024, using four databases-MEDLINE, EMBASE, Web of Science, and Scopus. We focused solely on models that had undergone external validation, employed Kidney Disease Improving Global Outcomes (KDIGO) definitions for AKI, and utilized ML models (excluding logistic regression models). A total of 44 studies encompassing 161 ML models for AKI prediction, severity assessment, and outcomes in both adult and pediatric populations were included in the review. These studies encompassed 4,153,424 patient admissions, with 1,209,659 in the development and internal validation cohorts and 2,943,765 in the external validation cohorts. The ML models demonstrated significant variability in performance owing to differing clinical settings, populations, and predictors used. Most of the included models were developed in specialized patient populations, such as those in intensive care units, post-surgical settings, and specific disease states (e.g. congestive heart failure, traumatic brain injury, etc.). Moreover, only a few models incorporated dynamic predictors of AKI which are crucial for improving clinical utility in rapidly evolving clinical conditions like AKI. The variable performance of these models when applied to external validation cohorts highlights the challenges of reproducibility and generalizability in implementing ML models in AKI care. Despite acceptable performance metrics, none of the models assessed in this review underwent validation or implementation in real-world clinical workflows. These findings underscore the need for standardized performance metrics and validation protocols to enhance the generalizability and clinical applicability of these models. Future efforts should focus on enhancing model adaptability by incorporating dynamic predictors and unstructured data and by ensuring that models are developed in diverse patient populations. Moreover, collaboration between clinicians and data scientists is critical to ensure the development of models that are clinically relevant, fair, and tailored to real-world healthcare environments.

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15. **Predicting in-hospital mortality in patients with alcoholic cirrhosis complicated by severe acute kidney injury: development and validation of an explainable machine learning model.**

Authors: Sun, Meina;Liu, Shihui;Min, Jie;Zhong, Lei;Zhang, Jinyu and Du, Zhian

Publication Date: 2025

Journal: Frontiers in Medicine 12, pp. 1570928

Abstract: Background: At present, there are no specialized models for predicting mortality risk in patients with alcoholic cirrhosis complicated by severe acute kidney injury (AKI) in the ICU. This study aims to develop and validate machine learning models to predict the mortality risk of this population during hospitalization. Methods: A retrospective analysis was conducted on 856 adult patients with alcoholic cirrhosis complicated by severe AKI, utilizing data from the MIMIC-IV database. Within the dataset, 627 patients from the period 2008-2016 were designated as the training cohort, whereas 229 patients from 2017 to 2019 comprised the temporal external validation cohort. Feature selection was conducted utilizing LASSO regression, which was subsequently followed by the development of eight distinct machine learning models. The performance of these models in the temporal external validation cohort was rigorously assessed using the area under the receiver operating characteristic curve (AUROC) to determine the optimal model. The model was interpreted using the SHAP method, and nomograms were subsequently constructed. A comprehensive evaluation was performed from the perspectives of discrimination (assessed via AUROC and AUPRC), calibration (using calibration curves), and clinical utility (evaluated through DCA curves). Results: LASSO regression identified nine key features: total bilirubin, acute respiratory failure, vasopressin, septic shock, oliguria, AKI stage, lactate, fresh frozen plasma transfusion, and norepinephrine. In the temporal external validation cohort, the Lasso-LR model achieved the highest AUROC value of 0.809, establishing it as the optimal model. We developed both a static nomogram and a web-based dynamic nomogram (https://zhangjingyu123456.shinyapps.io/dynnomapp/) for visualization purposes. In the nomogram

model, the AUROC for the training cohort and temporal external validation cohort were 0.836 (95% CI: 0.802-0.870) and 0.809 (95% CI: 0.754-0.865), respectively. The calibration slope and Brier score for the training cohort were 1.000 and 0.146, respectively; for the temporal external validation cohort, these values were 0.808 and 0.177, respectively. The DCA curves indicate that the model has certain clinical application value. Conclusion: The Lasso-LR model exhibits robust predictive capability for in-hospital mortality among patients with alcoholic cirrhosis complicated by AKI, offering valuable prognostic insights and individualized treatment decision support for healthcare professionals.

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16. **Predictive Factors for the Discontinuation of Renal Replacement Therapy in Critically Ill Adults: A Systematic Review and Meta-Analysis**

Authors: Taha, Eman Nasr;Ewida, Alaa H.;Elsheshtawi, Nehal N.;Ragab, Shimaa A.;Alaraby, Dina;Ewida, Rasha;Elmalky, Ahmed;Temsah, Mohamad-Hani;Sethi, Sidharth K.;Raina, Rupesh and Alhasan, Khalid

Publication Date: Apr ,2025

Journal: Cureus 17(4), pp. e81783

Abstract: Acute kidney injury (AKI) is a decline in kidney function. Acute kidney injury frequently occurs as a complication among patients who are hospitalized or critically ill. Consequently, we aimed to examine the factors that could predict the cessation of renal replacement therapy (RRT) in individuals with severe AKI. We conducted a systematic review and meta-analysis with a comprehensive literature search in PubMed, Excerpta Medica database (Embase), and the Cochrane Library to identify relevant studies exploring factors associated with a successful transition from continuous renal replacement therapy (CRRT). The search was conducted from each database from beginning until December 1, 2022. The research was carried out on adult critically ill patients taking RRT while being supported in an intensive care unit (ICU) environment. We identified a total of 11 studies through our search. The pooled analysis demonstrated several predictive factors for successful weaning from CRRT, including CRRT duration, urine output in the course of CRRT termination (with an increase of 100 mL/day), creatinine clearance, urinary creatinine (UCr), neutrophil gelatinase-associated lipocalin (NGAL), and ICU length of stay (p

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17. **Effect of Post-Acute Kidney Injury Use of Renin-Angiotensin Inhibitors on Long-term Mortality and Major Adverse Kidney Events: A 5-year Retrospective Observational Cohort Study.**

Authors: Tan, Byorn W. L.;Tan, Bryce W. Q.;Akalya, K.;Hong, Wei-Zhen;Da, Yi;Low, Sanmay;Ng, Wan-Ying and Chua, Horng-Ruey

Publication Date: May ,2025

Journal: Kidney Medicine 7(5), pp. 100996

Abstract: Rationale & Objective: Acute kidney injury (AKI) is common in hospitalized adults and a risk factor for chronic kidney disease and mortality. The effect of angiotensin-converting enzyme inhibitors (ACEi) or angiotensin receptor blockers (ARBs) post-AKI on mortality and long-term kidney function remains unclear. Study Design: Propensity-weighted retrospective observational cohort study. Setting & Participants: A total of 3,289 patients with AKI admitted to a tertiary care hospital from November 2015-October 2016, with follow-up until September 2020. Exposures: ACEi/ARB use within 180 days post-AKI. Outcomes: All-cause mortality, and major adverse kidney events (MAKE) as defined by composite of renal replacement therapy post-AKI, sustained estimated glomerular filtration rate (eGFR)

decline >30% from baseline, or eGFR : All-cause mortality, and major adverse kidney events (MAKE) as defined by composite of renal replacement therapy post-AKI, sustained estimated glomerular filtration rate (eGFR) decline >30% from baseline, or eGFR 2. Analytical Approach: We generated propensity weights for ACEi/ARB use post-AKI, using age, sex, comorbid conditions, prior medication, intensive care unit admission, severe sepsis, and index AKI Kidney Disease: Improving Global Outcomes severity. Cox proportional hazard models were used to test associations of post-AKI ACEi/ARB with mortality, MAKE, and joint models for eGFR slopes. Results: A total of 2,309 (70.2%) participants died or experienced MAKE by end of follow-up. 161 (4.9%) and 406 (12.3%) patients initiated or resumed prior ACEi/ARB use within 180 days post-AKI, respectively. Although the overall cohort had no significant mortality association with post-AKI ACEi/ARB use, a significant association with lower mortality was observed in patients with KDIGO 3 AKI (HR, 0.40; 95% CI, 0.21-0.75; P interaction = 0.003). However, post-AKI ACEi/ARB use was associated with increased MAKE in patients without cardiovascular indications for ACEi/ARB use (HR, 1.52; 95% CI, 1.17-1.98; P interaction = 0.03). Although post-AKI use of ACEi/ARB was associated with acute eGFR decline (initial eGFR change -2.3 mL/min/1.73 m2/year; 95% CI, -3.1 to -1.5; P Limitations: Retrospective observational study on heterogeneous AKI cohort without data on ACEi/ARB cumulative exposure. Conclusions: Early ACEi/ARB post-AKI was not associated with better long-term survival or kidney function but was associated with lower mortality in patients with KDIGO 3 AKI. Copyright © 2025 The Authors.; plain-language-summary Acute kidney injury (AKI) is common in hospitalized adults and increases the risk of death and kidney failure. Although angiotensin-converting enzyme inhibitors (ACEis) or angiotensin receptor blockers (ARBs) have been widely used in proteinuric kidney disease to slow kidney function decline, the effect of ACEi/ARB use post-AKI on long-term kidney function remains unclear. In this 5-year study of 3,289 patients with AKI, we found that although patients experienced a transient decrease in kidney function following early ACEi/ARB initiation after their kidney injury, long-term kidney function trajectory and survival in these patients were similar to patients without early ACEi/ARB use. However, ACEi/ARB use after an AKI may reduce the long-term risk of death in patients with severe AKI. Additionally, we noted sustained kidney function deterioration in a subgroup of patients on ACEi/ARB early post-AKI in the absence of cardiovascular indications. These observations suggest that clinicians should adopt more individualized approaches to early ACEi/ARB administration post-AKI. Language: English

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18. **The influence of electronic AKI alert on prognosis of adult hospitalized patients: a systematic review and meta-analysis.**

Authors: Wang, Han;Deng, Lingling;Li, Ting;Liu, Kang;Mao, Huijuan and Wu, Buyun

Publication Date: May 12 ,2025

Journal: Critical Care (London, England) 29(1), pp. 189

Abstract: BACKGROUND: Acute kidney injury (AKI) is a critical yet frequently under diagnosed condition in hospitalized patients, impacting morbidity and mortality. Electronic alerts for AKI aimed to assist physicians in early diagnosis and intervention, though evidence for their effectiveness is inconsistent. MATERIALS AND METHODS: A systematic search was conducted in PubMed, the Cochrane Central Register of Controlled Trials, Cochrane Library, and Web of Science from inception to November 2024. Eligible studies included randomized controlled trials (RCTs), before-and-after analyses, and stepped-wedge designs involving hospitalized patients. The primary outcomes were mortality and renal replacement therapy (RRT) rates, Secondary outcomes included hospital length of stay (LoS), AKI progression and recovery. Care-centered outcomes encompassed nephrologist consultation, nephrotoxic medication discontinuation and medication review. Subgroup analysis examined the impact of response intensity, hospital type and geographic region on these outcomes. RESULTS: Twenty-two studies involving 170,696 participants were included: 8 RCTs (n = 21,710) and

14 non-RCTs or observational studies (n = 148,986). RCTs showed no effect on mortality (RR 1.02; 95% CI 0.97-1.07) or LoS (mean difference 0.04; 95% CI - 0.13 to 0.22) but a significant increase in RRT use (RR 1.13; 95% CI 1.02-1.26) with AKI alert systems. Non-RCTs, however, reported reduced mortality (RR 0.92; 95% CI 0.88-0.96), less AKI progression (RR 0.85; 95% CI 0.77-0.94), enhanced kidney recovery (RR 1.65; 95% CI 1.56-1.75), increased nephrotoxic drug discontinuation (RR 1.20; 95% CI 1.13-1.28), and higher drug review rates (RR 1.19; 95% CI 1.17-1.21), with no impact on RRT use (RR 1.08; 95% CI 0.87-1.36). Subgroup analysis revealed an increased in-hospital mortality in low response intensity (RR 1.15; 95% CI 1.00-1.32), reduced mortality in moderate response intensity (RR 0.93; 95% CI 0.89-0.97), and unclear effects in high response intensity (RR 0.88; 95% CI 0.70-1.09). AKI alert was also favored in teaching hospitals and in several regions (Europe, North America and South America). CONCLUSION: The efficacy of AKI alerts remains inconclusive. Current evidence do not support or refute their effectiveness. Variability in response intensity, hospital type and geographic region may help explaining discrepancies, underscoring the need for further research to optimize AKI alert systems with more effective action in clinical practice.

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19. **A higher preoperative total protein to albumin ratio independently predicted more severe postoperative acute kidney injury in patients with acute type A aortic dissection: a retrospective cohort study of 224 cases.**

Authors: Wang, Xiuhua;Xu, Hui;Tu, Guowei;Lai, Hao;Xu, Jiarui;Li, Xin and Luo, Zhe

Publication Date: 2025

Journal: Frontiers in Cardiovascular Medicine 12, pp. 1562388

Abstract: Objectives: In this retrospective study, we investigated the incidence of postoperative acute kidney injury (AKI) and determined the predictors associated with AKI in patients underwent surgeries for acute type A aortic dissection (ATAAD). Methods: We enrolled patients diagnosed with ATAAD and received operation. AKI was defined based on the Kidney Disease: Improving Global Outcomes criteria. Potential perioperative predictors were evaluated for postoperative AKI. Univariate and multivariate regression analyses were conducted to identify predictors associated with AKI following surgery. The primary end point was the incidence of postoperative AKI, while the secondary end points included in-hospital mortality and other major surgical complications. Results: This study enrolled 224 patients in all. There were 155 (69.2%) patients with postoperative AKI, including 55 (24.6%) with KDIGO stage 1, 45 (20.1%) with stage 2 and 55 (24.6%) with stage 3. Twenty-eight patients (12.5%) needed renal replacement therapy after surgery. The total in-hospital mortality was 2.7% (AKI vs. non-AKI: 3.2% vs. 1.4%, p = 0.669). Multivariate regression analysis found total protein concentrations [odds ratio (OR) 1.136, 95% confidence interval (CI): 1.032-1.250, p = 0.009], intraoperative blood loss (OR 1.002, 95% CI: 1.000-1.004, p = 0.042) and ventilation time (OR 1.011, 95% CI: 1.001-1.021, p = 0.026) were independently associated with AKI. The area under the receiver operating characteristic curve was 0.688 (95% CI: 0.617-0.759). Our predictive model demonstrated a sensitivity of 72.5% and a specificity of 57.4%. The ordinal logistic regression analysis found that age (OR 1.055, 95% CI: 1.027-1.084, p p p = 0.012) and ventilation time (OR 1.005, 95% CI: 1.001-1.008, p = 0.005) were independently associated with the severity of AKI. Conclusion: A higher preoperative total protein to albumin ratio independently predicted more severe postoperative AKI in patients undergoing surgical treatment for ATAAD. Monitoring preoperative total protein concentrations and the total protein to albumin ratio may assist in identifying patients at higher risk of progressing to severe AKI, though further multicenter validation is required. Copyright © 2025 Wang, Xu, Tu, Lai, Xu, Li and Luo.

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20. **Risk Prediction Models for Contrast-associated Acute Kidney Injury After Percutaneous Coronary Intervention: A Systematic Review.**

Authors: Zhang H.;Chen T.;Chen N. and Liu, L.

Publication Date: 2025

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

Abstract: The aim of this review was to systematically review published studies on risk prediction models for contrast-associated acute kidney injury (CA-AKI) in patients with ST-segment elevation myocardial infarction (STEMI) after percutaneous coronary intervention (PCI). We searched PubMed, Embase, Web of Science, Scopus, Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Chinese databases from inception to July 1, 2024. The Checklist for critical Appraisal and data extraction for systematic Reviews of prediction Modelling Studies (CHARMS) was used to extract data and The Prediction Model Risk of Bias Assessment Tool (PROBAST) was used to assess the risk of bias and applicability. A total of 2784 publications were retrieved; 16 studies were included. The models' area under the curve (AUC) or C-index ranged from 0.719 to 0.877. Commonly used predictors included age, diabetes, Killip class, and use of intra-aortic balloon pump (IABP). Thirteen studies were determined to be at high risk of bias, while three were unclear, but their applicability was satisfactory. The models' clinical utility was still up for debate. Future development or validation of models should focus on methodology and combine machine learning and natural language processing to analyze data to improve the predictive ability and clinical applicability of models.

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21. **Development with external validation of a prediction model for postoperative acute kidney injury following noncardiac surgery in elderly patients.**

Authors: Zhang, Xiaoying;Ruan, Xianghan;Yu, Yao;Sun, Tongyan;Zhang, Jiaqiang;Cong, Xuhui;Lou, Jingsheng;Li, Hao;Cao, Jiangbei;Liu, Yanhong and Mi, Weidong

Publication Date: May 30 ,2025

Journal: BMC Geriatrics 25(1), pp. 390

Abstract: STUDY OBJECTIVE: To develop and externally validate a risk prediction model for postoperative acute kidney injury (PO-AKI) in elderly patients undergoing noncardiac surgery, addressing the current gap in predictive tools for this vulnerable population. DESIGN: A multicenter retrospective cohort study presented according to TRIPOD + AI statement. SETTING: Conducted in 21 tertiary hospitals across 11 provinces in China from January 2009 to April 2022. PATIENTS: Elderly patients (>= 65 years) undergoing noncardiac procedures. INTERVENTIONS AND MEASUREMENTS: The endpoint was PO-AKI within seven days post-surgery, diagnosed using the KDIGO criteria. Data were extracted from electronic medical records for model derivation and validation. MAIN RESULTS: The study included 163,131 elderly patients, with 52,494 for model discovery, 7,899 and 80,641 for external validation. The model incorporated nine variables: age, heart disease history, preoperative hyponatremia, renal surgery (yes/no), surgery type, surgery duration, intraoperative diuretics usage, first-aid vasopressors usage, and blood transfusion. The model demonstrated acceptable discriminative ability with AUROC values of 0.803, 0.793, 0.770, and 0.774 across the training, internal validation, and two external validation datasets, respectively. The calibration plots and decision curve analyses yielded commendable results in both training and validation sets. To streamline usability, we employed risk scores and categorized the population into low-, medium-, and high-risk subgroups. CONCLUSIONS: Clinicians could implement this externally validated risk prediction model to stratify PO-AKI risks in elderly patients during the early postoperative phases of noncardiac surgery.

22. **Mortality Risk Analysis of Combination Antiplatelet Therapy in Patients with Ischemic Stroke and Acute Kidney Injury: A Retrospective Cohort Analysis of the MIMIC-IV Database.**

Authors: Zhou, Qiangqiang;Xu, Hongyu;Long, Shengrong;Wei, Wei and Li, Xiang

Publication Date: May 02 ,2025

Journal: Diseases 13(5)

Abstract: BACKGROUND: Ischemic stroke (IS), a major cerebrovascular disease, is associated with high disability and mortality rates. Acute kidney injury (AKI) often complicates IS and increases in-hospital mortality. While antiplatelet agents are commonly used for IS treatment, their effectiveness in IS patients with AKI is unclear. METHODS: This study, using data from the MIMIC-IV database, divided patients into non-combination (clopidogrel or ticagrelor alone) and combination (with aspirin) groups. The primary outcome was 28-day mortality, with secondary outcomes including 90-day, 1-year, and in-hospital mortality. Multivariable Cox and logistic regression models were used to analyze the relationship between antiplatelet regimens and mortality. Subgroup analyses and interaction tests were conducted. RESULTS: Results showed the combination group had lower 28-day, 90-day, 1-year, and in-hospital mortality risks than the non-combination group (all p p = 0.743, p = 0.244). CONCLUSIONS: This study demonstrates that combination antiplatelet therapy significantly reduces 28-day, 90-day, 1-year, and in-hospital mortality risks of IS patients with AKI, suggesting its potential benefits in improving both short- and long-term clinical outcomes. However, this does not apply to patients with severe AKI, indicating heterogeneous survival benefits of combination therapy across AKI severity. Clinical decision-making should incorporate AKI stage stratification to evaluate the applicability of combination antiplatelet therapy. Further research is needed to explore the impact of AKI staging on antiplatelet therapy in IS patients.

Sources Used:

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