Supplementary Table 1. Summary of aritifical intellignence in AKI assessment papers

Ref	Year	Task	Baseline Cr / AKI definition	Methods for handling missing data	Model	AUROC	Presentation of missing data proportion	Using of public datasets	Real-time prediction	External validation
[S1]	2015	AKI within 2 to 9 days after admission	Average values within 7 to 365 days prior to admission KDIGO without UO	Median imputation was used	LR	0.83	O	X	X	X
[S2]	2018	AKI at various periods after admission	The last measured value within 2 days prior to admission or the first measurement during hospitalization KDIGO without UO	Removed	RF	0.77	X	X	△	X
[S3]	2018	AKI within 2 days post-liver transplantation	The most recent value measured before the surgery AKIN without UO	For less than 1% missing, the mean and median of continuous variables; for less than 5% missing, hot-deck imputation was used	GBM	0.90	O	X	X	X
[S4]	2019	AKI at various periods after admission	The last measured value within 2 days before admission or the first measurement after admission KDIGO without UO	Missing indicator was used	Ensemble	0.74	X	X	△	X
[S5]	2020	AKI and RRT within 48 hours in hospitalized patients	The first value measured at the time of admission KDIGO without UO	After replacing with the most recent value, imputation with the median or mode was used	GBM	0.86	X	X	O	O
[S6]	2020	AKI within 7 days after aortic arch surgery	The most recent value before surgery KDIGO without UO	Removed	LGBM	0.83	O	X	X	X
[S7]	2020	AKI within 7 days after cardiac surgery	The last measured value before surgery KDIGO without UO	Replaced by mean and mode values	Ensemble	0.84	O	X	X	X
[S8]	2020	AKI within 7 days after partial nephrectomy	Not clearly stated KDIGO with UO	Not clearly stated	XGB	0.74	X	X	X	X

https://doi.org/10.3904/kjim.2024.098

Supplementary Table 1. Continued

Ref	Year	Task	Baseline Cr / AKI definition	Methods for handling missing data	Model	AUROC	Presentation of missing data proportion	Using of public datasets	Real-time prediction	External validation
[S9]	2020	AKI after ICU admission	Average value within 7 to 180 days before admission KDIGO with UO	Replaced with mean values	GBM	0.69	X	X	X	O
[S10]	2022	AKI in patients undergoing knee arthroplasty	The last measured value within 6 months before surgery KDIGO without UO	Model's own algorithm was used	GBM	0.78	O	X	X	O
[S11]	2021	Survival within 1, 5, 17 years after kidney transplantation	Not clearly stated	Removed	SVM	0.82	X	X	X	X
[S12]	2021	AKI within 72 hours after ICU admission	The minimum value on the first day of admission KDIGO with UO	After removing rows with more than 50%, MICE was used	LGBM	0.90	X	O	X	X
[S13]	2021	AKI within 48 hours in PICU	Average considering age and gender KDIGO without UO	No missing values	Ensemble	0.89	X	X	O	O
[S14]	2021	AKI associated with cardiac surgery (duration not specified)	Not clearly stated Post-surgery SCr exceeding 2.26 mg/dL, doubling or more from the baseline, or RRT	After excluding features with more than 5%, patients with any missing values were removed	GBM	0.85	O	X	X	X
[S15]	2021	AKI within 7 days after nephrectomy in patients with renal cell carcinoma	Measured value before surgery (not clearly stated) KDIGO without UO	Not clearly stated	LGBM	0.81	X	X	X	X
[S16]	2021	Recovery of AKI within 48 hours in patients who developed AKI within 48 hours after ICU admission for sepsis	The minimum value during 7 days before admission KDIGO with UO	After excluding features with more than 30%, MissForest was used	ANN	0.76	O	O	X	X

Supplementary Table 1. Continued

Ref	Year	Task	Baseline Cr / AKI definition	Methods for handling missing data	Model	AUROC	Presentation of missing data proportion	Using of public datasets	Real-time prediction	External validation
[S17]	2022	Severe AKI within 48 hours in the ICU	Not clearly stated KDIGO (AKI if stage II or III criteria are met, negative for the rest)	After removing features with more than 50%, 30-50% were checked with specialist and MICE was used for less than 30%	XGB	0.86	X	O	O	O
[S18]	2022	Prediction of progression from AKI stages 1/2 to AKI 3 in ICU patients	Not clearly stated KDIGO with UO	After removing features with more than 70%, XGBoost's internal method was used	XGB	0.93	X	O	X	X
[S19]	2022	AKI within 7 days after cardiac surgery	The first measured value at hospital admission KDIGO without UO	Some were filled in upon review, and multiple imputation was used for the remaining	DF	0.88	X	X	X	X
[S20]	2022	AKI within 7 days after cardiac surgery	The first measured value at hospital admission KDIGO without UO	Not clearly stated	RF	0.74	X	X	X	X
[S21]	2022	AKI within 7 days after liver transplantation in patients	The most recent value within 3 months before hospital admission, or the first measured value upon admission International Club of Ascites	Not clearly stated	ANN	0.81	X	X	X	X
[S22]	2022	Mortality during hospital stay in patients who developed AKI within 24 hours after ICU admission	The minimum value within 7 days KDIGO with UO	After removing features with more than 20%, multiple imputation was used	XGB	0.89	O	O	X	X
[S23]	2022	Recovery of AKI within 72 hours in patients who developed AKI within 48 hours after ICU admission	Not clearly stated	Not clearly stated	RF	0.77	O	X	X	X

https://doi.org/10.3904/kjim.2024.098

Supplementary Table 1. Continued

Ref	Year	Task	Baseline Cr / AKI definition	Methods for handling missing data	Model	AUROC	Presentation of missing data proportion	Using of public datasets	Real-time prediction	External validation
[S24]	2021	Oliguric AKI stages 2/3 in ICU	The minimum available value during the hospital stay or the most recent value within 4 days KDIGO with UO	Only urine volume and SCr were used, with SCr being the same as baseline and urine volume was calculated using a 9-hour average	ANN	0.91	O	X	O	O
[S25]	2022	Mortality during hospital stay in ICU patients over 60 years with AKD	The minimum value during the hospital stay or estimated value KDIGO with UO	Not clearly stated	XGB	0.90	O	X	X	O
[S26]	2022	AKI in patients hospitalized for acute pancreatitis	Not clearly stated KDIGO with UO	Not clearly stated	RF	0.91	X	X	X	△
[S27]	2022	AKI after orthopedic surgery in elderly patients	The most recent value before surgery KDIGO without UO	Not clearly stated	LR	0.82	X	X	X	X
[S28]	2022	Persistent AKI in patients who developed AKI after surgery in ICU	The minimum value within 6 months before ICU admission or estimated value KDIGO without UO	After removing features with more than 20%, multiple imputation was used	Emsemble	0.86	O	X	X	O
[S29]	2022	AKI in ICU for sepsis	Not clearly stated KDIGO with UO	After removing features with more than 20%, multiple imputation was used	XGB	0.82	O	X	X	X
[S30]	2021	Occurrence and recovery of AKI stages 2/3 in all patients	The minimum SCr during hospital stay KDIGO without UO (not clear)	Model's own algorithm was used	XGB	Not reported	X	O	X	X
[S31]	2023	Prediction of AKI stages 2/3 and AKI stage 3 after the initial 12 hours following Mechanical Ventilation	The average value before ICU admission or using the first measured value upon ICU admission KDIGO without UO (excluding criteria for acute dialysis, RRT)	Not clearly stated	RF	0.82	O	O	O	O

Supplementary Table 1. Continued

Ref	Year	Task	Baseline Cr / AKI definition	Methods for handling missing data	Model	AUROC	Presentation of missing data proportion	Using of public datasets	Real-time prediction	External validation
[S32]	2024	Progression of AKI stages in patients who experienced AKI within 48 hours after cardiac surgery and received furosemide injection within 24 hours after AKI diagnosis	The minimum measured value within 3 months before cardiac surgery, excluding undefined patients KDIGO with UO	Multiple imputation was used	LR	0.81	O	X	X	X
[S33]	2023	Recovery of renal function within 1 year after utilizing RS in AKD patients	The minimum measured value within 365 days before RS, excluding undefined patients KDIGO without UO	Not clearly stated	RS	0.74	X	O	X	X
[S34]	2024	AKI within 7 days in lymphoma patients treated with methotrexate	The most recent value measured within 72 hours before medication administration, excluding undefined patients KDIGO without UO	Not clearly stated	LASSO	0.72	X	X	X	X
[S35]	2023	Prediction of stage 2 or higher AKI on the third day of hospitalization in pediatric ICU patients using RAI	The minimum value within 90 days before ICU admission or estimated value KDIGO with UO	Not clearly stated	RAI	0.77	X	X	X	X
[S36]	2023	AKI from 24 hours after admission until discharge in ICU-admitted patients with cirrhosis	Measured value within 7 days before ICU admission or the first measured value after ICU admission KDIGO with UO	After removing features with more than 80%, linear interpolation was used	ANN	0.76	O	X	X	O

https://doi.org/10.3904/kjim.2024.098

Supplementary Table 1. Continued

Ref	Year	Task	Baseline Cr / AKI definition	Methods for handling missing data	Model	AUROC	Presentation of missing data proportion	Using of public datasets	Real-time prediction	External validation
[S37]	2023	Mortality within 30 days, AKI recovery within 30 days, and AKI recovery within 90 days in AKI patients who received RRT	Not clearly stated KDIGO with UO	Not clearly stated	RF	0.67	X	X	X	X
[S38]	2023	Mortality within 7, 14, 28 days in patients who developed AKI within 24 hours after admission for sepsis to the ICU	Measured value before admission or the first value at admission KDIGO with UO	After removing features with more than 30%, multiple imputation was used	XGB	0.91	O	O	X	O
[S39]	2023	Mortality during hospital stay in patients who developed AKI within 48 hours after ICU admission for sepsis	Measured value before admission or the first value at admission KDIGO with UO	Multiple imputation was used	XGB	0.79	O	O	X	X
[S40]	2023	AKI in patients who developed ARDS on the first day after ICU admission	Applying ICD codes	After removing features with more than 20%, multiple imputation was used	XGB	0.87	O	X	X	X
[S41]	2023	Mortality within 28 days in patients who developed AKI on the first day after ICU admission for sepsis	Not clearly stated KDIGO with UO	After removing features with more than 20%, MissForest was used	XGB	0.87	X	O	X	X
[S42]	2023	Occurrence of stage 3 or higher AKI in TBI patients	Not clearly stated KDIGO with UO	Multiple imputation was used	RF	0.82	O	O	X	O

https://doi.org/10.3904/kjim.2024.098

Supplementary Table 1. Continued

Ref	Year	Task	Baseline Cr / AKI definition	Methods for handling missing data	Model	AUROC	Presentation of missing data proportion	Using of public datasets	Real-time prediction	External validation
[S43]	2024	Occurrence of stage 2 or higher AKI in septic patients with hypertension	Not clearly stated KDIGO with UO	Not clearly stated	Nomogram	0.82	X	X	X	X

AKI, acute kidney injury; Cr, creatinine; AUROC, area under the receiver operating characteristic curve; KDIGO, Kidney Disease: Improving Global Outcomes; UO, urine output; LR, logistic regression; RF, random forest; AKIN, acute kidney injury network; GBM, gradient boosting machine; RRT, renal replacement therapy; LGBM, light gradient boosting machine; XGB, extreme gradient boosting; ICU, intensive care unit; SVM, support vector machine; PICU, pediatric intensive care unit; MICE, multiple imputation by chained equations; DF, deep forest; ANN, artificial neural network; SCr, serum creatinine; AKD, acute kidney disease; RS, renal scintigraphy; LASSO, least absolute shrinkage and selection operator; RAI, renal angina index; ARDS, acute respiratory distress syndrome; ICD, International Classification of Diseases; TBI, traumatic brain injury; eGFR, estimated glomerular filtration rate.

"Estimated value" refers to the estimation of parameters, such as eGFR, using methods like modification of diet in renal disease when baseline is unavailable. "△" signifies insufficient information for assessment. "Ensemble" refers to the combination of individual models through methods like voting, each developed separately.

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