

**Methods used to assess the performance of biomarkers for the diagnosis of Acute Kidney Injury: a systematic review and meta-analysis:**

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**Supplementary Material**

**Supplementary file 2.** Studies included in the systematic review.

Title	Journal	Author	Year of publication	Study type		Number of centers	Number of included patients	Population	diagnostic AKI	Number of patients with AKI
Some biomarkers of acute kidney injury are increased in pre-renal acute injury	Kidney International	Nejat	2012	observ	diagnostic	2	489	ICU patients	AKIN	204
Serum uric acid may predict development of progressive acute kidney injury after open h eartsurgery.	Renal Failure	Gaipov	2015	observ	diagnostic	1	60	cardiac surgery	KDIGO	40
Urinary $\alpha$ - and $\pi$ -glutathione s-transferases for early detection of acute kidney injury following cardiopulmonary bypass	Biomarkers	Susantitaphong	2013	observ	diagnostic	3	252	cardiac surgery	AKIN	72
Combination of urinary kidney injury molecule-1 and interleukin-18 as early biomarker for the diagnosis and progressive assessment of acute kidney injury following cardiopulmonary bypass surgery: a prospective nested case-control study.	Biomarkers	Liang	2010	observ	diagnostic	1	122	cardiac surgery with CPB	RIFLE	30
comparison of serum creatinine, cystatin C, and Neutrophil gelatinase-associated lipocalin for acute kidney injury occurrence according to risk, failuer, injury, loss, and end-stage criteria classification system in early after living kidney donation	Saudi Journal of kidney diseases and transplantation	Hekmat	2016	observ	diagnostic	1	42	living kidney donors	RIFLE	20
Urinary cystatin C as an early biomarker of acute kidney injury following adult cardiothoracic surgery.	Kidney International	Koyner	2008	observ	diagnostic	1	72	Adult cardiothoracic surgery	Other	34
Performance of kidney injury molecule-1 and liver fatty acid-binding protein and combined biomarkers of AKI after cardiac surgery.	clinical journal of the American Society of Nephrology	Parikh	2013	observ	diagnostic	6	1219	Cardiac surgery	Other	60
Neutrophil gelatinase-associated lipocalin and liver-type fatty acid-binding protein as biomarkers for acute kidney injury after organ transplantation.	journal of Anesthesia	Iguchi	2015	observ	diagnostic	1	25	heart, lung, liver transplantations	KDIGO	11
Urinary KIM-1, NGAL and L-FABP for the diagnosis of AKI in patients with acute coronary syndrome or heart failure undergoing coronary angiography.	Heart Vessels	Torregrosa	2015	observ	diagnostic	1	144	acute coronary syndrome or heart failure	RIFLE	20
Urinary KIM-1, NGAL and L-FABP for the diagnosis of AKI in patients with acute coronary syndrome or heart failure undergoing coronary angiography.	Heart Vessels	Torregrosa	2015	observ	diagnostic	1	49	cardiac surgery	RIFLE	15

Combination of biomarkers for diagnosis of acute kidney injury after cardiopulmonary bypass.	Renal Failure	Prowle	2015	interv	diagnostic	1	93	cardiac surgery with CPB with at least one risk factor for AKI	RIFLE	25
Urinary neutrophil gelatinase-associated lipocalin and L-type fatty acid binding protein as diagnostic markers of early acute kidney injury after liver transplantation.	Biomarkers	Li	2012	observ	diagnostic	1	25	liver transplantation	AKIN	11
Evaluation of urinary tissue inhibitor of metalloproteinase-2 in acute kidney injury: a prospective observational study.	critical care	Yamashita	2014	observ	diagnostic	NR	98	ICU patients	KDIGO	42
The role of urinary liver-type fatty acid-binding protein in critically ill patients.	journal of Korean medical science	Cho	2013	observ	diagnostic	1	145	ICU patients	AKIN	54
Assessment of cell-cycle arrest biomarkers to predict early and delayed acute kidney injury.	disease markers	Bell	2015	observ	diagnostic	1	94	ICU patients	KDIGO	19
Urinary biomarkers TIMP-2 and IGFBP7 early predict acute kidney injury after major surgery.	PLOS one	Gocze	2015	observ	diagnostic	1	107	High risk AKI patients after non cardiac surgery	KDIGO	45
Clinical usefulness of urinary liver-type fatty-acid-binding protein as a perioperative marker of acute kidney injury in patients undergoing endovascular or open-abdominal aortic aneurysm repair.	journal of Anesthesia	Obata	2016	observ	diagnostic	1	95	endovascular anevrysm repair (EVAR	AKIN	9
	journal of Anesthesia	Obata	2016	observ	diagnostic	1	42	open repair anevrysm	AKIN	13
Urinary L-FABP and its combination with urinary NGAL in early diagnosis of acute kidney injury after cardiac surgery in adult patients.	Biomarkers	Liu	2013	observ	diagnostic	1	109	cardiac surgery	AKIN	26
Urinary TIMP-2 and IGFBP7 as early biomarkers of acute kidney injury and renal recovery following cardiac surgery.	PLOS one	Meersch	2014	observ	diagnostic	1	50	cardiac surgery with CPB	KDIGO	26
Perioperative heart-type fatty acid binding protein is associated with acute kidney injury after cardiac surgery.	Kidney International	Schaub	2015	observ	diagnostic	6	959	cardiac surgery	AKIN	330
Urinary liver-type fatty acid-binding protein level as a predictive biomarker of contrast-induced acute kidney injury.	european journal of clinical investigation	Manabe	2012	observ	diagnostic	1	220	patients with CKD scheduled to undergo coronary angiography or intervention	Other	19
Urinary neutrophil gelatinase-associated lipocalin: a useful biomarker for tacrolimus-induced acute kidney injury in liver transplant patients.	PLOS one	Tsuchimoto	2014	observ	diagnostic	1	31	living donor liver transplantation	AKIN	20
Plasma neutrophil gelatinase-associated lipocalin (NGAL) and plasma cystatin C (CysC) as biomarker of acute kidney injury after cardiac surgery.	Saudi Journal of kidney diseases and transplantation	Ghonemy	2014	observ	diagnostic	1	50	cardiac surgery	RIFLE	17
Plasma NGAL predicts early acute kidney injury no earlier than s-creatinine or cystatin C in severely burned patients.	Burns	Rakkolainen	2016	observ	diagnostic	1	19	burn patients with >20%TBSA	AKIN	9
TIMP2*IGFBP7 biomarker panel accurately predicts acute kidney injury in high-risk surgical patients.	the journal of trauma and acute care surgery	Gunnerson	2016	observ	diagnostic	58	375	surgical patients	KDIGO	35

Serum neutrophil gelatinase associated lipocalin (NGAL) and cystatin C as early predictors of contrast-induced acute kidney injury in patients undergoing percutaneous coronary intervention.	Clinica Chimica Acta	Padhy	2014	observ	diagnostic	1	60	percutaneous coronary intervention	Other	30
Urine IL-18, NGAL, IL-8 and serum IL-8 are biomarkers of acute kidney injury following liver transplantation.	BMC nephrology	Sirota	2013	observ	diagnostic	2	40	liver transplantation	Other	7
Distinct injury markers for the early detection and prognosis of incident acute kidney injury in critically ill adults with preserved kidney function.	Kidney International	Siew	2013	observ	diagnostic	1	372	ICU patients	AKIN	127
Spot urine albumin to creatinine ratio outperforms novel acute kidney injury biomarkers in patients with acute myocardial infarction.	international journal of Cardiology	Tziakas	2015	observ	diagnostic	3	805	acute myocardial infarction	AKIN	118
Assessment of biochemical markers in the early post-burn period for predicting acute kidney injury and mortality in patients with major burn injury: comparison of serum creatinine, serum cystatin-C, plasma and urine neutrophil gelatinase-associated lipocalin.	critical care	Yang	2014	observ	diagnostic	1	90	burn patients with >20%TBSA	RIFLE	55
Comparative analysis of urinary biomarkers for early detection of acute kidney injury following cardiopulmonary bypass.	Biomarkers	Liangos	2009	observ	diagnostic	2	103	cardiac surgery with CPB	AKIN	13
Improved performance of urinary biomarkers of acute kidney injury in the critically ill by stratification for injury duration and baseline renal function.	Kidney International	Endre	2011	observ	diagnostic	2	528	ICU patients	KDIGO	147
Comparison of Neutrophil Gelatinase-Associated Lipocalin Versus B-Type Natriuretic Peptide and Cystatin C to Predict Early Acute Kidney Injury and Outcome in Patients With Acute Heart Failure.	the american journal of cardiology	Palazzuoli A	2015	observ	diagnostic	1	203	acute heart failure	AKIN	78
The use of plasma and urine neutrophil gelatinase associated lipocalin (NGAL) and Cystatin C in early diagnosis of septic acute kidney injury in critically ill patients.	disease markers	Aydogdu	2013	observ	diagnostic	1	151	ICU patients	RIFLE	63
Validation of cell-cycle arrest biomarkers for acute kidney injury using clinical adjudication.	American Journal of respiratory and Critical Care Medicine	Bihorac	2014	observ	diagnostic	23	408	ICU patients	Other	71
Diagnostic value of neutrophil gelatinase-associated lipocalin, cystatin C, and soluble triggering receptor expressed on myeloid cells-1 in critically ill patients with sepsis-associated acute kidney injury.	critical care	Dai	2015	observ	diagnostic	1	112	ICU patients with sepsis	KDIGO	55
Evaluation of new acute kidney injury biomarkers in a mixed intensive care unit.	critical care medicine	Doi	2011	observ	diagnostic	1	339	ICU patients	RIFLE	131
Acute kidney injury biomarkers for patients in a coronary care unit: a prospective cohort study.	PLOS one	Chen	2012	observ	diagnostic	1	150	coronary care unit patients	AKIN	43

Urinary biomarkers in the clinical prognosis and early detection of acute kidney injury.	clinical journal of the American Society of Nephrology	Koyner	2010	observ	diagnostic	1	122	cardiac surgery	AKIN	46
Urinary liver-type fatty acid-binding protein linked with increased risk of acute kidney injury after allogeneic stem cell transplantation.	biology of blood and Marow transplantation	Shingai	2014	observ	diagnostic	1	84	allogenic stem cell transplantation recieipient	AKIN	32
Urine neutrophil gelatinase-associated lipocalin and interleukin-18 predict acute kidney injury after cardiac surgery.	Renal Failure	Xin	2008	observ	diagnostic	1	33	cardiac surgery	AKIN	9
Assessment of urinary kidney injury molecule-1 and interleukin-18 in the early post-burn period to predict acute kidney injury for various degrees of burn injury.	BMC nephrology	Ren	2015	observ	diagnostic	1	95	burn patients	KDIGO	11
Hsp72 is a novel biomarker to predict acute kidney injury in critically ill patients.	PLOS one	Morales-Buenrostro	2014	observ	diagnostic	1	37	ICU patients	AKIN	17
Comparison of Cystatin C and NGAL in Early Diagnosis of Acute Kidney Injury After Heart Transplantation.	Annals of transplantation	Hoskova	2016	observ	diagnostic	1	117	Heart Transplantation	KDIGO	30
Neutrophil gelatinase-associated lipocalin (NGAL) for the early detection of contrast-induced nephropathy after percutaneous coronary intervention.	Scandinavian journal of Clinical and Laboratory Investigation	liebetrau	2014	observ	diagnostic	1	128	percutaneous coronary intervention	KDIGO	14
Derivation and validation of cutoffs for clinical use of cell cycle arrest biomarkers.	Nephrology Dialyse transplantation	Hoste	2014	observ	diagnostic	41	153	ICU patients	KDIGO	27
Quantification of urinary TIMP-2 and IGFBP-7: an adequate diagnostic test to predict acute kidney injury after cardiac surgery?	Critical care	Wetz	2015	observ	diagnostic	1	42	coronary artery bypass graft surgery	KDIGO	16
Discovery and validation of cell cycle arrest biomarkers in human acute kidney injury.	Critical care	Kashani	2013	observ	diagnostic	35	728	ICU patients	KDIGO	101
Predictive value of urine interleukin-18 in the evolution and outcome of acute kidney injury in critically ill adult patients.	BJA	Nisula	2015	observ	diagnostic	1	1210	ICU patients	KDIGO	268
Time of injury affects urinary biomarker predictive values for acute kidney injury in critically ill, non-septic patients.	BMC nephrology	de Geus	2013	observ	diagnostic	1	481	ICU patients	AKIN	49
The clinical utility window for acute kidney injury biomarkers in the critically ill.	critical care	Ralib AM	2014	observ	diagnostic	1	77	ICU patients	KDIGO	26
Usefulness of urinary biomarkers in early detection of acute kidney injury after cardiac surgery in adults.	circulation journal official journal of the japanese Circulation Society	Matsui	2012	observ	diagnostic	1	85	cardiac surgery	AKIN	48
Urinary neutrophil gelatinase-associated lipocalin levels predict cisplatin-induced acute kidney injury better than albuminuria or urinary cystatin C levels.	Kaohsiung Journal of Medical Sciences	Lin	2013	observ	diagnostic	1	33	cancer patients (head and neck, oesophageal or thymic cancer)	RIFLE	10
Postoperative biomarkers predict acute kidney injury and poor outcomes after adult cardiac surgery.	journal of the American Society of	Parikh	2011	observ	diagnostic	6	1219	cardiac surgery	RIFLE	60

	Nephrology									
Diagnostic performance of urinary kidney injury molecule-1 and neutrophil gelatinase-associated lipocalin for acute kidney injury in an obstructive nephropathy patient.	Nephrology	Xue	2014	observ	diagnostic	1	90	surgically proven obstructive nephropathy.	AKIN	54
Urinary kidney injury molecule-1 and monocyte chemotactic protein-1 are noninvasive biomarkers of cisplatin-induced nephrotoxicity in lung cancer patients.	cancer chemotherapy and pharmacology	Shinke	2015	observ	diagnostic	1	42	patient with lung cancer	Other	30
Combination of Urinary Biomarkers Improves Early Detection of Acute Kidney Injury in Patients With Heart Failure.	circulation journal official journal of the japanese Circulation Society	Yang	2016	observ	diagnostic	1	103	acute decompensated heart failure	KDIGO	49
Serum heart-type fatty acid-binding protein level can be used to detect acute kidney injury on admission and predict an adverse outcome in patients with acute heart failure.	circulation journal official journal of the japanese Circulation Society	Shirakabe	2015	observ	diagnostic	1	282	acute heart failure	RIFLE	69
Comparison of Plasma and Urine Biomarker Performance in Acute Kidney Injury.	PLOS one	Schley	2015	observ	diagnostic	1	110	cardiac surgery with CPB	AKIN	37
Urinary liver-type fatty acid-binding protein predicts adverse outcomes in acute kidney injury.	Kidney International	Ferguson	2010	observ	diagnostic	1	160	AKI versus control (healthy volunteers, pre cardiac catheterization patients, ICU patients without AKI)	RIFLE	92
Urinary biomarkers for sensitive and specific detection of acute kidney injury in humans.	clinical and translational science	Vaidya	2008	observ	diagnostic	1	204	AKI versus control ( healthy volunteers, pre cardiac catheterization patients, ICU patients without AKI)	RIFLE	102
Urinary glutathione S-transferase as an early marker for renal dysfunction in patients admitted to intensive care with sepsis.	critical care and resuscitation	Walshe	2009	observ	diagnostic	1	38	ICU patients with sepsis	AKIN	19
Neutrophil Gelatinase-Associated Lipocalin (NGAL) predicts renal injury in acute decompensated cardiac failure: a prospective observational study.	BMC cardiovascular disorders	Macdonald S	2012	observ	diagnostic	2	90	acute decompensated heart failure	RIFLE	22
Plasma NGAL for the diagnosis of AKI in patients admitted from the emergency department setting	clinical journal of the American Society of Nephrology	Soto	2013	observ	diagnostic	1	616	emergency department patients	RIFLE	130
Urinary IL-18 is an early predictive biomarker of acute kidney injury after cardiac surgery.	Kidney International	Parikh	2005	observ	diagnostic	1	138	ICU patients with acute lung injury	Other	52

Neutrophil gelatinase-associated lipocalin (NGAL) for the early detection of cardiac surgery associated acute kidney injury.	Scandinavian journal of Clinical and Laboratory Investigation	liebetrau	2013	observ	diagnostic	1	141	cardiac surgery	KDIGO	47
Neutrophil Gelatinase Associated Lipocalin (NGAL) in Leptospirosis Acute Kidney Injury: A Multicenter Study in Thailand.	PLOS one	Srisawat	2015	observ	diagnostic	9	206	patients suspects de leptospirosis	KDIGO	55
Plasma neutrophil gelatinase-associated lipocalin as a predictive biomarker for the detection of acute kidney injury in adult poisoning.	clinical toxicology	Ahn	2016	observ	diagnostic	1	157	acute poisoning presenting in the emergency department	AKIN	23
The identification of three novel biomarkers of major adverse kidney events.	Biomarkers in Medicine	Haase	2014	observ	diagnostic	NR	100	cardiac surgery	RIFLE	23
Serum neutrophil gelatinase-associated lipocalin (NGAL) in predicting worsening renal function in acute decompensated heart failure.	Journal of Cardiac failure	Aghel	2010	observ	diagnostic	1	91	acute decompensated heart failure	AKIN	35
Urinary netrin-1 and KIM-1 as early biomarkers for septic acute kidney injury.	Renal Failure	Tu	2014	observ	diagnostic	1	150	ICU patients with sepsis	AKIN	49
Urinary neutrophil gelatinase-associated lipocalin to hepcidin ratio as a biomarker of acute kidney injury in intensive care unit patients.	minerva anesthesiologica	Martensson	2015	observ	diagnostic	1	102	ICU patients	RIFLE	54
Neutrophil gelatinase--associated lipocalin predicts acute kidney injury in patients undergoing liver transplantation.	Liver transplantation	Portal	2010	observ	diagnostic	1	80	liver transplantation	AKIN	30
A Prospective Study of the Timing and Accuracy of Neutrophil Gelatinase-Associated Lipocalin Levels in Predicting Acute Kidney Injury in High-Risk Cardiac Surgery Patients.	Journal of cardiothoracic and vascular anesthesia	Fanning	2016	observ	diagnostic	1	50	cardiac surgery	KDIGO	31
Urinary neutrophil gelatinase-associated lipocalin (NGAL) as an early marker of acute kidney injury in critically ill multiple trauma patients.	Clinical chemistry and laboratory medicine	Makris	2009	observ	diagnostic	1	31	Trauma	RIFLE	11
Plasma neutrophil gelatinase-associated lipocalin as an early predicting biomarker of acute kidney injury and clinical outcomes after recovery of spontaneous circulation in out-of-hospital cardiac arrest patients.	Resuscitation	Park	2016	observ	diagnostic	1	54	recovery of spontaneous circulation (ROSC) in patients with out-of-hospital cardiac arrest (OHCA).	AKIN	26
Combined biomarker analysis for risk of acute kidney injury in patients with ST-segment elevation myocardial infarction.	PLOS one	Tung	2015	observ	diagnostic	1	189	ST elevation myocardial infarction (STEMI) undergoing percutaneous coronary intervention	AKIN	37

Neutrophil gelatinase-associated lipocalin and albuminuria as predictors of acute kidney injury in patients treated with goal-directed haemodynamic therapy after major abdominal surgery	Annals of Clinical Biochemistry	Cullen	2014	observ	diagnostic	1	109	perioperative patients admitted to a critical care unit after major abdominal surgery and treated with goal-directed haemodinamics therapy	AKIN	17
Plasma Neutrophil Gelatinase-Associated Lipocalin (NGAL) predicts acute kidney injury in septic shock at ICU admission].	Annales francaises d'anesthesie reanimation	Camou	2013	observ	diagnostic	1	50	ICU patients with septic choc	RIFLE	43
Whole blood neutrophil gelatinase-associated lipocalin predicts acute kidney injury in burn patients.	Journal of surgical research	Sen	2015	observ	diagnostic	1	30	burn patients with >20%TBSA	RIFLE	14
Novel biomarkers for the prediction of acute kidney injury in patients undergoing liver transplantation.	Biomarkers in Medicine	Dedeoglu	2013	observ	diagnostic	1	26	liver transplantation	AKIN	9
Novel and conventional serum biomarkers predicting acute kidney injury in adult cardiac surgery--a prospective cohort study.	Critical care medicine	Haase-Fielitz	2009	observ	diagnostic	1	100	cardiac surgery with CPB	Other	23
Neutrophil Gelatinase-Associated Lipocalin and Contrast-Induced Acute Kidney Injury.	Circulation cardiovascular interventions	Quintavalle	2015	interv	diagnostic	4	458	patients with chronic kidney disease, referred to our institutions for coronary and/or peripheral procedures	AKIN	64
Urinary biomarkers in the early detection of acute kidney injury after cardiac surgery.	Clinical Journal of the American Society of Nephrology	Han	2009	observ	diagnostic	1	90	cardiac surgery	AKIN	36
Usefulness of plasma neutrophil gelatinase-associated lipocalin as an early marker of acute kidney injury after cardiopulmonary bypass in Korean cardiac patients: a prospective observational study.	Clinical Biochemistry	Park	2015	observ	diagnostic	1	112	cardiac surgery with CPB	RIFLE	13
Plasma and urine neutrophil gelatinase-associated lipocalin in the diagnosis of new onset acute kidney injury in critically ill patients.	Critical care	Matsa	2014	observ	diagnostic	1	194	ICU patients	RIFLE	59
Levels of protein C and soluble thrombomodulin in critically ill patients with acute kidney injury: a multicenter prospective observational study.	PLOS one	Bouchard	2015	observ	diagnostic	3	80	ICU patients	AKIN	56
Diagnostic and prognostic stratification in the emergency department using urinary biomarkers of nephron damage: a multicenter prospective cohort study.	Journal of the American College of Cardiology	Nickolas	2012	observ	diagnostic	3	1635	emergency department patients	RIFLE	96
Serum cystatin C and microalbuminuria in burn patients with acute kidney injury.	European Journal of Clinical Investigation	Yim	2015	observ	diagnostic	1	97	burn patients	AKIN	40



Urinary interleukin-18 does not predict acute kidney injury after adult cardiac surgery: a prospective observational cohort study.	critical care	Haase	2008	observ	diagnostic	1	100	cardiac surgery with CPB	RIFLE	50
Plasma neutrophil gelatinase-associated lipocalin in acute kidney injury superimposed on chronic kidney disease after cardiac surgery: a multicenter prospective study.	critical care	Doi	2013	observ	diagnostic	2	68	cardiac surgery avec IRC preop	AKIN	33
Plasma neutrophil gelatinase-associated lipocalin in acute kidney injury superimposed on chronic kidney disease after cardiac surgery: a multicenter prospective study.	critical care	Doi	2013	observ	diagnostic	2	78	cardiac surgery	AKIN	20
Pulse wave velocity and neutrophil gelatinase-associated lipocalin as predictors of acute kidney injury following aortic valve replacement.	Journal of cardiothoracic Surgery	Kidher	2014	observ	diagnostic	1	53	aortic valve replacement	RIFLE	16
Urine neutrophil gelatinase-associated lipocalin levels predict acute kidney injury in acute decompensated heart failure patients.	Renal Failure	Soyler	2015	observ	diagnostic	1	100	acute heart failure	AKIN	19
Elevated urinary IL-18 levels at the time of ICU admission predict adverse clinical outcomes.	clinical journal of the american society of nephrology	Siew	2010	observ	diagnostic	1	451	ICU patients included in the NIH-sponsored VALID study	AKIN	86
Serum and urine cystatin C are poor biomarkers for acute kidney injury and renal replacement therapy.	Intensive Care Medicine	Royakkers	2011	observ	diagnostic	NR	151	ICU patients with expected duration of mechanical ventilation of at least 48h and/or expected length of stay of at least 72h	RIFLE	35
Can admission serum cystatin C level be an early marker subclinical acute kidney injury in critical care patients?	Scandinavian journal of Clinical and Laboratory Investigation	Gaygisiz	2016	observ	diagnostic	1	72	ICU patients	RIFLE	19
Neutrophil gelatinase-associated lipocalin as an early biomarker of acute kidney injury in liver transplantation.	Clinical transplant	Jeong	2012	observ	diagnostic	1	19	liver transplantation	RIFLE	11
Urinary neutrophil gelatinase-associated lipocalin as a marker of acute kidney injury after orthotopic liver transplantation.	Nephrology Dialyse transplantation	Wagener	2011	observ	diagnostic	1	92	liver transplantation	RIFLE	37
Comparison of urinary neutrophil glucosaminidase-associated lipocalin, cystatin C, and $\alpha$ 1-microglobulin for early detection of acute renal injury after cardiac surgery.	european Journal of cardiothoracic Surgery	Heise	2011	observ	diagnostic	1	47	cardiac surgery with CPB	AKIN	36
Serum cystatin C- versus creatinine-based definitions of acute kidney injury following cardiac surgery: a prospective cohort study.	american Journal of kidney disease	Spahillari	2012	observ	diagnostic	6	1150	cardiac surgery with CPB with at least one risk factor for AKI	Other	484
The role of neutrophil gelatinase-associated lipocalin in predicting acute kidney injury in patients undergoing off-pump coronary artery bypass graft: A pilot study.	Annals of Cardiac Anaesthesia	Jain	2016	observ	diagnostic	1	80	cardiac surgery off-pump coronary artery bypass graft	AKIN	7

Plasma neutrophil gelatinase-associated lipocalin for the prediction of acute kidney injury in acute heart failure.	Critical care	Breidthardt	2012	observ	diagnostic	1	207	acute heart failure in the emergency department	AKIN	60
Plasma neutrophil gelatinase-associated lipocalin as a biomarker for acute kidney injury in critically ill patients with suspected sepsis.	Clinical Biochemistry	Kim	2013	observ	diagnostic	1	231	ICU patients with sepsis	AKIN	18
Neutrophil gelatinase-associated lipocalin at ICU admission predicts for acute kidney injury in adult patients.	American Journal of respiratory and Critical Care Medicine	de Geus	2011	observ	diagnostic	1	632	ICU patients	RIFLE	171
Cystatin C is a biomarker for predicting acute kidney injury in patients with acute-on-chronic liver failure.	World Journal of Gastroenterology	Wan	2013	observ	diagnostic	1	86	acute on chronic liver failure	AKIN	8
Urinary hepcidin-25 and risk of acute kidney injury following cardiopulmonary bypass.	clinical journal of the American Society of Nephrology	Ho	2011	observ	diagnostic	1	338	cardiac surgery with CPB	Other	28
Cystatin C as a marker of acute kidney injury in the emergency department.	clinical journal of the American Society of Nephrology	Soto	2010	observ	diagnostic	1	616	emergency department patients	RIFLE	130
The clinical utility of plasma neutrophil gelatinase-associated lipocalin in acute kidney injury.	Blood purification	Pickering	2013	observ	diagnostic	2	528	ICU patients	KDIGO	360
Neutrophil gelatinase-associated lipocalin in adult septic patients with and without acute kidney injury.	Intensive Care Medicine	Martensson	2010	observ	diagnostic	1	45	ICU patients with SIRS or septic choc	RIFLE	18
Urine neutrophil gelatinase associated lipocalin as an early marker of acute kidney injury in hematopoietic stem cell transplantation patients.	Renal Failure	Taghizadeh-ghehi	2015	interv	diagnostic	1	72	hematopoietic stem cell transplantation	AKIN	12
Urine neutrophil gelatinase-associated lipocalin as a marker of acute kidney injury after kidney surgery.	the Journal of Urology	Sprenkle	2013	observ	diagnostic	1	162	renal surgery and thoracic surgery	AKIN	36
Urinary neutrophil gelatinase-associated lipocalin predicts kidney outcome and death in patients with cirrhosis and bacterial infections.	journal of Hepatology	Barreto	2014	observ	diagnostic	1	132	Patients with Cirrhosis and bacterial infection	AKIN	65
Influence of severity of illness on neutrophil gelatinase-associated lipocalin performance as a marker of acute kidney injury: a prospective cohort study of patients with sepsis.	BMC nephrology	Vanmassenhove	2015	observ	diagnostic	1	107	patients with sepsis	RIFLE	79
Sensitivity and specificity of a single emergency department measurement of urinary neutrophil gelatinase-associated lipocalin for diagnosing acute kidney injury.	Annales of internal Medicine	Nickolas	2008	observ	diagnostic	1	635	emergency department patients	RIFLE	30
Serum Cystatin C for the Diagnosis of Acute Kidney Injury in Patients Admitted in the Emergency Department.	disease markers	Bongiovanni	2015	observ	diagnostic	1	198	emergency department patients	RIFLE	33
Combination of renal biomarkers predicts acute kidney injury in critically ill adults.	Renal Failure	Kokkoris	2012	observ	diagnostic	1	100	ICU patients	RIFLE	36

Preoperative serum cystatin C combined with dipstick proteinuria predicts acute kidney injury after cardiac surgery.	Renal Failure	Wang	2014	observ	diagnostic	1	616	cardiac surgery	AKIN	179
Predicting cisplatin-induced acute kidney injury by urinary neutrophil gelatinase-associated lipocalin excretion: a pilot prospective case-control study.	Nephron clinical Practice	Gaspari	2010	observ	diagnostic	1	24	non small cell lung cancer or head and neck cancer	Other	12
Perioperative plasma neutrophil gelatinase-associated lipocalin measurement in patients who undergo left ventricular assist device implantation surgery.	circulation journal official journal of the japanese Circulation Society	Sumida	2014	observ	diagnostic	1	31	left ventricular assist device implatation surgery	KDIGO	17
Additive value of blood neutrophil gelatinase-associated lipocalin to clinical judgement in acute kidney injury diagnosis and mortality prediction in patients hospitalized from the emergency department.	Critical care	Di Somma	2013	observ	diagnostic	3	665	emergency department patients	RIFLE	49
Urinary cystatin C and acute kidney injury after cardiac surgery.	american Journal of kidney disease	Koyner	2013	observ	diagnostic	6	1203	cardiac surgery	AKIN	416
Urinary Neutrophil Gelatinase-Associated Lipocalin predicts the severity of contrast-induced acute kidney injury in chronic kidney disease patients undergoing elective coronary procedures.	BMC nephrology	Tasanarong	2013	observ	diagnostic	1	130	chronic kidney disease (GFR<60ml/min) who underwent elective coronary angiography	KDIGO	16
The diagnostic accuracy of plasma neutrophil gelatinase-associated lipocalin in the prediction of acute kidney injury in emergency department patients with suspected sepsis.	Annals of emergency Medicine	Shapiro	2010	observ	diagnostic	10	661	emergency department patients with suspected sepsis (2/4 SIRS)	Other	24
Early postoperative serum cystatin C predicts severe acute kidney injury following cardiac surgery: a post-hoc analysis of a randomized controlled trial.	Journal of cardiothoracic Surgery	Kiessling	2014	interv	diagnostic	1	70	cardiac surgery with CPB	AKIN	21
Plasma neutrophil gelatinase-associated lipocalin is an early biomarker for acute kidney injury in an adult ICU population.	Intensive Care Medicine	Cruz	2010	observ	diagnostic	1	301	ICU patients	RIFLE	133
Serum and urinary biomarkers for predicting acute kidney injury after partial nephrectomy.	Clinical and investigative medicine	Chen	2015	observ	diagnostic	1	89	partial nephrectomy	AKIN	28
Predictive value of NGAL for use of renal replacement therapy in patients with severe sepsis.	ACTA anaesthesiologica Scandinavica	Hjortrup	2014	observ	diagnostic	3	222	ICU patients with severe sepsis	KDIGO	31
Presurgical serum cystatin C and risk of acute kidney injury after cardiac surgery.	american Journal of kidney disease	Shlipak	2011	observ	diagnostic	6	1147	cardiac surgery	AKIN	407
The ratio of plasma neutrophil gelatinase-associated lipocalin predicts acute kidney injury in patients undergoing liver transplantation.	Transplantation proceedings	Cheng	2012	observ	diagnostic	1	26	liver transplantation	AKIN	13

Accuracy of plasma neutrophil gelatinase-associated lipocalin in the early diagnosis of contrast-induced acute kidney injury in critical illness.	Intensive Care Medicine	Valette	2013	observ	diagnostic	2	98	critically ill patients with stable creatinine concentration up to 48 h before contrast medium injection	AKIN	30
Plasma cystatin C and acute kidney injury after cardiopulmonary bypass.	clinical journal of the American Society of Nephrology	Wald	2010	observ	diagnostic	3	150	cardiac surgery with CPB	Other	47
Predicting the development of acute kidney injury in liver cirrhosis--an analysis of glomerular filtration rate, proteinuria and kidney injury biomarkers.	Alimentary Pharmacology and Therapeutics	Slack	2013	observ	diagnostic	1	34	cirrhosis	AKIN	18
Is urinary $\gamma$ -glutamyl transpeptidase superior to urinary neutrophil gelatinase-associated lipocalin for early prediction of acute kidney injury after liver transplantation?	Transplantation proceedings	Marcelino	2014	observ	diagnostic	1	61	liver transplantation	AKIN	19
Role of urine neutrophil gelatinase-associated lipocalin in the early diagnosis of amphotericin B-induced acute kidney injury.	Antimicrobial Agents and Chemotherapy	Rocha	2015	observ	diagnostic	1	24	initiating treatment with ampho B	KDIGO	17
Plasma neutrophil gelatinase-associated lipocalin and acute postoperative kidney injury in adult cardiac surgical patients.	Anesthesia Analgesia	Perry	2010	observ	diagnostic	2	879	coronary artery bypass graft surgery	Other	75
Subclinical and clinical contrast-induced acute kidney injury: data from a novel blood marker for determining the risk of developing contrast-induced nephropathy (ENCINO), a prospective study.	Renal Failure	Akrawinthawong	2015	observ	diagnostic	3	63	patients with chronic kidney disease scheduled to undergo coronary angiography or intervention	KDIGO	8
Preoperative serum h-FABP concentration is associated with postoperative incidence of acute kidney injury in patients undergoing cardiac surgery.	BMC cardiovascular disorders	Oezkur	2014	observ	diagnostic	1	70	cardiac surgery elective CABG surgery or single valve repair/replacement	AKIN	45
Urinary Biomarkers Improve the Diagnosis of Intrinsic Acute Kidney Injury in Coronary Care Units.	Medicine	Chang	2015	observ	diagnostic	1	147	coronary care unit patients who exhibited any of the comorbidities of AKI and any of the kidney stressors	KDIGO	43
Serum cystatin C as a marker of renal function in patients with acute renal failure.	Saudi Journal of kidney diseases and transplantation	Tarif	2008	observ	diagnostic	1	373	patients diagnosed with ARF at hospitalization versus healthy voloneers	Other	73

Changes in renal markers and <b>acute kidney injury</b> after marathon running.	nephrology	Mccullough	2011	observ	diagnostic	1	25	marathon runners	AKIN	10
Plasma neutrophil gelatinase-associated lipocalin is an early marker of acute kidney injury in adult critically ill patients: a prospective study.	journal of critical care	Constantin	2010	observ	diagnostic	3	88	ICU patients	RIFLE	52
Urine neutrophil gelatinase-associated lipocalin in septic patients with and without acute kidney injury.	Renal Failure	Fan	2014	observ	diagnostic	1	126	ICU patients with sepsis	RIFLE	58
Serum cystatin C concentration as a marker of acute renal dysfunction in critically ill patients.	Critical Care	Villa	2005	observ	diagnostic	1	50	ICU patients	Other	25
Comparison of serum creatinine and cystatin C for early diagnosis of contrast-induced nephropathy after coronary angiography and interventions.	Clinical chemistry and laboratory medicine	Ribichini	2012	observ	diagnostic	1	166	patients underwent coronary angiography and/or angioplasty and at risk of CIN	Other	30
Urinary Neutrophil Gelatinase-Associated Lipocalin (uNGAL) and contrast-induced acute kidney injury after coronary angiogram.	swiss Medical Weekly	Perrin	2013	observ	diagnostic	1	244	percutaneous coronary intervention	AKIN	8
Midkine: a novel and early biomarker of contrast-induced acute kidney injury in patients undergoing percutaneous coronary interventions.	BioMed research international	Malyszko	2015	observ	diagnostic	1	89	percutaneous coronary intervention	Other	9
Early detection of acute renal failure by serum cystatin C.	Kidney International	Herget-Rosenthal	2004	observ	diagnostic	3	85	ICU patients with high risk AKI	RIFLE	44
Association between increases in urinary neutrophil gelatinase-associated lipocalin and acute renal dysfunction after adult cardiac surgery.	Anesthesiology	Wagener	2006	observ	diagnostic	1	81	cardiac surgery	Other	16
Urinary cystatin C is diagnostic of acute kidney injury and sepsis, and predicts mortality in the intensive care unit.	critical care	Nejat	2010	observ	diagnostic	2	444	ICU patients	AKIN	125
Predictive value of plasma neutrophil gelatinase-associated lipocalin for acute kidney injury in intensive care unit patients after major non-cardiac surgery.	Nephrology	Shum	2015	observ	diagnostic	1	151	patients admitted to ICU after non cardiac surgical intervention	AKIN	45
Urine neutrophil gelatinase-associated lipocalin moderately predicts acute kidney injury in critically ill adults.	journal of the American Society of Nephrology	Siew	2009	observ	diagnostic	1	451	ICU patients	AKIN	86
Markers of renal function and acute kidney injury in acute heart failure: definitions and impact on outcomes of the cardiorenal syndrome.	European Heart Journal	Lassus	2010	observ	diagnostic	14	292	acute heart failure	AKIN	46
Proatrial natriuretic peptide (1-98), but not cystatin C, is predictive for occurrence of acute renal insufficiency in critically ill septic patients.	Nephron clinical Practice	Mazul-Sunko	2004	observ	diagnostic	1	29	ICU patients with sepsis	Other	10
Does the kidney injury molecule-1 predict cisplatin-induced kidney injury in early stage?	Annals of Clinical Biochemistry	Tekce	2015	observ	diagnostic	1	22	patients with solid tumors treated with cisplatin	AKIN	8

Using inflammatory and oxidative biomarkers in urine to predict early acute kidney injury in patients undergoing liver transplantation.	Biomarkers	Liu	2014	observ	diagnostic	1	28	liver transplantation	RIFLE	16
Accuracy of Urinary Neutrophil Gelatinase-Associated Lipocalin in Quantifying Acute Kidney Injury after Partial Nephrectomy in Patients with Normal Contralateral Kidney.	PLOS one	Koo	2015	observ	diagnostic	1	146	open or laparoscopic partial nephrectomy for solid renal tumors	AKIN	34
Fibroblast growth factor-23 and the long-term risk of hospital-associated AKI among community-dwelling older individuals.	clinical journal of the American Society of Nephrology	Brown	2014	observ	diagnostic	4	3241	elderly individuals in the Cardiovascular Health Study.	Other	119
Relative and absolute changes in urinary neutrophil gelatinase-associated lipocalin and correlation with small increases in serum creatinine levels after coronary angiography: an observational study.	Nephron clinical Practice	Souza	2015	observ	diagnostic	1	125	elective coronary angiography to diagnose ischemic heart disease.	AKIN	22
Sepsis and AKI in Clinical Emergency Room Patients: The Role of Urinary NGAL.	BioMed research international	Si Nga	2015	observ	diagnostic	1	168	septic patients admitted to the emergency room	AKIN	121
Analysis of biomarkers for risk of acute kidney injury after primary angioplasty for acute ST-segment elevation myocardial infarction: results of the HORIZONS-AMI trial.	Catheterization and Cardiovascular Interventions	Guerchicoff	2015	interv	diagnostic	NR	390	ST elevation myocardial infarction (STEMI) undergoing percutaneous coronary intervention	Other	56
Urinary excretion of twenty peptides forms an early and accurate diagnostic pattern of acute kidney injury.	Kidney International	Metzger	2010	observ	diagnostic	3	20	ICU patients	AKIN	9
Urinary excretion of twenty peptides forms an early and accurate diagnostic pattern of acute kidney injury.	Kidney International	Metzger	2010	observ	diagnostic	3	38	allogenic stem cell transplantation reciepiant	AKIN	16
Urinary macrophage migration inhibitory factor serves as a potential biomarker for acute kidney injury in patients with acute pyelonephritis.	Mediators of inflammation	Hong	2012	observ	diagnostic	1	39	acute pyelonephritis	RIFLE	13
Plasma IL-6 and IL-10 Concentrations Predict AKI and Long-Term Mortality in Adults after Cardiac Surgery.	journal of the American Society of Nephrology	Zhang	2015	observ	diagnostic	6	960	cardiac surgery	AKIN	330
Urinary chitinase 3-like protein 1 for early diagnosis of acute kidney injury: a prospective cohort study in adult critically ill patients.	Critical Care	De Loor	2016	observ	diagnostic	1	181	ICU patients	KDIGO	6
A Pilot Study Identifying a Set of microRNAs As Precise Diagnostic Biomarkers of Acute Kidney Injury.	PLOS one	Aguado-Fraile	2015	observ	diagnostic	1	55	ICU patients	AKIN	35
A Pilot Study Identifying a Set of microRNAs As Precise Diagnostic Biomarkers of Acute Kidney Injury.	PLOS one	Aguado-Fraile	2015	observ	diagnostic	1	31	cardiac surgery	AKIN	17

Urinary Angiotensinogen Level Predicts AKI in Acute Decompensated Heart Failure: A Prospective, Two-Stage Study.	journal of the American Society of Nephrology	Yang	2015	observ	diagnostic	4	317	acute decompensated heart failure	KDIGO	104
The Preinterventional Cystatin-Creatinine-Ratio: A Prognostic Marker for Contrast Medium-Induced Acute Kidney Injury and Long-Term All-Cause Mortality.	Nephron clinical Practice	Luders	2015	observ	diagnostic	1	373	elective left heart catheterization	AKIN	79
Urine hepcidin has additive value in ruling out cardiopulmonary bypass-associated acute kidney injury: an observational cohort study.	Critical Care	Haase-Fielitz	2011	interv	diagnostic	NR	100	cardiac surgery with CPB with at least one risk factor for AKI	RIFLE	9
Predictive and pathogenetic value of plasma biomarkers for acute kidney injury in patients with acute lung injury.	critical care medicine	Liu	2007	interv	diagnostic	10	876	ICU patients with acute lung injury	RIFLE	209
Advanced oxidation protein products in predicting acute kidney injury following cardiac surgery.	Biomarkers	Du	2015	observ	diagnostic	1	67	cardiac surgery with CPB	Other	35
High sensitive C-reactive protein and the risk of acute kidney injury among ST elevation myocardial infarction patients undergoing primary percutaneous intervention.	Clinical and Experimental Nephrology	Shacham	2015	observ	diagnostic	1	562	ST elevation myocardial infarction (STEMI) undergoing percutaneous coronary intervention	AKIN	51
Syndecan-1 in Acute Decompensated Heart Failure--Association With Renal Function and Mortality	circulation journal official journal of the japanese Circulation Society	Neves	2015	observ	diagnostic	1	201	acute decompensated heart failure	KDIGO	62
Pre-operative growth differentiation factor 15 as a novel biomarker of acute kidney injury after cardiac bypass surgery.	international journal of Cardiology	Guenancia	2015	observ	diagnostic	1	134	coronary artery bypass graft surgery	KDIGO	42
Greater increase in urinary hepcidin predicts protection from acute kidney injury after cardiopulmonary bypass.	Nephrology Dialyse transplantation	Prowle	2012	interv	diagnostic	1	93	cardiac surgery with CPB with at least one risk factor for AKI	RIFLE	25
Value of plasmatic membrane attack complex as a marker of severity in acute kidney injury.	BioMed research international	Rodriguez	2014	observ	diagnostic	1	156	sepsis, cisplatin, ischemie reperfusion, multifactoriel	RIFLE	81
Serum uric acid level as a risk factor for acute kidney injury in hospitalized patients: a retrospective database analysis using the integrated medical information system at Kochi Medical School hospital.	Clinical and Experimental Nephrology	Otomo	2016	observ	diagnostic	1	####	admission to the hospital	KDIGO	7491
The urinary levels of prostanoid metabolites predict acute kidney injury in heterogeneous adult Japanese ICU patients: a prospective observational study.	Clinical and Experimental Nephrology	Ujike-Omori	2015	observ	diagnostic	1	93	ICU patients	AKIN	24

MicroRNA-21 and risk of severe acute kidney injury and poor outcomes after adult cardiac surgery.	PLOS one	Du	2013	observ	diagnostic	1	120	cardiac surgery	AKIN	40
Serum estradiol levels predict survival and acute kidney injury in patients with septic shock--a prospective study.	PLOS one	Feng	2014	observ	diagnostic	1	107	Pneumonia related septic shock	RIFLE	58
B-type natriuretic peptide and risk of acute kidney injury in patients hospitalized with acute coronary syndromes*.	critical care medicine	Moltrasio	2014	observ	diagnostic	1	639	acute coronary syndromes patients undergoing emergency and urgent percutaneous coronary intervention	AKIN	85
Monitoring of plasma creatinine and urinary γ-glutamyl transpeptidase improves detection of acute kidney injury by more than 20%.	critical care medicine	Blasco	2011	observ	diagnostic	1	100	ICU patients	Other	36
Early prediction of acute renal injury using urinary proteomics.	American journal of Nephrology	Nguyen	2005	observ	diagnostic	1	60	cardiac surgery with CPB	Other	15
B-type natriuretic peptide and risk of contrast-induced acute kidney injury in acute ST-segment-elevation myocardial infarction: a substudy from the HORIZONS-AMI trial.	circulation cardiovascular interventions	Jarai	2012	interv	diagnostic	NR	979	ST elevation myocardial infarction (STEMI) undergoing percutaneous coronary intervention	Other	131
Microalbuminuria in non-diabetic STEMI: an independent predictor for acute kidney injury.	Scandinavian Cardiovascular Journal	Lazzeri	2012	observ	diagnostic	1	526	ST elevation myocardial infarction (STEMI) undergoing percutaneous coronary intervention	Other	59
Preoperative serum brain natriuretic peptide and risk of acute kidney injury after cardiac surgery	Circulation	Pattel	2012	observ	diagnostic	6	1139	cardiac surgery	AKIN	407
Preoperative proteinuria predicts acute kidney injury in patients undergoing cardiac surgery.	the Journal of Thoracic and Cardiovascular surgery	Coca	2012	observ	diagnostic	6	1159	cardiac surgery	AKIN	409
Markers of tubular and glomerular injury in predicting acute renal injury outcome in thermal burn patients: a prospective study.	Renal Failure	Sabry	2009	observ	diagnostic	1	40	burn patients with >20%TBSA	Other	9



C-reactive protein and the risk of contrast-induced acute kidney injury in patients undergoing percutaneous coronary intervention.	American journal of Nephrology	Gao	2011	observ	diagnostic	1	4522	patients undergoing percutaneous coronary intervention (PCI) excluding acute myocardial infarction, cardiogenic shock, concomitant inflammatory conditions or undergoing CABG within 48 h	Other	726
Interleukin-8 and acute kidney injury following cardiopulmonary bypass: a prospective cohort study.	Nephron clinical Practice	Liangos	2009	observ	diagnostic	2	143	cardiac surgery with CPB	AKIN	41
Evaluation of sE-Selectin and sICAM-1 as parameters for renal function.	Renal Failure	Dehne	2008	observ	diagnostic	1	33	surgical ICU patients	Other	11
Elevated plasma concentrations of IL-6 and elevated APACHE II score predict acute kidney injury in patients with severe sepsis.	Clinical Journal of the American Society of Nephrology	Chawla	2007	interv	diagnostic	164	547	ICU patients with severe sepsis	Other	127
Neutrophil gelatinase-associated lipocalin as a diagnostic marker of acute kidney injury in pre-eclampsia.	The journal of Obstetrics and Gynecology Research	Moyake	2016	observ	diagnostic	1	187	109 women with the diagnostic of pre eclampsia and 78 controlled patients with normal pregnancy	KDIGO	14
Serum Neutrophil Gelatinase-Associated Lipocalin Levels In Early Detection Of Contrast-Induced Nephropathy.	Clinical and investigative medicine	Muratoglu	2016	observ	diagnostic	1	74	Abdominal tomography with contrast	Other	12
Value of Serum Cystatin C Measurement in the Diagnosis of Sepsis-Induced Kidney Injury and Prediction of Renal Function Recovery.	Yonsei medical Journal	Leem	2017	observ	diagnostic	1	162	ICU patients with sepsis	RIFLE	113
Procalcitonin and Interleukin-6 Levels: Are They Useful Biomarkers in Cardiac Surgery Patients?	Blood purification	Clementi	2017	observ	diagnostic	1	122	cardiac surgery	AKIN	35
Urinary interleukin-18 and urinary neutrophil gelatinase-associated lipocalin predict acute kidney injury following pulmonary valve replacement prior to serum creatinine.	Congenital haert disease	Buelow	2012	observ	diagnostic	1	20	cardiac surgery pulmonary valve replacement	Other	7
Novel urinary biomarkers in detecting acute kidney injury, persistent renal impairment, and all-cause mortality following decongestive therapy in acute decompensated heart failure.	Journal of Cardiac failure	Verbrugge	2013	observ	diagnostic	1	83	acute decompensated heart failure	Other	14
Urinary actin, interleukin-6, and interleukin-8 may predict sustained ARF after ischemic injury in renal allografts.	american Journal of kidney disease	Kwon	2003	observ	diagnostic	1	40	renal transplant	Other	9
Serum procalcitonin predicts development of acute kidney injury in patients with suspected infection.	Clinical chemistry and laboratory medicine	Nie	2013	observ	diagnostic	1	1361	patients suspected of infection by 3	KDIGO	199

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Association of cardiac biomarkers with acute kidney injury after cardiac surgery: A multicenter cohort study.	the Journal of Thoracic and Cardiovascular surgery	Belley-Coté	2016	observ	diagnostic	6	960	cardiac surgery	Other	37
Evolution and predictive power of serum cystatin C in acute renal failure.	Clinical Nephrology	Ahlström	2004	observ	diagnostic	1	202	ICU patients	Other	54
The urine protein NGAL predicts renal replacement therapy, but not acute kidney injury or 90-day mortality in critically ill adult patients.	Anesthesia Analgesia	Nisula	2014	observ	diagnostic	15	1042	ICU patients	KDIGO	379
Serum cystatin C in elderly cardiac surgery patients.	The Annals of Thoracic Surgery	Ristikankare	2010	observ	diagnostic	1	110	cardiac surgery with CPB	RIFLE	62
Fluid balance and conventional and novel biomarkers of acute kidney injury in cardiovascular surgery.	The Annals of Thoracic Surgery	Kambhampati	2013	observ	diagnostic	1	100	cardiac surgery	AKIN	27
Neutrophil gelatinase-associated lipocalin as early predictor of acute kidney injury after cardiac surgery in adults with chronic kidney failure.	The Annals of Thoracic Surgery	Perrotti	2014	observ	diagnostic	1	166	cardiac surgery with CKD	Other	52
Could neutrophil-gelatinase-associated lipocalin and cystatin C predict the development of contrast-induced nephropathy after percutaneous coronary interventions in patients with stable angina and normal serum creatinine values?	Kidney & Blood Pression Research	Bachorzewska-Gajewska H	2007	observ	diagnostic	1	100	patients undurgoing percutaneous coronary intervention (PCI)	Other	11
Urinary IL-18 and NGAL as early predictive biomarkers in contrast-induced nephropathy after coronary angiography.	Nephron clinical Practice	Ling	2008	observ	diagnostic	1	40	Patients undergoing coronary angiography	Other	13
Clinical usefulness of novel biomarkers for the detection of acute kidney injury following elective cardiac surgery.	Nephron clinical Practice	Che	2010	observ	diagnostic	1	29	cardiac surgery	Other	14
Procalcitonin as an Early Predictor of Contrast-Induced Acute Kidney Injury in Patients With Acute Coronary Syndromes Who Underwent Percutaneous Coronary Intervention.	Angiology	Kurtul	2015	observ	diagnostic	1	814	ST elevation myocardial infarction (STEMI) undergoing percutaneous coronary intervention	Other	96
Combination of two urinary biomarkers predicts acute kidney injury after adult cardiac surgery.	The Annals of thoracic surgery	Katagiri	2012	observ	diagnostic	2	77	cardiac surgery	AKIN	28
Urinary NGAL and KIM-1: biomarkers for assessment of acute ischemic kidney injury following nephron sparing surgery.	journal of Urology	Abassi	2013	observ	diagnostic	1	27	Open nephron sparing surgery for solid renal tumor	AKIN	10
Urinary excretion of liver-type fatty acid-binding protein in contrast medium-induced nephropathy.	american Journal of kidney disease	Nakamura	2006	observ	diagnostic	1	66	patients undurgoing percutaneous coronary intervention (PCI)	Other	13

Urinary neutrophil gelatinase-associated lipocalin and acute kidney injury after cardiac surgery.	american Journal of kidney disease	Wagener	2008	observ	diagnostic	1	426	cardiac surgery	AKIN	85
Determination of urinary neutrophil gelatinase-associated lipocalin (NGAL) cut-off level for early detection of acute kidney injury in Thai adult patients undergoing open cardiac surgery.	journal of the medical association of Thailand	Thanakitcharu P	2014	observ	diagnostic	1	130	cardiac surgery	AKIN	46
Urinary Tissue Inhibitor of Metalloproteinase-2 and Insulin-Like Growth Factor-Binding Protein 7 for Risk Stratification of Acute Kidney Injury in Patients With Sepsis.	critical care medicine	Honore	2016	observ	diagnostic	39	232	ICU patients with sepsis	KDIGO	40
Simple blood and urinary parameters measured at ICU admission may sign for AKI development in the early postoperative period: a retrospective, exploratory study.	Renal Failure	Maciel	2016	observ	diagnostic	1	112	ICU patients en postop	AKIN	28
Clinical significance of NGAL and KIM-1 for acute kidney injury in patients with scrub typhus.	PLOS one	Sun	2017	observ	diagnostic	1	138	Typhus	RIFLE	25
Urinary cystatin C as an early biomarker of acute kidney injury after open and endovascular abdominal aortic aneurysm repair.	Annals of Vascular Surgery	Pirgakis	2014	observ	diagnostic	1	126	abdominal aortic aneurysm	AKIN	28
Diagnostic and short-term prognostic utility of plasma pro-enkephalin (pro-ENK) for acute kidney injury in patients admitted with sepsis in the emergency department.	Journal of Nephrology	Marino	2015	observ	diagnostic	1	101	sepsis	RIFLE	49
Importance of determination of urine neutrophile gelatinase associated lipocalin in early detection of acute kidney injury.	collegium antropologicum	Omerika	2014	observ	diagnostic	1	150	ICU patients after cardiac surgery	RIFLE	20
Rapid detection of acute kidney injury by plasma and urinary neutrophil gelatinase-associated lipocalin after cardiopulmonary bypass.	J Cardiovasc Pharmacol	Tuladhar	2009	observ	diagnostic	1	50	cardiac surgery with CPB	Other	9
Rapid detection of acute kidney injury by urinary neutrophil gelatinase-associated lipocalin after cardiopulmonary bypass surgery.	J of the College of Physicians and surgeons Pakistan	Munir	2013	observ	diagnostic	1	88	cardiac surgery with CPB	AKIN	11
Urinary neutrophil gelatinase-associated lipocalin for early detection of acute kidney injury in geriatric patients with urinary tract infection treated by colistin.	Clinical Nephrology	Shavit	2013	observ	diagnostic	1	116	geriatric patients with urinary tract infection treated by colistin	AKIN	52
Plasma neutrophil gelatinase-associated lipocalin as early biomarker for acute kidney injury in burn patients.	Journal of Burn Care & Research	Hong	2013	observ	diagnostic	1	45	burn patients with >20%TBSA	RIFLE	11
Implication of combined urinary biomarkers in early diagnosis of acute kidney injury following percutaneous coronary intervention.	Clinical Nephrology	Luo	2013	observ	diagnostic	1	42	percutaneous coronary intervention	Other	12
Performance of urinary NGAL and L-FABP in predicting acute kidney injury and subsequent renal recovery: a cohort study based on major surgeries.	Clinical chemistry and laboratory medicine	Zeng	2014	observ	diagnostic	1	199	major surgery	AKIN	37

Plasma neutrophil-gelatinase-associated lipocalin and cystatin C could early diagnose contrast-induced acute kidney injury in patients with renal insufficiency undergoing an elective percutaneous coronary intervention.	Chinese Medical Journal	Liu	2012	observ	diagnostic	1	311	percutaneous coronary intervention	Other	39
Neutrophil gelatinase-associated lipocalin as an early marker of acute kidney injury in patients with traumatic brain injury.	Journal of Nephrology	Li	2013	observ	diagnostic	1	55	traumatic brain injury	AKIN	13
Cystatin C as an early marker of acute kidney injury and predictor of mortality in the intensive care unit after acute myocardial infarction.	arab journal of nephrology and transplantation	Fouad	2013	observ	diagnostic	1	100	ICU after acute myocardial infarction	Other	35
Post-operative serum uric acid and acute kidney injury.	Journal of Nephrology	Ejaz	2012	observ	diagnostic	1	100	cardiac surgery		NR
Assessment of NGAL as an early biomarker of acute kidney injury in adult cardiac surgery patients.	journal of biological regulators and homeostatic agents	Sargentini	2012	observ	diagnostic	1	NR	cardiac surgery with CPB		NR
urine biomarkers give early prediction of acute kidney injury and outcome after out of hospital cardiac arrest	Critical care	Beitland	2016	observ	diagnostic	1	195	out of hospital cardiac arrest	KDIGO	88
Early prediction of acute kidney injury biomarkers after endovascular stent graft repair of aortic anevrysm : A prospective observational study	Journal of intensive Care	Ueta	2014	observ	diagnostic	1	42	endovascular stent graft repair of aortic anevrysm	AKIN	6
Comparative analysis of diagnostic and predictive performance of novel renal biomarkers in plasma and urine of acute kidney injury patients	Intensive care Medicine Experimental	Schley	2015	observ	diagnostic	1	110	cardiac surgery	AKIN	
urinary TIMP-2 and IGFBP7 for the prediction of acute kidney injury following cardiac surgery	BMC nephrology	Wang	2017	observ	diagnostic	1	57	cardiac surgery	KDIGO	20
urinary [TIMP-2]*[IGFBP7] for early prediction of acute kidney injury after coronary artery bypass surgery	Annals of Intensive Care	Pilarczyk	2015	observ	diagnostic	1	60	elective on pump CABG due to severe coronary artery disease	KDIGO	19
C-terminal fragment of agrin (CAF) levels predict acute kidney injury after acute myocardial infarction	BMC nephrology	Arampatzis	2017	observ	diagnostic	3	403	acute myocardial infarction	KDIGO	59
Association of Renal Stress/damage and filtration Biomarkers with subsequent AKI during hospitalization among patients presenting to the emergency department	Clinical Journal of the American Society of Nephrology	Kimmel	2016	observ	diagnostic	1	298	emergency patients	KDIGO	46
Efficacy of urinary midkine as a biomarker in patients with acute kidney injury	Clinical and Experimental Nephrology	Hayashi	2017	observ	diagnostic	NR	582	33 controles et 549 patients with various renal diseases	KDIGO	67
early prediction of acute kidney injury after transapical and transaortic aortic valve implantation with urinary G1 cell cycle arrest biomarkers	BMC anesthesiology	Dusse	2016	observ	diagnostic	1	40	TAVI	KDIGO	8

urinary TIMP2 IGFBP7 for the prediction of platinum-induced acute renal injury	international journal of nephrology and renovascular diseases	schanz	2017	observ	diagnostic	1	32	malignant disease, therapy with cysplatin	KDIGO	4
post cardiac surgery acute kidney injury : a woebegone status rejuvenated by the novel biomarkers	iranian red crescent medical journal	Jayaraman	2014	observ	diagnostic	1	100	cardiac surgery		31
Early prediction of acute kidney injury in patients with acute myocardial injury	journal of critical care	Hsiao	2012	observ	diagnostic	1	86	SCA	AKIN	17
Serum Neutrophil Gelatinase-associated Lipocalin versus serum creatinine for the prediction of acute kidney injury after liver transplantation	international journal of organ traansplantation	Khosravi	2013	observ	diagnostic	1	90	liver transplantation	RIFLE	31
Neutrophil gelatinase-associated lipocalin as a biomarker for pedicting acute kidney injury during off-pump coronary artery bypass grafting	Annals of Cardiac Anaesthesia	Kanchi	2017	interv	diagnostic	1	90	stable CKD not on dialysis scheduled for on pump-CABG	KDIGO	28
Neutrophil gelatinasee-associated lipocalin (NGAL) predicts the occurrence of malaria-induced acute kidney injury	Malaria journal	Van Wolfswinkel	2016	observ	diagnostic	1	39	imported falciparum malaria	KDIGO	6
Plasma endostatin may improve acute kidney injury risk prediction in critically ill patients	Annals of intensive care	Martensson	2016	observ	diagnostic	1	93	ICU	KDIGO	21
creatinine, Neutrophil gelatinase-associated lipocalin and cystatin C in determining acute kidney injury after heart operations using cardiopulmonary bypass	Artificial organs	Kalisnik	2017	observ	diagnostic	1	41	cardiac surgery	AKIN	18
plasma neutrophil gelatinase-associated lipocalin diagnosed acute kidney injury in patients with systemic inflammatory disease and sepsis	Nephrology	Ralib	2017	observ	diagnostic	1	225	ICU patients with sepsis	KDIGO	87
Kidney damage biomarkers detect acute kidney injury but only functional markers predict mortality after paraquat ingestion	Toxicology letters	Mohamed	2015	observ	diagnostic	1	50	paraquat poisoning	AKIN	26
Acute kidney injury prediction in cardiac surgery patients by a urinary peptide pattern: a case-control validation study	Critical care	Metzger	2016	observ	diagnostic	1	120	cardiac surgery	AKIN	60
Novel urinary biomarkers and the early detection of acute kidney injury after open cardiac surgeries	journal of critical care	Elmedany	2017	observ	diagnostic	1	45	cardiac surgery	AKIN	11
Urine catalytic iron and Neutrophil gelatinase-associated lipocalin as companion early markers of acute kidney injury after cardiac surgery :a prospective pilot study	american Journal of kidney disease	Akrawinthawong	2013	observ	diagnostic	1	14	Cardiac surgery	AKIN	8
Early prediction of cisplatin nephrotoxicity in head and neck cancer patients an evaluation with urinary biomarkers	International journal of pharmaceutical sciences and research	Saleena	2015	observ	diagnostic	1	NR	cisplatin for head and neck cancer		NR
Urinary neutrophil gelatinase associated lipocalin ( NGAL) for early diagnosis of acute kidney injury in renal transplant recipients	Nephro-Urology Monthly	Rostami	2013	observ	diagnostic	1	64	kidney transplantation recipients	Other	31

neutrophil gelatinase associated lipocalin as a biomarker for acute kidney injury in patients undergoing coronary artery bypass grafting with cardiopulmonary bypass	Annals of Vascular Surgery	Prabhu	2010	observ	diagnostic	1	30	CABG	RIFLE	8
NGAL expression during cardiopulmonary bypass does not predict severity of postoperative acute kidney injury	BMC nephrology	Friedrich	2017	observ	diagnostic	1	81	cardiac surgery with CPB	AKIN	31
Neutrophil gelatinase-associated lipocalin for acute kidney injury during acute heart failure hospitalizations : the AKINESIS study	Journal of the american College of Cardiology	Maisel	2016	observ	diagnostic	16	927	acute heart failure	RIFLE	72
diagnostic value of matrix metalloproteinase-9 and tissue inhibitor of matrix metalloproteinase-1 in sepsis associated acute kidney injury	Tohoku journal of experimental medicine	Bojic	2015	observ	diagnostic	1	53	sepsis	KDIGO	37
Urine Ratio of neutrophil gelatinase-associated lipocalin to creatinine as a marker for early detection of cisplatin-associated nephrotoxicity	Iranian journal of kidney diseases	Shahbani	2015	observ	diagnostic	1	24	cisplatin chemotherapy	AKIN	2
diagnosis of cardiac surgery-associated acute kidney injury: differential roles of creatinine, chitinase 3-like protein 1 and neutrophil gelatinase-associated lipocalin : a prospective cohort study	Annals of Intensive Care	De Loor	2017	observ	diagnostic	1	203	cardiac surgery	KDIGO	103
Neutrophil gelatinase-associated lipocalin levels during the first 48 hours of intensive care may indicate upcoming acute kidney injury	Journal of critical care	Kamis	2016	observ	diagnostic	1	107	ICU	RIFLE	38
AKI predictor, an online prognostic calculator for acute kidney injury in adult critically ill patients: development, validation and comparison to serum neutrophil gelatinase-associated lipocalin	Intensive care medicine	Flechet	2017	observ	diagnostic	7	2367	ICU	KDIGO	
Urinary neutrophil gelatinase associated lipocalin as an early marker of acute kidney injury in the recipient after liver transplantation	Egyptian journal of critical care medicine	El-Akabawy	2017	observ	diagnostic	1	30	liver transplantation	RIFLE	
diagnostic and prognostic value of neutrophil gelatinase associated lipocalin, matrix metalloproteinase-9, and tissue inhibitor of matrix metalloproteinases-1 for sepsis in the emergency department : an observational study	critical care	Wang	2014	observ	diagnostic	1	480	SIRS	AKIN	NR
Assessment of plasma neutrophil gelatinase-associated lipocalin (NGAL) in patients after cardiac surgery	Anaesthesiology and intensive care	Dimitrova-Karamphilova	2013	observ	diagnostic	1	70	cardiac surgery	RIFLE	15
Evaluation of serum neutrophil gelatinase-associated lipocalin in predicting acute kidney injury in critically ill patients	Journal of international medical Research	Hang	2017	observ	diagnostic	1	249	emergency patients	KDIGO	101
Assessment of fractional excretion of urea for early diagnosis of cardiac surgery associated acute kidney injury	Renal Failure	Varela	2015	observ	diagnostic	1	66	cardiac surgery	AKIN	16

Plasma neutrophil gelatinase-associated lipocalin (NGAL) as an early predictive marker of contrast-induced nephropathy in hospitalized patients undergoing computed tomography	Clinical kidney journal	Filiopoulos	2013	observ	diagnostic	1	47	elective contrast tomography	Other	4
the role of neutrophil gelatinase-associated lipocalin in early diagnosis of contrast nephropathy	Indian journal of nephrology	Khatami	2015	observ	diagnostic	1	121	coronary angiography	Other	7
Urinary neutrophil gelatinase-associated lipocalin as a biomarker of kidney injury in hematologic-oncologic patients receiving amphotericin B	Iranian journal ok kidney diseases	Karimzadeh	2017	observ	diagnostic	3	40	amphotericin B	KDIGO	
Acute kidney injury during liver transplantation as determined by neutrophil gelatinase-associated lipocalin	Liver transplantation	Niemann	2009	observ	diagnostic	1	59	liver transplantation	RIFLE	27
plasma neutrophil gelatinase associated lipocalin in the early detection of acute kidney injury in patients undergoing cardiac surgery	International Journal of Pharma and bio sciences	Anusha	2015	observ	diagnostic	1	103	cardiac surgery versus healthy individuals	AKIN	13
early predictors of acute kidney injury in patients with cirrhosis and bacterial infection: urinary neutrophil gelatinase-associated lipocalin and cardiac output as reliable tools	Kidney research and clinical practice	Ximenes	2015	observ	diagnostic	1	18	cirrhosis and bacteial infection	Other	
Urine Neutrophil gelatinase-associated lipocalin: a doagnostic and prognostic marker for acute kidney injury (AKI) in hospitalized cirrhotic patients with AKI-prone conditions	BMC gastroenterology	Treeprasertsuk	2015	observ	diagnostic	1	121	hospitalized cirrhosis	AKIN	35
Urinary neutrophil gelatinase-associated lipocalin in critically ill surgical cancer patients	Indian journal of critical care medicine	Delifino duarte	2015	observ	diagnostic	1	22	major oncological surgeries	AKIN	3
Urinary KIM-1, IL-18 and Cys-c as early predictive biomarkers in gadolinium-based contrast-induced nephropathy in elderly patients	Clinical Nephrology	Duan	2013	observ	diagnostic	1	60	elderly patients scheduled for MRI with gadolinium	Other	8
Evaluation of clinically available renal biomarkers in critically ill adults: a prospective multicenter observational study	Critical care	Deng	2017	observ	diagnostic	1	1084	ICU	KDIGO	326
Cystatin C is a moderate predictor of acute kidney injury in the early stage of traumatic hemorrhagic shock	Experimental and therapeutic medicine	Chen	2015	observ	diagnostic	1	57	traumatic hemorrhage versus control	Other	18
A preoperative multimarker approach to evaluate acute kidney injury after cardiac surgery	Journal of cardiothoracic and vascular anesthesia	Enger	2017	observ	diagnostic	1	1015	cardiac surgery with CPB	KDIGO	100
Diagnostic value of N-Acetyl-β-D-glucosaminidase for the early prediction of acute kidney injury after percutaneous nephrolithotripsy	Experimental and therapeutic medicine	Jiang	2013	observ	diagnostic	1	90	percutaneous nephrolithotripsy	AKIN	11
serum Cystatin C as a predictor of cardiac surgery associated-acute kidney injury in patients with normal preoperative renal function. A prospective cohort study	Egyptian journal of critical care medicine	Samy	2017	observ	diagnostic	1	40	cardiac surgery with CPB	AKIN	20

Plasma microRNA-21 for the early prediction of acute kidney injury in patients undergoing major cardiac surgery	Nephrology dialysis Transplantation	Gaede	2016	observ	diagnostic	1	115	cardiac surgery	KDIGO	42
Serum Cystatin C as a marker of renal function in critically ill patients with normal serum creatinine	Nephro-Urology Monthly	Sagheb	2014	observ	diagnostic	1	80	ICU	Other	59
Evaluation of serum Cysteine-rich protein 61 and cystatin C levels for assessment of acute kidney injury after cardiac surgery	Renal Failure	Mosa	2016	observ	diagnostic	1	50	cardiac surgery with CPB	KDIGO	26
Klotho: a novel ans early biomarker of acute kidney injury after cardiac valve replacement surgery in adults	International Journal of Clinical and Experimental medicine	Liu	2015	observ	diagnostic	1	35	cardiac valve replacement surgery	AKIN	19
Significance of cystatin C for early diagnosis of contrast-induced nephropathy in patients undergoing coronary angiography	Medical science monitor	Wang	2016	observ	diagnostic	1	300	coronary angiography	Other	29
cystatin C for early detection of acute kidney injury after laparoscopic partial nephrectomy	Urology Annals	Alesawi	2014	observ	diagnostic	1	25	partial nephrectomy	AKIN	4
Preoperative plasma growth-differentiation factor-15 for prediction of acute kidney injury in patients undergoing cardiac surgery	Critical care	Heringlake	2016	observ	diagnostic	1	1176	cardiac surgery	KDIGO	258
Heparin-binding protein as a biomarker of acute kidney injury in critical illness	ACTA anaesthesiologica Scandinavica	Tyden	2017	observ	diagnostic	1	245	ICU	KDIGO	80
The serum heart-type fatty acid-binding protein(HFABP) levels ccan be used to detect the presence of acute kidney injury on admission in patients admitted to the non-surgical intensive care unit	BMC cardiovascular disorders	Shirakabe	2016	observ	diagnostic	1	494	ICU	RIFLE	145