**AKI risk factor definitions in** [**Yasrebi-de kom et al (2023)**](https://doi.org/10.1093/ckj/sfad160)**: data sources, variable construction and definitions**

| AKI risk factor | Type | Availability | Data source | Variable name or variable construction description (if applicable) | Risk factor definition used to identify confounders and mediators in KNMP-DKD |
| --- | --- | --- | --- | --- | --- |
| Acute heart failure | Acute | Indirect | NICE MDS [Diagnoses on ICU admission] & [Diagnosis following first 24 hours of ICU admission] & [Admission and Patient Details] | CPR OR thrombolytic therapy following acute myocardial infarction OR number of CABG grafts > 0 OR internal mammary arterial graft OR APACHE IV admission diagnoses for CABG or AHF. Only scored if admission was not a planned surgery admission | All forms / terms of / for AHFa |
| Burns | Acute | Direct | NICE MDS [Diagnosis on ICU admission] | Burns | All forms / terms of / for burns |
| Graft and transplant surgery | Acute | Indirect | NICE MDS [Diagnosis on ICU admission] & [Diagnosis following first 24 hours of ICU admission] | Number of CABG grafts > 0 OR internal mammary arterial graft OR APACHE IV admission diagnoses for grafting or organ transplantation | All forms / terms of / for grafting or transplant surgery |
| Hypotension | Acute | Indirect | RESCUE data [ABP measurements] | MAP < 60 mmHG in ≥ 2 successive hourly measurementsb | All forms / terms of / for hypotension |
| Hypovolemia | Acute | Indirect | NICE MDS [Diagnosis on ICU admission] & [Diagnosis following first 24 hours of ICU admission] | Gastrointestinal bleeding OR APACHE IV admission diagnoses for hemorrhage or hypovolemia | Hypovolemia or dehydration |
| Major surgery | Acute | Indirect | NICE MDS [Diagnosis following first 24 hours of ICU admission] | APACHE IV admission diagnoses for major surgery (expert opinion classification) | All forms / terms of / for major surgery |
| Mechanical ventilation | Acute | Indirect | NICE MDS [Diagnosis on ICU admission] & [Diagnosis following first 24 hours of ICU admission] | Mechanical ventilation on ICU admission OR mechanical ventilation within 24 hours | Lung failure or breathing cessation only |
| Sepsis | Acute | Indirect | NICE MDS [Diagnosis following first 24 hours of ICU admission] & [Physiology and Laboratory details] & [Glasgow Coma Scale components] | APACHE IV admission diagnoses for sepsis OR SOFA score >= 2 combined with a confirmed infection within 24 hours of admissionc | Sepsis or blood poisoning only; for indications, only antibiotics described in the SWAB Sepsis 2010 guidelined |
| Trauma | Acute | Indirect | NICE MDS [Diagnosis following first 24 hours of ICU admission] | APACHE IV admission diagnoses for trauma | All forms / terms of / for trauma |
| Agee | Demographic | Direct | NICE MDS [Admission and Patient Details] | Age | All forms / terms / of / for age |
| Alcohol abuse | Chronic | Indirect | RESCUE data [Drug administrations] | Thiamine administration during ICU admission | All forms / terms of / for alcoholism or alcohol abuse |
| Cardiovascular disease | Chronic | Indirect | NICE MDS [Diagnosis on ICU admission] & [Chronic Diagnoses] | Chronic cardiovascular insufficiency (NYHA IV) OR myocardial infarction before ICU admission OR number of grafts > 0 OR internal mammary arterial graft OR pre-operative ejection fraction < 40%f | All forms / terms of / for chronic cardiovascular diseaseg |
| Chronic kidney disease | Chronic | Indirect | NICE MDS [Chronic Diagnoses] | Chronic renal insufficiency OR chronic dialysis | All forms / terms of / for chronic kidney disease |
| Chronic pulmonary disease | Chronic | Indirect | NICE MDS [Chronic Diagnoses] | Chronic obstructive pulmonary disease OR chronic respiratory insufficiency | All forms / terms of / for chronic pulmonary disease |
| Diabetes mellitus | Chronic | Direct | NICE MDS [Diagnosis on ICU admission] | Diabetes | All forms / terms of / for diabetes |
| Hypertension | Chronic | Unavailable | NA | NA | All forms / terms of / for hypertension |
| Liver disease | Chronic | Direct | NICE MDS [Chronic Diagnoses] | Cirrhosis | All forms / terms of / for cirrhosis, liver failure or liver function disorderh |
| Malignancy | Chronic | Indirect | NICE MDS [Chronic Diagnoses] & [Diagnosis following first 24 hours of ICU admission] | Metastasized neoplasm OR haematological malignancy OR APACHE IV admission diagnoses for malignancy | All forms / terms of / for malignancies |
| Obesity | Chronic | Indirect | NICE MDS [Admission and Patient Details] | BMI ≥ 30 (calculated using weight and height variables) | All forms / terms / of / for obesity |
| Sexe | Demographic | Direct | NICE MDS [Admission and Patient Details] | Gender | All forms / terms of / for sex |
| Smoking | Chronic | Unavailable | NA | NA | All forms / terms of / for smoking |
| SCr baselinee | Other | Indirect | RESCUE data [Lab] | First SCr value within first 24 hours of ICU admission | NA |
| APACHE IV mortality probabilitye | Other | Direct | NICE MDS | Calculated by NICE Registry Research & Support | NA |

AKI: acute kidney injury, KNMP-DKD: KNMP Drug Knowledge Database, KNMP: Koninklijke Nederlandse Maatschappij ter bevordering der Pharmacie, NICE: National Intensive Care Evaluation quality registry, MDS: minimal dataset, ICU: intensive care unit, CPR: cardiopulmonary resuscitation, CABG: coronary artery bypass grafting, APACHE IV: Acute Physiology and Chronic Health Evaluation IV, AHF: acute heart failure, RESCUE: Towards a leaRning mEdication Safety system in a national network of Intensive Care Units – timely detection of adverse drug Events, ABP: arterial blood pressure, MAP: mean arterial pressure, SOFA: sequential organ failure assessment, SWAB: Stichting Werkgroep Antibioticabeleid, NYHA IV: New York Heart Association IV, BMI: Body mass index, SCr: serum creatinine

aIncluding acute myocardial infarction, cardiac arrest, arrhythmias (by expert opinion): catecholaminergic polymorphic ventricular tachycardia (CPVT), ventricular fibrillation, ventricular tachycardia and 3rd degree atrioventricular (AV) block

bLehman et al. (2010) [1], coded as a time-varying variable with time until onset as not present and time from onset to outcome as present

cSinger et al. (2016) [2]

dSWAB sepsis 2010 antibiotics

eAssigned as a confounder for all drugs

fPonikowski et al. (2016) [3]

gWe used the Dutch Heart Foundation and the ICD-11 classification for diseases of the circulatory system as guidelines to find chronic cardiovascular diseases, excluding acute cardiovascular diseases (historical acute cardiovascular diseases were included)

hThe KNMP-DKD often did not make a distinction between acute and chronic liver failure in the indication and contraindication sections, we included both within the liver disease AKI risk factor definition

**References**

1. Lehman LW, Saeed M, Moody G, Mark R. Hypotension as a risk factor for acute kidney injury in ICU patients. *2010 Computing in Cardiology* 2010: 1095-1098

2. Singer M, Deutschman CS, Seymour CW et al. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). *JAMA* 2016; 315: 801-810

3. Ponikowski P, Voors AA, Anker SD et al. 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC). Developed with the special contribution of the Heart Failure Association (HFA) of the ESC. *Eur J Heart Fail* 2016; 18: 891-975