

ORIGINAL ARTICLE

Sensitivity and positive predictive value of diagnosis codes for acute kidney injury in Denmark

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ABSTRACT

Background. Acute kidney injury (AKI) is associated with increased morbidity and mortality but is likely underrecorded in health registers. This study examined the sensitivity and positive predictive value (PPV) of AKI diagnoses compared with laboratory-identified AKI.

Methods. In this observational study we analysed data from the Danish National Patient Register and laboratory databases from January 2007 through November 2023. Diagnoses of AKI according to the International Classification of Diseases, 10th Revision (ICD-10) were compared with laboratory-identified AKI episodes defined by the Kidney Disease: Improving Global Outcomes (KDIGO) creatinine criteria. Sensitivity was defined as the proportion of laboratory-identified AKI episodes captured by ICD-10 codes within 30 days before or after the episode's index date and PPV was the proportion of ICD-10-coded AKI episodes confirmed by the KDIGO criteria within a ± 30 -day window. Analyses were stratified by sex, age, AKI stage, setting, comorbidity and short-term mortality.

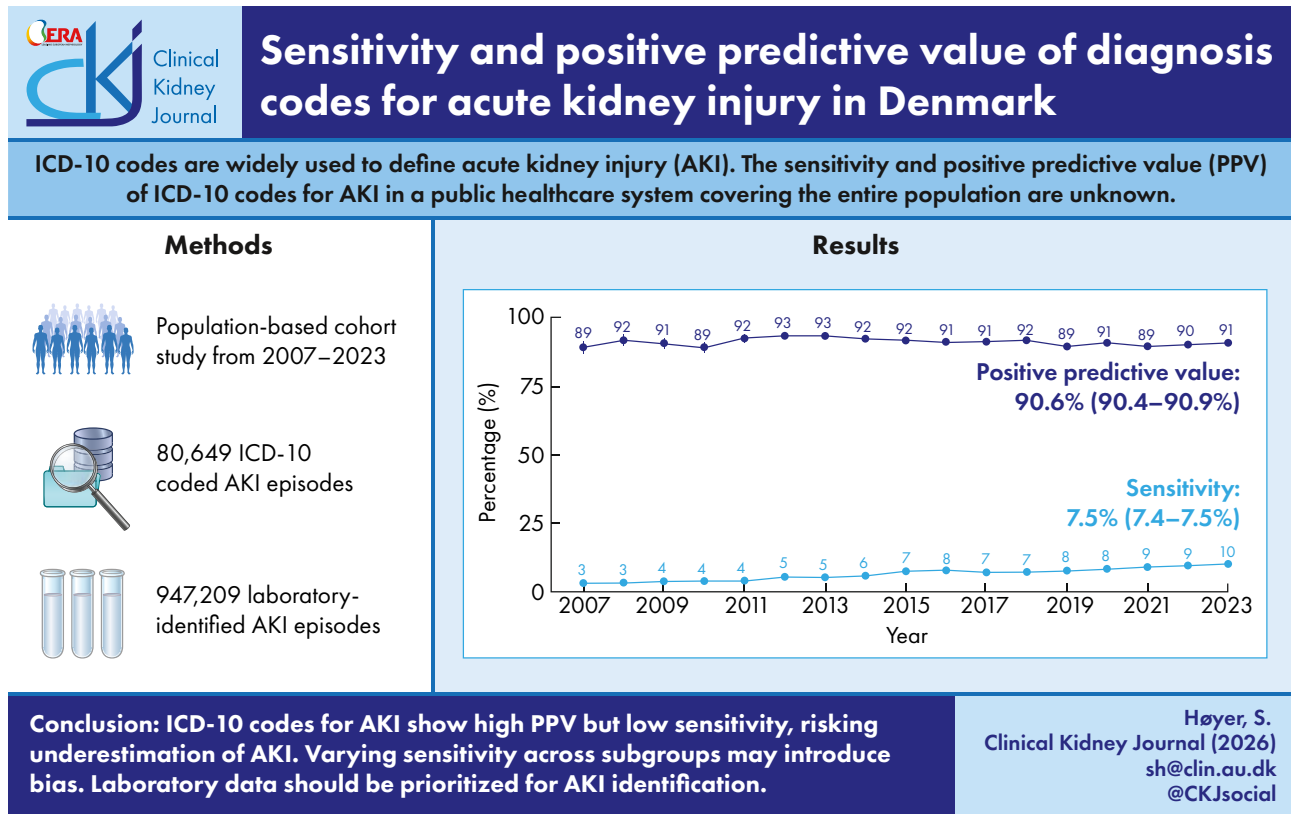
Results. A total of 947 209 laboratory-identified AKI episodes and 80 649 ICD-10-coded AKI episodes were included. Overall, sensitivity was 7.5% [95% confidence interval (CI) 7.4–7.5], varying by stage (4.0% for stage 1 versus 21.7% for stage 3) and setting (6.0% for hospital acquired versus 8.6% for community acquired). The overall PPV was 90.6% (95% CI 90.4–90.9), with little variation across subgroups.

Conclusion. ICD-10 codes of AKI demonstrate a high PPV, ensuring accuracy in identifying true AKI episodes. However, the low sensitivity highlights a risk of underestimating AKI occurrence. Laboratory data should be prioritized for comprehensive AKI identification and potential biases addressed when relying on diagnosis codes in research.

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GRAPHICAL ABSTRACT



Keywords: acute kidney injury, ICD-10 codes, laboratory data, positive predictive value, sensitivity

KEY LEARNING POINTS

What was known:

- Acute kidney injury (AKI) is a clinical syndrome associated with increased morbidity and mortality, yet the diagnosis is frequently underrecorded in health registers. Assessing the sensitivity and positive predictive value (PPV) of the diagnosis code is crucial, as this code is used in both clinical practice and research.
- No studies have examined the validity of AKI diagnosis codes in a public healthcare system covering the entire population.

This study adds:

- International Classification of Diseases, 10th Revision (ICD-10) codes for AKI show high PPV (90.6%) but low sensitivity (7.5%), suggesting a risk of underestimating AKI occurrence.
- Additionally, variability in sensitivity across subgroups introduces potential bias that must be considered when relying on these codes for research or clinical purposes.

Potential impact:

- Laboratory results should be prioritized over ICD codes when identifying AKI in clinical or research settings.
- Researchers and clinicians must consider the low sensitivity and potential subgroup-specific biases when using ICD-10 codes for AKI identification

INTRODUCTION

Acute kidney injury (AKI) is a common and potentially serious clinical condition characterized by a rapid decrease in kidney function and associated with increased morbidity and mortality [1]. Despite the prognostic significance, AKI is often unrecognized in clinical practice and underrecorded in health registers [2]. To align and enhance the validity of a diagnosis for AKI, the Kidney Disease: Improving Global Outcomes (KDIGO) criteria provide a standardized definition of AKI based on changes in serum creatinine and urine output [1]. Once an AKI diagnosis is established clinically, it should be recorded using the International Classification of Diseases, 10th Revision (ICD-10) codes. In Denmark, these codes are assigned by the treating physician based on available laboratory results and clinical judgment. However, AKI episodes are not always routinely identified or coded [3].

Investigating the validity, specifically the positive predictive value (PPV) and sensitivity, of ICD-10 codes for AKI is essential, as these codes are widely used for surveillance, clinical decision-making and epidemiological research. Previous studies have reported PPVs ranging from 46% to 95% and sensitivities ranging from 7% to 57% for an AKI diagnosis in hospital settings [4–9]. However, these studies are limited by the use of prior AKI definitions [4, 7, 9], a lack of population-based data [5–8] or a focus on specific patient subgroups [4, 9]. To date, no studies have examined the sensitivity and PPV of ICD-10 codes for identifying AKI within a uniform public healthcare system covering the entire population.

We evaluated the validity of the ICD-10 code for AKI by comparing it with laboratory-defined AKI according to the KDIGO creatinine criteria in a population-based Danish cohort. By assessing both the sensitivity and the PPV of the ICD-10 code, we seek to quantify the completeness and accuracy in identifying true AKI episodes.

MATERIALS AND METHODS

Identification of AKI

This nationwide observational study included AKI episodes from 1 January 2007 to 30 November 2023. The study was conducted in Denmark, where the public healthcare system provides treatment for acute illnesses, fully covered by a tax-funded model. Healthcare data, including biochemical test results and diagnoses, are systematically and mandatorily reported to nationwide registers, enabling comprehensive data collection for research purposes. We used nationwide data from the Danish National Patient Register for identification of ICD-10-coded AKI and laboratory data from the Laboratory Information System (LABKA) and the Register of Laboratory Results for Research (RLRR) for laboratory-defined AKI. Data from these sources were linked using the Civil Personal Register number, which is assigned to all Danish residents and allows for individual-level linkage of data [10]. Information on admissions, primary and secondary disease diagnoses, major treatments and surgical procedures were retrieved from the Danish National Patient Register [11], while date, time and results of plasma creatinine (pCr) measurements from hospitals and general practices were extracted from the laboratory databases [12, 13]. The LABKA covers the North and Central Denmark Regions, whereas the RLRR covers all of Denmark. These databases overlap, with the LABKA providing data further back in time and the RLRR covering more recent periods, as previously described [14]. To ensure data con-

sistency, we restricted the analysis to AKI episodes among individuals residing in municipalities with complete laboratory coverage for at least 1 year.

Two cohorts of AKI episodes were defined for this study: a laboratory-identified AKI cohort and an ICD-10-coded AKI cohort. In both cohorts, the unit of analysis was the individual AKI episode.

The laboratory-identified AKI cohort comprised AKI episodes defined through laboratory measurements of pCr in accordance with the KDIGO criteria [1]. These criteria require a ≥ 1.5 increase in pCr from baseline or an increase of ≥ 26.5 $\mu\text{mol/l}$ within 48 hours. For neonates (≤ 28 days old), baseline pCr was determined as the lowest previous pCr measurement. For all other individuals, baseline pCr was defined as the lowest inpatient or outpatient pCr recorded within the past 7 days or the median outpatient pCr value at 8–365 days prior to the AKI, whichever was lower [15]. A pCr measurement satisfying the AKI criteria was included as an AKI episode if it was not preceded by another pCr measurement satisfying the AKI criteria within the previous 30 days (Fig. 1).

The ICD-10-coded AKI cohort consisted of cases with an AKI diagnosis (ICD-10 code: N17) recorded during inpatient or emergency room visits. As for laboratory-defined AKI, ICD-10-coded AKI episodes were included if there had not been another hospitalization with a diagnosis of AKI in the 30 days before admission (Fig. 1).

Statistical analyses

Baseline characteristics of the cohorts were summarized using medians and interquartile ranges (IQRs) for continuous variables and frequencies and percentages for categorical variables.

The sensitivity of the diagnosis code was estimated using the laboratory-identified AKI cohort. An AKI episode was considered captured by codes if there was a corresponding hospital ICD-10 diagnosis of AKI within 30 days before or after the episode's index date. The sensitivity was computed as the proportion of laboratory-defined AKI episodes captured by ICD-10 codes.

The PPV was estimated based on the ICD-10-coded AKI cohort. An AKI diagnosis code was considered true positive if a pCr measurement satisfied the AKI criteria within 30 days before or after the index date. The PPV was calculated as the proportion of ICD-10-coded AKI episodes confirmed by laboratory measurements according to the creatinine-based KDIGO criteria.

Sensitivity and PPV were calculated with 95% confidence intervals (CIs), and to account for repeated AKI episodes within individuals and clustering within municipalities, independence estimating equations were applied, i.e. a unique value for each subject identification–municipality combination was included in a REPEATED SUBJECT statement in the GENMOD procedure in SAS version 9.4 (SAS Institute, Cary, NC, USA).

Stratified and sensitivity analyses

Stratified analyses were performed by sex, age group (0–1, 2–17, 18–39, 40–59, 60–79, ≥ 80 years), AKI-related conditions (sepsis and surgery), short-term mortality (7 days) and calendar year.

For sensitivity, we additionally stratified by AKI stage (KDIGO stages 1–3 at the index date) and setting (community-acquired versus hospital-acquired AKI). The AKI was categorized as community acquired if it occurred on a non-hospitalization day or the first day of hospitalization and as hospital acquired if onset occurred >1 day after hospitalization. The sensitivity was also reevaluated for first-time laboratory-identified AKI episodes

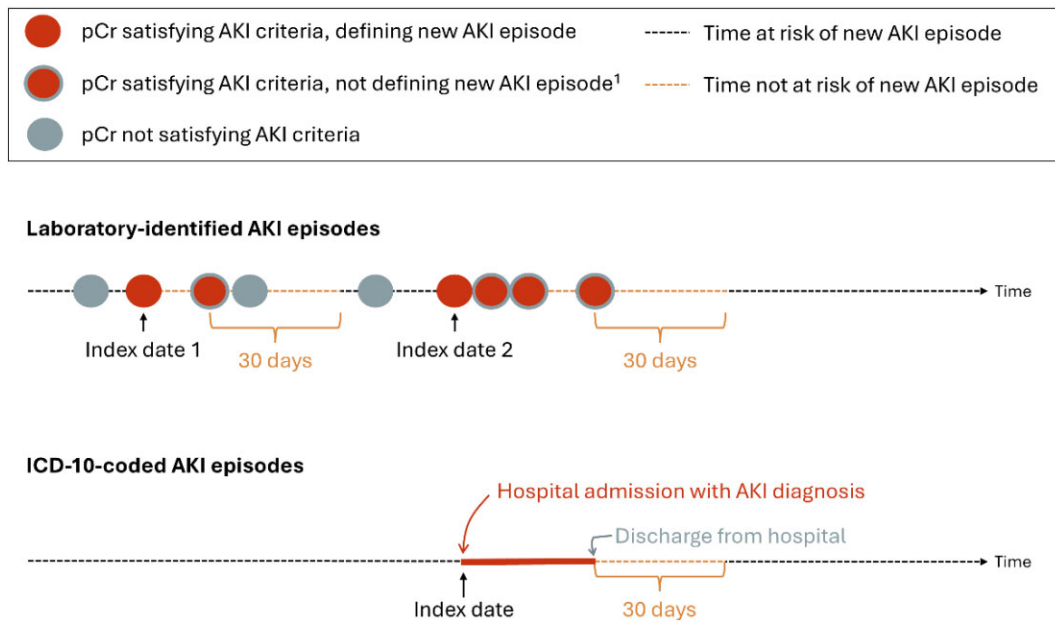


Figure 1: Illustration of how an individual may be included in the laboratory-identified and ICD-10-coded AKI cohorts. The first AKI episode (index date 1) was not captured by ICD-10 coding (e.g. due to the absence of hospitalization), whereas the second episode (index date 2) was both laboratory-identified and ICD-10-coded at hospital admission.

¹Due to <30 days between this pCr measurement and the most prior pCr measurement satisfying the AKI criteria.

only and when outpatient AKI diagnosis codes or procedural codes for acute renal replacement therapy (RRT) were considered as additional criteria for capturing laboratory-defined AKI episodes.

For PPV, we further stratified by diagnosis type (primary versus secondary diagnosis) and repeated analyses for only first-time AKI diagnoses, including AKI diagnoses from outpatient visits and accepting RRT as confirming an AKI diagnosis if it occurred within 30 days before or after the AKI diagnosis.

Finally, in post hoc analyses we assessed robustness by repeating the analyses using 90- rather than 30-day windows, both for new AKI episodes and for evaluating overlap between ICD-10-coded and laboratory-identified AKI episodes. These analyses were restricted to data up to 30 September 2023 to ensure sufficient follow-up. In addition, we described the ICD-10-coded AKI cohort stratified by whether the diagnosis could be verified by a pCr measurement fulfilling the KDIGO criteria.

All statistical analyses were performed using SAS version 9.4 and figures were generated using R version 4.3.3 (R Foundation for Statistical Computing, Vienna, Austria). This manuscript followed the Strengthening the Reporting of Observational Studies in Epidemiology guideline [16].

Ethical considerations

The study was registered at Aarhus University (2016-051-000001/812) and data access was granted by the Danish Health Data Authority (FSEID-00003631). According to Danish legislation, ethical approval is not required for non-interventional registry-based studies.

RESULTS

A total of 947 209 AKI episodes were identified among 563 999 individuals in the laboratory-identified cohort and 80 649 AKI

diagnoses among 73 693 individuals were included in the ICD-10-coded cohort. Baseline characteristics are summarized in Table 1. The laboratory-identified cohort consisted of 47% females with a median age of 73 years (IQR 62–81), while the ICD-10-coded cohort consisted of 41% females with a median age of 75 years (IQR 65–82). The ICD-10-coded cohort had a higher prevalence of all comorbidities compared with the laboratory-identified cohort [e.g. hypertension in 63% versus 58% and chronic kidney disease (CKD) in 61% versus 50%].

Sensitivity of ICD-10-coded AKI

Overall, the sensitivity of ICD-10 codes for capturing laboratory-identified AKI episodes was 7.5% (95% CI 7.4–7.5) (Table 2). The sensitivity varied substantially by stage but to a lesser extent by sex, age, setting and 7-day vital status. The sensitivity ranged from 4.0% (95% CI 4.0–4.1) in stage 1 AKI to 21.7% (95% CI 21.4–22.0) in stage 3 AKI. In terms of AKI setting, the sensitivity for hospital-acquired AKI was 6.0% (95% CI 6.0–6.1) and 8.6% (95% CI 8.5–8.7) for community-acquired AKI. In patients with sepsis the sensitivity was 14.7% (95% CI 14.3–15.0), while it was 6.5% (95% CI 6.4–6.6) in patients with recent surgery. The sensitivity increased from 3% in 2007 to 10% 2023 (Fig. 2). In robustness analyses restricted to first-time AKI episodes, the sensitivity was 7.2% (95% CI 7.2–7.3) and when outpatient AKI diagnoses and RRT were considered as additional criteria for capturing AKI, the sensitivity was 9.9% (95% CI 9.9–10.0). Applying 90-day windows resulted in slightly higher sensitivities (Supplementary Table S1).

PPV of ICD-10-coded AKI

The overall PPV of the ICD-10 code for AKI was 90.6% (95% CI 90.4–90.9) (Table 3). The PPV varied across age groups with the highest PPV in patients aged 60–79 years [92.6% (95% CI 92.3–92.8)] and the lowest PPV in those aged 2–17 years [80.2%

Table 1: Baseline characteristics of the laboratory-identified and ICD-10-coded AKI cohorts.

Characteristics	Laboratory-identified AKI cohort	ICD-10-coded AKI cohort
Episodes, n	947 209	80 649
Individuals, n	563 999	73 693
Age (years), median (IQR)	73 (62–81)	75 (65–82)
Female, n (%)	444 238 (47)	33 081 (41)
Comorbidity, n (%)		
Diabetes	264 390 (28)	26 153 (32)
Hypertension	547 234 (58)	50 406 (63)
CKD	469 086 (50)	49 477 (61)
CVD	447 426 (47)	41 783 (52)
Baseline eGFR (ml/min/1.73 m ²), median (IQR) ^a	67 (43–88), 7% missing	53 (35–74), 12% missing
AKI stage, n (%)		
Stage 1	697 764 (74)	
Stage 2	117 805 (12)	
Stage 3	131 640 (14)	
Setting, n (%)		
Hospital-acquired AKI	420 310 (44)	
Community-acquired AKI	526 899 (56)	
AKI-related conditions, n (%)		
Sepsis	48 322 (5)	10 187 (13)
Surgery	171 027 (18)	11 052 (14)
Diagnosis type ^b , n (%)		
Primary		41 197 (51)
Secondary		53 861 (67)
Dead within 7 days from index, n (%)	82 984 (9)	10 598 (13)
Dead within 30 days from index, n (%)	151 572 (16)	20 196 (25)

CVD: cardiovascular disease.

^aBaseline eGFR is defined as the median eGFR value from tests taken during outpatient or general practice visits in the year before the index date.

^bThe sum of primary and secondary diagnoses exceeds 80 649 (100%) because AKI may be coded as both a primary and secondary diagnosis during hospitalizations where patients are transferred between departments. Such hospitalizations would only be counted once in the overall number.

(95% CI 76.8–83.6)]. In other subgroups defined by sex, diagnosis type, AKI-related conditions (sepsis or surgery) and 7-day vital status, the PPV varied between 90% and 95%. The PPV remained stable throughout the study period (Fig. 2). Sensitivity analyses that included AKI diagnoses from outpatient visits demonstrated a lower PPV of 83.5% (95% CI 83.2–83.9), whereas considering RRT within 30 days as confirming an AKI diagnosis had a minimal impact. When only first-time AKI diagnoses per person were included, the PPV was 91.3% (95% CI 91.1–91.5). The PPV was slightly higher when applying a 90-day window (Supplementary Table S2). Individuals with non-verified diagnoses had fewer comorbidities and lower or missing baseline estimated glomerular filtration rate (eGFR) (Supplementary Table S3).

DISCUSSION

This study evaluated the validity of the ICD-10 code for AKI by comparing ICD-10-coded AKI episodes with laboratory-identified AKI episodes in a large Danish population-based cohort. Overall, we found a low sensitivity of 7.5% for ICD-10-coded AKI episodes in capturing laboratory-identified AKI episodes, while the PPV was high at 90.6%.

The strengths of our study include a population-based nationwide cohort from the Danish healthcare system, which enhances generalizability to other public healthcare systems. The study covers both hospital- and community-acquired AKI episodes across 17 years, allowing assessment of ICD-10 code validity in different clinical contexts. Nonetheless, some limitations should be considered. We acknowledge that our creatinine-based AKI definition serves as a reference standard,

which may not capture the full spectrum of clinically recognized AKI and could therefore underestimate the true incidence. In particular, we lacked data on urine output, which is necessary for a complete AKI assessment according to the KDIGO [1]. However, urine output is not routinely monitored outside intensive care units and is therefore unavailable in most settings [3]. As a result, ICD-10-coded AKI episodes diagnosed solely by reduced urine output were not considered true positive, which may have resulted in underestimated PPV. In contrast, the lack of urine output could lead to an overestimated sensitivity. Despite these concerns, the creatinine-based reference standard is widely accepted in the literature and allows for a consistent comparison across studies [3, 17].

Previous studies have examined the validity of ICD codes for AKI in hospital settings. A Canadian study of elderly patients reported sensitivity and PPV estimates similar to ours, with a sensitivity of 7% and a PPV of 90% for AKI in emergency room settings [4]. This study used the prior Acute Kidney Injury Network (AKIN) criteria, as opposed to the current KDIGO criteria used in our study. In contrast, other studies have generally reported higher sensitivities while maintaining similarly high PPVs. For instance, another Canadian study of kidney transplant patients reported a sensitivity of 42% and a PPV of 89%, likely due to more rigorous monitoring in this high-risk group [9]. Furthermore, studies examining general hospitalized patients have reported sensitivities ranging from 17% to 54% [5–8, 18], and a recent Italian study reported an underdetection rate of 68% of creatinine-based AKI episodes not captured by administrative codes [19].

The overall low sensitivity of ICD-10 codes for AKI likely reflects underrecognition and undercoding in clinical practice, as

Table 2: Sensitivity of ICD-10-coded AKI.

Characteristics	n	Detected, n	Sensitivity, % (95% CI)
Overall	947 209	70 586	7.5 (7.4–7.5)
Sex			
Female	444 238	29 154	6.6 (6.5–6.6)
Male	502 971	41 432	8.2 (8.2–8.3)
Age (years)			
<2	5375	200	3.7 (3.3–4.3)
2–17	11 248	408	3.6 (3.3–4.0)
18–39	48 217	1968	4.1 (3.9–4.3)
40–59	142 268	8668	6.1 (6.0–6.2)
60–79	464 373	36 576	7.9 (7.8–8.0)
≥80	275 728	22 766	8.3 (8.2–8.4)
AKI stage at index			
1	697 764	28 140	4.0 (4.0–4.1)
2	117 805	13 916	11.8 (11.6–12.0)
3	131 640	28 530	21.7 (21.4–22.0)
Setting			
Hospital-acquired AKI	420 310	25 318	6.0 (6.0–6.1)
Community-acquired AKI	526 899	45 268	8.6 (8.5–8.7)
AKI-related conditions			
Sepsis	48 322	7080	14.7 (14.3–15.0)
Surgery	171 027	11 128	6.5 (6.4–6.6)
Including outpatient AKI diagnoses and RRT	947 209	94 117	9.9 (9.9–10.0)
Only first-time laboratory-identified AKI	563 999	40 784	7.2 (7.2–7.3)
Vital status at 7 days			
Alive	864 225	61 924	7.2 (7.1–7.2)
Dead	82 984	8662	10.4 (10.2–10.6)

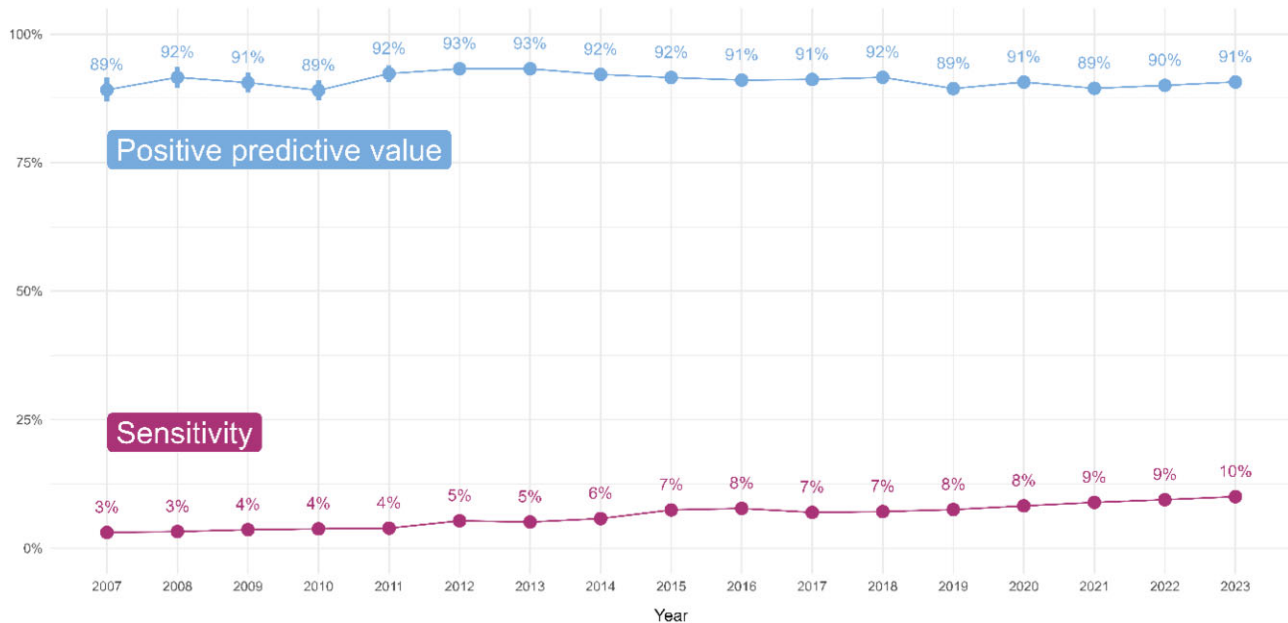


Figure 2: Sensitivity and PPV by calendar year.

AKI is often considered a transient complication rather than a primary diagnosis, particularly when occurring with other acute illnesses. The lower sensitivity observed in our study compared with others may additionally reflect methodological and structural differences. First, some previous studies applied different AKI definitions, such as the AKIN criteria, which use a more restrictive baseline and may capture a different patient popula-

tion. Second, differences in coding practices across healthcare systems may contribute to differences in sensitivity. In some countries, such as the USA, hospitals may adopt more comprehensive coding strategies, as billing incentives encourage the inclusion of all relevant diagnoses to maximize reimbursement [20]. In contrast, Denmark's tax-funded healthcare system may result in less extensive coding, as the coding is performed

Table 3: PPV of ICD-10-coded AKI.

Characteristics	n	True	PPV, % (95% CI)
Overall	80 649	73 106	90.6 (90.4–90.9)
Sex			
Female	33 081	30 094	91.0 (90.7–91.3)
Male	47 568	43 012	90.4 (90.2–90.7)
Age (years)			
<2	246	206	83.7 (79.3–88.4)
2–17	524	420	80.2 (76.8–83.6)
18–39	2445	2002	81.9 (80.3–83.5)
40–59	9952	9096	91.4 (90.8–92.0)
60–79	41 165	38 104	92.6 (92.3–92.8)
≥80	26 317	23 278	88.5 (88.1–88.8)
AKI-related conditions			
Sepsis	10 187	9548	93.7 (93.2–94.2)
Surgery	11 052	10 432	94.4 (94.0–94.8)
Diagnosis type			
Primary diagnosis	41 197	37 746	91.6 (91.4–91.9)
Secondary diagnosis	53 861	48 872	90.7 (90.5–91.0)
Including AKI diagnoses in ambulatory visits	90 302	75 418	83.5 (83.2–83.9)
Accepting RRT as confirming an AKI diagnosis	80 649	73 315	90.9 (90.7–91.1)
Only first-time AKI diagnoses	73 693	67 262	91.3 (91.1–91.5)
Vital status at 7 days			
Alive	70 051	63 212	90.2 (90.0–90.5)
Dead	10 598	9894	93.4 (92.9–93.8)

by the treating physician and financial incentives for diagnostic coding are less pronounced. Third, Denmark does not use decision-support systems or electronic alerts to assist clinicians in identifying and coding AKI, meaning that diagnosis coding relies solely on clinical judgment despite the routine availability of pCr results. This may contribute to underrecording, particularly of less severe episodes. These differences highlight how methodological choices, healthcare funding structures and coding practices influence diagnostic code validity across settings and healthcare systems. Nonetheless, similar patterns may be expected in other tax-funded healthcare systems where diagnoses are coded by treating physicians.

Like previous research, we observed a higher sensitivity in older patients and males [5, 6, 19] and in patients who died shortly after AKI. The higher sensitivity in these subgroups may reflect increased clinical awareness and reporting in individuals with more severe illness or comorbidities [21]. The sensitivity was also higher among patients with stage 3 AKI [5, 6, 9], reflecting the more severe kidney dysfunction in this group, which is more easily recognized in clinical practice. Furthermore, consistent with findings by Rey *et al.* [6], we observed a higher sensitivity for community-acquired AKI than hospital-acquired AKI. Community-acquired AKI may lead to initial hospital contact, making it more likely to be recognized as a primary reason for admission [22]. In contrast, hospital-acquired AKI may develop as part of ongoing treatment for other conditions and might be underrecognized or attributed to other underlying factors [22].

The results of our study underscore both the limitations and the potential of using administrative data for the identification of AKI. The low sensitivity indicates that a substantial proportion of laboratory-defined AKI episodes are not captured by ICD-10 codes in hospital records, which highlights the risk of underestimating incidence and prevalence in studies relying solely on administrative data. In studies assessing associations of ICD-10-coded AKI, a low sensitivity may introduce both information bias

from misclassification and selection bias. Misclassification could bias estimates if underrecording is more common in certain subgroups, such as younger patients, who are less likely to have an AKI diagnosis coded and are also less likely to experience the outcome of interest (e.g. death). Selection bias may arise in studies of patients with AKI if the association under study differs systematically in uncoded AKI episodes from coded episodes, for example, if there is a weaker association between the exposure (e.g. medication use) and outcomes (e.g. death) in patients with milder AKI (the study population). In the present study, we found comparable age distributions between the laboratory-identified and ICD-10-coded cohorts, suggesting that coding of AKI is not strongly influenced by age. On the other hand, we observed a higher prevalence of comorbidities in the ICD-10-coded cohort (e.g. hypertension and CKD) compared with the laboratory-identified cohort. This overrepresentation of patients with more severe health conditions may inflate associations between AKI and adverse outcomes, limiting the generalizability of findings derived from ICD-10-coded AKI episodes to the broader AKI population.

From a patient perspective, low coding sensitivity does not necessarily imply that AKI was untreated, as treatment decisions are guided by clinical evaluation and laboratory results. However, underrecording may reduce documentation quality and follow-up care, including nephrology referral, medication review, and post-AKI monitoring. Improved documentation of AKI could therefore support better long-term care and secondary prevention.

Although many AKI episodes remain uncoded, the high PPV indicates that when AKI is coded, it is likely to reflect true cases of the condition. A high PPV of the outcome of interest is generally preferable to a high sensitivity when estimating relative risks [23]. In a post hoc analysis, AKI episodes without laboratory confirmation were characterized by lower comorbidity and more frequently missing baseline eGFRs, suggesting that these

diagnoses may have been based on other clinical information such as urine output, point-of-care testing or dialysis for other indications. Extending the window between diagnosis codes and laboratory data from ± 30 to ± 90 days slightly increased the PPV, suggesting a limited impact of timing misalignment.

In conclusion, this study highlights important limitations of the ICD-10 codes for AKI within a public healthcare system. While the high PPV suggests that coded AKI episodes are likely accurate, the low sensitivity indicates a risk of underestimating AKI incidence and prevalence. Moreover, the variability in sensitivity across subgroups may cause information and selection bias in studies using ICD-10 codes for AKI identification. Therefore, when laboratory test results are available, they should be prioritized for AKI identification; moreover, it remains important to evaluate the potential biases induced when relying on diagnosis codes for AKI identification.

SUPPLEMENTARY DATA

Supplementary data are available at *Clinical Kidney Journal* online.

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AUTHORS' CONTRIBUTIONS

C.C., S.J., U.H. and S.H. contributed to the conception and design of the study. U.H. performed the statistical analysis. S.H. drafted the initial manuscript. All authors contributed to the interpretation of the results, revised the manuscript and approved the final version.

DATA AVAILABILITY STATEMENT

The data supporting this article cannot be publicly shared due to restrictions imposed by Danish legislation. Access can only be obtained with approval from the Danish Health Data Authority.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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