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Impact of precise Staging of Acute Kidney Injury and Chronic Kidney Disease on Treatment Outcomes: Observational Study, real world data, ICD-10-GM

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Introduction
"Kidney Disease: Improving Global Outcomes" (KDIGO) provides guidelines for identifying the stages of acute kidney injury (AKI) and chronic kidney disease (CKD). The guidelines were introduced into the ICD-10-GM (International Classification of Diseases, German Modification) in 2016 for precise coding. A data-driven rule-based engine was developed to determine KDIGO staging using laboratory values, to then tag the cases with precise ICD10 GM codes and compare the staging to KD-related keywords in discharge letters.

Methods
Methods: To assess potential differences in outcomes, we compare the patient subgroups with exact KDIGO staging to imprecise or missing staging for all-cause mortality, in-hospital mortality, selection bias and costs by applying Kaplan-Meier analysis and the Cox proportional hazards regression model. We analysed 63,105 in-patient cases from 2016 to 2023 at a tertiary hospital with AKI, CKD and acute-on-chronic KD.

Results
Imprecise and missing CKD staging were associated with an 85% higher risk of all-cause and in-hospital mortality (CI: 1.7 to 2.0 and 1.66 to 2.03, respectively) compared to exact staging for any given disease status; imprecise or missing AKI staging increased in-hospital mortality risk by 56% and 57% (CI: 1.43 to 1.70 and 1.37 to 1.81, respectively) in patients with AKI. Vulnerable groups could be determined.

Discussion/Conclusions
Exact staging is associated with better outcomes in KD management.

Our study provides valuable insight into potential quality and outcome improvements. Considering elderly patients, women and patients with acute-on-chronic KD as the most vulnerable, improving staging might play an essential role in better treatment, amenable mortality and lower costs. To enhance precise staging in clinical practice, focusing on generating high-quality evidence and guidelines, supporting the implementation through leadership and clinical education is needed. Clinician and patient involvement, along with advanced tools for pattern recognition and nonintrusive alert systems, can streamline integration and foster continuous improvement in outcomes.

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