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## Association of CKD with Outcomes Among Patients Undergoing Transcatheter Aortic Valve Implantation

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### Abstract

**Background and objectives** Despite the multiple depicted associations of CKD with reduced cardiovascular and overall prognoses, the association of CKD with outcome of patients undergoing transcatheter aortic valve implantation has still not been well described.

**Design, setting, participants, & measurements** Data from all hospitalized patients who underwent transcatheter aortic valve implantation procedures between January 1, 2010 and December 31, 2013 in Germany were evaluated regarding influence of CKD, even in the earlier stages, on morbidity, in-hospital outcomes, and costs.

**Results** A total of 28,716 patients were treated with transcatheter aortic valve implantation. A total of 11,189 (39.0%) suffered from CKD. Patients with CKD were predominantly women; had higher rates of comorbidities, such as coronary artery disease, heart failure at New York Heart Association 3/4, peripheral artery disease, and diabetes; and had a 1.3-fold higher estimated logistic European System for Cardiac Operative Risk Evaluation value. In-hospital mortality was independently associated with CKD stage  $\geq 3$  (up to odds ratio, 1.71; 95% confidence interval, 1.35 to 2.17;  $P < 0.05$ ), bleeding was independently associated with CKD stage  $\geq 4$  (up to odds ratio, 1.82; 95% confidence interval, 1.47 to 2.24;  $P < 0.001$ ), and AKI was independently associated with CKD stages 3 (odds ratio, 1.83; 95% confidence interval, 1.62 to 2.06) and 4 (odds ratio, 2.33; 95% confidence interval, 1.92 to 2.83 both  $P < 0.001$ ). The stroke risk, in contrast, was lower for patients with CKD stages 4 (odds ratio, 0.23; 95% confidence interval, 0.16 to 0.33) and 5 (odds ratio, 0.24; 95% confidence interval, 0.15 to 0.39; both  $P < 0.001$ ). Lengths of hospital stay were, on average, 1.2-fold longer, whereas reimbursements were, on average, only 1.03-fold higher in patients who suffered from CKD.

**Conclusions** This analysis illustrates for the first time on a nationwide basis the association of CKD with adverse outcomes in patients who underwent transcatheter aortic valve implantation. Thus, classification of CKD stages before transcatheter aortic valve implantation is important for appropriate risk stratification.

Transcatheter Aortic Valve Replacement   Aortic Valve Stenosis  
chronic renal insufficiency   Treatment Outcome   Economics  
Acute Kidney Injury   Comorbidity   Confidence Intervals  
coronary artery disease   diabetes mellitus   Female   Germany  
heart failure   Hospital Mortality   Humans   Length of Stay  
Peripheral Arterial Disease   Prognosis   Renal Insufficiency, Chronic  
Risk Assessment   Stroke

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