

PICCs frequently placed in hospital patients with chronic kidney disease

By Acp Hospitalist Weekly Staff, acphospitalist.org

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About a quarter of peripherally inserted central catheters (PICCs) inserted in the hospital were placed in patients with chronic kidney disease (CKD), despite guidelines to the contrary, a recent study found.

The prospective cohort study used data from the 52 hospitals participating in the Michigan Hospital Medicine Safety Consortium to analyze PICC use in medical patients hospitalized between November 2013 and September 2016, particularly those with CKD stage 3b or above (estimated glomerular filtration rate [eGFR] <45 mL/min/1.73 m²). Results were published by *Annals of Internal Medicine* on June 4.

Of the 20,545 patients who received a PICC, 23.1% (95% CI, 20.9% to 25.3%) had an eGFR less than 45 mL/min/1.73 m², and 3.4% were receiving hemodialysis. The rate was even higher in the ICU: 30.9% (95% CI, 29.7% to 32.2%) of patients receiving PICCs while in intensive care had CKD stage 3b or more, compared to 19.3% (95% CI, 18.8% to 19.9%) of those on the wards. There was significant variation among hospitals in their rates of PICC placement in these patients, with interquartile ranges of 23.7% to 37.8% in ICUs and 12.8% to 23.7% in wards.

Multilumen PICCs were more common than single-lumen ones in the patients with CKD stage 3b or more, and complications were common. PICC-related complications occurred in 15.3% of ward patients and 22.4% of ICU patients

with an eGFR less than 45 mL/min/1.73 m². Among those with higher eGFRs, the complication rates were 15.2% and 23.9%, respectively.

“Taken together, these data suggest that PICC placement in patients with CKD is common and discordant with guidelines,” the study authors said. They noted that current guidelines recommend central venous catheters over PICCs in critically ill patients and state that PICCs are contraindicated in patients with moderate to advanced CKD. Clinicians might have been unaware of these guidelines or patients' CKD status, the authors speculated. Potential solutions include decision support, mandatory review of PICC appropriateness before placement, and consultation with a nephrologist or vascular access team, they suggested. The study had limitations, including some missing data on eGFR values and possible justifications for PICC placement.

“These important data reaffirm prior observations that too little attention has been given to vein protection guidelines for patients with CKD,” said an accompanying editorial. “Arm vein protection, shared decision making, early education, PICC avoidance, earlier nephrology referral, better use of tools to track planning for patients with CKD, and prompt access to vascular surgical care can decrease catheter use by incident hemodialysis patients and alleviate the burdens of morbidity and mortality for this vulnerable population.”