Human Factors Affecting Infection Prevention

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cilitators of infection prevention, along with workflow scheduling and variation in policies and procedures. Staff at several facilities cited factors associated with a supportive culture, including the presence and engagement of facility leadership during work hours. Staff also identified extrinsic patient factors leading to disruptions in the flow of care, including hygiene, transportation, vascular assess, and hemostasis.

This small, exploratory study identifies macroergonomic factors potentially affecting infection prevention practices during dialysis care. "[T]he complex constellation of human skills required for the optimal completion of infection prevention tasks within dialysis may be significantly affected (both positively and negatively) by the design of our systems of care," the researchers write. Further studies are needed to incorporate the observations into strategies to reduce infection risks [Parker SH, et al. Human factors contributing to infection prevention in outpatient hemodialysis centers: A mixed methods study. *Am J Kidney Dis*, published online March 4, 2024. doi: 10.1053/j.ajkd.2023.12.024].

Cefepime-Taniborbactam Is Superior to Meropenem for Complicated UTI

The β-lactam and β-lactamase inhibitor combination cefepime-taniborbactam offers a higher treatment success rate in the treatment of complicated urinary tract infection (UTI) compared with meropenem, reports a clinical trial in *The New England Journal of Medicine*.

The phase 3 "Safety and Efficacy Study of Cefepime/VNRX-5133 in Patients with Complicated Urinary Tract Infections" (CERTAIN-1) trial enrolled 661 patients with complicated UTI. Patients were randomly assigned in a 2:1 ratio to treatment with cefepime-taniborbactam (2.5 g intravenously [IV]) or meropenem (1 g IV), every 8 hours for 7 days. In patients with bacteremia, treatment could be extended to 14 days.

Microbiologic and clinical success rates were assessed at 19 to 23 days in a microbiologic intention-to-treat population of 436 patients with positive urine culture for a qualifying gram-negative pathogen, most

commonly Enterobacterales species. In this group, the mean age was approximately 56 years, and 53% of patients were women. The diagnosis was complicated UTI in 57.8% of patients and acute pyelonephritis in 42.2%.

Composite microbiologic and clinical success rates were 70.6% with cefepime-taniborbactam versus 58.0% with meropenem. A prespecified superiority analysis showed a significant 12.6 percentage-point difference between groups. At late follow-up (28 to 35 days), composite and clinical success rates remained higher with cefepime-taniborbactam. Among patients with bacteremia, composite success rates at test of cure were 81.6% with cefepime-taniborbactam versus 68.4% with meropenem.

Headache, gastrointestinal events, and hypertension were the most common adverse events with cefepime-taniborbactam. Serious adverse events occurred in approximately 2% of both groups.

Emerging resistance to β-lactam antibiotics poses a challenge to treatment of complicated UTI, as for other serious infections. The cefepime-taniborbactam combination has shown promise for treatment of serious gram-negative infections.

The CERTAIN-1 findings suggest that cefepime-taniborbactam is superior to meropenem for treatment of complicated UTI including acute pyelonephritis. Safety profiles are similar between the two treatments. Cefepime-taniborbactam is "a potential treatment option for patients with complicated UTI and acute pyelonephritis caused by Enterobacterales species and *Pseudomonas aeruginosa*, including antimicrobial-resistant strains," the investigators conclude [Wagenlehner FM, et al.; CERTAIN-1 Study Team. Cefepime-taniborbactam in complicated urinary tract infection. *N Engl J Med* 2024; 390:611–622. doi: 10.1056/NEJMoa2304748].

Racial Differences in ADPKD Mortality for Older Adults

A large analysis of patients with autosomal-dominant polycystic kidney disease (ADPKD) finds differences in mortality risk for Black versus White patients aged 65 years or older, reports a study in *BMC Nephrology*.

The researchers analyzed US Renal Data System data for patients with ADPKD from 2014 through 2016. The analysis included a cohort of 1936 patients with non-end stage renal disease (ESRD) chronic kidney disease (CKD) and a cohort of 37,461 patients with ESRD. The mean age was 71.4 years in the cohort with non-ESRD CKD and age 59.2 years in the cohort with ESRD. Race was classified as White in 79.6% and 73.8%, respectively.

After adjustment for age, mortality was 18.4 per 1000 patient-years in patients with ADPKD with non-ESRD CKD and 37.4 per 1000 patient-years for those with ADPKD and ESRD. On Cox regression modeling in the cohort with non-ESRD CKD, risk of death was higher for patients with more advanced disease: hazard ratio (HR), 1.59 for stage 4 and 2.71 for stage 5 CKD compared with stage 3. In the cohort with ESRD, risk of death was more than twice as high among patients undergoing dialysis: HR, 2.36.

Among patients with non-ESRD CKD aged 65 years or older, age-adjusted mortality was highest for Black patients: 82.7 deaths per 1000 patient-years. In contrast, among older adults in the cohort with ESRD, mortality was highest for White patients: 136.1 deaths per 1000 patient-years.

The study revealed findings regarding mortality specific to patients with ADPKD, the leading inherited cause of ESRD. For patients aged 65 or older with ADPKD and ESRD, the data show a "numerically lower" mortality compared with previous reports, possibly reflecting "more effective treatment and disease management."

In the same age group, the findings suggest racial differences in both cohorts of non-ESRD CKD and ESRD of patients with ADPKD, with a possible survivorship effect among Black patients. "Black patients may be less likely than other racial groups to survive long enough to reach ESRD, perhaps because of inequities in care," the researchers write. "ADPKD also may be underdiagnosed in Black patients with a hypertension comorbidity" [Mladsi D, et al. Mortality risk in patients with autosomal dominant polycystic kidney disease. *BMC Nephrol* 2024; 25:56. doi: 10.1186/s12882-024-03484-3].