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## VRE in Chronic Hemodialysis Patients

Gina Pugliese, RN, MS  
Martin S. Favero, PhD

Vancomycin-resistant *Enterococcus* (VRE) has been identified with increased frequency in dialysis populations, but the risk factors for VRE colonization are not well defined in hemodialysis patients. Investigators from the University of Maryland School of Medicine conducted a study to determine such risk factors. Patients from a university-affiliated outpatient dialysis center had surveillance stool or rectal cultures for VRE obtained during April 1994 and January 1996. The combined cohort of 168 patients was followed up for all-cause mortality, subsequent hospitalization, and VRE infection. Demographic and risk factor information, including age, gender, race, diabetes, coronary artery disease, and human immunodeficiency virus infection were collected on all patients.

Sixteen patients had surveillance cultures grow vancomycin-resistant *Enterococcus faecium* or *Enterococcus faecalis* (VREF), and nine additional patients had clinical cultures positive for VREF. The median follow-up time for patients with positive surveillance or clinical cultures for VREF was 421 days versus 423 days for those without VREF.

Patients with positive surveillance cultures for VREF had less time on hemodialysis before screening (median, 207 vs 822 days;  $P < .01$ ) and more hospitalization in the year before screening (median, 19 vs 3 days;  $P < .01$ ) compared with those without VREF. Patients with VREF colonization were more likely to develop infection with VREF (25% vs 1%;  $P < .01$ ) than those without VREF colonization. However, adjusting for age, diabetes, coronary artery disease, and acquired immune deficiency syndrome using Cox

proportional-hazards models, the presence of VREF on screening culture was not associated with an increased risk of death (RR, 1.1;  $P = .86$ ). Thus, after adjusting for other comorbidities, VREF colonization was not associated with increased mortality.

Patients with end-stage renal disease on hemodialysis who are hospitalized are more likely to have VREF, but longer duration on hemodialysis was not associated with presence of this organism. This suggests that VRE transmission occurs predominantly in the inpatient setting.

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