From: Rutala WA, Gergen MF, Weber DJ. Comparative evaluation of the sporicidal activity of new low-temperature sterilization technologies: ethylene oxide, 2 plasma sterilization systems, and liquid peracetic acid. *Am J Infect Control* 1998;26:393-398.

VRE Colonization of Pediatric Oncology Patients

Colonization with multidrug-resistant vancomycin-resistant enterococci (VRE) can become a serious problem, because there is no proven therapy in case of an infection, and there is the risk of transfer of glycopeptide resistance to other organisms. Schuster and coworkers from the Department of Pediatric Hematology and Oncology, University of Munich, reported a study of VRE colonization among pediatric oncology patients.

Stool samples were taken from all patients of the pediatric oncology unit from March 1996 until June 1997. Barrier isolation was introduced in May 1996 and prudent use of glycopeptide antibiotics in July 1996. The results indicated that 24 (50%) of the 48 patients were colonized with VRE. Eleven (46%) of these 24 patients were VRE carriers at the time of their first examination; 9 patients (37%) acquired VRE during their therapy, and 4 patients (17%) had come from other hospitals and already were VRE-positive when they entered the unit.

In March 1997, 1 year after the outbreak, only four patients still were VRE-positive; by June 1997, all were VRE-negative. The average time of colonization was 12.5 weeks. Seventeen (70%) of the 24 colonized patients had received glycopeptide antibiotics, 16 of them within 2 months before the appearance of VRE in their stool. Five colonized patients died, four of their oncological illness and one because of sepsis without proof of VRE in his blood. In the end, none of the patients suffered from a VRE infection, and the transfer of glycopeptide resistance to other organisms was not observed. It was concluded that, with barrier isolation and a very restrictive use of glycopeptide antibiotics, VRE colonization can be decreased and even stopped. In spite of the high number of colonized patients, no VRE disease occurred.

From: Schuster F, Graubner UB, Schmid I, Weiss M, Belohradsky BH. Vancomycin resistant enterococci—colonization of 24 patients on a pediatric oncology unit. *Klin Padiatr* 1998;210:261-263.

Risk Factors for Ventilator-Associated Pneumonia

Understanding the risk factors for ventilator-associated pneumonia (VAP) can help to assess prognosis and devise and test preventive strategies. Cook and coinvestigators from McMaster University, Hamilton, Ontario, Canada, conducted a study to examine the baseline and time-dependent risk factors for VAP and to determine the conditional probability and cumulative risk over the duration of stay in the intensive-care unit (ICU).

The study design was a prospective cohort study in 16 ICUs in Canada. There were 1,014 mechanically ventilated patients. Demographic and time-dependent variables reflecting illness severity, ventilation, nutrition, and drug exposure were determined. Pneumonia was classified by using five methods: adjudication committee, bedside clinician's diagnosis, Centers for Disease Control and Prevention definition, Clinical Pulmonary Infection score, and positive culture from bronchoalveolar lavage or protected specimen brush.

The results showed that 177 of 1,014 patients (17.5%) developed VAP 9.0±5.9 days (median, 7 days; interquartile range, 5-10 days) after admission to the ICU. Although the cumulative risk increased over time, the daily hazard rate decreased after day 5 (3.3% at day 5, 2.3% at day 10, and 1.3% at day 15). Independent predictors of VAP in multivariable analysis were a primary admitting diagnosis of burns (risk ratio [RR], 5.09; 95% confidence interval [CI_{95}], 1.52-17.03), trauma (RR, 5.00; CI_{95}, 1.91-13.11), central nervous system disease (RR, 3.40; CI_{95}, 1.31-8.81), respiratory disease (RR, 2.79; CI_{95}, 1.04-7.51), cardiac disease (RR, 2.72; CI_{95}, 1.05-7.01), mechanical ventilation in the previous 24 hours (RR, 2.28; CI_{95}, 1.11-4.68), witnessed aspiration (RR, 3.25; CI_{95}, 1.62-6.50), and paralytic agents (RR, 1.57; CI_{95}, 1.03-2.39). Exposure to antibiotics conferred protection (RR, 0.37; CI_{95}, 0.27-0.51). Independent risk factors were the same regardless of the pneumonia definition used.

It was concluded that the daily risk for pneumonia decreases with increasing duration of stay in the ICU. Observed aspiration and exposure to paralytic agents are potentially modifiable independent risk factors. Exposure to antibiotics was associated with low rates of early VAP, but this effect attenuated over time.

From: Cook DJ, Walter SD, Cook RJ, Griffith LE, Guyatt GH, Leasa D, et al. Incidence of and risk factors for ventilator-associated pneumonia in critically ill patients. *Ann Intern Med* 1998;129:433-440.

VRE and End-Stage Renal Disease

The percentage of nosocomial enterococci that are vancomycin-resistant (VRE) has been increasing rapidly in the United States, resulting in recommendations to reserve vancomycin use for cases with proven resistance to other antimicrobials. The use of vancomycin is common in the hemodialysis setting. Brady and coinvestigators from Munster, Indiana, prospectively investigated the incidence of VRE in their dialysis population and compared it with a control group of 40 clinic patients with chronic renal insufficiency (CRI) who had a serum creatinine level greater than 1.5 mg/dL but were not undergoing dialysis. The incidence of VRE on their campus is almost 10%, which is similar to US data. They studied 50 chronic hemodialysis (HD) patients and 50 peritoneal dialysis (PD) patients. Each patient had a rectal swab performed for the presence of enterococci. Antimicrobial exposures over the 6 months before the initial swab test were reviewed in each patient. At least one repeated swab test was performed in 30 CRI,