



INFECTOLOGÍA

Central Venous Catheter-Associated Bloodstream Infection in a Medical ICU*

David K. Warren, MD; Jeanne E. Zack, BSN; Jennie L. Mayfield, MPH; Alexander Chen, MD; Donna Prentice, MSN; Victoria J. Fraser, MD and Marin H. Kollef, MD, FCCP

Correspondence to: Marin H. Kollef, MD, FCCP, Washington University School of Medicine, 660 South Euclid Ave, Campus Box 8052, St. Louis, MO 63110; e-mail: kollefm@msnotes.wustl.edu

* From the Pulmonary and Critical Care Division (Drs. Chen and Kollef), Division of Infectious Diseases (Drs. Warren and Fraser), Washington University School of Medicine; and BJC HealthCare (Ms. Zack, Ms. Mayfield, and Ms. Prentice), St. Louis, MO.

Objective:

To determine whether an education initiative could decrease the rate of catheter-associated bloodstream infection.

Design: Preintervention and postintervention observational study.

Setting: The 19-bed medical ICU in a 1,400-bed university-affiliated urban teaching hospital.

Patients:

Between January 2000 and December 2003, all patients admitted to the medical ICU were surveyed prospectively for the development of catheter-associated bloodstream infection.

Intervention: A mandatory education program directed toward ICU nurses and physicians was developed by a multidisciplinary task force to highlight correct practices for the prevention of catheter-associated bloodstream infection. The program consisted of a 10-page self-study module on risk factors and practice modifications involved in catheter-related bloodstream infections and in-services at scheduled staff meetings. Each participant was required to complete a pretest before reviewing the study module and an identical test after completion of the study module. Fact sheets and posters reinforcing the information in the study module were also posted throughout the ICU.

Measurements and main results:

Seventy-four episodes of catheter-associated bloodstream infection occurred in 7,879 catheter-days (9.4 per 1,000 catheter-days) in the 24 months before the introduction of the education program. Following implementation of the intervention, the rate of catheter-associated bloodstream infection decreased to 41 episodes in 7,455 catheter days (5.5 per 1,000 catheter-days) [$p = 0.019$]. The estimated cost savings secondary to the decreased rate of catheter-associated bloodstream infection for the 24 months following introduction of the education program was between \$103,600 and \$1,573,000.

Conclusions:

An intervention focused on the education of health-care providers on the

prevention of catheter-associated bloodstream infections may lead to a dramatic decrease in the incidence of primary bloodstream infections. Education programs may lead to a substantial decrease in medical-care costs and patient morbidity attributed to central venous catheterization when implemented as part of mandatory training.