

Rosenthal VD, Olarte N, Torres-Hernández H, Villamil-Gómez W, INICC. G. Catheter-Associated Blood Stream Infection Rates, Extra Length of Stay and Mortality in 69 Adult ICUs of 37 Cities of 11 Developing Countries. Findings of the INICC. In: Proceedings and Abstracts of the 34th Annual Scientific Meeting of the Association for Professionals in Infection Control and Epidemiology; 2007 June 24-28; San Jose, U.S.A.; 2007. p. 52.

Catheter-Associated Blood Stream Infection Rates, Extra Length of Stay and Mortality in 69 Adult ICUs of 37 Cities of 11 Developing Countries. Findings of the INICC.

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OBJECTIVE: Our goal was to determine the rate, extra length of stay (ELOS) and extra mortality of central vascular catheter-associated blood stream infection (CVC-BSI) in 69 intensive care units (ICUs) of hospital members of the INICC in Argentina, Brazil, Colombia, Croatia, India, Macedonia, Morocco, Mexico, Peru, Philippines and Turkey.

METHODS: An open label, prospective cohort, active healthcare associated infection (HAI) surveillance study was conducted on adult patients admitted to 69 tertiary-care ICUs of 37 cities in 11 countries. The protocol, forms, and methodology implemented were developed by INICC. The data collection was performed at the participating ICU. Data uploading and data analysis were conducted at INICC headquarters on proprietary software.

Rates of HAI were recorded through applying the definitions provided by the Centers for Disease Control and Prevention (CDC) National Nosocomial Infection Surveillance (NNIS) system.

We analyzed the HAI rate, extra LOS and mortality of patients with CVC-BSI.

Adult patients with CVC-BSI were considered cases, while those without HAI were considered controls. We calculated ELOS subtracting average length of stay (ALOS) of patients with and without CVC-BSI.

RESULTS: From 2002 to 2006, we enrolled 34,080 patients, representing 214,658 bed days. The overall HAI rate was 12.8 (4,357/34,080) per 100 patients, and 20.3 (4,357/214,658) per 1000 bed days. The CVC-BSI rate was 11.4 (1,423/125,319) per 1000 CVC days. Overall 10.6% of all CVC-BSI were caused by *Pseudomonas* sp. infections—48.1% of which were resistant to ciprofloxacin, 42.2% were resistant to ceftazidime, 39.6% were resistant to imipenem, and 38.3% were resistant to piperacillin tazobactam; 14.0% were caused by *Acinetobacter* sp.; 23.0% were caused by *Staphylococcus aureus* infections—85.4% of which were resistant to methicillin; 24.6% were caused by *Enterobacteriaceae*—53.0% of which were resistant to ceftriaxone, 51.9% were resistant to ceftazidime, and 31.9% were resistant to piperacillin tazobactam; 4.8% were caused by *Candida* sp.; 2.9% were caused by *Enterococcus* sp.-4.3% of which were resistant to vancomycin; 1.0% were caused by *Stenotrophomonas* sp.; 16.4% by Coagulase-negative-staphylococci; 0.1% by *Aeromonas* sp., 0.5% by *Alcaligenes* sp.; 0.3% by *Corynebacter* sp., 1.0% by *Haemophilus* sp., 0.1% by *Cryptococcus* sp., and finally 0.9% by *Streptococcus* sp.

The LOS of patients without HAI was 4.7 days; the LOS of patients with CVC-BSI was 14.5 days (RR, 3.08) representing 9.8 ELOS.

A total of 4,615 out of 29,774 (15.5%) patients without HAI died; 254 out of 833 patients (30.5%) with CVC-BSI died, the extra mortality for CVC-BSI was 15.0% (RR, 1.97; 95% CI, 1.73-2.23; P, 0.00001).

CONCLUSIONS: This study has identified that the CVC-BSI rate was high and increased 9.8 days the length of stay of patients in ICUs. CVC-BSI was significantly associated with higher mortality, which was increased 2 times.

