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Device Associated Infection Rates, Extra Length of Stay, Extra Mortality, Microorganism Profile, and Bacterial Resistance in an ICU of Costa Rica: Findings of the International Nosocomial Infection Control Consortium (INICC).

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Objectives:

To determine the rates and consequences of the device-associated infections (DAI) in one intensive care unit (ICU) of a hospital member of the INICC in Costa Rica.

Methods:

An open label, prospective cohort, active DAI surveillance study was conducted on adult patients admitted to one tertiary-care ICU of Costa Rica. The protocol, forms, and methodology implemented were developed by the INICC. The data collection was performed in the participating ICU. Data uploading and data analysis were conducted at INICC headquarters on proprietary software. Rates of DAI were recorded through applying the definitions provided by the CDC NHSN system. We analyzed the DAI (mechanical ventilator-associated pneumonia (VAP), central line associated bloodstream infection (CLAB), and catheter-associated urinary tract infection (CAUTI) rates, microorganism profile, bacterial resistance, extra length of stay (ELOS) and extra mortality.

Results:

From 10/07 to 6/08, we enrolled 125 patients, representing 431 bed days. The overall DAI rate was 4.8% and 13.9 per 1000 bed days. The VAP rate was 29.9 per 1000 device days, CLAB rate was 4.65 per 1000 CL days, and CAUTI rate was 0.0 per 1000 catheter days.

Overall 33.3% of all DAIs were caused by *Staphylococcus Aureus* -50% of which were resistant to methicilin-; 16.7% were caused by *Coagulasa-Negative Staphylococcus* -100% of which were resistant to methicilin-; 16.7% were caused by *Pseudomonas sp.* - 0% of which were resistant to ceftazidime and Imipenem- ; 16.7% were caused by *Enterococcus sp* and 16.7% were caused by *Candida sp.*

The LOS of patients without DAI was 3.0 days; the LOS of patients with CLAB was 16.0 days (RR, 5.29; 95% CI, 3.21-8.73; P, 0.0001), representing 13.0 extra days; the LOS of patients with VAP was 11.0 days (RR, 3.64; 95% CI, 2.74-4.83; P, 0.0001), representing 8.0 extra days.

A total of 6 out of 119 (5%) patients without DAI died; none of the patients (0%) with CLAB died; 1 out of 5 patients with VAP died (20%), the extra mortality being 15% (RR, 3.97; 95% CI, 0.45 - 32.95, P = 0.1678).

Conclusions:

This study identified that VAP rate is higher than NHSN rates and INICC rates; that CLAB rate is higher than NHSN rates and lower than INICC rates; and that CAUTI rate is lower than NHSN and INICC rates. Bacterial resistance rate to antibiotics is higher than NHSN rates and lower to INICC rates. VAP and CLAB increased significantly the LOS, but not mortality rate.