

Khaldi A, Hamdi A, Rosenthal VD, Jaballah NB. Device-Associated Infection Rates, Extra Length of Stay, Extra Mortality, Microorganism Profile, and Bacterial Resistance in 2 ICUs of Tunisia: Findings of the International Nosocomial Infection Control Consortium (INICC). In: Proceedings and Abstracts of the Fifth Decennial International Conference on Healthcare-Associated Infections 2010; 2010 March 18-22; Atlanta, GA, U.S.A; 2010.

Device-Associated Infection Rates, Extra Length of Stay, Extra Mortality, Microorganism Profile, and Bacterial Resistance in 2 ICUs of Tunisia: Findings of the International Nosocomial Infection Control Consortium (INICC).

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Background: Device associated infections (DAI) are associated with morbidity and mortality. There are no previous data from Tunisia showing DAI rates, length of stay, mortality, microorganism profile and bacterial resistance collected using a standardized methodology and definitions.

Objective: To determine the rates and consequences of device-associated infections (DAI) in two intensive care units (ICU) of a hospital member of the INICC in Tunisia.

Methods: An open label, prospective cohort, active DAI surveillance study was conducted on pediatric and new born patients admitted to two tertiary-care ICUs in Tunisia. 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 NNIS 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 10/08 to 5/09, we enrolled 367 patients, representing 2,179 bed days. The overall DAI rate was 4.1% (95% CI, 2.30 - 6.65) and 6.88 per 1000 bed days (95% CI, 3.85 - 11.34). The VAP rate was 5.56 per 1000 device days (95% CI, 2.39-10.9), CLAB rate was 8.65 per 1000 CL days (95% CI, 3.46 - 17.7). The CAUTI rate was 0.0. Overall 25.0% of all DAI were caused by *Acinetobacter sp.*; 8.3% were caused by *Staphylococcus Aureus sp.* -0.0% of which were resistant to methicilin-; 16.7% by *Pseudomonas sp* -0.0% of which were resistant to imipenem, 66.7% were resistant to ceftazidime, and 100% were resistant to ceftriaxone; 8.3% by *Coagulasa Negative Staphylococci*-0.0% of which were resistant to methicilin-; 41.7% by *Klebsiella sp.* -71.4% of which were resistant to ceftazidime, 90% to ceftriaxone. The LOS of patients without DAI was 5.5 days; the LOS of patients with CLAB was 6.8 days (RR, 1.23; 95% CI, 0.87-1.72; P, 0.2346), representing 1.3 extra days; the LOS of patients with VAP was 20.0 days (RR, 3.61; 95% CI, 2.79-4.67; P, 0.0001), representing 14.5 extra days. A total of 29 out of 353 (8.2%) patients without DAI died; 5 out of 34 patients with CLAB died (14.7%), the extra mortality being 6% (RR, 1.79, 95% CI 0.69 - 4.62, P, 0.2226); 3 out of 3 patients with VAP died (100%), the extra mortality being 92% (RR, 12.17, 95% CI 3.71 - 39.96, P, 0.0001).

Conclusions: This study identified that VAP rate is higher than NHSN rates and lower than INICC rates, and that CLAB rates are similar to the INICC rates and higher than the NHSN rates. VAP increased significantly the LOS and the mortality rate.