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Effectiveness of Outcome and Process Surveillance for Reducing Overall Device-Associated Infection and Mortality Rates in a Hospital in Morocco. Findings of the International Nosocomial Infection Control Consortium (INICC).

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OBJECTIVE:

To determine the effect of outcome and process surveillance (intervention) on the rate of overall device-associated infection (DAI) and mortality rates in one intensive care unit (ICU) of Rabat, Morocco.

METHODS:

An open label, prospective cohort, active DAI surveillance, sequential study was conducted on adult patients admitted to a tertiary-care ICU. 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 the INICC headquarters on proprietary software. Rates of DAI were recorded through applying the definitions provided by CDC-NNIS system. We collected mechanical ventilator-associated pneumonia (VAP), central vascular catheter-associated bloodstream infection (CVC-BSI), and catheter-associated urinary tract infection (CAUTI) rates. The overall DAI rates and mortality rates during baseline was compared to the rate during an intervention period.

RESULTS:

From 11/04 to 10/07, 1,507 adult ICU patients were enrolled; 712 in the baseline period (11/04 to 06/06) and 795 in the intervention period (07/06 to 10/07).

Patient's characteristics were similar over the two periods (Patient gender, $P=0.2491$; Age, $P=0.1489$; Average Severity Illness Score, $P=0.1672$; Diabetes, $P=0.0573$; Coronary Insufficiency, $P=0.7450$; Cardiac Surgery, $P=0.1423$; COPD, $P=0.1768$; Renal Impairment, $P=0.3295$; Hepatic Failure, $P=0.2642$; Abdominal Surgery, $P=0.7997$; Thoracic Surgery, $P=0.9121$; Trauma, $P=0.6680$; Stroke, $P=0.2941$ and Immune-compromise, $P=0.6880$).

Compliance with hand hygiene improved during the intervention period (29% vs. 39.5% [RR = 1.34, 95% CI = 1.22 - 1.47, P -value = 0.0001]).

The overall DAI rate per 1,000 bed days during the intervention period was significantly lower than during the baseline period (25.1 vs 17.8 HAI per 1000 bed days, RR = 0.71, 95% CI = 0.54 - 0.93, $P=0.0136$).

The percentage of patients with DAI was also significantly lower during the intervention period (18.0% vs 10.7%, RR = 0.59, 95% CI = 0.45 - 0.78, $P=0.0001$).

The crude mortality of patients in the ICU was significantly lower in the intervention period (35.7% vs. 26.5%, RR = 0.74, 95% CI = 0.62 - 0.89, $P=0.0014$).

CONCLUSION:

Outcome and process surveillance resulted in a significant improvement of hand hygiene compliance and significant reduction of the overall DAI rate and the mortality rate.