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Effectiveness of Outcome Surveillance for Reducing Ventilator Associated Pneumonia and Overall Device Associated Infection Rates in a Hospital in Cuba. Findings of the International Nosocomial Infection Control Consortium (INICC)

Author Block: Humberto Guanche Garcell¹, **Victor D. Rosenthal, MD, CIC, MSc**², Clara Morales Pérez³.
¹University Hospital "Joaquín Albarrán Domínguez", Havana, Cuba, ²International Nosocomial Infection Control Consortium (INICC), Buenos Aires, Argentina, ³Hospital Docente Clínico Quirúrgico "Joaquín Albarrán Domínguez", Havana, Cuba.

Abstract:

OBJECTIVE: To determine the effect of outcome surveillance (intervention) on the rate of ventilator-associated pneumonia (VAP) per device days and overall device-associated infection (DAI) per 100 discharged patients in one intensive care unit (ICU) of Havana, Cuba.

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.

Infection control guidelines were applied during intervention phase.

The VAP rate per device days and overall DAI rates per 100 discharged days during baseline and intervention phases were compared.

RESULTS: From 1/2007 to 10/2007, 235 adult ICU patients were enrolled, 108 in the baseline period (01/07 to 05/07) and 127 in the intervention period (06/07 to 10/07).

Patient's characteristics were similar over the two periods (Patient gender, $P=0.4711$; Age, $P=0.4939$; Diabetes, $P=0.3544$; Hypertension, $P=0.1330$; Coronary Insufficiency, $P=0.9601$; Cardiac Surgery, $P=0.3564$; COPD, $P=0.3298$; Renal Impairment, $P=0.7054$; Hepatic Failure, $P=0.8425$; Abdominal Surgery, $P=0.5496$; Thoracic Surgery, $P=0.2438$; Trauma, $P=0.8711$ and Stroke, $P=0.0536$)

The rate of VAP per 1,000 ventilator days during the intervention period was significantly lower than during the baseline period (43.5 vs. 9.2, $RR=0.21$, $95\% CI=0.06-0.77$, $P=0.0092$).

Finally, the rate of DAI per 100 patients during the intervention period was significantly lower than during the baseline period (15.7% vs. 3.9% DAIs per discharged patient, $RR=0.25$, $95\% CI=0.09-0.68$, $P=0.0032$).

CONCLUSIONS: Outcome surveillance resulted in a significant reduction of the VAP rate per 1,000 ventilator days and the overall DAI per 100 discharged patients.