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Effectiveness of Outcome and Process Surveillance for Reducing Ventilator-Associated Pneumonia in a Hospital of Turkey. Findings of the INICC.

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OBJECTIVE:
To determine the effect of outcome and process surveillance (intervention) on the rate of ventilator associated pneumonia (VAP) in one intensive care unit (ICU) of Trabzon, Turkey.

METHODS:
An open label, prospective cohort, active healthcare-associated infection (HAI) surveillance, sequential study was conducted on adult patients admitted to one tertiary-care ICU.
The protocol, forms, and methodology implemented were developed by 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 VAP were recorded through applying the definitions provided by the Centers for Disease Control and Prevention (CDC) National Nosocomial Infection Surveillance (NNIS) system. The rate of VAP during baseline was compared to the rate during an intervention period.

RESULTS:
From January 2004 to June 2006, 435 adult ICU patients were enrolled. We divided the study period in the two following phases; phase 1, from January 2004 to November 2004 (11 months); and phase 2, from December 2004 to June 2006 (19 months). A total of 148 patients were incorporated during first phase, and 287 during the second phase. Patient's demographic characteristics and underlying diseases were similar over the two periods (Patient gender, RR= 0.94, 95% CI = 0.74 - 1.20, P = 0.6411; Cardiac Surgery, RR = 0.26, 95% CI = 0.05 - 1.41, P = 0.0914; COPD, RR = 1.02, 95% CI = 0.66 - 1.55, P = 0.9444 and Abdominal Surgery, RR = 0.68, 95% CI = 0.42 - 1.11, P = 0.1233)
Through process surveillance, we found that the presence of mucus on circuit was reduced significantly during phase two, 84.0% vs. 97.4% (RR = 1.16, 95% CI = 1.08 −1.25, P-value = < 0.001).
On the other hand, hand hygiene (HH) compliance was compared during the following two periods: from September 2004 to November 2004 (baseline HH period), matching with first phase; and December 2004 to June 2005 (intervention HH Period), matching with second phase. During baseline HH period, the HH was 36.9% and during intervention HH period it

was 47.0%, showing significant HH compliance improvement (RR = 1.27, 95% CI = 1.00 - 1.62, P-value = 0.0464).
The incidence of VAP rate during the second phase (December 2004 to June 2006) was significantly lower than during the first phase (January 2004 to November 2004), 19.6 (26 VAP and 1329 mechanical ventilator days] versus 8.0 [13 VAP and 1624 mechanical ventilator days] VAP per 1000 MV days, RR = 0.41, 95% CI = 0.21 - 0.80, P = 0.0065).
The percentage of patients with VAP during the second phase was significantly lower than during the first phase (17.6% [26/148] versus 4.5% [13/287]; RR = 0.26, 95% CI = 0.13 - 0.50, P = < 0.001).

CONCLUSION:
Outcome and process surveillance resulted in a significant reduction of VAP rate, which was reduced 74%.