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The impact of compliance to VAP bundle of care on the VAP rates in three adult ICUs

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Background & Aim: The Ventilator Associated Pneumonia (VAP) is the most common device associated-Hospital Associated Infection (DA-HAI) in our ICU-patients. Since mechanical ventilation is a main risk factor for the development of VAP, it should be avoided whenever, possible. The incidence of VAP could be decreased by the implementation of the ventilator bundle as a set of interventions intended to prevent adverse events in ventilated patients. This study aims to measure the compliance to the ventilator bundle elements, measure the VAP rates according to the Center of Disease Control (CDC) criteria and assess the effect of complying with the ventilator bundle of care on the VAP rates.

Method: The study was conducted in three closed adult general-surgical ICUs with 40 beds capacity, in a private hospital in Alexandria, Egypt. The study was initiated through a prospective cohort. All the patients admitted to the three ICUs in the period from April 2016 through December 2017 were included in the study. All the ICU patients were followed for their attachment to a ventilator throughout their ICU stay. When attached to ventilator, they were monitored for incidence of VAP, until their discharge, transfer or death. VAP Bundle Program was implemented in April 2016 by the infection control team. The critical care nurses were educated and made aware about the problem of VAP and the use of ventilator bundle in helping to decrease this hospital associated infection. Our bundle components are as follows, head of bed elevation, daily sedation interruption, daily oral care, peptic ulcer prophylaxis and deep vein thrombosis prophylaxis. Compliance was assessed twice daily by the ICU team.

Result: The yearly hospital admissions to the three hospital ICUs was 1521 in 2016, with 6906 patients days and 1330 ventilator days. Whereas, 2017 showed a total admission of 1221 patients, 9256 patients days and 1626 ventilator days. A significant drop in the VAP rates was reported. The year 2016 showed a VAP rate of 46.6165/1000 ventilator days that dropped to 19.5740/1000 ventilator days through the year 2017 (P value <0.00001). The main causative organisms of VAP were different through the two years, MDR *Klebsiella pneumoniae* (30.6%) and *Pseudomonas aeruginosa* (30.6%) were the most common VAP infections in 2016 followed by *Acinetobacter* infection (25%), whereas in 2017 *Acinetobacter* (29.5%) infection was the most common causative agent of VAP, followed by *Pseudomonas aeruginosa* (23.5%) and MDR *Klebsiella pneumoniae* (17.6%). An increase in compliance rates to VAP bundle of care was reported. Compliance with head-of-bed elevation was 93.5% in 2016 and 98.95% in 2017, sedation holds was 89.22% and 98.72% in 2016 and 2017, respectively, oral care showed an increased compliance from 79.5% in 2016 to 94.2% in 2017, DVT prophylaxis was almost the same 99.7% in 2016 and 99.3% in 2017 and PUD showed a compliance rate of 98.3% in 2016 and 99.7% in 2017.

Conclusion: Adherence to strict infection control measures and VAP bundle of care reduces the VAP rates significantly.

Biography

May Elghamrawi Abdelaziz is a Medical Microbiologist with an expertise in infection prevention and control practices, surveillance and epidemiology. She is the Head of infection control team in Mabaret-Al Asafra Hospital and an Infection Control Doctor in Alexandria University Hospitals. She is a Clinical Consultant in the e-learning unit, Faculty of Medicine, Alexandria University, Egypt, where she also earned her Medical degree and completed her PhD in Clinical Microbiology and Immunology. She also worked as the Head of Microbiology Laboratory, Damanhour Oncology Center, as twice per week visitor (one year contract).

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