

Clinical and epidemiological impact of an educational intervention and an active surveillance programme for multidrug-resistant microorganisms in a medical intensive care unit

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Introduction: Multidrug resistant organisms (MDRO) have become a public health problem of increasing interest, specially in Intensive Care Units (ICU). The ability of bacteria like *Acinetobacter baumannii* (AB) to persist in colonized patients and fomites and their complex mechanisms of antibiotic resistance make MDRO responsible for epidemics and endemics difficult to control. The aim of this project is to analyze the effect of an educational intervention and an active surveillance program in the weekly colonization pressure (WCP) of MDRO. Methods: We initiated the study in our ICU in an epidemic situation of AB. We designed an educational intervention which included information for health care workers and feedback. Surveillance of MDRO (*AB*, *Pseudomonas aeruginosa*, Extended-spectrum beta-lactamase-producing (ESBL) Enterobacteriaceae, Methicillin-resistant *Staphylococcus aureus* (MRSA) and *Stenotrophomonas maltophilia*) was performed weekly in all patients at risk (≥ 48 h in the ICU), by oropharyngeal swab, rectal swab and bronchial aspirate culture in case of mechanical ventilation. Patients colonized by MDRO were isolated and placed under contact precautions. Patients colonized by MDR AB also received selective decontamination of the digestive tract. MDRO related infections were diagnosed according to the criteria of the CDC in Atlanta. We calculated the WCP and the weekly infection rate (WIR) and analyzed the relationship between both by Pearson's correlation test. Results: During a 10 month period, 450 patients were analyzed (1,695 cultures). The median WCP for MDRO was 52 % (interquartile range (IR): 33-66), with great variability. The median of WCP for AB was 18% (IR: 5-35), with minimum 0% and maximum 75%. During the surveillance period there was an epidemic outbreak of *Klebsiella pneumoniae* producing ESBL, as shown in graphics. Colonization was more frequent in the gastrointestinal tract. We detected 5 infections due to AB (3 ventilator-associated tracheobronchitis, 1 urinary tract infection and 1 catheter related bacteriemia) and the median WIR was 0 (IR: 0-4). The correlation between the WCP and the WIR in the next week for AB was statistically significant ($r = 0,40$; $p = 0,023$). Conclusion: The WCP for MDRO in ICU presents great variability, according to cases of exogenous acquisition and new endogenous cases. Maintaining an active surveillance program allows to adopt appropriate measures to control epidemic outbreaks.

