TITLE: PRESENCE OF GRAM-NEGATIVE BACTERIA IN THE ENVIRONMENT OF A NEONATAL INTENSIVE CARE UNIT

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ABSTRACT:

Contaminated surfaces within the hospital environment are potential reservoirs of health care associated pathogens. The presence of Gram-negative bacteria in the environment can serve as a source of dissemination and transmission in a hospital environment. The aim of this study is to evaluate the presence of Gram negative bacteria on inanimate surfaces of a Neonatal Intensive Care Unit. The study was conducted at Neonatal Intensive Care Unit, in Hospital of the Federal University of Uberlândia. The environmental samples were collected in March, June and August of 2018. A sterilized swab was moistened in 3 mL of 0.9% saline solution, also sterilized, and subjected to pressure and friction throughout the area delimited by the mold. The samples was processed for culture and isolation and confirmed by Matrix-Assisted Laser Desorption Ionization-Time of Flight (MALDI-TOF MS). Among the 408 samples collected, 30 (7.3%) presented contamination by Gram-negative bacteria, including 13 (43.4%) *Enterobacter aerogenes*, 6 (20%) *Escherichia coli*, 4 (13.4%) *Enterobacter agglomerans*, 3 (10%) *Serratia marcescens* and 1 (3.3%) isolated from *Serratia liquefaciens*, *Stenotrophomonas maltophilia*, *Klebsiella pneumoniae* and *Klebsiella oxytoca.* There was a higher number of contaminant isolates in the baby incubators (n=11; 36.6%), faucet spout (n=4; 13.3%) and bath sink drains (n=4; 13.3%). *Enterobacter aerogenes* was the most frequent pathogen, followed by *Escherichia coli*. Both were present on several surfaces. Environmental surfaces, objects and medical devices may serve as potential reservoirs for nosocomial pathogens, playing an important role in the transmission of micro-organisms. High-touched surfaces of NICU were found to be contaminated with clinical pathogenic bacteria. Overall, the role of the environment is still underestimated and new techniques may be required to mitigate the role that environmental transmission plays in acquisition of organisms.

Keywords: cross infection, intensive care, neonatal, environmental microbiology, gram-negative bacteria

Development Agency: CAPES - Coordenação de Aperfeiçoamento de Pessoal de Nível Superior