

TITLE: AIRBORNE METHICILLIN-RESISTANT COAGULASE-NEGATIVE STAPHYLOCOCCI
IN INTENSIVE CARE UNIT

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ABSTRACT:

In recent years, coagulase-negative *Staphylococcus* have been highlighted as important pathogens, being related to several types of infections, especially in immunocompromised individuals and newborns. The objective of this study was to evaluate aerial contamination by coagulase-negative *Staphylococcus* (SCoN) in air-conditioned hospital environments and to verify the possible presence of antibiotic resistance genes in the samples collected. Air collections were performed in Intensive Care Unit (ICU) rooms in a private hospital in Maceió, Alagoas/Brazil. Collection plates were taken to the laboratory for growth, isolation and purification of the colonies of interest. The isolates were initially identified by biochemical Gram staining, catalase and coagulase assays. DNA from the samples were extracted for specific identification of *S. epidermidis* and *S. saprophyticus* by polymerase chain reaction (PCR). The resistance genes screened were: *mecA* (methicillin/oxacillin), *vanA* (vancomycin), *ermA*, *ermB* and *ermC* (cross-resistance to macrolides, lincosamides and streptogramin B). A total of 34 isolates were positive for SCoN, with 12/34 (35.2%) of the samples identified as *S. epidermidis* and 4/34 (11.7%) *S. saprophyticus* positive. Regarding the detection of resistance genes, only *mecA* (7 positive isolates) and *ermA* (1 positive isolate) were detected in the samples, being found only in *S. epidermidis*. SCoN are considered important hospital pathogens, with emphasis on infections related to the use of medical devices and those associated with biofilms formation. In addition, they are frequently found presenting a resistance phenotype to several types of antibiotics, which may be a considerable factor in the worsening of the clinical condition in susceptible individuals. After monitoring the indoor air quality in hospital ICUs, it was verified that *S. epidermidis* and *S. saprophyticus* were present in the air samples analyzed. Specifically for *S. epidermidis*, it was found that some isolates carried important antibiotic resistance genes such as *mecA* and *ermA*. We can conclude that the presence of airborne SCoN carrying resistance genes in ICU is an important factor in the spread of infections in the hospital environment.

Keywords: Airborne bacteria, coagulase-negative *Staphylococcus*, indoor air quality, hospital,

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