

**TITLE:** OUTBREAK OF CARBAPENEM RESISTANT *Acinetobacter baumannii* IN A NEONATAL INTENSIVE CARE UNIT IN THE CENTRAL WEST REGION

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## **ABSTRACT**

Neonates are more susceptible to pathogens, whose incidence is increased due to prolonged hospitalization in neonatal intensive care units (NICUs), use of invasive procedures and broad spectrum antimicrobials. *Acinetobacter baumannii* has been associated with high rates of infection and colonization in NICU. This study describe an outbreak caused by carbapenem-resistant *A. baumannii* (CRAB) isolated from newborns. Bacterial identification and antimicrobial susceptibilities were performed by Vitek®2 automatized system and confirmed by Matrix-Assisted Laser Desorption Ionization Time of Flight Mass Spectrometry (MALDI-TOF MS). The presence of  $\beta$ -lactamase gene was evaluated by Polymerase Chain Reaction (PCR). The profile clonal and genetic relationship were determined by Pulsed Field Gel Electrophoresis (PFGE) and Multilocus Sequence Typing (MLST). In this study, 21 strains of *A. baumannii* resistant to carbapenem antibiotics were isolated from newborns and they were exposed to previous use of extended-spectrum beta-lactam (100%), aminoglycosides (83.3%) and cephalosporins (72.2%). All isolates showed the IS*Aba1* insertion sequence upstream of the *bla*<sub>OXA-23</sub> gene and the *bla*<sub>OXA-51</sub> gene. PFGE analysis identified three clusters (A, B, C) colonizing newborns admitted to different wards, with high occurrence of C cluster, indicating contamination due to contact between patients, hands or contaminated medical equipment, that these may have contributed to the dissemination of this clonal type. Sixteen CRAB were clonally related and sequence type 1 (ST1) was predominant, with was responsible for 19.04% of death in newborns in the NICU. The results indicate the spread of strains of carbapenem-resistant *A. baumannii* strains in a tertiary hospital in Dourados in the NICU, highlighting the importance of infection control measures to prevent transmission of clones among patients.

**Keywords:** Bacterial resistance, Neonatal ICU, MLST, OXA-23.

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