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Healthcare-associated infections and antimicrobial use in a neonatal intensive care unit: results from a one-year prospective active surveillance study

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Background. Neonatal intensive care units (NICUs) are vulnerable to healthcare-associated infections (HAIs), driven by neonates' immature immune systems, frequent invasive procedures (e.g., catheterization, mechanical ventilation, parenteral nutrition), and antimicrobial use. HAI rates in NICUs range from 8.7% to 74.3%. This study aimed to conduct prospective HAI surveillance in a NICU and identify associated risk factors to inform infection control programmes.

Materials and Methods. A prospective surveillance study was conducted over one year (April 2024–2025) at the NICU of the "Renato Dulbecco" University Hospital, Catanzaro. Data collection was adapted from a standardized protocol developed by the University of Catania, utilizing the NeoIPC toolkit and the NEO-KISS surveillance framework. Surveillance forms recorded intrinsic risk factors (gestational age, birth weight, delivery mode) and extrinsic risk factors (invasive devices, surgical procedures, antibiotic exposure, categorised by indication: prophylactic or therapeutic). Targeted HAIs included bloodstream infection, sepsis, necrotizing enterocolitis, pneumonia, and surgical site infection.

Results. A total of 106 neonates were enrolled, with a mean age of 1.8 days (SD ±5.34). Antimicrobials were administered to 89.6% of patients, with a median duration of 7 days (IQR 5–9). Empiric treatment mainly included ampicillin (51.9%) and gentamicin (48.1%), while fluconazole accounted for 88.7% of prophylaxis. Overall, 6.6% (n=7) developed at least one HAI, all classified as central line-associated bloodstream infections (CLABSIs). Cumulative incidence was 8.9 per 100 patients with a central venous catheter, with an incidence density of 4.2 per 1,000 patient-days. A total of 10 pathogens were isolated, including Staphylococcus aureus (n=3), extensively drug-resistant Enterococcus faecium (n=2), multidrug-resistant (MDR) Klebsiella oxytoca (n=2), MDR Serratia marcescens (n=1), MDR Enterobacter kobei (n=1), and MDR Klebsiella pneumoniae (n=1).

Conclusions. CLABSIs represent the predominant HAI in this vulnerable population, accompanied by significant multidrug resistance and extensive antimicrobial exposure. Continuous surveillance, bundle care for invasive catheters, and structured antimicrobial stewardship programmes are essential to mitigate infection rates and contain resistance in NICUs.

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References. 1. Tzialla C, Berardi A, Mondì V. Outbreaks in the Neonatal Intensive Care Unit: Description and Management. Trop Med Infect Dis. 2024 Sep 1;9(9). doi:10.3390/tropicalmed9090212 2. Neonatal Infection Prevention and Control. Surveillance Resources - NEOIPC PROJECT [Internet]. 2023 [cited 2026 Oct 10]. Available from: https://neoipc.org/surveillance/resources/ 3. Neonatal Krankenhaus-Infektions-Surveillance-System. NEO-KISS Modul Protokolle - NRZ [Internet]. 2020 [cited 2026 Oct 10]. Available from: https://www.nrz-hygiene.de/KISS-Modul/protokolle/KISS/NEO