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SHORT COMMUNICATION

Antimicrobial resistance crisis in Latin American ICUs

Crisis de resistencia antimicrobiana en UTI de Latinoamérica

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ABSTRACT

Healthcare-associated infections represented a growing challenge in hospitals, especially in intensive care units, where patients were more vulnerable. In this context, multi-resistant microorganisms made treatment difficult and increased health risks. In Latin America, antimicrobial resistance reached alarming levels due to the indiscriminate use of antibiotics, lack of control and surveillance, and limited health infrastructure. Pathogens such as Klebsiella pneumoniae KPC, Acinetobacter baumannii, Pseudomonas aeruginosa, ESBL-producing enterobacteria and MRSA were frequently identified in ICUs. This situation increased mortality, length of hospitalisation and the use of high-cost antibiotics. The response to this crisis required programmes for antimicrobial optimisation, infection control and strengthening of epidemiological surveillance.

Keywords: Antimicrobial Resistance; Intensive Care Units; Multidrug-Resistant Pathogens; Nosocomial Infections; Latin America.

RESUMEN

Las infecciones asociadas a la atención sanitaria representaron un desafío creciente en hospitales, especialmente en unidades de cuidados intensivos, donde los pacientes fueron más vulnerables. En este contexto, los microorganismos multirresistentes dificultaron el tratamiento y aumentaron los riesgos para la salud. En Latinoamérica, la resistencia antimicrobiana alcanzó niveles alarmantes debido al uso indiscriminado de antibióticos, la falta de control y vigilancia, y la infraestructura sanitaria limitada. Patógenos como Klebsiella pneumoniae KPC, Acinetobacter baumannii, Pseudomonas aeruginosa, enterobacterias BLEE y Staphylococcus aureus MRSA fueron identificados con alta frecuencia en UTI. Esta situación incrementó la mortalidad, el tiempo de hospitalización y el uso de antibióticos de alto costo. La respuesta a esta crisis exigió programas de optimización antimicrobiana, control de infecciones y fortalecimiento de la vigilancia epidemiológica.

Palabras clave: Resistencia Antimicrobiana; Unidades de Cuidados Intensivos; Patógenos Multirresistentes; Infecciones Nosocomiales; Latinoamérica.

INTRODUCTION

Healthcare-associated infections (HAIs) have become increasingly important in hospitals, especially in intensive care units, where patients are more vulnerable and exposed to invasive therapies. In this context, MRMs—organisms resistant to multiple antibiotics—represent a critical challenge, hindering appropriate empirical treatment and increasing adverse outcomes.[1]

The Latin American region faces a particularly high burden of antimicrobial resistance (AMR), exacerbated by the indiscriminate use of antibiotics, limited drug regulation, lack of standardized infection control policies,

and poor microbiological surveillance in many health centers. Bacterial resistance is not new, but its rapid spread in hospital settings, especially in ICUs, has triggered a large-scale health alert.[2]

The World Health Organization (WHO) recognizes antimicrobial resistance as one of the 10 major threats to global public health. In Latin America, alarming trends have been identified in the emergence of resistant bacterial strains in the community and hospital settings. The lack of robust surveillance systems, combined with the high burden of infectious diseases, creates an ideal breeding ground for developing and spreading resistant bacteria.[3]

Some of the factors contributing to this scenario are the inappropriate use of antibiotics, lack of adherence to clinical guidelines and antimicrobial management protocols, limited hospital infrastructure to implement effective infection control measures, and poor access to timely and quality microbiological diagnostics.[4]

Among the pathogens most frequently identified in Latin American hospital ICUs are:

Carbapenemase-producing Klebsiella pneumoniae (KPC)

Carbapenem-resistant Klebsiella pneumoniae has been reported frequently in countries such as Brazil, Argentina, and Colombia. These strains often carry genes such as blaKPC, blaNDM, or blaOXA-48, which make them highly resistant to multiple antibiotics, including carbapenems, considered drugs of last resort.[5]

Multidrug-resistant Acinetobacter baumannii

This pathogen has demonstrated a remarkable ability to acquire resistance mechanisms and survive in the hospital environment. Several studies conducted in Brazil, Peru, and Mexico have documented a growing prevalence of strains resistant to carbapenems, aminoglycosides, and fluoroquinolones.[6]

Multidrug-resistant Pseudomonas aeruginosa

Respiratory and urinary infections are frequently associated with devices such as mechanical ventilators and catheters. Combined resistance to ceftazidime, piperacillin-tazobactam, and meropenem has been reported in multiple regional healthcare institutions.[7]

Enterobacteria producing ESBL (extended-spectrum β-lactamases)

These bacteria, especially Escherichia coli and Klebsiella spp., are resistant to third-generation cephalosporins and are often associated with prolonged antibiotic use in ICUs.[8]

Methicillin-resistant Staphylococcus aureus (MRSA)

Although its prevalence has declined in some countries, MRSA remains a significant problem, especially in skin and soft tissue infections and catheter-associated infections.[9]

Brazil is one of the countries where AMR in ICUs has been studied the most. A report from the BR-GLASS system showed that more than 60 % of Acinetobacter spp. Infections in ICUs were resistant to carbapenems. KPC strains of K. pneumoniae have been identified as endemic in many institutions.[10]

In Argentina, the WHONET and SISA systems have reported a high rate of BLEE in enterobacteria and a significant presence of KPC in ICU isolates. National surveillance has allowed the spread of multidrug-resistant epidemic clones to be observed.[11]

Colombia has a high prevalence of MDR, especially K. pneumoniae KPC and carbapenem-resistant A. baumannii. The circulation of NDM-producing E. coli has also been reported.[12]

Although these countries have regional variability, the primary multidrug-resistant pathogens follow the same trends. Recent studies have shown an alarming prevalence of multidrug-resistant A. baumannii in national referral hospitals in Peru.[13]

The presence of MDR in intensive care significantly increases:

- The mortality rate, especially in bloodstream infections and ventilator-associated pneumonia.
- The length of hospital stay.
- The use of high-cost and toxic antibiotics (such as colistin or tigecycline).

The fight against MDR in ICUs must address multiple fronts:

- Antimicrobial stewardship programs (ASPs)

Designed to reduce unnecessary or inappropriate antibiotic use through protocols, audits, and ongoing staff training.

- Infection control measures: hand hygiene, isolation of colonized or infected patients, and rigorous disinfection of equipment and surfaces.

Implementation of surveillance studies to enable early detection of outbreaks or changes in resistance patterns.[14]

The high prevalence of multidrug-resistant microorganisms in ICU patients in Latin America is an urgent

problem that requires a comprehensive, coordinated, and sustained response. Strengthening surveillance programs, implementing effective infection control measures, and using antimicrobials rationally are fundamental pillars for addressing this growing threat.[15]

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FINANCING

None.

CONFLICT OF INTEREST

Authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

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