significantly improved ZOIs for SE and CA strains ($p < 0.05$). There were no significant ZOI differences between carriers for PSA strains; by D5, no inhibition was observed for PSA with any material. For CA, bioceramics tended to yield larger ZOIs. BOAT demonstrated optical density inhibition for all strains except MRSA exposed to G alone and CA strains.

Conclusion: Both bioceramics and PMMA beads acted as effective carriers; however, greater antimicrobial elution and biofilm eradication during early phases (D1–D5) were observed with bioceramics, while PMMA showed superior activity at later stages (D5–D15).

Keywords: Biofilm, Osteomyelitis, Antimicrobial, Local treatment, Biomaterials.

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DETECTION OF AMPC BLACMY AND BLAACT VARIANTS USING QPCR-HRM IN ENTEROBACTERIACEAE

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Introduction/Objective: AmpC β-lactamase confers resistance to several antibiotics, including penicillins, second- and third-generation cephalosporins, and monobactams, but does not hydrolyze cefepime or carbapenems. Its origin may be chromosomal, inducible in some species after cephalosporin exposure, or plasmid-mediated (pAmpC), characterized by constitutive and abundant expression in different bacteria. This study aimed to develop specific primers for pAmpC gene identification using qPCR-HRM, a technique that combines the sensitivity of qPCR with High-Resolution Melting analysis, enabling differentiation of resistance genes based on melting temperature (Tm), including the detection of mutant variants.

Methods: A total of 148 clinical *Enterobacteriaceae* isolates from hospitals and clinics in Rio de Janeiro (2021–2024) were analyzed. Bacterial identification was performed using VITEK-2 and MALDI-TOF. Antimicrobial susceptibility was determined by VITEK-2 and disk diffusion according to BRCAST (2024). Forty-six β-lactam-resistant isolates were screened for pAmpC genes using conventional PCR, followed by sequencing and analysis in PubMLST and Institut Pasteur MLST databases.

Results: Three pAmpC-producing strains were confirmed: two *Escherichia coli* and one *Klebsiella pneumoniae*, carrying CMY-44, CMY-69, and ACT-5 genes, respectively. These variants had not been previously reported in Brazil. qPCR-HRM showed Tm values of 82.0°C (± 0.5) for CMY in *Salmonella enterica*, 84.0°C (± 0.5) in *E. coli*, and 86.0°C (± 0.5) for ACT in *K. pneumoniae*, allowing clear distinction between CIT and EBC targets.

Conclusion: qPCR-HRM proved to be a rapid (2 h), sensitive, specific, cost-effective, and efficient tool for detecting and differentiating pAmpC genes, even in the presence of mutations. The observed prevalence was 6.52% among β-lactam-resistant strains. These findings underscore the importance of broader surveillance studies to monitor pAmpC epidemiology in Brazil.

Keywords: *Enterobacteriaceae*, AmpC, qPCR-HRM, antimicrobial resistance.

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DIAGNOSTIC STEWARDSHIP: CLINICAL AUDIT OF BLOOD CULTURE REQUESTS MANAGED BY CLINICAL PHARMACY

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Introduction: Early microbiological diagnosis of bloodstream infections is essential to guide therapy, limit unnecessary antibiotic use, and reduce selective pressure. In 2024, the FDA reported a global shortage of BACTEC (BD) blood culture vials, requiring contingency and diagnostic stewardship measures integrated with antimicrobial stewardship programs.

Objective: To describe the design and implementation of a contingency plan based on prospective audit and feedback by the clinical pharmacy team to optimize the use of blood culture vials during the shortage, and to assess its impact on clinical processes and outcomes.

Methods: Conducted in a tertiary pediatric hospital (369 beds; 60% public system coverage), this study established a multidisciplinary technical group (pharmacists, infectious disease specialists, microbiologists, and administrators) to: review literature on blood culture yield and clinical indications; create a clinical decision flowchart for blood culture collection; provide multidisciplinary training led by pharmacists to improve request assessment; and perform prospective audits of requests in real time, evaluating justification, number of vials, requesting units, withholding unjustified requests, and discussing uncertain cases within the task group. Sepsis kits remained exempt from prior authorization.

Results: Historical monthly consumption averaged 938 blood culture collections. A retrospective analysis of 144 requests over 12 days revealed 56.3% noncompliance (routine or admission requests without justification). During the

prospective audit month, 410 collections were performed (−56.8% compared to baseline). Of 309 audited requests, 188 (45.9%) were canceled and 121 (29.5%) approved. Main requesting units included bone marrow transplant (15.6%), public emergency (13.9%), and private emergency (13.4%). Follow-up within 48 h after cancellations showed no cases of sepsis, shock, or death related to denied requests, and no decrease in bloodstream infection diagnoses. Educational actions and "handshake stewardship" reinforced adherence.

Conclusion: The multiprofessional contingency plan, combined with clinical auditing and feedback, reduced unnecessary blood culture requests without compromising diagnostic accuracy. The revision of the flowchart and the implementation of mandatory justifications reinforced the rational use of laboratory resources and strengthened collaboration between clinical care teams and the clinical pharmacy.

Keywords: Antimicrobial stewardship, Blood culture, Clinical pharmacy.

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EFFICACY OF ORAL ANTIBIOTIC PROPHYLAXIS WITH CEPHALEXIN AND METRONIDAZOLE AFTER CESAREAN DELIVERY IN OBESE PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Surgical site infections are a significant cause of morbidity following cesarean deliveries. Preoperative prophylaxis with cephalosporins is the standard of care; however, obesity remains an independent risk factor. Effective preventive measures are essential to improve maternal health and reduce costs. This study aimed to evaluate the efficacy of oral cephalexin and metronidazole prophylaxis in the postoperative period of cesarean sections.

Methods: A systematic search was conducted in PubMed, Embase, and Cochrane databases for randomized clinical trials evaluating the efficacy of oral cephalexin and metronidazole for preventing surgical site infection, incision dehiscence, fever, endometritis, and cellulitis after cesarean section. Statistical analyses were performed using R software (version 4.5.0), with risk ratio as the effect measure. Results were expressed as geometric means and geometric mean ratios, applying a random-effects model and a 5% significance level. Heterogeneity was assessed using the I^2 statistic. Sensitivity analyses were performed when data were available.

Results: Three randomized controlled trials were included, totaling 1,144 patients—572 in the oral antibiotic prophylaxis group (cephalexin plus metronidazole) and 572 in the control group. The mean age of participants was 27 years, and the mean BMI was 37 kg/m^2. A significant reduction was observed in the incidence of cellulitis (RR = 0.41; 95% CI 0.25−0.67; $p < 0.001$; $I^2 = 0\%$) and surgical site infection (RR = 0.39; 95% CI 0.27−0.58; $p < 0.001$; $I^2 = 0\%$) in the intervention group. No statistically significant differences were found between groups for endometritis (RR = 0.37; 95% CI 0.11−1.21; $p = 0.102$; $I^2 = 0\%$), fever (RR = 0.68; 95% CI 0.36−1.30; $p = 0.247$; $I^2 = 46.4\%$), or wound separation (RR = 0.47; 95% CI 0.18−1.20; $p = 0.113$; $I^2 = 55.3\%$).

Conclusion: This meta-analysis confirms that postoperative oral antibiotic prophylaxis with cephalexin and metronidazole is effective in reducing surgical site infections and cellulitis after cesarean delivery. These findings support its use as an adjuvant strategy for preventing infectious complications in obstetric settings, particularly among high-risk populations such as obese patients.

Keywords: Cephalexin, Metronidazole, Surgical site infection, Obesity, Cesarean section.

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HOSPITAL EFFLUENT AS A VECTOR FOR ANTIMICROBIAL RESISTANCE: A ONE HEALTH RISK

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Introduction: Antimicrobial resistance (AMR) is one of the major public health challenges of the 21st century. In this context, hospital effluents are relevant sources of dissemination of antimicrobials, resistance genes, and multidrug-resistant bacteria into aquatic ecosystems. Understanding the contribution of these effluents as sources of selective pressure and resistance spread is essential from a One Health perspective. This study aimed to assess the presence of antimicrobials and resistant bacteria in hospital effluent.

Methods: Hospital effluent samples were collected in May 2025 in the municipality of Lapa, Paraná. Analyses were conducted for antimicrobials of the β-lactam and tetracycline classes, along with bacterial susceptibility testing by antibiogram. Antimicrobial quantification was performed using the TwinSensor test. To detect β-lactam-resistant bacteria, serial dilutions were plated (200 μL of the 10^{-5} dilution) on ESBL medium. Colonies with the highest concentrations were isolated and inoculated into Mueller-Hinton medium for susceptibility testing to ciprofloxacin (CIP), tetracycline (TET),