

OPTIMIZING PATIENT SAFETY: NAVIGATING THE RISK AND MANAGEMENT OF ANTIBIOTIC – INDUCED TOXICITY

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Abstract

To review the spectrum of adverse effects associated with antibiotic use, identify key risk factors, and emphasize strategies for their prevention and management in clinical practice. A narrative literature review was conducted focusing on commonly prescribed antibiotics and their associated adverse drug reactions. Published studies addressing gastrointestinal, allergic, hepatic, renal, hematological, and microbiota-related toxicities were analyzed, with special consideration of vulnerable patient populations and antimicrobial stewardship practices. Antibiotics were found to cause a wide range of adverse effects, ranging from mild gastrointestinal disturbances to severe reactions such as anaphylaxis, hepatotoxicity, nephrotoxicity, hematological disorders, and *Clostridioides difficile*-associated colitis. Long-term or inappropriate antibiotic use disrupted normal microbial flora, leading to superinfections and increased antimicrobial resistance. Pediatric, geriatric, pregnant, and immunocompromised patients exhibited a higher risk of complications. Drug–drug interactions and dose-dependent toxicity further contributed to adverse outcomes. Antibiotic-associated adverse effects pose a significant challenge to patient safety and therapeutic success. Rational prescribing, early detection of adverse reactions, patient education, and antimicrobial stewardship programs are essential to minimize risks while preserving the clinical effectiveness of antibiotics.

Keywords: Allergic reaction, Antimicrobial stewardship, Hepatotoxicity, Drug interaction, Antibiotics