

AI-SUPPORTED ANTIBIOTIC PRESCRIPTION OPTIMIZATION

Julia Kowalska, Tobias Meyer & Diana Ivanova

Research Scholar, Department of Computer Science, Oxford University, England United Kingdom

ABSTRACT

Antimicrobial resistance (AMR) remains a grave public health concern globally, compounded further due to the inappropriate prescription of antibiotics. AI thus stands, in this sense, as a revolutionary method to optimize the prescription of antibiotics to improve appropriate treatments and obviate resistance mechanisms. In the last two decades, with the advancement of AI, particularly machine learning and deep learning, several advanced clinical decision support systems (CDSSs) have been developed that utilize patient information, microbiological data, and resistance patterns to suggest antibiotic therapies for specific patients. These AI-based systems have been found effective in reducing mismatches of antibiotics in various clinical settings-from outpatient care of urinary tract infections to ICU patient care-while simultaneously improving patient outcomes. Nonetheless, issues with data quality, integration into workflows, and acceptance by clinicians persist. This review presents the existing scenario of AI-supported antibiotic prescription optimization, recent developments, and clinical applications, concluding with a future perspective.

KEYWORDS: *Artificial Intelligence (AI), Antimicrobial Resistance (AMR), Antibiotic Stewardship, Clinical Decision Support Systems (CDSS), Machine Learning (ML), Deep Learning (DL), Personalized Medicine.*

Article History

Received: 15 Nov 2023 | Revised: 21 Nov 2023 | Accepted: 26 Nov 2023
