



Rapid Emergence of Bacterial Resistance in Infectious and Non-Infectious Disease Conditions

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ABOUT THE STUDY

The excessive use of antibiotics in healthcare facilities can be measured by monitoring the prescriptions. One of the most important steps in the fight against antibiotic resistance is the creation and implementation of regional prescribing guidelines based on monitoring of prescriptions and resistance trends. Despite this, healthcare facility surveillance is subpar over the world, especially in Low- and Middle-Income Nations with Dense Populations (LMICs). Around the world, there has been a rise in morbidity and mortality as a result of the rapid establishment of bacterial resistance and subsequent treatment failure of common bacterial diseases. Whether or not they are necessary, using antibiotics contributes significantly to the growth and spread of bacterial resistance. Bacterial resistance is still rising and has already risen to alarming levels. One of the corner stones of developing strategies to improve antibiotic use and slow the development of bacterial resistance is surveillance of antibiotic use corresponding to indications. Antibiotic use increased by 35% globally between 2000 and 2010.

However, the published studies have not looked into the relationship between treatment options and indications. The prescriptions are quantifiable and the best resources for conducting surveillance studies; however, in resource-constrained healthcare settings, patients' records are rarely computerized and are frequently documented manually on paper. Thus, the lack of automated data entry at LMICs makes prescription surveillance studies an expensive and time-consuming process, contributing significantly to the delay in developing contextualized antibiotic prescribing guidelines. The absence of local prescribing guidelines impedes rational antibiotic prescribing and contributes to the development of antibiotic resistance. The private sector is a major provider of healthcare, accounting for 93% of all health-care services. It also contributes significantly to the country's overall increase in antibiotic consumption and resistance. Despite this, only a few studies have been conducted to monitor antibiotic prescribing in the private healthcare sector. Few studies conducted in some

private settings show that antibiotic prescribing rates are generally high. These findings are consistent with the country's high antibiotic use and the presence of various multi drug-resistant bacterial strains. Antibiotics are essential in high infection risk departments (where minor and major surgical procedures are performed) for both infection treatment and prevention of Healthcare-Associated Infections (HAIs).

Furthermore, the data was gathered thoroughly in order to avoid selection bias. In consultation with two local obstetricians and gynecologists, all diagnoses were manually checked from records, and patients were divided into diagnosis groups for comprehensive categorization of patients in the diagnosis groups and subgroups. At no point during the study were the consultants identified. This method of data collection may have given patients the freedom to choose their own treatment plan. Our research also had some limitations. Before analyzing the missing data, the records in the archive were checked. A small age of patients' information on whether or not they were operated on could not be retrieved. For such patient records, a third diagnosis group, "possible surgical," was created to counteract the likely overestimation of antibiotic prescribing that would otherwise occur. The diagnoses (indications) were not externally validated because this was not the study's goal.

The use of Defined Daily Dose (DDD) has been criticized because it has shown a weak correlation with prescribed daily doses in some settings. However, prescribed daily doses may differ between healthcare facilities, and DDD allows comparison among hospitals or clinics even when prescribed daily doses differ. We are aware that the extensive manual checking and adding of International Classification of Diseases (ICD) codes and Anatomical Therapeutic Chemical (ATC) codes for the new Fixed-Dose Combinations (FDCs) in the data has prolonged the analysis and caused the presentation to be delayed. However, using human resources is the only way to conduct such detailed studies in resource-constrained settings while also providing a more accurate description of prescribing patterns.

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Antibiotics were empirically prescribed to patients at both hospitals who had no clinical indications of infection. Patients who underwent elective surgery were given antibiotics for several days, despite recommendations for single dose prophylaxis. To address the issue of antibiotic overuse, a multi-step approach in the form of an antibiotic stewardship program is suggested. The program could include the following components: presentation

of study results as feedback to consultants, participation of consultants in the development of local diagnose specific antibiotic prescribing guidelines, implementation of the guidelines, and periodic training and educational sessions. Antibiotic stewardship must be accompanied by on-going prescription monitoring and qualitative research to investigate the underlying causes of current prescribing patterns.