

An Audit of Rational Use of Antibiotics in a Tertiary Hospital

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Abstract

Background: Drug can cure ailment when used rationally on the other hand they may become harmful or even may threaten a life when used irrationally. Absence of guidelines for antibiotic use, protocols for rational therapeutics and infection control committees, have led to overuse and misuse of antimicrobials even in different specialized units in hospitals. **Objective:** The study has been designed to get a picture of use of antibiotics in a tertiary care hospital of Bangladesh. **Materials and method:** Cross sectional study was conducted in the department of Medicine of Sir Salimullah Medical College and Mitford Hospital, Dhaka, Bangladesh, for 3 months from 1st January 2009 to 31st March 2009. Admitted patients of Medicine unit-1 who got antibiotics were included in the study. Total number of patients was 1563. **Results:** Five hundred out of 1563 patients were prescribed antibiotics (38%). Out of 500 prescriptions, 68(14%) prescriptions were found irrational. **Conclusion:** Continuous surveillance should be carried out to reduce the irrational use of antibiotics.

Keywords: Audit; rational; antibiotics.

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Introduction

The clinical use of antibiotics was introduced in the early 1940s and a short time thereafter, their misuse and abuse potential were recognized.¹

The conference of experts on the rational use of drugs, convened by the World Health Organization (WHO) in Nairobi (Kenya) in 1985, defined that ‘The rational use of drugs requires that patients receive medication appropriate to their clinical needs, in dose that meet their own individual requirement for an adequate period of time and of the lowest cost to them and their community’.²

Rational use of drugs is based on ‘Rule of Right’ - ‘The right drug given to the right patient at the right time with the right doses’. They should also fulfill safety, affordability, need and efficacy. The definition implies that rational use of drugs, especially rational prescribing should meet certain criteria as follows:

Appropriate indication: The decision to prescribe drugs is entirely based on medical rationale and that drug therapy is an effective and safe treatment.

Appropriate drug: The selection of drugs is based on

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efficacy, safety, suitability and cost considerations.

Appropriate patient: No contra-indications exist and the likelihood of adverse reactions is minimal, and the drug is acceptable to the patient.

Appropriate information: Patients should be provided with relevant, accurate, important and clear information regarding his or her condition and the medications that are prescribed. *Appropriate monitoring:* The anticipated and unexpected effects of medications should be appropriately monitored.³

There are several impacts of irrational use of drugs like increased morbidity and mortality, waste of resources leading to increased costs and increased risk of unwanted effects such as adverse drug reactions and the emergence of drug resistance.

Antimicrobial resistance diverts financial resources that could otherwise be used for improving health and threatens the success of global efforts to combat the major infectious diseases. In this light, implementation of the WHO Global Strategy can be considered appropriate risk management to protect current health care initiatives and the availability of treatment for future generations.⁴

WHO has recommended multifaceted strategies to improve hospital prescribing pattern of antibiotics⁴, such as:

Establish infection control programmes, based on current best practice, with the responsibility for effective management of antimicrobial resistance in hospitals and ensure that all hospitals have access to such a programme.

Establish effective hospital therapeutics committees with the responsibility for overseeing antimicrobial use in hospitals.

Develop and regularly update guidelines for antimicrobial treatment and prophylaxis, and hospital antimicrobial formularies.

Monitor antimicrobial usage, including the quantity and patterns of use, and feedback results to prescribers.

Unfortunately, in the real world, prescribing patterns do not always conform to these criteria and can be classified as inappropriate or irrational prescribing. Irrational prescribing may be regarded as

‘pathological’ prescribing, where the above mentioned criteria are not fulfilled.

Hence, the present study was designed to find the status of irrational use of antibiotics in a tertiary hospital in our setting.

Materials and method

This cross sectional study was conducted in the department of Medicine of Sir Salimullah Medical College and Mitford Hospital, Dhaka, Bangladesh, for 3 months from 1st January 2009 to 31st March 2009.

Admitted patients of Medicine unit-1 who got antibiotics were included in the study. Total number of patients was 1563. All the relevant information including irrational use of antibiotics³, if any, was collected and documented from the patient’s treatment record file, with prior permission from concern authority. The results were expressed in proportion.

Results

During the study period, 1563 patients were admitted in the Medicine ward under unit-I. Five hundred (32%) out of 1563 patients were prescribed antibiotics. Out of 500 prescriptions 68 prescriptions (14%) were found irrational (Fig 1&2).

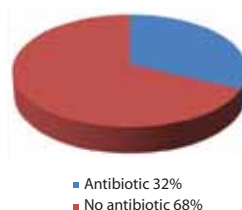


Fig 1: Use of antibiotics

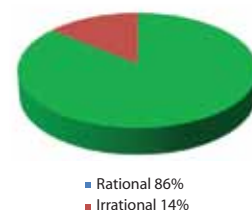


Fig 2: Irrational use of antibiotics

Discussion

This study found that 32% of admitted patients in a medicine ward of a tertiary level hospital of Bangladesh got antibiotics and 14% of prescriptions were found irrational.

Several studies performed in the 1970s demonstrated that antimicrobials were often used inappropriately in the hospital setting, and between

14% and 43% of all courses of antimicrobial therapy were deemed unnecessary because there was no evidence of infection.⁵⁻⁸ Some studies conducted later on have reported almost same proportion of the given antibiotic treatments to be unnecessary.⁹⁻¹¹

Several studies also reported that, the rate of inappropriate use of antibiotic were 28-65%.¹²⁻¹⁵ In studies carried out in Israel and Switzerland, appropriateness of antibiotic use has been reported at quite high rates (80±9% and 71%, respectively).^{16, 17}

In Turkey, despite antibiotics being used in 25-35% of patients admitted to the hospital, 40-50% of the cases were reported as irrational.^{18,19}

In a multi-center study, it was reported that antibiotics given in 25.8% cases of clinically proven infections and 15.95% cases of microbiologically documented infections were inappropriate, while 33.07% in prophylactic uses were inappropriate.²⁰ In another study, rates for unnecessary use and inappropriate use of antibiotics were 27% and 35.8%, respectively.²¹ Willemsen et al.²² reported 37.4% antibiotic use was inappropriate in Netherlands. In India, 30%-40% antibiotic use was found inappropriate and Das found it 40%.^{23,24}

A study done in India revealed that 69.4% patients received antibiotics for acute respiratory infection and diarrhoea of viral origin.²⁵ In a recent study in China in 2008 this rate was 16.8%.²⁶

It can be stated from the above discussion that we have found reasonably low proportion of irrational use of antibiotics, but it might not be the real picture of the country because our study was conducted in a tertiary level hospital of the capital city on admitted patients. On the other hand some of the studies discussed above done abroad were not conducted in tertiary level hospitals and sample size might also play important role. Time factor should be counted also. Moreover it must be taken into consideration that campaign of rational use of drug, surveillance and general awareness are increasing day by day. Still continuous surveillance should be carried out to reduce the unnecessary use of antibiotics. Hospitals should identify their own prescribing pattern and problems in antibiotic therapy. This is the logical first step in any program aimed at making antibiotic therapy more rational.

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