

EVALUATION OF PRESCRIBING PATTERNS OF ANTIBIOTICS IN ORTHOPEDIC DEPARTMENT AT GBR HOSPITAL

NARASARAOPET

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ABSTRACT

Rational drug use is an important factor to be checked for the optimal benefit of drug therapy in patient care.^[22] In India, many factors like illiteracy poverty, use of multiple health care system, drug advertising and promotion, sale of prescription, competition in medical and pharmaceutical market place and limited availability of drug information are the main reasons for not achieving the optimal health care.^[23] Inappropriate use of drug also leads to increased cost of medical care, antimicrobial resistance, adverse effects and utilization evaluation (DUE) studies becomes one of the potential tools in evaluation of health system.^[22-24] Drug utilization studies focuses on factors related to prescribing, dispensing, administering and taking of

medication and associated events. Antibiotic is a chemical compound that inhibits the growth of microorganisms, such as Bacteria, fungi, or protozoans. it also includes any agent with biological activity against living organisms, however, the term is commonly used to refer to substances with anti-bacterial, anti-fungal or anti-parasitical activity.

KEYWORDS: Rational Drugs, Antibiotics, Bacteria, Fungi, Protozoa.

INTRODUCTION

DRUG UTILIZATION EVALUATION

Rational drug use is an important factor to be checked for the optimal benefit of drug therapy in patient care.^[22] In India, many factors like illiteracy poverty, use of multiple health care

system, drug advertising and promotion, sale of prescription, competition in medical and pharmaceutical market place and limited availability of drug information are the main reasons for not achieving the optimal health care.^[23] Inappropriate use of drug also leads to increased cost of medical care, antimicrobial resistance, adverse effects and utilization evaluation (DUE) studies becomes one of the potential tools in evaluation of health system.^[22-24] Drug utilization studies focuses on factors related to prescribing, dispensing, administering and taking of medication and associated events.^[22]

Classification of Drug Utilization Evaluation

DUR is typically classified into three different categories.

Prospective DUR

Prospective review evaluation a patients planned drug therapy before a medication described. This DUR helps the pharmacist to access the prescription medications and resolve drug related problems.^[22,24,25]

Concurrent DUR

It is performed during the course of treatment and the ongoing monitoring of drug therapy for the positive patient outcomes.^[22, 25]

Retrospective DUR

It is a review of drug therapy after the patient has received the medication. A retrospective review aims to detect the pattern in prescribing, dispensing or advertising drugs and it helps to prevent recurrence of inappropriate medication use. The advantage of this DUR is ease of data collection, as records are assessed at the data collector's convenience. A disadvantage is that some information may be unclear or missing and reviewed patients may not gain immediate benefit, as interventions are delayed until the intervention phase.^[22, 24, 25]

DEFINITIONS

Criteria are predetermined parameters of drug prescribing and use established in a DUR program for comparison to actual practice. Criteria should be developed or selected by qualified health professionals, and supported by official drug compendia, unbiased drug information, and peer reviewed literature.

Threshold is a percentage, established by the DUR committee that identifies the point at which a drug therapy problem exists. For example, a threshold of 95% means collected for a given criterion shows compliance.

Prospective DUR involves comparing drug orders with criteria before the patient receives the drug. This type of evaluation is ideal for its preventive potential, and for its individual patient-centered interventions.

Concurrent DUR involves reviewing drug orders during the course of therapy. This type of evaluation is ideal where adjustments to drug therapy may be necessary based on on-going diagnostic and laboratory tests.

Retrospective DUR involves reviewing drug prescribing and use after they have occurred. Although the easiest and least costly approach, with retrospective DUR there is no opportunity to modify therapy for the patients on whom the data were collected.

Interventions are the activities selected by the DUR committee to correct drug therapy problems identified during DUR monitoring and evaluation.

STEPS IN ESTABLISHING A BASIC HOSPITAL DUR PROGRAM

The steps included in establishing a basic hospital DUR program are enumerated below. The process is divided into four phases:

- 1. Phase -1: Planning**
- 2. Phase-2: Data collection and Evaluation**
- 3. Phase-3: Intervention**
- 4. Phase-4: Program evaluation**

PHASE 1: PLANNING

Step 1. Forming the DUR Committee.

Step 2. Writing policies and procedures.

The key elements recommended for inclusion in DUR policies and procedures are

Designation as a “program”

Mission statement

Committee formation

Frequency of meeting

Step 3. Defining all areas or departments of the hospital where drugs are used (e.g., emergency room, intensive care unit, radiology, surgical department, medical department).

Step 4. Categorizing drugs for possible enclosure in the program.

Step 5. Assessing resources available for criteria development, data collection, and evaluation, and choose drugs to be involved in program.

Step 6. For each drug, select aspects (indications, dosing, dosage form chosen, etc.) of drug use to monitor and evaluate.

Step 7. Selecting criteria and establishing performance thresholds.

Step 8. Establishing methodology for collecting data and evaluation and create a schedule.

DUR committee must establish methodology for data collection

Data elements

Data sources

Forms

Persons responsible

Sample size

Step 9. Educating hospital staff about DUR program and current criteria.

PHASE 2: DATA COLLECTION AND EVALUATION

Step 10. Collecting data

Prospective-evaluation of a patient's therapy before medication is dispensed.

Concurrent-ongoing monitoring of drug therapy during the course of treatment.

Retrospective-review of therapy after the patient has received the medication.

Step 11. Evaluating data and determining the problems of drug use.

PHASE 3: INTERVENTION

Step 12. Disseminating results to hospital staff.

Step 13. If a drug use problem was found, design and implement interventions. Interventions that results in improved drugs use are:

Educational interventions

Operational interventions

Step 14. Collect new data on problem drug to determine if drug use has improved as a result of the intervention.

Step 15. Disseminate results of re-evaluation.

PHASE 4: PROGRAM EVALUATION Step16.Evaluating all DUR program events at end of the evaluation year, and plan program activities for the next year.

ANTIBIOTICS

Antibiotic is a chemical compound that inhibits the growth of microorganisms, such as Bacteria, fungi, or protozoans.it also includes any agent with biological activity against living organisms, however, the term is commonly used to refer to substances with anti-bacterial, anti-fungal or anti-parasitical activity.

History: Although potent antibiotic compounds for treatment of human disease caused by bacteria such as tuberculosis, plague or leprosy were not isolated and identified until the twentieth century, the first known use of antibiotics was by the ancient Chinese over 2,500 years ago.

The antibiotic properties of penicillium spp. Were first described in France by Ernest duchense in 1897.However, his work went by without much notice from the scientific community until Alexander Fleming's discovery of penicillin's.

Modern research on antibiotic therapy began in Germany with the development of the narrow- spectrum antibiotic salvarsan by Paul Ehrlich in 1909, for the first time allowing an efficient treatment of the then - widespread problem of syphilis. The drug which was also effective against other spirichaetal infections, is no longer in use modern medicine.

Antibiotics were further developed in Britain following the re - discovery of penicillin in 1928 by Alexander Fleming. More than ten years later, Ernst Chain and Howard Floret became interested in his work and came up with the purified form of penicillin. The three shared the 1945 Nobel prize in medicine. "Antibiotic" was originally used to refer only to substances extracted from a fungus or other microorganisms, but has come to include also the many synthetic and semisynthetic drugs that have antibacterial effects. Based on chemical structure.

ANTIBIOTICS CLASSIFICATION

Antibiotics are classified in many ways based on chemical structure its spectrum of activity, pharmacological activity.

BASED ON CHEMICAL STRUCTURE

- 1. Beta - lactam antibiotics:** Penicillin's, cephalosporin's.
- 2. Aminoglycoside antibiotics:** Streptomycin, Neomycin, Paromomycin, kanamycin, Amikacin, Gentamicin, Tobramycin, Netilmicin, Sisomicin, Spectinomycin.
- 3. Tetracyclines:** Tetracycline, Chlorthracycline, Rolitetracycline, Oxytetracycline, Methacycline, Demeclocycline, Meclocycline, Doxycycline, Minocycline.
- 4. Macrolide antibiotic:** Erythromycin, Clarithromycin, Azithromycin, Dirithromycin, Troleandomycin.
- 5. Lincomycins:** Linomycin. clindamycin
- 6. Polypeptide antibiotics:** Vancomycin, Teicoplanin, Bacitracin, Polymyxin B, Colistin, Gramicidin.
- 7. Miscellaneous:** eg. Chloramphenicol, Novobiocin, Mupirocin, Quinupristin, Fusidic acid.

BASED ON PHARMACOLOGICAL ACTIVITY**1. Antifungal antibiotics**

A. Polyene: Amphotericin B, Nystatin, Natamycin.

B. Others: Griseofluvin

2. Anticancer antibiotics: Dectinimycin, Daunirubicin, Doxorubiçin, Bleomycin, Idarubicin, Mitomycin, Plicamycin, Streptomycin, Valrubicin

3. Antityphoid antibiotics: Chloramphenicol.

4. Antidiarrheal antibiotics: Colistin

5. Antitubercular antibiotics: Rifampicin, Rifabutin, Cycloserine, Capreomycin.

AIM OF THE STUDY

The present study aimed to Evaluation of Prescribing pattern of Antibiotics in Orthopedic Department., adverse drug events, rationality of the selected hospitals. Drug utilization review plays a major role in improving the socio economic status and improve prescribing habits of healthcare professionals.

OBJECTIVES OF THE STUDY

Evaluation of Prescribing pattern of Antibiotics in Orthopedic Department.

To obtain information on demographic characteristics of the prescription selected for evaluation.

To investigate and compare drug prescription patterns in orthopedic department.

To study out the variability of prescriptions.

To study out the utilization of medications in orthopedic department.

To study out the rationality in orthopedic department.

METHODOLOGY

Inclusion criteria

Patients with age group of 0-70years.

All out-patient and in patients in orthopedic department.

Exclusion criteria

Patients with age group of above 70 years.

Intensive care unit patients.

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