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DRUG UTILIZATION EVALUATION: AN OVERVIEW

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ABSTRACT

Drug Utilization Evaluation (DUE), contrarily called Drug Utilization Reviews(DUR) or Medication Utilization Evaluations (MUE), are elucidated as an legalized, organized, ongoing review of healthcare provider advising, pharmacist dispensing, and patient administration of medicaments. Drug Utilization Review involve a encyclopedic appraisal of patients' prescription and medication data prior, throughout and subsequent to dispensing to make certain pertinent exercise of medication and pragmatic patient outcomes. Since the middle of twentieth century, interest in Drug Utilization Evaluation has been Increasing for appraising the quality of medical prescription and comparing patterns of use of specific drugs. It's main goal is to enhance an individual patient's quality of life through the achievement of predefined, medication-related therapeutic outcomes. The Medication Utilization Evaluation process helps to Point out the exact and probable medication-related problems, resolve exact medication-related problems, and avert probable medication-related problems that could impede with achieving ideal outcomes from medication therapy.

KEYWORDS: Review, prescription, Drug Utilization Evaluation.

INTRODUCTION

As stated by WHO, Drug Utilization evaluation is defined as the marketing, distribution, prescription and use of drugs in society, with special emphasis on the resulting medical, social and economic consequences. Drug Utilization Evaluation (DUE) is an ongoing authorized and systematic quality improvement process.[1]

Drug utilisation review map outs

1. To evaluate drug use and/or prescribing pattern.
2. To perceive and help to prevent drugs interactions.
3. To determine and prevent adverse drugs reaction in sensitivity pattern.
4. To detect the potential drugs toxicity.
5. To evolve criteria and standards which prescribe optimal drug use.
6. To encourage appropriate drugs use through education and other intervention.
7. To bestow feed-backs of results to physicians and other relevant groups.

Drug Utilization Review (DUR) is otherwise called as Drug Use/ Utilization Evaluation (DUE). In the era of cost constraints and quality assurance, it is increasingly used. This is to evaluate appropriateness of usage of various medications which has been adapted by pharmacists. It aids the healthcare system to understand, interpret improve the prescribing administration and use of medications. It helps to design educational programs by assisting Health Care systems and hospitals which may improve prescribing and drug use.[2]

Why is drug utilization research necessary?

The goal is to ease the rational use of drugs in citizenry. The rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, and at the lowest cost to them and their community, by WHO. It is necessary to notice the inappropriate use of drugs that causes life threatening problems to the patients(Hawkey et al., 1990). It is very hard to figure out the judicious use of drug without the familiarity on how drugs are being prescribed. By describing the drug use pattern and interventions, drug utilization research contributes to rational drug use. This understands how drugs are being used by making estimates of number of patients exposed to drugs, describing and estimating to what extent the drugs are used at certain area, whether overused or underused, describing the pattern of drug use etc. It compares the observed patterns of drug use with current recommendations or guidelines. Feed back is provided to the prescribers based on the drug utilization data collected. The interventions undertaken to improve the patient outcome is assessed by Drug Utilisation Research.[2,3] It is an essential tool of Pharmacy service position and clinical pharmacy practice.[3]

At local and national levels, Drug utilisation research forms the basis for making revision in the drug distributing strategy, thereby it holds a pivotal place in clinical practice. Also, since

it aids in emerging strategies to utilize health resources in the most systematic manner, it is remarkably necessary in a advancing economy like India where 72% of all health care burden is borne by the patients.[4]

History

Drug Utilization Review is evolved in North America.[5] It is developed in mid 1960s in North Europe and U.K.[6,7] Raise in coverage of medication distributing and development in technical feasibility are the two determinants that boost the emergence of Drug Utilization Review.[5] The first Research work was done by Arthur Engel in Sweden and Peter siderius in Holland.[6,7] By mid 1970 private companies that contributing Drug Utilization Review are merged with many medical programs. From 1985 when using Antibiotics, American Hospitals are requested to use DUR.[5] In community pharmacy settings, Federal law (OBRA-90)requires DUR for patients receiving medication through medicaid.[8] Three relevant goals for a DUR program provided by Congress under the Omnibus Budget Reconciliation Act of 1990.

1. minimizing hospitalization due to Adverse events.
2. Averting and spotting fraud and abuse.
3. supporting evidence based prescribing.[9]

Types of DUE

1. Drug focused: Drug utilization evaluation of a solitary drug (e.g. Ceftriaxone) or a class of drugs (e.g. Cephalosporins) is tested.
2. Indication focused: Evaluation of drug or drugs that is used for certain indication is inspected for their use.
3. Quantitative: This type of DUE comprises collecting, organizing and estimation of drug usage in figures in the pattern of drug accession, prescribing, dispensing, consumption and distribution.
4. Qualitative: Evaluation of quality of drug therapy and its outcomes by comparing practice with predetermined criteria and standards.[10,11]

Phases in organizing a DUR program

Phase: 1 Planning

1. Evolve a DUR Committee
2. Make a note of policies and procedures.
3. Narrate about the departments of the hospital, where drugs are used.

4. Choose particular drugs for possible inclusion in the program.
5. Appraise resources available for criteria development, data collection, and evaluation.
6. Examine the indications, dosing, dosage form, frequency of drug used to monitor and evaluate.
7. Choose criteria and establish performance thresholds.
8. Progress the methodology for data collection, evaluation and create a schedule.
9. Educate hospital staff about DUE study and current criteria.

Phase: 2 Data collection and Evaluation

10. Initiate the data collection in a proper way.
11. Assess the collected data and verify if drug use problems exist.

Phase: 3 Intervention

12. Convey the results to hospital staff.
13. If a drug use problem is noticed, design and implement interventions.
14. Collect new data on problem drug to verify if drug use has enhanced as a result of the intervention.
15. Disseminate results of re-evaluation

Phase: 4 Program Evaluation

16. At the end of the year, evaluate all DUR program activities and plan the new activities for the forthcoming year.

Steps

Step 1: Evolve a DUR Committee.

Specialist who have intention to enhance drug therapy should be in the DUR committee and have unhindered access to professionals in medicine, surgery and all major hospital. It is culpable for the initial formulation of DUR protocol and strategies. Also, it is responsible for Outlining and enforcing all DUR activities. The committee should assure that data collectors are skilled and competently experienced.

Step 2: Make a note of policies and procedures.

The policies and procedures that will direct its function should be formulated and authorised by the committee. Disclosure of the obvious statement of protocol and strategies may be used in order to educate hospital officials about the program.

Step 3: Narrate about the departments of the hospital, where drugs are used.

A whole DUR program handles drug utilization in all areas of the hospital. Example: emergency room, intensive care unit, radiology, surgical department, medical department, paediatrics.

Step 4: Choose particular drugs for possible inclusion in the program.

Though it is impracticable and complicated, to track and evaluate every drug used in a hospital, the Committee must specify supremacy drugs that have the following characteristics.

1. High cost, high volume, clinically important drugs;
2. Utilized in high-risk patients (elderly, intensive care, pediatric, etc.);
3. Substantial side effects, narrow therapeutic index;
4. Used in most common diagnoses;
5. Under consideration for formulary addition; and Currently added to formulary.

Step 5: Appraise resources available for criteria development, data collection, and evaluation.

By utilising Hospital experts and clinical professionals, the committee may formulate criteria on its own or use detemined criteria from unprejudiced drug reference literature. knowledge about drug names, strengths, the way orders are written and how Information is organized in the patient's history should be possessed by the the data collectors.

Step 6: Examine the indications, dosing, dosage form, frequency of drug used to monitor and evaluate.

The main aspects of use to consider for the drugs selected by the committee are listed below:

1. Indications
2. Contraindications
3. Side/adverse effects
4. Management of overdose
5. Dosing
6. Duplicate therapy
7. Preparation
8. Administration
9. Drug-drug and drug-food interactions
10. Monitoring/laboratory tests

11. Patient education/instructions
12. Perdicted results of therapy
13. Expenditure of course of therapy

Step 7: Choose criteria and establish performance thresholds.

Criteria are standards for evaluating appropriate drug use. The following are the methods to develop criteria:

1. Apply existing criteria sets, such as the World Health Organization Guidelines for Treatment of Common Diseases, or the American Society of Health System Pharmacists (ASHP) Criteria for Drug Use Evaluation. These criteria are equitable, have been designed by experts, and have been field examined for eligibility of use.
2. Acclimate existing criteria sets according to the needs of the hospital.
3. Select its own criteria, depending upon hospital-developed standard treatment guidelines.

Step 8: Progress the methodology for data collection, evaluation and create a schedule.

The DUR committee must develop methodology for data collection including: data elements, data sources, forms to use, persons responsible, and sample size, Prior to actual supervision and assessment of a drug begins.

Step 9: Educate hospital staff about DUE study and current criteria.

Dissemination of DUR program's policies and procedures, the monitoring and evaluation schedule, and the criteria for each drug may be done by various methods including memo, newsletter or staff meeting to educate the healthcare professionals in the hospital. New changes in DUR policies and procedures should be disclosed to medical officials.

Step 10: Initiate the data collection in a proper way.

The method of data collection are as follows;

- Prospective

The collection of data have to occur prior to administration of drug by comparing physician's orders to standard criteria.

- Concurrent

It may be performed in the pharmacy, or on the wards and the collection of data does not have to occur before the administration of a first dose.

- Retrospective

It is a preferred method for new programs and data collectors customarily employ in collaboration with the medical records department and ancillary departments.

Step 11: Assess the collected data and verify if drug use problems exist.
Information must be cautiously clustered when determining if thresholds were exceeded.

If a threshold set at 100% is met (indicating complete compliance with the criteria), it is usually sufficient to simply report the results to the DUR committee.

If a threshold set at less than 100% (e.g., 95%) is not actually exceeded (e.g., 98%), the DUR committee should decide if it is necessary to review those cases that were not in compliance with the criteria.

If a threshold is not met, it indicates a drug use problem.

Step 12: Convey the results to hospital staff.
Following processes are used to distribute results;

1. posting results in meeting places such as nurses' station on each ward
2. weekly prescribers' conference
3. newsletter
4. dissemination of written DUR committee meeting minutes.

Step 13: If a drug use problem is noticed, design and implement interventions.
Improved drug use results from choosing one or more interventions when a drug use problem occurs. Interventions can be educational or operational.

Educational interventions include informal and formal counseling, preparing newsletters, guidelines on drug use and other informational materials.

Operational interventions can include development of drug order forms, formulary additions and deletions, implementing standard treatment guidelines, changes in hospital policies and procedures etc.

Step 14: Collect new data on problem drug to verify if drug use has enhanced as a result of the intervention.

Supervise clinicians prescribing to ascertain effectiveness of interventions. After the intervention was implemented, reevaluation is performed six to twelve months by picking up the same data as in the primary DUR evaluation.

Step 15: Disseminate results of re-evaluation.
Disclose outcomes of the re-evaluation DUR to the clinical officials.

Step 16: At the end of the year, evaluate all DUR program activities and plan the new activities for the forthcoming year.
Ultimately, the Committee should execute an evaluation of the DUR program, and if applicable, alleviate thirsted changes.[12,13]

Findings from previous studies

Sharonjeet Kaur et al., study highlights the importance for rationalising drug therapy in the contingency settings with respect to enhancing adherence to national essential medicine list and increasing prescription of drugs by generic name. He said that inappropriate overuse of PPI and multivitamins where it is not indicated should be hindered. Since the drug cost is mostly driven by prescription of broad spectrum antibiotics, therefore, in future, hospital pharmacy should be motivated to acquire more cost effective alternative antibiotics.[14]

A retrospective study was performed to access drug utilization evaluation of antibiotics in patient department of District Hospital Rudraprayag for a period of three months. Overall 126 patients records were confronted in the study in which male female ratio was 1 2. Salient age range was 21-40. Overall 1064 drugs were prescribed average number of drug per prescription was 8.44. Percentage of drug by generic name was 33. Percentage of antibiotic prescribed was 82.74. Percentage of drugs with EDL was 66.16. Study results revealed poly-pharmacy, brand prescribing as common trends. Study showed need to promote prescribers to follow generic prescribing and use injectable and antibiotics rationally to prevent development of resistance in hospital and community(Kala kanishk et al., 2018).[15]

Role of pharmacists in DUE

• To encourage goals and objectives of DUE.
• To plan, organize and implement a DUE program.

• Growing, supervising and coordination of DUE program.
• Executing pilot studies, assemblage of data, analyzing collected data and writing a report.
• To register outcomes of program its effectiveness and cost benefits.
• To present DUE results that obtained at meetings and conferences.
• To teach hospital about DUE and its use.[20]

DISCUSSION

The price of non-optimal drug utilization is huge and this was one of the motive that drug utilization review appears.[15] Over the history recording of medication, Drug Utilization Review technology display the capability to the exalted pharmacy therapy.[16] Drug utilization review Supports pharmacists to assessing the medication for patients. Drug Utilization Review plays a key aspect in therapy and drug dispensing. It aids in enhancing the drug and drug dosage and provides feedback to hospital and clinicians for their therapy and their conduct. It motivate practitioners to modify and alter their normal habits in prescribing and then improve patient care.[17] However, the real value of such a system seems to lie in a retrospective review of practice patterns in different patients and at different times, combined with targeted educational outreach programs.[18]

Medication use evaluation is profitable to medical students and offers practice places. It improves prescribing practices, ensures safety outcomes, help students improve their medication therapy.[19]

It is impossible to evaluate all drugs available in the hospital. Hence the DUE ccommittee pinpoints drugs whose assessment and development in use will result in more clinical impact. Generally drugs with high volume of use, high cost or high frequency of adverse effects are subjected to DUE studies.[13] Common targets for DUR studies includes drugs used in high risk patients like elderly, pediatric patients and drugs used in the management of common conditions like RTI or UTI, commonly prescribed drugs (Antibiotics, Proton Pump Inhibitors), high cost drugs (Cephalosporins), new drugs, drugs with a narrow therapeutic index (Digoxin, Theophylline), drugs associated with potentially significant drug interactions (Warfarin, Theophylline, Phenytoin), drugs causing serious adverse reactions (Aminoglycoside antibiotics, NSAIDs).[21]

DUR helps to avert drug related problems like adverse drug reactions, toxicity, medication errors, drug-disease contraindications, drug-allergy interactions, drug-drug interactions and

therapeutic duplications. Formulary management along with DUR analysis encourages the enhancement in drug utilization process and it also find outs the area in which further information and education for health care professional may be needed. DUR programs helps to provide physicians with feedback on their conduct and prescribing behavior as compared to standard protocols. DUR information helps to improve prescribing formulary compliance and patient compliance. Nowadays, importance of drug utilization evaluation is enlarged in the areas like pharmacogenetics, pharmacoepidemiology, pharmacoeconomics, public health and pharmacovigilance.[12]

CONCLUSION

Drug Utilization Evaluation enables judgmental use of drugs that will reduce the burden of Drug related problems and thereby facilitate better patient care and restraining the resultant morbidity and mortality. This may instigate the healthcare professionals and policy makers to frame pertinent approaches for corroborating judgemental use of drug.

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