A review on steps involved in drug utilization review

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Article History:
Received on: 02 Jan 2020
Revised on: 13 Jan 2020
Accepted on: 29 Feb 2020

Keywords:
Drug Utilization Evaluation, DUE cycle, Steps involved in DUE

ABSTRACT
Drug Utilization is also known as Drug Utilization Review, is an arrangement of persistent, orderly, criteria based medication assessment that guarantees the proper usage of drugs. Drug use/ utilization evaluation and medication utilization evaluations are the same as drug utilization review. It is a technique for acquiring data to recognize the problems related to the usage of drugs and if appropriately created, it also gives a method for revising the issue and in this way, it becomes a factor in reasonable drug usage. Evaluation of use can survey the real procedure of medication administration or dispensing of proper medication and furthermore the results of treatment. Drug utilization review services include corrective actions, prescriber reviews and further evaluations as a quality assurance mechanism. This article reviews the drug utilization pattern and evaluation of the process of drug utilization. The evaluation pattern can be classified into several categories such as prospective, concurrent and retrospective. The drug utilization evaluation process is a continuous cycle and its maximum effect is attained when it is conducted as a cycle rather than conducting in steps. This evidence-based approach with utilization of the medication is intended to depend on the best accessible clinical evidence to create explicit rules for a particular illness or utilization of a particular medication.

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ISSN: 0975-7538
DOI: https://doi.org/10.26452/ijrps.v11i3.2612

INTRODUCTION
Drug use is a complex process. Wide variations may occur in the use of drugs due to the uncertainties in diagnosis and medication adherence. In any country, socio-economic factors may affect the use of drugs. In India, illiteracy, poverty, the practice of different systems of medicine, dispensing of medications without a prescription, supremacy in the medical and marketing field and lack of information about drugs. The method to evaluate and improve drug use is conducting Drug Use Evaluation/Drug Utilization Evaluation (DUE) or Drug Utilization Review (DUR) (Parthasarathi et al., 2012).

Rational Drug use is a vital indicator that can be used to assess the maximum benefit of the use of drugs or medicines during patient care (Ramalingam et al., 2018; Sachdeva and Patel, 2010). Inappropriate use of the drug can also tend to hike in medical cost, development of antimicrobial resistance, ADR and mortality of Patients. Therefore the drug utilization (DUE) studies become one of the impending tools in the assessment of the health program (Ramalingam et al., 2019; Shalini, 2010). Drug Use Evaluation (DUE) or Drug Utilization Evaluation (DUE) is the management of continuous, precise, criteria-based assessments of the use of drugs, which will warrant that the drugs are being used relevantly, which is
at the extent of the patient (Holloway and Green, 2003). Medication use evaluation (MUE) is alike to Drug Use Evaluation besides MUE gives importance to better patient understanding results and Quality of Life of the Individuals. Therefore, MUE is mostly relying on a multidimensional perspective with the use of drug therapy.

Drug use evaluation is a necessary element of the Drug use quality refinement procedure. It is an execution enhancement technique to optimize patient outcomes (Huang et al., 2012). DUE occupies one of the prime areas in pharmacy Practice where the majority of the researches are performed. Today the research fields such as Pharmacoepidemiology, Pharmacovigilance, Pharmacoeconomics, Outcomes research, etc., who are advancing profess to fabricate more valuable knowledge compared with DUE. The DUE studies have a promising impact locally and internationally as they are relentlessly used indicators of the healthcare system. Prescribing patterns are frequently utilized technique to assess the agreement of doctors who prescribe according to standard treatment guidelines as well as rational prescribing practices (Balasubramanian et al., 2019).

The ultimate goal of a DUE or MUE is to provide better patient care through the best treatment and also to make sure the treatments according to the current standards of care.

Extra purposes of DUE are,

1. To create rules for suitable drug utilization
2. To evaluate the efficacy of treatment with drugs
3. To enhance management in the drug use techniques
4. To control the cost of drugs
5. To prevent the drug-associated problems like ADR, lack of success in the treatment, too much use and less use of drugs, inaccurate doses and use of medicines which are not in the formulary
6. To sort out areas in which more knowledge and studies are required for individuals who practice medicine.

CLASSIFICATION OF DRUG UTILIZATION EVALUATION

Prospective DUE

A review has done prospectively by evaluating the patient’s pre-planned drug therapy prior to medication described. This type of DUR paves the way to a pharmacist to evaluate the dosage of prescription drugs, the interaction of drugs and to clear the problems associated with drug use.

Concurrent DUE

It is performed during therapy and continuous monitoring of treatment with medicines to attain positive outcomes from the patient.

Retrospective DUE

It is a review of treatment subsequent to medication administration by a patient. The aim of this review is to find the trends in prescribing, dispensing and advertising about medication, thereby helps to prevent duplication (Navarro, 2008; Thomas et al., 1997).

Specific elements addressed in each medication use evaluation are to,

1. Define the purpose, focus, and priorities,
2. Develop the usage criteria to be evaluated,

Collect the usage data; review and evaluate the data collected, Develop and implement actions to improve medication usage, Assess the actions that were implemented, Document the results, and Report the results to other healthcare professionals.

Focused Medication Use Evaluation

Focused also known as targeted drug use assessments, follows a rational well-accepted cycle,

Detection of a possible problem in the utilization of a specific drug or therapy, compilation and comparison of information obtained, assessment of compliance with pre-established setup rules or expectation and adopt necessary steps to enhance disparity between assumed and calculated results (Huang et al., 2012).

Simultaneous assessment is usually favoured over retrospective methods, as it allows organizations to opt vital outcomes for data collection rather than stick on outcomes commonly documented in inpatient medical records (Warholak et al., 2015). Enhancement of drug utilization has the capability to reduce the building of antimicrobial resistance and to decrease the complete healthcare costs by rendering cost-effective treatments (Commission, 1996). Increased cost, overuse and problem-prone medications can also be considered for evaluation (Management, 2008).

The Due Cycle

The DUE process is a continuous cycle and it is most worthy if the cycle is conducted rather than performing various steps. The major phases of DUE cycles are,
1. Planning
2. Data Collection
3. Evaluation
4. Feedback of result
5. Intervention
6. Re-evaluation
7. Feedback of result

**STEPS IN CONDUCTING DUE PROCESS**

**Step-1**
**Identification of areas or Drugs for the DUE program**

In a hospital, a large number of drugs, which are used for the treatment. But, it is unnecessary to include each and every drug for the study. So it is better to select by the hospital DUE committee to choose the priority drugs which have to be included in the DUE program. The areas for DUE can be identified by a keen observation in the medication error reports, Adverse Drug Reaction reports, from the microbiological data and also from the feedback of prescribers and Clinical Pharmacists. ABC analysis is helpful to identify the priority drugs for inclusion in the DUE studies. DUEs may also focus on an area where medicines are over-used and under-used.

**Step-2**
**Design of Study**

Several study techniques are used in DUE studies. Observational research methods are most widely considered than experimental study methods. Pre and Post design is also an observational method used to examine before and after interventions to improve prescribing patterns.

**Step-3**
**Define criteria and standards**

Criteria are always statements, which are determined earlier that can enable oneself to provide uncompromised drug use, wherein the quality of actual drug use can be compared. Research literature must be used to validate the formed criteria scientifically. The developed criteria should be scientifically based and supported by the research literature. This should be authentic and must have only one interpretation and also should be readily measured.

**Step-4**
**Design the data collection form**

It is important to have a good structure for a data collection form because a good frame reflects the accuracy of the collected data. A general aspect in the framing of a form for the collection of data is the compilation of patient information, laboratory data, etc. Along with that, the variables in a study may also influence the framing of a good data collection form. This may vary and depends on the type and objectives of DUE.

**Step-5**
**Data Collection**

In the DUE study, the person who collects the data should be selected carefully. Data collectors should be familiar with the collection of data from the Patient’s case note. Physicians, Pharmacists, and nurses are ideal data collectors.

**Step-6**
**Evaluation of Result**

Evaluation of data is the most critical step in Drug Utilization Evaluation. The collected data from the study should be collated using available resources. Then summarise the categories of the results obtained and check the deviations if any, from the standard guidelines. If the deviations are noted, reasons for deviation should be evaluated.

**Step-7**
**Feedback of results**

The positive result of a DUE is influenced by the response of the findings from the hospital health care professionals who participated in the study. The results can be published in hospital newsletters, academic meetings, and DUE meetings so as to bring it to the attention of the hospital staff.

**Step-8**
**Implementation of interventions**

Once a drug use problem is identified, proper interventions have to be made. Educational or operational are interventions to improve drug use. Educational consists of meetings, academic detailing, newsletters and feedback of results. Operational intervention includes the correction of the identified operational problem by the DUE. The choice and development of interventions need careful planning.

**Step-9**
**Re-evaluation**

The success of a DUE is determined by the re-evaluation of drug use and prescribing patterns. Which can be conducted in the same procedure as done before. Re-evaluation was usually done 3-12 months after the intervention.
Step-10

Feedback of Result

It is important to inform the hospital staff regarding the result of re-evaluation. This gives a check on adopted interventions that have been made for the correction of medication use-related problems.

CONCLUSIONS

It is the need of the time to develop as well as adopt the guidelines in the therapeutic management for the betterment of patients. These guidelines help the healthcare providers to prescribe the medications based on the evidence whereby the overall quality of drug use is improved. Drug utilization study continuously helps to rule out if any irrational prescribing of drugs. This effectiveness of DUE can only be obtained by conducting researches at all domains, and extrapolating the first expert’s knowledge from such researches can help to decide the best treatment plan as well as constantly monitor the quality of Pharmaceutical services that a patient receives.

Conflict of Interest

Nil.

Funding Support

Nil.

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