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Review Article

Role of clinical pharmacist in drug utilization evaluation, medication adherence and pharmacovigilance

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ABSTRACT

A series of systematic, criterion-based drug evaluation known as Drug utilization review are conducted on a regular basis to ensure that medication is utilized appropriately. It's a mean of learning more about the issues brought on by drug usage, if done properly, may help to solve the issues. Medication adherence generally refers to a patient's ability to take prescription drugs as directed and their continued use of those drugs. The increasing body of research linking medication non adherence to unfavorable outcomes and increased healthcare cost has raised concerns among clinicians, healthcare institutions, and other stakeholders. Pharmacovigilance, in which the procedures keeping an eye on the assessing adverse medication reactions, is essential to clinical practice, public health and efficient drug regulating system. Aim of the study was wo study about the role of pharmacist in drug utilization review, medication adherence and pharmacovigilance.

Keywords: Medication adherence, Drug utilization, Pharmacovigilance

INTRODUCTION

An authorized, systematic, continuous evaluation of the prescription, dispensing and use of medication is known as drug utilization evaluation (DUE) or drug utilization review (DUR). It includes a drug review based on pre-established criteria, and if these criteria are not satisfied, adjustment to prescription therapy are implemented.[1]

Types of DUR

Three different approaches:

Prospective

Before a prescription is written, each patient's file is examined as a part of prospective DUR in order to find any drug-related issues, such as therapeutic duplication, drug-disease contraindication, drug-drug interaction or other possible adverse drug events.

Retrospective

Retrospective is carried out following the dispensing of prescriptions and employs practice pattern analysis to detect utilization of expensive medications, to compare specific drug classes used by various facilities/providers/to track compliance with pharmacotherapy recommendation from practice guidelines for treatment of specific diseases.

Concurrent

Reviewing medication orders while undergoing treatment is known as concurrent DUR. When changes to drug

therapy may be required based on continuing laboratory and diagnostic testing, this kind of review is ideal.[2]

Steps involved in DUR

Establish responsibility: This involves designating a subcommittee or a DTC member to oversee and monitor the DUR procedure at clinic/hospitals. It is the duty of drug and therapeutics committee to establish protocols on DUR.

Develop the scope of activity: Depending upon the kind of issue found, the scope can be very broad or it can concentrate on only one area of pharmacological therapy.

Establishing criteria for review of the medicine: DUE guidelines are declaration that specify appropriate drug use in relation to certain elements. Using the standard treatment guideline, criteria for the use of any medication should be developed.

Data collection: Information collected either prospectively during preparation/ dispensing of medication/ retrospectively form files, other records.

Data analysis: Data is recorded in a format that fits DUR's selected criteria. For submission to the DTC, the percentage of cases that satisfy each criterions threshold should be computerized and compiled.

Feedback to the prescribers and making plan of action: Following the presentation of data, the DCT need to draw conclusions regarding the variations between the intended and actual outcomes.

Follow-up: Follow-up is essential in every DUR to guarantee proper problem resolutions. The DUR will not have been useful if drug use issues are not addressed or of an intervention is not examined.

Develop and implement interventions

Operational or instructional interventions can be used to improve drug use. Educational interventions like conferences, circulating guidelines etc. and operational like relocating employees, changing formulary etc.

Revaluate: Monitoring prescription and drug consumption's pattern is required to evaluate effectiveness of programs and ascertain whether drug use has improved.

Reassess and revise: Future DUE investigations should aim to improve quality, safety and efficacy by applying lessons learned from 1st DUR research on drug use program.[3]

Role of pharmacist in DUR

Pharmacist as a profession and as individual have significant role in play in improving drug use, policy, and results.

Creating submissions for the purpose of justifying the program, developing, overseeing and coordinating the program, teaching hospital employees about DUE in a conceptual and useful manner, the promotion and recommendation of DUE goal and objectives, the creation and evaluation of audit criteria, guidelines, study, protocols and other educational materials, the documentation of program outcomes, effectiveness and cost benefit, prospective/concurrent drug usage monitoring, representation of DUE result at meeting and conferences and hospital committees dealing with quality assurance in general and DUE in particular.

MEDICATION ADHERENCE

The world health organization define medication adherence as "the extent to which an individual's behavior aligns with the established guidelines from the healthcare provider". This includes thing like filling prescriptions, remembering to take medicines on schedule and comprehending the instructions. It is deemed for the success of patient treatment and avoid unnecessary medical expenditures. It comprehends on initiation, implementation and discontinuation on treatment, prescribing and pharmacotherapy.[5]

Factors affecting medication adherence

Therapy related factor

Patient may lack information or medications they need in onset of illness. Patients may be confused about their health conditions and treatments are time consuming. It also seems difficult aspect in any need of information based on medication and the leaflet in the package is also matter on patient to understand, so they use sources like internet. Generic substitutions cause suspicions in generic name comparing the original name. The patient and physician must have proper communication and proper education on prescribed medicines. Insufficient education leaves patient along struggles with medication problems.

Disease related barriers

In this, it outlines the duration of disease. This factor was analyzed showing conflicts in direction and evidences was judged probably on impact overall. Selection of medicines and intakings depend on the severity of disease. Medication adherence can be increased when multiple illness is a negative belief can differ from condition to condition. Some diseases can cause its own consequences when not properly treated.

Patient related factors

Parkinson's and cardiovascular diseases are two aliments for which positive effect directions in older adults have been observed, the impact was that drug was not as clear. In the SRs on adherence in inflammatory arthritis, chronic disease, HIV positive patients, patients use oral anticancer

medications and cardiovascular disorder, different age groups were compared. There was some indication of an impact of the two situations, HIV positive patients over 45 showed higher levels of adherence than those under 45. When oral anticancer medication was administered to patients, there is evidence that middle age individuals were more receptive than elderly individual's over 75 and younger individuals under 45. Overall, both positive and negative effects direction were seen and it was determined that the evidence lacked sufficient clarity.

Health care system related barrier

Higher copayments and any copayments had a detrimental effect. Evidence of copayment had a negative effect on cardiovascular disease and inflammatory arthritis adherence. Regarding oral anticancer medications, there was conflicting evidence of an effect. The cost of prescription drugs and ingestions were examined in patients with oral anticancer and inflammatory arthritis. Although adverse reactions were documented, there was insufficient data to support a detrimental impact in adherence in either condition. Additionally, adherence to drugs for chronic illness is influenced by health insurance status.[6]

NONADHERENCE

The degree to which patient complies with the prescribed guidelines. According to the estimation of world health organization, the rate of drug adherence in affluent countries is 50% while in developing countries the rate is significantly lower. Medication non adherence is well-known and pervasive public health issue that has an impact on overall healthcare expenses as well as health outcomes. Poor adherence will raise the need for medical services and raise total health care expenses. Furthermore, it has been proposed that pharmaceutical nonadherence may account 10% of adult hospitalization. As a result, putting in place initiatives to enhance drug adherence following discharge can gently reduce healthcare expenses.

Risk factors of non-adherence-Medication cost, poor access to medication, poor after care planning, poor physician-patient relationship, complex medication regimens, lack of medication education, poor social transport and poor transportation.[7]

Role of pharmacist in medication adherence

As pharmacist are able to show patient the drug and connect any information's to the medication itself, they are in a unique position to increase medication adherence. Although it's uncertain if these methods alone are beneficial, pharmacist frequently give patients written information suited to them along communicated instructions. In addition to educating patients, a pharmacist can improve medication adherence but offering prescribers advice on simplifying drug regimens, giving patient medication cards or other medication aids like Dosettes, and identifying the risk factor and reinforces that could lead to medication non-adherence.

Clinical pharmacist has numerous chances in hospitals to evaluate patient related factors that could support drug adherence. Pharmacist can evaluate patients understanding of their therapy and regular dosing routines conducting patient interviews. For instance, does the patient follow a certain schedule, and can family members help medicine administration supervisions? Additionally, the pharmacist can determine whether the patient has any particular medication-related issues, such trouble in swallowing big tablets/open child-proof containers. Patient memory skills and comprehensions, as well as possibility that negative drug reaction could make medication adherence difficult can all be evaluated by pharmacist.[8]

PHARMACOVIGILANCE

Research and practice pertaining to detection, assessment, and comprehension and prevention of drug side effects or any other potential drug related issues are referred to as pharmacovigilance. By identifying risk factors for development of ADRs, estimating quantitative aspects of beneficial or risk analysis and encouraging discovery of previously undiscovered ADRs, interactions and increases in frequency of ADRs. Pharmacovigilance supports safe and appropriate use of medications. It also distributes information to improve drug prescribing and regulation.

Types of adverse drug reactions

Type A: Augmented

Most prevalent (up to 70%) dose-dependent severity rises as dose increase, most avoidable with a gradual introduction of modest doses. Pharmacological processes such as hypotension from beta-blockers, hypoglycemia from insulin or oral hypoglycemic agent, or gastric ulcers brought on by NSAIDs can all be predicted.

Type 2: Bizzare

Examples of rare, unique, genetically determined, unpredictable, severe and potentially fatal conditions that are not related to dosage are halothane-induced hepatitis, chloramphenicol-induced aplastic anemia and neuroleptic malignant syndrome brought on by certain anesthetic and antipsychotics.

Type C: Continues drug use

Happens as result of persistent drug use, may be irreversible, unexpected e.g., anti-psychotics- induced tardive dyskinesia and anti-cholinergic-induced dementia.

Type D: Delayed

Delayed incidence of adverse drug reactions, even after therapy has ended. Examples include ophthalmopathy

following chloroquine, corneal opacities following thioridazine, and pulmonary fibrosis following methedrine.

Type E: End of the dose

Withdrawing responses usually occurs in conjunction with depressant medication. Examples include hypertension and restlessness in opiate abstainers, seizures after alcohol and benzodiazepine withdrawal, and hypotension from an alpha blocker or an ace inhibitor at initial dose.

Type F: Failure of therapy

Result in ineffective treatment (which per the WHOs criteria, had previously been omitted from analysis based on WHO definition) such as accelerated hypertension due to ineffective management.[9]

ADR MONITORING

ADR monitoring is defined as the process of continually keeping an eye on any negative side effects that arise after taking any medication. Pharmacovigilance is a crucial role in tracking adverse drug reaction. Pharmaceutical regulators are required by law to monitor their medication on the market and document any potential adverse effect. ADRs can happen when using a variety of pharmaceuticals, natural remedies, cosmetics, medical equipment, biological product etc. The purpose of implementing this monitoring process is to ensure that patient receives safe and effective medication.

METHODS INVOLVED IN PHARMACOVIGILANCE

Causality assessment

In order to classify ADR into different categories, the method of causality assessment of ADR is used for various criteria such as time interval between administration and occurrence. For determining the cause of ADR, there is no universally accepted methods. Various techniques for determining causality, it is divided into three categories; algorithm, probabilistic technique, and expert judgment or global introspection.[10]

Naranjo's assessment scale

The adverse medication reaction scale also known as Naranjo's algorithm, uses a straight forward questionnaire to give probability ratings in order to determine if a medication and are recognized unpleasant clinical event are casually related.[11]

Role of pharmacist in pharmacovigilance

Analysis of each reported, drugs and individuals who have a high risk of involvement in adverse medication reaction are identified. The creation of the ADR monitoring and reporting programs, policies, processes and scope. Use of the ADR program for educational purpose. How information from ADR program is used and distributed across the organization. A breakdown of how doctors, nurses, pharmacist risk managers and other medical professionals, interact with and what their roles are within the ADR program. Pharmacist prevent, identify, record, report adverse drug reactions, which helps to ensure the safety of medication. A pharmacist is essential for surveillance of drug safety. Pharmacist play a significant part in producing communication materials such as newsletters and other publications that are used by variety of professionals and experts to disseminate drug alerts and other drug safety information. Throughout counselling section pharmacist provides promising environment for patients by limiting medication errors and increasing patient safety and patients' overall quality of life.[12]

CONCLUSION

The medical profession has seen a rapid growth in recent years although it faces numerous problems like non adherence to medication as well as adverse effects of drugs. To overcome this and for the betterment of patient it is essential to implement various therapeutic management guidelines and drug safety monitoring measures such as pharmacovigilance. Hence the pharmacy professionals have undertaken the responsibility to eliminate the medication-based problems by extending a helping hand to increase medication adherence by patient education and use of compliance aids as well as performing extensive drug research to aid in prescription. The final step to assure proper medical service is reporting of adverse effects during pharmacovigilance. All these ultimately help in achieving the common goal of improved medical service to humanity.

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