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A REVIEW ON OBSTACLES AND PREVENTION OF DRUG RELATED PROBLEMS

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ABSTRACT

Drug – Related Problems (DRPs) are relatively common in hospitalized patient's and may lead to increase health care cost, hospital stay, morbidity, mortality, and decreased quality of life. Drugs are more essential in prevention of health complaints and treatment of disease condition. The amount of accelerating drug users and available drugs also more complex drug regimen led to complications follow - up, drug interactions and more side effects. Both classification and identification of DRPs are essential to enhance the methods of medication's use. The problems associated with drug therapy could also be averted by preventive interventions. Several possibilities for prevention of medication errors and especially for prevention exist. Prescribing, transcription and interpretation errors are often reduced by using computerized physician order entry. Some measures to avoid DRPs are the avoidance of look – alike packages, introducing systems for early detection of adverse drug events and education of personnel involved within the drug distribution process. Divided DRPs in hospitalised patients are mainly divided into two categories : intrinsic drug related problems and extrinsic drug related problems. Identification of risk factors that contribute to the event of adverse drug reactions, although the effect of attention on risk factors is probably going to be smaller than the effect of attention on medication systems improvements, may also aid within the prevention of those reactions. Early detection is significant role within the prevention of adverse drug reactions and thus each hospital should have a system for the detection of adverse drug reactions.

KEYWORDS: Drug related problems, prevention, prescribing, Transcription, Interpretation.

INTRODUCTION

Drug- related problems (DRPs) cause substantial morbidity and mortality, and also increased health care cost, which successively affect both society and patients. Drugs are essential in prevention of health complaints and treatment of disease condition. The number of accelerating drug users and available drugs also more complex drug regimen led to complications follow - up, drug interactions and more side effects. They're intended to cure, diagnose diseases or prevent, signs and symptoms.[1] Both classification and documentation of DRPs are essential to enhance the method of medication use. Interventional studies show that general practices and hospitals have a high prevalence of such problems mainly within the geriatric patients.[2]

DRPs are frequent among admission and discharged patients from hospital. In practice, professionals need a patient oriented base to implement pharmaceutical interventions.[3] The foremost frequent varieties of errors were inappropriate schedule, missing information and wrong dosage. Pharmaceutical care is that liable provision of drug therapy for the aim of achieving definite outcomes that improve a patient's quality of life.[4] When the end result isn't optimal, a drug – related problem has occurred. DRPs were classified per modified version into seven subgroups: ADR, dosage too high, dosage too low, unnecessary drug therapy, ineffective drug, needs additional drug therapy and non – compliance. Inappropriate drugs were added to the category ineffective drugs, and additionally three further categories were introduced: interactions (pharmacodynamic and pharmacokinetic), transition errors and monitoring need.[5] Some studies evaluating drug – related hospitalization have estimated that approximately 5% to 10% of all hospital admissions are drug related problems.[6] DRPs are common among geriatric people after hospital discharge and are relevant since they threaten patient's safety.[7] The DRP's were identified by researchers during ward rounds by reviewing the patient case reports. Problems identified and recognized was discussed and documented with the concerned health care team.[8]

They provide information to quantify the burden of DRPs among patients with poly pharmacy and contribute to the look and implementation of risk management plan. Example of DRPs seen in patients affected by chronic pain that is prescribed opioid painkillers (like morphine) may build up a tolerance to the effect of the painkillers, requiring higher doses to attain the identical pain reducing effect.[9] This risky practice of dose escalation can cause

drug overdoses. When unrecognized, and undetected, a DRP may lead to drug – related mortality or may be drug – related morbidity.[10]

CLASSIFICATION OF DRPs

The DRPs were defined as follows:

ADR: Adequate doses leading to adverse drug reactions were classified as ADR.

Dosage too high: If the prescribed dose was but recommended, this was classified as dosage too high.

Dosage too low: If the prescribed dose was but recommended, this was classified as dosage too low.

Ineffective/ inappropriate drug: Inappropriate drug use per explicit Swedish criteria.11 and inappropriate drugs per renal function or disease were classified as ineffective/inappropriate drug.

Needs additional drug therapy: If a patient was inadequately medicated, this was defined as additional drug therapy needs.

Unnecessary drug therapy: If a patient had an unnecessary drug therapy, this was defined as unnecessary drug therapy.

Noncompliance: A deviation from the prescribed medications due to a choice, non – comprehension or forgetfulness, was defined as non – compliance.

Interactions: A drug interaction was defined because the modification of one drug by concomitant administration of another drug, producing loss of therapeutic effect or too high therapeutic effect.

Transition errors: Discrepancies between the hospital admissions upon medication charts as compared with what patients were actually taking.

Monitoring need: Need for laboratory test, therapeutic drug monitoring.

DRUG RELATED PROBLEMS IN HOSPITALISED PATIENTS

Drug related problems include medication errors (involving an error within the method of prescribing, administering a drug or dispensing, where there are adverse consequences or not) and adverse drug reactions (any response to a drug which is noxious and unintended, and which can occur at doses normally employed in man for prophylaxis, diagnosis or therapy of disease, or for the modification of physiological function). It should be defined as an injury whether or not causally associated with the utilization of a drug. DRPs are relatively common in hospitalized patients and might cause increased costs, and patient morbidity and mortality.

Problems associated with drug therapy are also averted by preventive interventions. Prescribing, interpretation and transcription errors are going to be reduced by using computerized physician order entry, this might aid within the reduction of both administration and dispensing errors. Education of nursing staff involved in process of drug distribution is another important measure for preventing medication errors. The primary detection of adverse drug reactions may help to cut back problems associated with drug therapy.

POSSIBLE CAUSES AND METHODS FOR PREVENTION OF DRUG RELATED PROBLEMS

Different approaches were described within the literature to stop prescribing errors. These approaches include improving education with relevancy drugs and patient characteristics important for drug therapy employing a pharmacy computer for medication orders entry and by using computerized physician order entry. Hart wig et al. took in response to the amount of allergies reported in their hospitals, was the upgrading of the pharmacy system to facilitate capture of allergy information. This computer generated primary prevention alerts (e.g. linking amino glucose dosage and creatinine clearance of the patient and thus recommending dosage adjustment) and secondary prevention alerts (laboratory values and use of tracer drugs to detect adverse events at an early stage). Anderson et al. showed that computerized physician order entry could end in a 21% reduction in prescribing errors. Bates et al. employed in their study on the effect of computerized physician order entry, provided the physician with a menu of medicines from the formulary and default dosages. The computer provided a limited drug – allergy check, drug – drug interaction check and drug – drug laboratory check (e.g. potassium levels in patients receiving potassium). Bond et al. it has been shown that increased staffing for clinical pharmacists was related to lower drug costs. Prevention of this category of errors can best be achieved by computerized physician order entry, which eliminates the necessity for both transcription and interpretation. Possibilities for prevention of dispensing errors are employment of bar – coding, employment of double – checks, and also the use of strict preparation procedures. Preventive measures for administration errors should include computerized a physician order entry, the employment of computer lists for administration (including printed drug names, routes, times, administration and dosages), the education of nurses and also the introduction of double – checks and bar – coding may additionally be use at this stage.

DISCUSSION

DRPs were defined as definitely preventable if the patient (1) didn't take a drug that's known to scale back or prevent the symptoms in keeping with the prescribed directions, (2) had a known allergy, (3) had a disease that drug was contraindicated, and (4) took a drug that wasn't indicated, and possibly avoidable if there's a failure to observe by a physicians at the reasonable time intervals and inadequate monitoring because of inability to work out a physician (e.g. financial difficulties). Medication errors were divided into four main categories, namely prescribing errors, dispensing errors, administration errors and transcription/ interpretation errors. The last three categories can even be called 'distribution errors'. Hart wig et al. describe the results of a voluntary reporting system for medication errors: 45% of all reporting errors were administration errors, 32% were transcription errors, 13% were dispensing errors and 4% were prescribing errors. Vargas et al. found a relationship between the amounts of adverse drug reactions, and also the number of potential drug – drug interactions. Another study by Seeger et al. States those preventable adverse drug reactions in hospitalized patients were related to dosing and former allergy to the drug. Prescribing errors involved prescription of a wrong drug (indication error), wrong dose (dossing error), wrong dosage form (e.g. tablets prescribed for patient unable to swallow), right drug to wrong patient (contraindication, known allergy, drug – drug interaction). Causes for errors in prescribing where lack of information about the prescribed drug, unfamiliarity with the patient and mental slips because of distraction or calculation errors. In the study by Lesar et al. 30% of errors were because of lack of knowledge of the drug, 29% of lack of information regarding patient factors and 17.5% to dose calculation. Many drug distribution systems depend on transcription of a physician orders by nursing staff, which offers substantial opportunity for error. Handwritten orders (either directly written by physicians or after transcription by the nurses) must be interpreted by pharmacy personnel and translated into the dispensing of the correct dosage and also the right drug. West et al. have found verbal medication orders to be related to a lower rate of errors, mainly because of smaller rate of transcription errors. Administration error occurs within the last a part of the distribution process, when the drug is administered to the patient. The errors which will occur during this stage involve the five rights: giving the correct drug to the correct patient at the correct dose by the correct route at the correct time. Adverse drug reaction isn't caused by errors and thus preventive measures to avoid them don't seem to be as easy to implement as for medication errors. However, like medication errors, early detection of adverse drug reactions may end up within the prevention of further harm to patient. Because such a computerized system can

only aid within the detection of previously known adverse drug reactions, it must be complemented by a voluntary reporting system. This can allow previously unknown adverse drug reactions to be detected as early as possible. Bates et al. have studied risk factors for adverse drug events (preventable and non – preventable) in hospitalized patients. After controlling for level of care and length of hospitalization, few risk factors emerged. They conclude from their analysis that prevention strategies should target improving medication systems.

CONCLUSION

Drug related problems result in increased morbidity and mortality, so hospitals should introduce or further improve the quality systems for the safe use of drugs. Our review shows a wide variety of incidences of drug related problems. This wide variety can be simply explained by the different study methods and by different definitions used. Therefore one can only conclude that drug related problems are an important problem in hospitalized patients. Several possibilities especially for the prevention of DRPs and for preventive exist. The unit – dose system has resulted in substantial decrease in error rates in many hospitals. The implementation of computerized physician order entry can result in a major reduction in the number of DRPs. More studies were needed on the effects of such preventive measures. Early detection and identifying risk factors that contribute to the development of adverse drug reactions, may also aid in the prevention of these reactions, although the effect of a focus on risk factors is likely to be smaller than the effect of focus on medication systems improvement.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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