

STUDY OF PRESCRIBING TRENDS AND ELEMENTS OF PRESCRIPTION IN OUTPATIENT PSYCHIATRY DEPARTMENT OF A TERTIARY CARE HOSPITAL.

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ABSTRACT

Introduction: Inappropriate use of drugs represent a potential hazard to patients. This necessitates a periodic review of pattern of drug utilization. All prescriptions must include the name, address, specialty and signature of the prescriber, name, sex, and age of the patient and the strength, quantity, dose, frequency, dosage form and instructions for use of the medication. Psychopharmacology is a rapidly growing field, psychiatrists are exposed to lots of newly introduced drugs. The burden of illness resulting from psychiatric and behavioral disorders is enormous, therefore, the study was carried out to find out prescribing trends and elements of prescriptions of psychotropic drugs.

Methodology: Institutional ethics committee approval. Prospective, Observational, non-interventional study in OPD of Psychiatry Department for 2 months, 151 prescriptions were analyzed. **Results:** The principles of rational prescribing were followed except brand names (88%). Superscription and transcription was included in all the prescriptions, in 139 (92.05%) subscription was written and the signature in 137 (90.7%). Registration number was written in 77 prescriptions. The dose was written in 138 (91.3%) of the total prescriptions. The frequency was written for all the drugs in 119 (78.8%) and some drugs in 20 (13.2%) and none of the drugs in 12 (7.9%) of the total prescriptions. Of the total, 66.7% of CNS drugs prescribed, clonazepam was the most commonly prescribed drug at (20.1%) followed by escitalopram (antidepressant) at 9.6% and amitriptyline (antidepressant) at 7.6%. **Conclusion:** Many prescribers lack the digitized information systems that reduce prescribing errors. To reduce these errors, some investigators have developed modified prescription forms that prompt the prescriber to provide all the desired elements of a good prescription.

KEYWORDS: Drug utilization, Rational, Antidepressants, Psychopharmacology.

INTRODUCTION

Therapeutic practice is expected to be primarily based on evidence provided by pre-marketing clinical trials, but complementary data from the post-marketing period are also paramount for improving drug therapy.^[1] It is important to realize that inappropriate use of drugs represent a potential hazard to patients and an unnecessary expense. This necessitates a periodic review of pattern of drug utilization to ensure safe and effective treatment.^[2]

To improve the overall drug use, especially in developing countries, international agencies like World Health Organization (WHO) and International Network for Rational Use of Drugs (INRUD) have recommended standard drug use indicators.^[3,4] which help us to know the shortcomings in our prescription writing. Studying prescription pattern provides opportunity to monitor therapeutic trends. Medicines are a key component of healthcare and errors relating to medication, may impact on patient's safety.^[4]

Medication errors: problems related to strength and frequency of medication, quantity per dose, instructions for use, total quantity to be dispensed, dosage form etc.

Prescribing errors are harmful to the patients and in worst cases they may lead to fatality. To avoid errors in prescription and its amelioration, the easiest way of prevention of prescription errors is at the time of writing prescription.^[5,6]

The principle target of the drug utilization studies/research is to promote the rational prescribing of the drugs. Without proper knowledge of drug prescribing pattern, it is impossible to suggest measures to improve the prescribing attitude of prescribers.^[7,8]

Prescribing accounts for a large proportion of errors.

Measurement of drug use in health facilities not only describes drug use patterns and prescribing behavior^[9] but also helps in the identification of factors responsible for the practice of polypharmacy and the problems associated with it. Irrational prescribing is a global problem and may also be regarded as "pathological" prescribing.

All prescriptions must include the name, address, specialty and signature of the prescriber as well as the name, sex, and age of the patient and the strength, quantity, dose, frequency, dosage form and instructions for use of the medication.

Adherence by the physician to good quality prescribing will minimize errors and ultimately improve patient's care. Prescribing errors can occur as a result of haste, poor concentration to

the patient or on account of illness (in case the patient is unable to deliver the correct information), decision-making or the prescription-writing process. Incorrect prescribing habits are common unfortunately.

Rational drug prescribing is defined as the use of the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost¹⁰. In 2005, Department of Health in the United Kingdom planned to reduce prescribing errors by 40%. Such initiatives are also required in a developing country like India. Irrational drug therapy can cause patient's harm by exacerbation or prolongation of illness, distress and higher costs in some cases.

Psychiatric disorders form an important public health priority.^[11,12] Of the top ten health conditions contributing to the Disability Adjusted Life Years (DALYs), four are psychiatric disorders.^[13] Mental illness is associated with high levels of health service utilization and associated costs, and in developing countries these costs are mostly paid by the patient.^[14]

When a psychiatric patient is diagnosed, the practitioner selects a medication therapy from a variety of therapeutic approaches and according to the severity and condition of a patient. Psychopharmacology is a rapidly growing field, patients with psychiatric illnesses are continuously increasing and psychiatrists are very much exposed to lots of newly introduced drugs that are claimed and projected as the better alternative to the traditional psychiatric medicines.^[15] For the treatment of psychiatric disorders, a wide array of psychotropic drugs is available.^[16]

Psychiatric drugs usually are classified into 3 families depending on their principal focus of action or their use in the main psychiatric disorders:

- ☐ Antidepressants.
- ☐ Antipsychotics
- ☐ Anxiolytics

The above 3 classes of drugs are commonly seen to be prescribed in a psychiatry OPD and along with their therapeutic effects we see that they are prone to adverse effects when errors in their prescription occur.

By observing prescriptions we can set standards and assess the quality of care through performance review. The study of prescribing seeks to monitor, evaluate and if necessary, suggest modifications in prescribing patterns so as to make medical care rational and cost

effective. Medical audit oversees the observance of standards of medical care at all levels of the health care delivery system. It is concerned with the evaluation of medical care in retrospect through analysis of prescriptions or clinical records; to provide the full benefits of medical knowledge effectively and rationally.

The burden of illness resulting from psychiatric and behavioral disorders is enormous; although, it remains grossly under represented by conventional public health statistics, which focus on mortality rather than the morbidity or dysfunction. Therefore, the study was carried out to find out prescribing trends and elements of prescriptions of psychotropic drugs.

Review of literature

As important as is the intellectual process of rational drug selection, the processes of prescription and order writing to convert the choice of drug into medication received by the patient is of almost equal importance.

A **prescription** (℞) is a health-care program that governs the plan of care for an individual patient and is implemented by a qualified practitioner.^[17] A prescription may be taken as a reflection of the physicians' attitude to the disease and the role of the drug in its treatment. It also provides an insight into the nature of the health care delivery system.^[18]

What is the purpose of a Prescription?

The standard means of giving permission for a medication to be provided (or dispensed) to a patient remains the prescription (for outpatients) or the medication order (for inpatients). Prescriptions and medication orders contain the information necessary to provide a patient with a supply of medication. Certain information is required by law and other sets of information are helpful in avoiding errors. Historically, prescriptions were handwritten and given to the patient, who then take the prescriptions to a pharmacy to be filled.

The prescriber should write out both drug names and instructions, avoiding all abbreviations, and write as legibly as possible. The importance of legible handwriting in the prescription- and order-writing process cannot be overemphasized. At worst, poor handwriting can result in deadly or life-threatening medical errors. At best, it may results in delays in the dispensing of the prescribed medicine.

Prescriptions have legal implications, as they may indicate that the prescriber takes responsibility for the clinical care of the patient and in particular for monitoring efficacy and safety. As medical practice has become increasingly complex, the scope of meaning of the term "prescription" has broadened to also include clinical assessments, laboratory tests, and imaging studies relevant to optimizing the safety or efficacy of medical treatment.

\mathcal{R} is a symbol meaning "prescription". It is sometimes transliterated as "R_x" or just "Rx". This symbol originated in medieval manuscripts as an abbreviation of the Late Latin verb *recipe*, the imperative form of *recipere*, "to take" or "take thus"^[19]. Literally, the Latin word *recipe* means simply "Take...." and medieval prescriptions invariably began with the command to "take" certain materials and compound them in specified ways.^[19]

Folk theories about the origin of the symbol \mathcal{R} note its similarity to the Eye of Horus,^[20] or to the ancient symbol for Zeus or Jupiter, (\mathcal{Z}), gods whose protection may have been sought in medical contexts. The word "prescription", from "pre-" ("before") and "script" ("writing, written"), refers to the fact that the prescription is an order that must be written down before a compound drug can be prepared. Those within the industry will often call prescriptions simply "scripts".

The fact that a prescription instructs someone to "take" rather than "give" is not a trivial distinction, but makes clear it is directed at the patient, and is not directly an instruction to anyone else. Prescriptions, when handwritten, are notorious for being often illegible. In the US, medical practitioners' sloppy handwriting kills more than 7,000 people annually, according to a July 2006 report from the National Academies of Science's Institute of Medicine (IOM).^[21] Predating modern legal definitions of a prescription, a prescription traditionally is composed of four parts: a "superscription", "inscription", "subscription" and "signature".^[22] The concept of prescriptions dates back to the beginning of history. So long as there were medications and a writing system to capture directions for preparation and usage, there were prescriptions.^[2] Modern prescriptions are actually "extemporaneous prescriptions" from the Latin (*ex tempore*) for "at/from time".^[24]

"Extemporaneous" means the prescription is written on the spot for a specific patient with a specific ailment. This is distinguished from a non-extemporaneous prescription that is a generic recipe for a general ailment.

The traditional antipsychotic drugs have been very much replaced by the newer antipsychotic drugs. Although their safety and efficacy on long term use is not fully established and requires continuous monitoring.^[25]

Aims and objectives

- 1) To study the elements of prescription and
- 2) The prescribing trends of outpatient prescriptions of a psychiatry OPD at a Tertiary care hospital.

Methodology

Institutional ethics committee approval.

Permission from the Dean and Prof & HOD, Dept. Of Psychiatry.

Type of study: Prospective, Observational, non-interventional.

Place of study: OPD of Psychiatry Department at a Tertiary care hospital

Duration: 2 months

Sample size: 151 prescriptions

151 outpatient prescriptions were collected from Psychiatry OPD of a Tertiary care hospital from 01/04/2014 to 31/05/2013.

The prescriptions were analyzed on the basis of following parameters:

1. Demographic data
2. Diagnosis
3. Number of drugs per patient
4. Duration of therapy
5. Fixed dose combinations
6. Any specific instructions given to the patients

Information present on the prescription was analyzed for the different elements of prescriptions and rationality.

RESULTS

Male patients far outnumbered (73%) female (27%) in the present study. This trend highlights the demography of the patient population coming in our OPD. Male members have a higher help seeking behavior as mostly they are economically productive and, at times, the sole bread winners of the family. Although many of the psychiatric conditions have equal

incidence in both the genders and some are even more so in females, the patients attending OPDs in most psychiatric centers as well as the indoor patients in psychiatric ward belonged to male gender. This highlights the gender bias prevalent in India and is seen in other South Asian countries as well.

Overall, the principles of rational prescribing were followed according to the various drug use indicators mentioned by WHO/INRUD except the trade names in 88% of the prescriptions.

More than half of the sample size (67%) comprised of patients between the age group of 21-40 years, highlighting the fact that psychological disorder tends to effect economically productive sections of our society. Hence, this study emphasizes the need for evolving a better regimen to treat them and greater efforts to ensure regular, long-term compliance on medications.

It was observed that 115 patients were co-prescribed anti-depressants with antianxiety drugs, 7 were co-prescribed antidepressant and antipsychotics, 71 received benzodiazepines, 65 were prescribed antianxiety drugs.

Table1: WHO Drug indicators

Element	Present	Absent
Superscription	151(100%)	00(0%)
Inscription		
Generic Name	19(12.5%)	132(87.4%)*
Capital letter	18(11.9%)	133(88.07%)*
Dose	138(91.3%)	13(8.6%)
Subscription	139(92.05%)	12(7.9%)
Signature	137(90.7%)	14(9.2%)
Transcription	151(100%)	00(0%)

Table 2: Elements of prescription N=151

Total number of prescriptions analyzed	151
Total number of drugs prescribed	304
Average number of prescriptions per day	2.4
Average number of drugs per prescription	2.1*
Percentage of psychotropic drugs prescribed by generic name	12*
Percentage of psychotropic drugs prescribed by brand name	88*
Number of psychotropic drugs prescribed from EDL	101

Table 3: Number of drugs prescribed per prescription

Number of Prescriptions N=151		
Number of drugs per prescription	Total No.	Percentage
1	69	45.6
2	41	27.1
3	26	17.2
4	06	3.9
5	07	4.6
6	1	0.6
7	1	0.6

Table 4A: Prescriber Information

Physician related N=151	Number of prescription	Percentage %
Signature	151	100
Date	151	100
Registration number	77	51

Table 4B: Patient Information

Patient related N=151	Number of prescriptions	Percentage %
Name	151	100
Age	151	100
Sex	151	100

Table 5: Variables related to Drugs

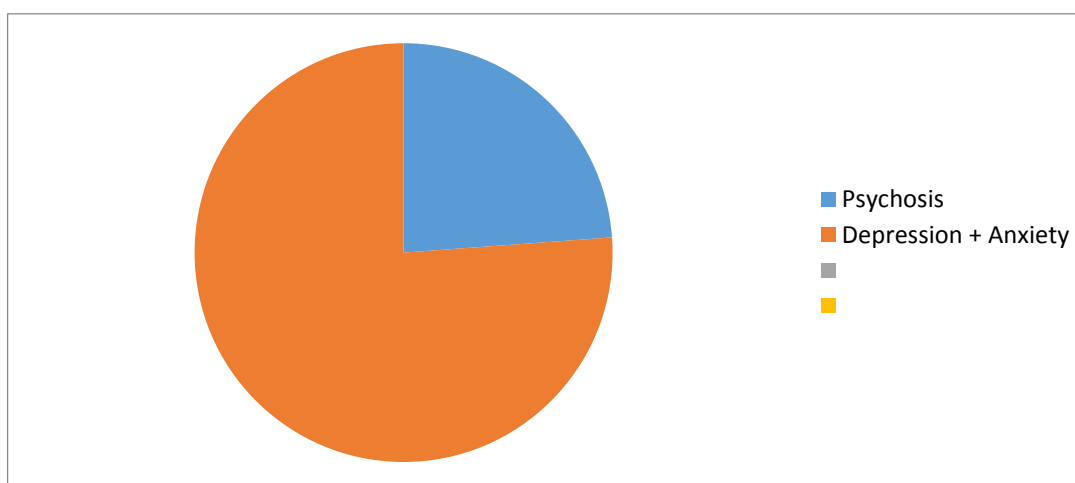
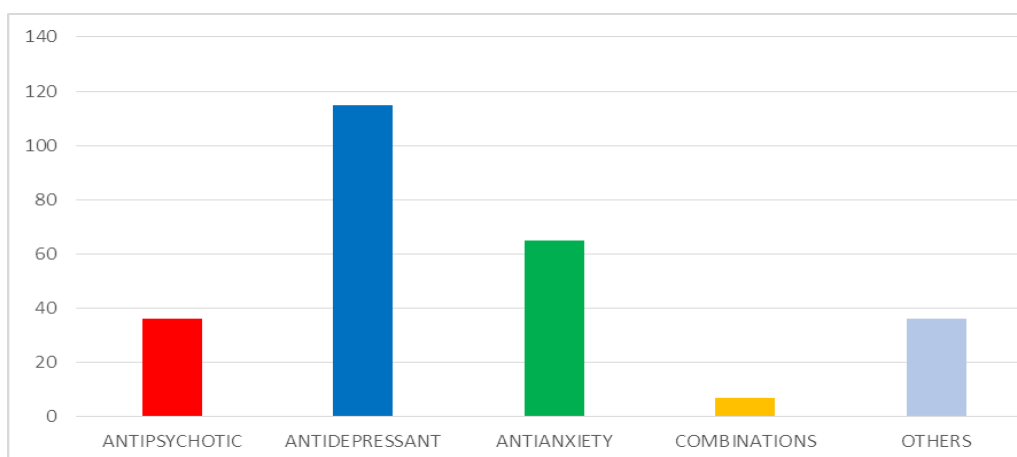
Variables N=151	Included for all drugs		Some drugs		None of the drugs	
	Number	%	Number	%	Number	%
Frequency	119	78.8	20	13.2	12	7.9
Quantity/dose	96	63.5	41	27.1	14	9.2
Instruction for use	123	81.4	17	11.2	11	7.2
Total quantity to be dispensed	138	91.3	6	3.9	7	4.6

Table 6: Prescribing frequency of various drug classes

Drug class N=301	Number	Percentage
Central nervous system drugs	201	66.7
NSAID'S and Analgesics	31	10.2
Vitamins and minerals	37	12.2
Gastrointestinal drugs	23	7.6
Hormones	1	0.3
Cardiovascular system drugs	7	2.3
Hypolipidemic drugs	1	0.3

Table 7: Patterns of CNS Drugs Prescribed

Drug class N=249	Number	Percentage
Clonazepam	50	20.1
Escitalopram	24	9.6
Amitriptyline	19	7.6
Paroxetine	13	5.2
Chlordiazepoxide	13	5.2
Fluphenzine	8	3.2
Lorazepam	8	3.2
Risperidone	6	2.4
Olanzapine	6	2.4
Risperidone	6	2.4
Lorazepam	8	3.2
Bupropion hydrochloride	6	2.4
Others	87	34.9

**Graph 1: Disease Distribution****Graph 2: Pattern of drugs prescribed**

DISCUSSION

A written prescription is the prescribers order to prepare or dispense a specific treatment usually medication for a specific patient. When a patient comes for an office visit, the physician or other authorized health professional prescribes medication 67% of the time and on an average of one prescription per office visit is written because more than one prescription may be written at a single visit. The average number of drugs per prescription in an audit is an important index of the scope for review and educational intervention in prescribing practices.

This is especially important in psychiatry as studies^{26, 27} have shown that polypharmacy was common and psychotherapeutic drugs have been over-prescribed and misused.

Elements of prescription

The quantity of medication prescribed should reflect the anticipated duration of therapy, cost and the need continued contact with the physician.

The direction of use must be clear and concise to prevent toxicity and to obtain the greatest benefits from therapy.

Additional instructions: such as, may cause drowsiness, do not drink alcohol must also be mentioned, if present.

All prescription orders should be legible, ambiguous, dated and signed clearly. Furthermore, a good prescription should contain sufficient information to permit the pharmacist to discover errors before the drug is dispensed. In our study the superscription and transcription was included in all the prescriptions, in 139(92.05%) subscription was written and the signature was present in 137(90.7%) of the total prescriptions. Ideally all the prescriptions should be signed. Registration number was written in 77 prescriptions.

The dose was written in 138(91.3%) of the total prescriptions.

The frequency i.e., number of times the drugs is to be taken in a day was written for all the drugs in 119(78.8%) and some drugs in 20(13.2%) and none of the drugs in 12(7.9%) of the total prescriptions.

Socioeconomic factors

Generic prescribing

Prescribing all drugs by generic names is the recommendation of the WHO.

It offers the pharmacist flexibility in selecting the particular drug product to fill the order and offer the patient a potential saving when there is a price difference between identical drugs from different manufacturers. In most states and in most hospitals, the pharmacist have the option of supplying a generically equivalent drug product even if a proprietary name has been specified in the order .It cannot be assumed that every generic drug product is as satisfactory as the trade named product, although examples of unsatisfactory generics are rare. Bioavailability- the effective absorption of the drug product varies between manufacturers and sometimes between different lots of a drug produced by the same manufacturer. In spite of the evidence many practitioners avoid generic prescribing, thereby increasing medical costs.

Only 19(12.5%) prescriptions were written in generic name and 18(11.9%) in capital letter,a matter of great concern.

Brand name drugs are often dispensed when bioequivalent generic alternatives are available, resulting in an estimated\$8.8 billion in excess expenditures per year in the United States. This potentially unnecessary use of brand name drugs may reflect physician and patient beliefs that brand name drugs are superior to their generic counterparts.^[28]

However, habitual use of brand name terminology may also play an important role in the dispensing of brand-name products, as the name recorded on a prescription can impact whether a drug is dispensed in brand or generic form even when the physician would accept the generic version, and the pharmacy is empowered to provide it.^[29, 30] Physicians may prefer brand names for a variety of reasons. Brand names are often more memorable or evocative than generic names and easier to pronounce. Many physicians may be familiar only with the brand name of certain drugs or unaware of the correspondence between generic and brand names.^[31-33]

In addition, in certain cases physicians may believe that generic formulations are not as effective as the brand name product.^[34] Although the interchangeability of certain drugs remains a matter of debate^[35] many physicians may not be aware of the strict controls imposed by FDA to prove bioequivalence before a generic formulation can be approved.^[36]

Polypharmacy increases the risk of drug interactions and errors of prescribing. Fortunately in our study the incidence of polypharmacy was low (2.17 drugs per prescription). Only 41 patients [27%] received 3 or more drugs.

Monotherapy was observed in 69(45.6%) followed by prescriptions with two drugs in 41(27.1%) of the total prescriptions. This is especially important in psychiatry as studies have shown that polypharmacy was common and psychotherapeutic drugs have been over-prescribed and misused.

Out of the total 66.7% of CNS drugs prescribed, clonazepam was the most commonly prescribed drug at 20.1% followed by escitalopram (antidepressant) at 9.6% and amitriptyline (antidepressant) at 7.6%.

Majority of patients were prescribed a single mood stabilizer. Most guidelines profess a single mood stabilizer while initiating treatment and using it to maximum possible dose before switching or augmenting it with another agent. Also, since adding another mood stabilizer adds to the cost of the total treatment and most patients coming to our OPD belonged to lower economic strata, this factor too was taken into consideration. It was observed that 19% of the patients out of total 36 psychotics were prescribed a combination of two mood stabilizers. This study hence highlights that polypharmacy is being practiced in treatment of bipolar disorder. Evidence-based polypharmacy and justifying the prescription is the need of the hour and, at times, medications more than one will be required for the management of symptoms and to ensure compliance. Also, this being a tertiary care center, the patients coming in the OPDs may have been treated outside with other mood stabilizers/antipsychotic and yet not shown improvement. There are also subgroups of patients who may have relapsed despite adequate dosage of a mood stabilizer. Carbamazepine was the least frequently prescribed mood stabilizer. It would be interesting to know treatment patterns followed in other institutes of repute and compare them with our findings. Many patients of bipolar disorder first attend OPD during manic phase of illness since it's more disruptive (to attendants and others in general), whereas depressive symptoms are likely to be at times missed by attendants. Hence, the mood stabilizer that is started during that time is likely to be continued in subsequent visits. It was found that the highest number of patients received a combination of antidepressants and antianxiety drugs, which highlights the need for initial symptomatic management and

also highlights the complaints with which the patients present to the OPD, namely aggression, disturbed sleep (benzodiazepines), and co-morbid anxiety (benzodiazepines).

Whereas the WHO guidelines on rational use of drugs in the region recommends a range of 1.6-1.8 drugs per encounter,^[37] our study showed 2.1 drugs per encounter.

Contrary to the recommendation only to administer one substance in the optimal dosage, clinicians frequently apply combination therapies, which often are substantiated by little or no scientific evidence. The concurrent use of multiple psychoactive medications in a single patient, i.e., polypharmacy, is increasingly common and debatable contemporary practice in clinical psychiatry and probably based more upon experience than evidence.^[38,39]

According to Preskorn and Lacey clinicians, there are several reasons for polypharmacy: to treat two patho -physiologically distinct but co- morbid illnesses in the same patient; to prevent an adverse effect produced by the primary drug; to provide acute amelioration while awaiting the delayed effect of another medication (e.g., using lorazepam in acute mania while waiting for the antimanic effects of lithium to exert themselves); to treat intervening phases of an illness (e.g., adding an antidepressant to a mood stabilizer when a bipolar patient develops a depressive episode); and to boost or augment the efficacy of the primary treatment (e.g., combining a selective serotonin reuptake inhibitor and desipramine to treat a patient with major depression.^[40]

CONCLUSION

Psychiatric epidemiology is traditionally concerned with patterns of psychopathology in human population groups as well as the factors that influence these patterns.

Depression was the most common diagnosis followed by anxiety and bipolar disorder. In Anxiety disorders, the most commonly prescribed drug was Clonazepam. Atypical antipsychotics were preferred over older ones.

In Depression, the most commonly prescribed drug was amitriptyline and the least commonly prescribed drug was bupropion.

There is an increasing trend towards use of newer drugs for better compliance and lesser side effects. Advent of newer psychotropic drugs has changed the present scenario in a positive

direction, role of which will be proved to be useful in the future following further clinical trials.

Physicians may prefer brand names for a variety of reasons. Brand names are often more memorable or evocative than generic names and easier to pronounce.

The high level of generic prescription observed in this study; (94.38%) is a good trend. Increased generic prescribing will reduce the cost of medications and promote medication adherence.

Percentage of drugs prescribed from the essential drug list (99.2%) was higher.

The use of brand names may reflect habitual use of a lexicon learned in training or shortly after introduction of new drugs. Therefore, efforts to increase the use of nonproprietary names should focus on these periods of early exposure. Medical students and residents should be educated about these issues, and physician supervisors should be encouraged to promote use of generic terminology in their day-to-day interactions with trainees. Standards in continuing medical education programs could also be strengthened; while the Accreditation Council for Continuing Medical Education (ACCME) encourages the use of generic names in educational presentations, parts of their guideline place greater emphasis on balancing the use of brand names across different companies than on minimizing the use of proprietary terminology. Electronic prescribing systems could also be engineered to convert brand to generic names.

Suggestion

Many prescribers lack the digitized information systems that reduce prescribing errors. To reduce these errors, some investigators have developed modified prescription forms that prompt the prescriber to provide all the desired elements of a good prescription. The modified forms also contain pre-defined choices such as common quantities, units and frequencies that the prescriber may circle rather than write out. Such forms are thought to reduce errors, especially omission and handwriting errors and are actively under evaluation.

Measures to Reduce Errors:

1. All prescriptions must be legible and written in capitals.
2. Avoid abbreviations and dangerous dose expressions.
3. All prescriptions should include a brief notation of purpose, unless deemed In-appropriate (e.g. for nausea, for blood pressure, etc.).

4. Sign your name as if it were a legal document.
5. Always use a leading zero before a number less than one (e.g. 0.5 mg) and never use a terminal zero (e.g. 5.0 gm).
6. Write out the actual amount prescribed in addition to giving the Roman numeral to discourage alterations.
7. Do not make any changes or cross-outs.

Medication safety and error avoidance organizations such as the Institute for Safe Medication Practices (ISMP) and JCAHO have recommended that abbreviations and dangerous dose expressions be avoided when prescribing medications because of the increased risk of medication errors. To avoid undesirable and/or serious effects on the patient, both physician and pharmacist must render the highest of professional services. "MAXIMIZE PATIENT SAFETY" should be the motto.

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