# The Art of Writing an Ideal Prescription

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## Abstract

**Prescription is a written order for medication in clinical practice and serves as communication between the prescriber and pharmacist. Writing of prescription is a scientific technique and skill; every clinician must know the format and steps involved in writing good prescriptions. There are two types of prescriptions but due to availability of readymade formulations, the role of pharmacist is limited to dispensing only. Most of the medicines are only available after producing a prescription, hence called as prescription drugs. But some common medicines are available without prescription known as non-prescription or popularly as over-the-counter drugs. In Indian prescriptions we have seen various shades of religious symbols. Prescribing medicines in extreme ages of pediatrics and geriatrics is another important skill. Similarly, female pregnancy and lactation are also crucial conditions that need special attention of prescribing. Clinicians must be cautious and take special attention while prescribing for hepatic and renal disorders..**



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## Introduction

Every prescription is the beginning of a new experiment. Begin carefully and be blessed by the patient, family and almighty. The word prescription has two words - pre (before) and script (writing) that is 'to write before.' The prescription must be delivered in a thoughtful and delicate way and must be free from errors. It is a legal document for which prescriber and pharmacist, both are responsible. A good prescription should be rational, ethical, effective, economical, appropriate, accountable and acceptable to the patient.[1]

Prescription is a written order by a physician along with instructions for the treatment of patient. The instructions are directed towards the patient as well as towards the pharmacist, chemist to prepare and or dispense specific medications for the particular patient.[2]

In usual language, prescription is nothing but a paper on which a doctor has written medicines that a patient needs and can get from the chemist by showing the prescription. Nowadays, prescription includes only marketed medicines, hence there is no need to instruct the pharmacist about how to prepare the medicine. But instruction is directed in context to the amount to be dispensed.[3]

## Types of Prescription

There are two types of prescription–pre-compounded and compounded.[4] Due to availability of readymade medicines, now the practice of pre-compounded prescription is obsolete.

### Pre-compounded Prescription

- Common mode now, due to availability of readymade dosage forms.
- It is the order for the drugs supplied by a pharmaceutical company.
- Pharmacist dispenses without pharmaceutical alteration e.g. Tab Paracetamol (500mg) three times a day for 3 days (total 9 tablets).

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- The pharmaceutical companies maintain rapport with the practicing doctors through an agency of medical representatives, brochures and advertisements etc. keeping the physicians informed about their products.

**Compounded (Extemporaneous) Prescription**

- It is the physician's direction to the pharmacist to compound a preparation.
- The ingredients, their quantity and the form of preparation (powder, mixture) are chosen by the physician and instructed accordingly e.g. 'To make 10mg of Sulphur ointment (1%).'
- Pharmacist prepares the medication by using basic (active ingredient) adjuvant (assist action of main drug), corrective (correct, modifies or eliminates undesirable effects of basis and adjuvant) and vehicle(solvent)for dispensing in the form of powder, mixture and cream etc.[5]
- Dosage forms like capsule, tablet and injection could not be dispensed.

## General Considerations

"Writing of prescription is an art"

A specific pattern should be followed in prescription writing; in order to avoid errors and to safeguard the interest of the patient. Good prescribing practices reflect the quality of healthcare being provided to the patients. The following points should be remembered during prescription writing:

(i) The writing should be legible.

(ii) Abbreviations should be avoided, as much as possible.

(iii) If decimal is needed, zero should be placed prior to avoid future mistake. e.g. write .2mg as 0.2 mg. (use leading zero)

(iv) Never use trailing zero, e.g. 2 mg is correct but 2.0 mg is not. (avoid terminal zero).

(v) Less than one gram should be written as milligrams e.g. write 200 mg, not 0.2 gm.

(vi) More than one gram should be written as grams. e.g. write 1.2 gems, not 1200mg.

(vii) Shape & size of prescription paper – not uniform, shape is usually rectangular, e.g.4 × 7 inches .8 × 11 inches

(viii) e-prescribing /e-Rx is the computer based electronic generated medical prescription. A software is required.[6]

## Prescription Writing Format

Prescriptions should be written in a standard format. Following are the systematic order and essential components of an "Ideal Prescription" [2,6]:

(i) Prescriber particulars

(ii) Patient Particulars

(iii) Superscription

(iv) Inscription

(v) Subscription

(vi) Transcription

(vii) Signature

Parts of the prescription is briefly described as under:

**Prescriber Particulars**- Concerned with prescription paper (pad) of physician. It must have-

- Doctor's name, qualification
- Registration number
- Address and telephone number
- Availability period
- Date of writing the prescription

The information must be printed on the top of the letterhead/pad

**Patient Particulars**- Concerned with the patient identification-

- Name, age and gender
- Height, weight
- BMR (Optional)
- Unique identity no (optional)
- Address, email or telephone number (optional)

**Superscription**- It is usual practice to write Rx before prescribing any medicine.

- It's symbol is represented as Rx.
- R is pronounced as 'recipe' (a Latin word, R=*recipere*, which stands for take *thou* – you take). This means you (patient) take this medicament in the name of God, who may cure you.
- Probably this symbol contains two letters R and J (oblique line in Rx). Here, R stand for "receive", "take *thou*" or "take" (direction to the pharmacist). The tail of R probably represent the symbol J originally indented to involve the blessing of Jupiter (Supreme Roman deity /lucky planet for the sick). It is also designated as an invocation to Jupiter, the Greek god of healing, knowledge and learning.[7]
- A universally adopted tradition, but not a compulsion.

**Inscription**- It is the body of the prescription.

- It denotes drugs and their strength.
- Each drug should be written in new line with an initial capital letter.
- There may be one or more drugs in the inscription.
- Inscription may be either compounded or pre-compounded. In old days, the pharmacist made the appropriate formulation as per direction to physician. Now this practice is replaced by availability of ready-made formulation by pharmaceutical companies.
- May contain name of drugs (generic or brand).
- Write the name of drug in capital letter e.g. CROCIN
- Preferable to write generic name in parenthesis. e.g. CROCIN (PARACETAMOL)
- Mention strength and unit of drug dosage. e.g. Tab Amoxicillin DT (250mg) or Spy Amoxicillin (125mg / 5 ml)

**Subscription**- It is direction to the pharmacist regarding inscription.

- It includes quantity and dosage form of the drug to be dispensed for a course of therapy.
- It denotes total number of tablets, capsules or volume of liquid formulation. e.g. 500mg amoxicillin capsule, three times a day for weak, it means pharmacist, dispense 21 capsules.
- Reduces communication between prescriber and patient

**Transcription**- It is physician's direction to the patient.

- Abbreviated by *signa* or Sig (a Latin word *Signatura*)
- Instruction to the patient – how to take medicines.
- It should be clear, explanatory and in local language.
- It includes quantity, frequency, time, route of administration and duration.
- It also presents some relevant special information e.g. shake well before use.
- May be some warning signals.

**Signature**- The prescriber should sign at the end (at the bottom) along with medical registration number and the date of prescription. [7,8]

- It is essential for valid and authentic prescription.
- Helps during follow up.
- Signature has legal significance.

**Explanation of Terms -**

- Quantity e.g., 1/2 tab or 3.5 ml
- Frequency e.g., three time a day (TDS)
- Time e.g., at morning, before breakfast or at bed time
- Route of administration e.g., sublingual (SL kept under tongue) or oral (swallow as whole)
- Duration e.g. take at least for 5 days without gap
- Instruction e.g., shake well before use, take with milk, or take on empty stomach

## Prescription Related Errors

- Poor handwriting.
- Insufficient information to the patient.
- Writing of '*Latin*' abbreviations which are difficult to understand by patient.
- Incorrect calculation of dosage especially in pediatric patients.
- Prescription on phone in response to patient complaints.
- Online prescription as an alternative, when direct consultation is not possible.
- Wrong selection of drug formulation.
- Clearly not mentioning amount of medicine, e.g. Tab Ofloxacin (?)100 or 200mg.
- Duration of treatment, dispense medicine for how many days (?)
- Date of prescription and signature missing during busy time.
- No cost consideration.[9]

## Precautions and Steps Involved in Good Prescription Writing

- Prescription should be clear and explanatory.
- Take assistance of typing and printer, if handwriting is poor.
- Write the prescription on physicians own letter head.
- Write on printed paper of hospital, clinics etc. if required.
- Should avoid using name of more doctors on the same prescription.
- A doctor should not use pad of another doctor.
- Avoid short form, write Paracetamol instead of PCM.
- For accuracy, write "Do not substitute" at the end.
- Latin abbreviations should be avoided.
- Blank space should be avoided between direction and signature. If blank space is left, it should be

struck off. (It is important to avoid misuse of space to obtain medicines for self-interest or illegally).

- To avoid misuse, never sign blank prescription papers in advance
- Should not use pad with printed message like-available at….Medical store.
- Keep a copy of every prescription delivered, if possible.
  (A prescription is prima facie evidence in the court of law).
- Spend some time with patients through counseling to clear any doubt[10]

## Generic Vs Brand prescription – NMC guidelines

A drug has three names – chemical, generic and brand. But branded medicines are usually costly while generic are economical.

A generic drug name is internationally accepted by WHO and is uniform name all over the world. Its main advantage is similar spelling and pronunciation; thus, confusion does not arise and is therefore convenient to prescribe. Prescribing a generic drug is economical because there is no expenditure involved on promotion. The only drawback is quality control, which sometimes may be substandard.

Brand drug is commercial in nature and is produced by the manufacturer. Same drugs may have different commercial names and may have different brand names in different countries. The manufacturer has confined to ownership of a particular brand. Brand drug names are short, catchy or smart, but sometimes confusing. They are costly due to promotion and marketing of the brand.

National Medical Commission (NMC), drafted the prescription guidelines-2022, for registered medical practitioners. As per the recommendation, doctors must write names of generic medicines only in prescription. Violating the guidelines can bring penalties ranging from advisory or warning to even suspension of license for 30 days.[11]

## Indoor Prescription

Prescription written in hospital or indoor settings follows the same principle with some difference. Typical prescription format is not required. Here, prescription (order) is written with each visit or at least one every day. Instruction is mostly directed to the nursing staff.[21]

## Prescription Recommendation in Telemedicine

Telemedicine is nothing but prescribing of medicine via using telecommunication. The telemedicine guidelines require doctors who provide teleconsultation to start patient treatment only if the doctor is satisfied that he has gathered adequate and relevant information about the patient's medical condition and can prescribe medicines which are in the best interest of the patient. The telemedicine platform has basic amenities like audio & video enabled conferencing, clinical document generation, remote scheduling &appointments, patient history management & analysis. The doctor should verify and confirm patient's identity by name, age, address, phone number, email ID, registered ID and other relevant information.[13]

## Spiritual Aspect of Prescription

The symbol Rx, which denotes Jupiter (God of healing), has become a universal tradition worldwide. Most of the prescribers start their prescription with Rx, but this is not a compulsion. In India we have seen different religious colors of prescription. Symbols such as *ohm, swastika, okra*, 786, holy cross and specific gods' names are printed on the prescription pad. This indicates the prescriber's faith towards god. "I treat; he cures" is a common version seen in most prescriber pads.[14]

## Prescription Vs Nonprescription Drugs

A prescription drug includes those drugs to be sold in retail only against a valid prescription provided by a registered medical practitioner. This is mandatory according to drug rules and acts of India. Such drugs need supervision and follow up of the prescribing physician. Examples- antimicrobials and anti-hypertensives (schedule H drug).

Most people cannot afford expensive physician's prescription, even for minor problems. Some relatively harmless drugs like analgesics, antacids, tonics etc. can be procured without a prescription. These drugs are called as nonprescription drugs (popularly known as over-the-counter or OTC drugs)

## Prescription Audit

Prescription audit (critical appraisal) or criticism of prescription is a healthy practice to detect errors in writing prescription. Prescription audit is a tool to evaluate the quality of prescription and measures to improve it. e.g. illegible writing causes ambiguity leading to dispensing of wrong drug or dose or any mistake may be potentially fatal depending upon drug dispensed.[15]

## Does Consultation Mean Prescription?

It is not always necessary to write a prescription. Consultation means ethical advice to the patient.

Therefore, simple advice is quite enough most of the time. Is medicine needed or not needed? This is a very crucial question before writing a prescription. During old times, consultation meant prescribing medicines, but the scenario keeps changing. Now, prescriptions may include only advice or expert opinion rather than writing medicines. For neonates, advice about breast feeding, proper positioning, burping, temperature maintenance, hygiene and vaccination are written in prescriptions. For an obese person, a prescription has advice about diet, walking and exercise etc.[16]

## Prescribing in Special groups & Situations

Prescribing in the extreme ends of life, that is in the pediatric and geriatric age, is very crucial. Even minor prescribing errors and dose deviation could result in adverse outcome. Similarly, pregnancy and lactation period are other important parameters. Careful prescribing and accurate dose adjustment are very important to safeguard the patients suffering from renal and hepatic pathology.

## Prescribing in Pediatrics

Pediatrics, unlike other medical disciplines, includes a spectrum of age groups viz. neonates, infants, toddlers, school going children, adolescents and then adults. Each group has its own physiological, pharmacological and therapeutic characteristics. Most of the body functions are immature at birth and improve with age advancement. There is significant pharmacokinetic and pharmacodynamic difference, as compared to adults. Generally, a drug is more active and toxic in children. The pediatric age is more susceptible to drug action and adverse reactions, hence utmost attention and caution are needed in terms of the growth aspect during prescribing medicines. Children are not to be considered as mini adults. Care should be taken towards the growth aspect of life while administering drugs.

A drug is highly toxic at an early age and is more prone to cause adverse effects. Therefore, high risk drugs should be avoided. The risk of drug toxicity is higher at an early age due to insufficient enzymes, heightened sensitivity and inadequate detoxification mechanism. Meanwhile, many signs of ADR may be different from adults. Some of the adverse effects are only seen in pediatrics groups due to immaturity, growth spurt and specific diseases. e.g., Reye's syndrome (Aspirin), kern icterus (sulfonamides), floppy baby syndrome (diazepam), and gray baby syndrome (chloramphenicol).

Medicines should be prescribed only when indicated. Consider the specific age group, such as neonates or infant. Select those medicines that have a good safety profile. Caretaker must be counselled regarding dose estimation, frequency and duration. Explain possible signs of adverse reactions and instruct the parent to report early.

Pharmacological aspects of drugs are different in children and require precise dose estimation. One of the most difficult tasks in pediatric therapy is dose calculation due to variation in age and weight. Adult doses should be given to children attaining adolescence or over 18 years of age or in cases where the weight is comparable to an adult body weight. Appropriate dose calculation is the most important initial step in pediatric practice. The dose may be calculated by following methods –

(i) Percentage of adult dose (as rough estimation)
(ii) Based on age (less accurate due to weight variation)
(iii) Based on body weight (most acceptable in routine practice)
(iv) Body surface area (more accurate but least feasible)

An accurate dose is an essential requisite in pediatric practice due to their growing aspect. Out of the different ways, none of the methods are universally applicable. However, body weight criterion is most practically applicable in routine practice. BSA method is most reliable and accurate in clinical setup. Use of a handy reference booklet on pediatric drug dosage is more common and beneficial.[17]

## Prescribing in Pregnancy

Great caution is required when a drug is prescribed during pregnancy and lactation. This is essential for the safety of the fetus and neonate. Numerous physiological changes occur during pregnancy that alter the pharmacokinetic and pharmacodynamic profile. The indiscriminate use of drugs during pregnancy has serious consequences, not only on the developing fetus but also to the family and society. Therefore, use of medicines should be minimal and when absolutely indicated.

A pregnant woman is likely to be exposed to a variety of environmental or non-therapeutic agents, which can affect the developing one. Most of the pharmacokinetic parameters are altered because of high levels of circulating sex hormones. The placenta and umbilical cord are important links between the mother and fetus for exchange. Moreover, most of the drugs cross the placenta and reach the fetus, who is exposed to both

the therapeutic and adverse effects. Drug compliance is poor due to fear of nausea and unexpected adverse effects. Maternal medication can change various parameters and affect the drug's efficacy and safety. It also increases the incidence of abortion and premature or delayed labor.

Placenta plays a significant role for nutrients and drug transfer from mother to the developing fetus. The fetal and maternal blood is separated by a lipid barrier that freely allows the transfer of lipid soluble (not water soluble), low molecular weight and unionized drugs. Poorly lipid soluble, highly ionized and large molecular weight drugs may reach the fetus only by facilitated diffusion or through transporters if present in high concentrations for a prolonged time.

Prescribing during pregnancy is very crucial and challenging to obstruction. To balance the benefit and risks of the ongoing therapy, medication should be considered for pregnant women and the developing fetus. Pregnancy might be responsible for temporary worsening of some conditions such as gestation induced diabetes and pregnancy induced hypertension. Maternal medication can increase the incidence of abortion, fetal malformation, prematurity and other perinatal problems. Pregnancy is a special state of vulnerability to drug toxicity, which is a major challenge in clinical medicine. Careful and ethical approach can save both of them.

Overall, from the point of view of safety, avoid prescribing drugs during the first trimester as much as possible. Consider the benefit/risk ratio. Treat minor ailments without drugs; better to try non-drug treatment whenever possible. Choose a drug that has the best safety record over time. Prefer a drug that has been in use from a long period of time. Try newly introduced drugs only after safety is clearly established. Use lowest effective dose for the shortest period of time. Discourage self-administration without advice. A detailed ultrasound scan after 20-21 weeks of gestation can be performed to detect any fetal abnormality if any risky drug was prescribed.[18]

## Prescribing during Lactation

Breast milk is the biggest gift of nature to mankind. Medicines contraindicated during pregnancy are not necessarily to be contraindicated during lactation. Most of the physiological changes developed during pregnancy will revert to non-pregnant state within two weeks after delivery. A mother receives a drug for therapeutic needs, while the infant might not require the drug at all. Most drugs are secreted into breast milk; however, their quantity is so small that they do not attain adequate concentration to harm the baby.[19]

## Prescribing in Geriatrics

Geriatrics is a special section of psychologically, emotionally, helpless and physically weaker persons. Old age is just arbitrary and a person of more than 65 or 75 years of age is considered as elderly. More roughly, geriatric is the age group who have crossed five decades. Scientifically, "geriatric is andropause in male and menopause in female." As most of the body parameters decline, special care is needed for medication to minimize adverse effects to this respectful age.

Incidences of adverse reactions are two to three times higher in elders due to the following reasons- Multiple drug therapy (poly-pharmacy) is one of the leading reasons. The elderly suffer from a number of diseases that necessitates excessive and unnecessary use of multiple drugs simultaneously. Accidental intake of many drugs due to confusion and forgetfulness. Visual, auditory and cognitive impairment could lead to errors in drug intake. The elderly are more prone to confusion, fatigue, depression, dizziness, dehydration and blood pressure alteration and therefore, need special cautions.

For ideal prescribing, improve compliance by proper counseling. Prescribe minimum medicines of known safety profile. Use minimum possible doses at the start and increase gradually. Use rational FDCs to improve compliance. Explain possible adverse effects and proper reporting. Regular monitoring of body functions. Remember– Start slow-proceed slow-required drug-at the right time.[20]

## Prescribing in Liver & Kidney Disorders

Liver and kidney are important body organs concerned with biotransformation and clearance of most of the administered medicines. A number of physiological and pathological changes take place throughout the life that affect the pharmacological profile of the drug. Most of the drugs are metabolized by the liver and are eliminated by the kidneys. Diseases or poor functions of the liver or kidney or both can result in deleterious drug effects. Knowledge about careful administration of hepatotoxic and nephrotoxic drug is more beneficial.[21]

In patients with liver disorders, prescriber should avoid hepatotoxic and narrow safety margin drugs or drugs that generate toxic metabolites. Cirrhosis, hepatitis and hepatocellular failure increases the risk of drug induced toxicity, which should be kept in mind during prescribing. Knowledge of hepatic inducers, in-

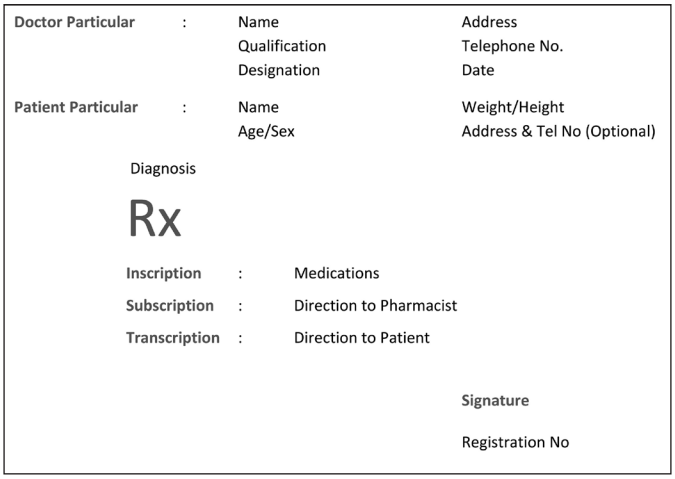


**Figure 1: Model format of prescription**

hibitors and possible drug interactions may be helpful. Simultaneous correlation of the liver function may be helpful.[22]

Kidney is the main organ concerned with drugs and their metabolite elimination. Prescribing is based on creatinine clearance that reduces the rate, accordingly. Select or avoid nephrotoxic drug, if possible. Estimate safe dose. Dose of drugs should be adjusted with the help of a nomogram. Drugs which are excreted unchanged should be avoided in severe renal diseases. Monitor the patient if prolonged treatment is required. Meanwhile TDM (therapeutic drug monitoring) may be considered whenever possible.[23]

## Conclusion

Prescription is an essential tool in all clinical disciplines. It is not only a piece of paper, but it gives a lot of authentic content if presented well in a scientific manner. Therefore, writing of an ideal prescription is an art-like practice. Because prescription has legal implications, utmost care should be taken during its writing. A prescriber must know all the basic necessities and steps involved in authentic prescription presentation. Care should be taken when a clinician prescribes the medicines to special groups of society and in special disease conditions. A good prescription should be rational, ethical, effective, economical, appropriate, accountable and acceptable to the patient.

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