



# Responsible Use of Medicines



## A Layman's Handbook...



Indian Pharmaceutical Association  
Pharmacy Council of India



# Responsible Use of Medicines

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*Thanks to staff of Hindu Pharmacy, Panaji*

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## **Message from the President of the Indian Pharmaceutical Association**



**Dr. Rao V. S. V. Vadlamudi**

The Indian Pharmaceutical Association's Community Pharmacy Division with support from the Pharmacy Council of India brought out this layman's handbook on the "Responsible Use of Medicines". This handbook contains a lot of information written in a simple fashion about various aspects of medicines that we use regularly. It is not an exaggeration to state that medicines have profound impact on our current life style and right from increasing life expectancy to improving the quality of life of persons suffering from chronic ailments. Each medicine available in the pharmacy to treat a specific or a variety of conditions is researched for several years and approved for clinical use. Medicines save lives if used appropriately and can prove to be unsafe if not used properly. The knowledge about safe and proper use of medicines should be known to the doctor, the pharmacist and the patient and most often this is not the case. With an intention to make the common public aware of the facts about how medicines have to be used responsibly for their own good, a project has been taken up by the community pharmacy Division of IPA under the leadership of Mrs. Manjiri Gharat and Mr. Raj Vaidya to produce this handbook. This hand book is a result of contributions from several people and financial support from the pharmacy council of India and I take this opportunity to gratefully acknowledge their contribution. I am sure this handbook would serve the purpose for which it is developed and would become instrumental in bringing about responsible use of medicines in our country.

*V.V.S.V. Vadlamudi*

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## **Message from the President of Pharmacy Council of India**



**Dr. B. Suresh**

Responsible Use of Medicines not only improves health outcomes, but also optimizes health care spending through the prevention and/or delay of costlier and more severe conditions. The IMS institute for Healthcare Informatics has reported that a half trillion dollars in annual global health spending can be saved through the responsible use of medicines. In a country like India, which manufactures USD \$ 12.5 billion worth of medicines. And with 1.25 billion populations, 60% of whom live in rural areas this becomes much more relevant. The need of the hour of the country is to include the role of medicines as an integral part of the health system in the Medicines Policy of the country and make efforts to contain costs across the overall health system. In today's economic climate, this could be a top health policy priority given both the positive impact on overall spending and resulting improvement in the health outcomes. The effort of Indian Pharmaceutical Association (IPA) in this direction to bring a handbook of 'Responsible Use of Medicines' is in the right direction and laudable. The Pharmacy Council of India congratulates IPA for the same and wishes success in all its endeavours.

A handwritten signature in black ink, appearing to read "B. Suresh".

**Dr. B. Suresh,**  
President, Pharmacy Council of India &  
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# Introduction

Medicines have revolutionized our lives. They are one of the reasons for our longevity, alleviation of diseases and suffering. Medicines today have a very important role to play, and no, today we cannot imagine a world without medicines.

However, medicine safety is an issue of prime importance. There is a lot of ignorance amongst the public about the proper or safe use of medicines. A very large percentage of people are ignorant about various aspects of medicines – care to be taken while purchasing, how they affect us, their proper storage, how they need to be correctly taken, at what times and for how long, what precautions to take while on medication, what happens if we do not use them properly, about side effects, drug interactions, etc. According to the W.H.O., more than half of the patients do not take their medicines appropriately.

Irrational use of medicines leads to so many ill consequences – improper treatment, under effects, side effects, and this ultimately leads to delayed recovery, continuance of agonies and discomforts, often increased expenses, hospitalizations, and even premature deaths.

Medicines are like a double edged sword – of great benefit if used correctly, but can cause harm if used incorrectly.

It is strange, but true, that at no point in our lives – during our education or otherwise, are we given any formal or informal basic tips/information about medicines and their proper use. As a result of this common man is ignorant of the same, and whatever information they have is the information they have obtained during their own personal experiences or those of their family members, while using medicines at home or during hospitalization/s.

It is a well proven fact that if the patient has sufficient information about the medicines he is supposed to or going to take, the treatment outcomes will improve and also reduces chances of side effects. Health care professionals – doctors, pharmacists and nurses are expected to provide this information. But unfortunately, in our country, for various reasons, it does not always happen.

Tragically, more than half of India's population does not have proper access to essential medicines.

The IPA (Indian Pharmaceutical Association) has prepared this booklet to put together various simple, yet basic and useful information to help a lay person to move towards "Responsible use of medicines" We hope that, by going through this booklet, one would greatly benefit in increasing one's knowledge about medicines, and find it useful in everyday life, when encountering medicines for oneself or members of the family.

We would also like to convey to you that pharmacists are there to help out people on their queries regarding medicines, and guide them on their safe usage. Public, therefore, must take advantage of their pharmacists, whether in the retail pharmacies/medical stores or in the hospital.

There is an urgent need to create mass awareness amongst the public about responsible use of medicines, and we hope that this is a small contribution towards this.

We hope you find this booklet useful and keep it handy with you.

### **Responsible Use of Medicines :**

"The term 'Responsible Use of Medicines' implies that the activities, capabilities, and existing resources of health system stakeholders are aligned to ensure patients receive the right medicines at the right time, use them appropriately, and benefit from them"

Also the patients and caretakers of the patient are equally responsible to ensure rational therapy by adhering to the instructions of the healthcare professionals. This in turn will benefit the patients.

## *Medicines..... And Shoes*

Prescription medicines are like shoes...  
we each have our own.



Your doctor prescribes the proper medicine,  
strength and dosage  
especially for you, according to your illness, age,  
weight and other conditions.

Do not offer your prescription medicine to others.  
Similarly, never use someone else's medicine.



# 1

# What are Medicines, And Why do we need them ?



Medicines or drugs are chemicals or substances (other than food) for internal or external use, and which are :

- a. used for or in the medical diagnosis, cure/treatment, mitigation or prevention of any disease or disorder in human beings or animals.
- b. intended to affect the structure or function of the human body or intended to be used for the destruction of vermin or insects which cause disease in human beings or animals.

Certain devices intended for internal or external use in the diagnosis, treatment, mitigation or prevention of disease or disorder in human beings or animals, are also categorized as drugs as per the law in India. - e.g. Diagnostic medicines, disposable syringes and needles, catheters, I.V. infusion sets, etc.

Since the word “drug” may sound like a misnomer (and people may believe them to be substances used for illicit purposes), the W.H.O. (World Health Organization), now prefers to use the word “Medicine”. These refer to legal drugs.

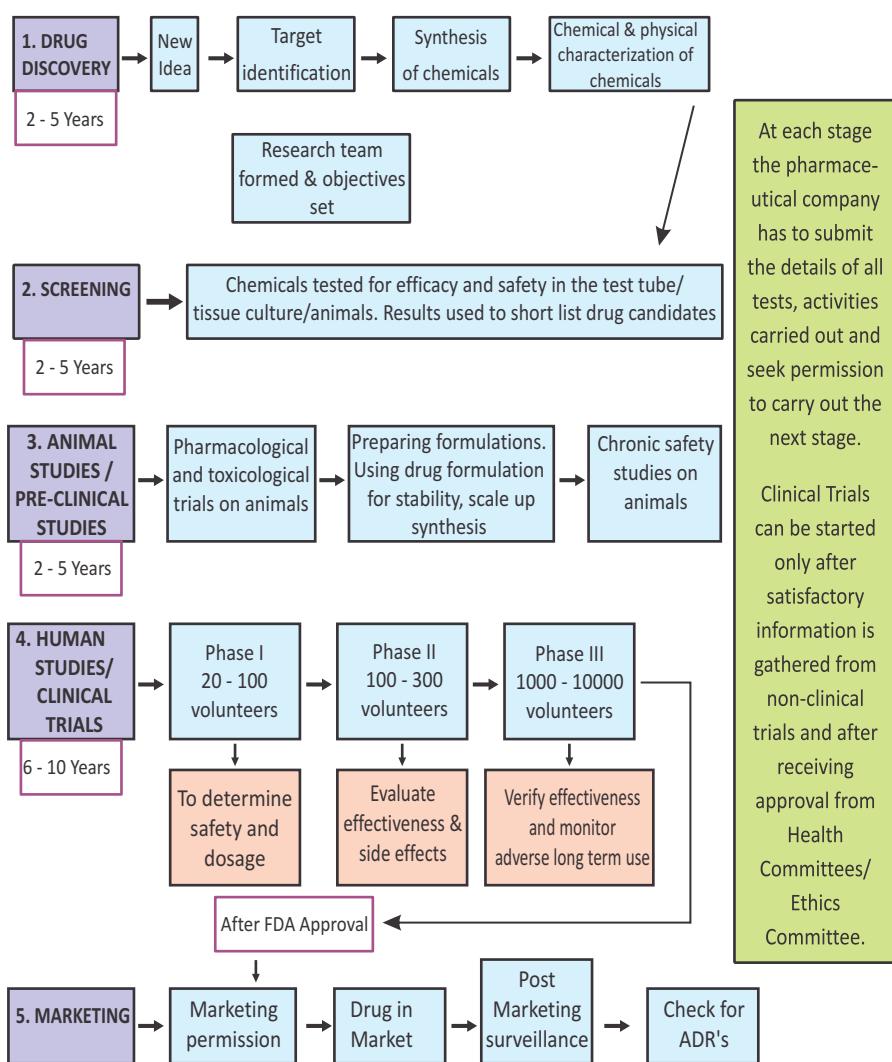
## Note

In this booklet, as far as possible, we have tried and used the word “medicines” when referring to drugs which help us to get better. However, because of some long standing conventions, sometimes we have used the word “drug” for such drugs. Thus, medicines and drugs sometimes have been used interchangeably, which may please be noted.

Even though medicines are legal drugs, they can still be very dangerous if they are taken without consulting the doctor or pharmacist, or taken in larger than the prescribed quantity, or medicines prescribed for someone else are taken, or if they are not taken as per instructions and in the correct manner.

## 1 Various stages of discovery of a medicine:

Introducing a new medicine (drug molecule) in the market is no easy task. It needs the efforts of a large team of scientists and other personnel, anything from 12-15 years of a whole set of studies and trials, and volumes of documentation, reporting and an expense of anything from 1-1.2 billion dollars! From the thousands of chemicals synthesized and screened, just a few may get approval and ultimately reach the market. The others drop out on the long journey at some point of time, since they do not prove to be the right candidates.



## **2 Need for medicines:**

Medicines change the way the body works. Medicines help us to get better when we are unwell. Medicines are an integral part of health care today and health care is unimaginable without them. In simple words, we need medicines to prevent or cure illnesses.

**All of us need medicines at some time or the other for:**

**Diagnosis:** e.g. various diagnostic agents,

**Prevention:** e.g. various vaccines to prevent various diseases, or calcium to prevent calcium deficiency, etc.

**Relieving/alleviating symptoms:** e.g. to reduce pain, swelling, congestion, etc.

**Control/reduce worsening of disease/illness:** e.g. blood pressure medicine/s to control blood pressure and thus avoid complications; antihistaminic to relieve symptoms of itching/allergies, etc.

**Treatment/cure of various ailments/diseases, when the disease is not self-limiting:** e.g. antibiotics to get rid of the bacterial infection, deworming tablets to get rid of intestinal worms, etc.

Medicines thus prevent and treat diseases/illnesses and epidemics; thus saving lives and promoting health.

### **Patient to decide and take the medicines:**

While the doctor prescribes/recommends medicines/treatment to the patient, what is to be done next is in the hands of the patient. It is the right of every patient to decide what treatment to take and whether to take the treatment or not. The health care provider can only recommend – the patient has to decide and actually carry out the step of taking the medicines, and in the correct manner and for the prescribed period of time.

#### **For e.g.**

- Complete the course of antibiotics without missing a dose.
- Take blood pressure medication/s everyday without fail at the same time/s of the day/night, as advised by the doctor.

**Note**

**It is very important to realize that the patient is also an equal partner in his/her own health care.**

# 2

## Types of Medicines

Worldwide, besides the allopathic or modern system of medicines, there are a wide variety of systems of medicines (often called as traditional or alternative or complimentary systems). In India, various systems of medicine are practiced, and medicines of various systems are available. The following are the recognized systems of medicine in India:

- |  |  |
|--|--|
| <b>A</b> • AYURVEDA<br><b>Y</b> • YOGA & NATUROPATHY<br><b>U</b> • UNANI<br><b>S</b> • SIDDHA<br><b>H</b> • HOMOEOPATHY<br>• SOWA-RIGPA (Amchi system) - (recently recognized) | Traditional Indian Systems of Medicine |
|--|--|

[www.indianmedicine.nic.in](http://www.indianmedicine.nic.in)

And, the following types of medicines are available :

Allopathic (modern medicine), Ayurvedic, Siddha, Unani and Homoeopathic. Most of these can usually be distinguished easily by looking at the label:

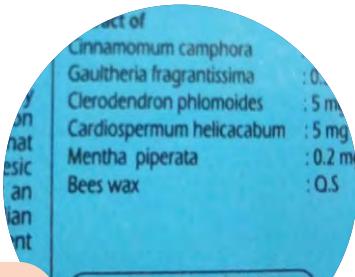


*Ayurvedic Medicine*



*Homoeopathic Medicine*

## Unani Medicine



## Siddha Medicine

In terms of value, the Indian pharmaceutical industry ranks globally as the 12<sup>th</sup> largest market by sales value (\$ 10 billion) and is globally ranked as 2nd largest by volume of sales. This accounts for 8% of the world's production by volume.

### Did You Know ?

**The annual pharmaceutical sales in India for various systems of medicines is :**



System of Medicine	Sales in INR or percentage %
Allopathy market*	77529 Crore
AYUSH**	8800 Crore
Ayurveda	83%
Homeopathy	2%
Unani and Siddha	0.2%

Data Year: 2013.\*: AIOCD PharmaTrac \*\*: Courtesy: Mr Anil Khanna

Allopathic medicines thus take up a large share of the medicines manufactured and used in India.

### 1 Which system of medicine to choose ?

It is solely the patient's choice as to which system of medicine he should choose, and accordingly he has to go to a qualified doctor of that system of medicine. Some of the approved qualifications of doctors of various system of medicine :

*Allopathy : M.B.B.S.*

*Ayurveda : B.A.M.S.*

*Homoeopathy : L.C.E.H., D.H.M.S., B.H.M.S.*

*Unani : B.U.M.S.*

*Siddha : B.S.M.S.*

The Government of India has created a special department in 1995 (now called as Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy - **AYUSH**) with a view to providing focused attention to the development of Education & Research in Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathic systems. (A few years ago, the Sow-Rigpa system was also recognized by the Department). It works towards upgradation of AYUSH educational standards, quality control and standardization of drugs, improving the availability of medicinal plant material, research and development and awareness generation about the efficacy of the systems, domestically and internationally.

## **2 Dietary Supplements / Food supplements:**

Some products available in pharmacies are strictly speaking not medicines, and therefore may not have undergone clinical trials to prove the safety and efficacy of the products:

- ❖ A dietary supplement/food supplement is a product taken by mouth, and that which contains a "dietary ingredient" intended to supplement the diet.
- ❖ The "dietary ingredients" in these products may include: vitamins, minerals, proteins and substances such as enzymes, coenzymes, other food substances, etc.
- ❖ These may be in the form of tablets/ capsules, powders or liquid.
- ❖ They bear on their label, wordings such as "Dietary Supplement", "NutritionalFoodSupplement(Proprietary food)", "Health Supplement" and "Not For Medicinal Use".

The Food and Safety Standards Act was passed in August 2006, and the Rules in 2011, but came into force from 5th August 2012. The Act lays down standards for articles of food and regulates their manufacture, storage, distribution, sale and import in order to ensure availability of quality food products of good standards to the public.

It is now mandatory for all the food business operators, manufacturers in India to get licensed/registered under the FSSA Act.

Under the Food Safety and Standards Act, Dietary supplements are termed as "Foods for special dietary uses or functional foods or nutraceuticals or health supplements" and defined as :

- a) Foods which are specially processed or formulated in order to satisfy particular dietary requirements which exist because of particular physiological or physical condition and which are processed as such wherein the composition of these foodstuffs must differ significantly from the ordinary food of comparable nature, if such ordinary food exists

one or more of the following ingredients namely:

- i. Plants or botanicals in the form of powder, concentrates or extracts in water, ethyl alcohol, single or in combinations.
  - ii. Minerals, vitamins or proteins (amounts not exceeding recommended daily allowance for Indians) or enzymes.
  - iii. Substances from animal origin
  - iv. A dietary substance being used by human beings to supplements the diet by increasing the total dietary intake.
- b)
- i. A product that is labelled as “food for special dietary uses or functional foods or nutraceuticals or health or similar such foods” which is not represented for use as conventional food and whereby such products may be formulated in the form of powders, granules, tablets, capsules, liquids, jelly and other dosage forms but not parenterals, and are meant for oral administration;
  - ii. Such a product does not include a drug as defined in clause (b) and Ayurvedic, Siddha and Unani drugs as defined in clauses (a) and (h) of Section 3 of the Drugs and Cosmetics Act, 1940 and Rules made thereunder.
  - iii. Does not claim to cure or mitigate any specific disease, disorder or condition (except for certain health benefit or such promotion claims) as may be permitted by the regulations made under this Act;
  - iv. Does not include a narcotic drug or a psychotropic substance as defined in the Schedule of the Narcotic Drugs and Psychotropic Substances Act, 1985 and Rules made thereunder and substances listed in Schedules E and EI of the Drugs and Cosmetics Rules, 1945;

Dietary Supplements in India could be identified by descriptions on their labels such as:

“Dietary Supplement (Proprietary food) or Health Supplement (Proprietary food) or Nutritional Supplement (Proprietary food)” and “Not for medicinal use”

Packaging and labelling requirements of “food for special dietary uses”, as per the Food Safety and Standard Act stipulate that:

- Labels shall not contain any statement, claim, design or device which is false or misleading in any particular concerning the food products contained in the package or concerning the quantity or the nutritive value implying medicinal or therapeutic claims or in relation to the place of

origin of the said food products.

- labelling and presentation of food, including their shape, appearance or packaging, the packaging materials used, the manner in which they are arranged and the setting in which they are displayed, and the information which is made available about them through whatever medium) does not mislead consumers.
- Label should not make a false or misleading representation concerning the need for, or the usefulness; or guarantee of the efficacy that is not based on an adequate or scientific justification thereof (Provided that where a defense is raised to the effect that such guarantee is based on adequate or scientific justification, the burden of proof of such defense shall lie on the person raising such defense.)

#### **The label of such dietary products should contain:**

- Name of product (including the word "Dietary Supplement (Proprietary food or Health Supplement (proprietary food) or nutritional supplement (proprietary food)" or a statement that the product is a supplement)
  - Net quantity of contents
  - Name and address of manufacturer and packer
  - Directions for use
  - The label of the supplement may or may not contain a cautionary statement. However, the lack of a cautionary statement does not mean that no adverse effects are associated with the product.
- ☞ However in a rapidly expanding market like India, most labels for Dietary Supplements do not contain all this information.
- ☞ Dietary supplements are not intended to treat, diagnose, mitigate, prevent or cure disease.
- ☞ As there are no strict criteria for dietary supplements as compared to drug products with regards to regulatory aspects, it is an ethical responsibility of the manufacturer to check its adverse effects before marketing. The product should be withdrawn if any adverse reactions occur after consumption.
- ☞ The Drug Control authorities are responsible for taking action against any unsafe dietary supplement products in the market.

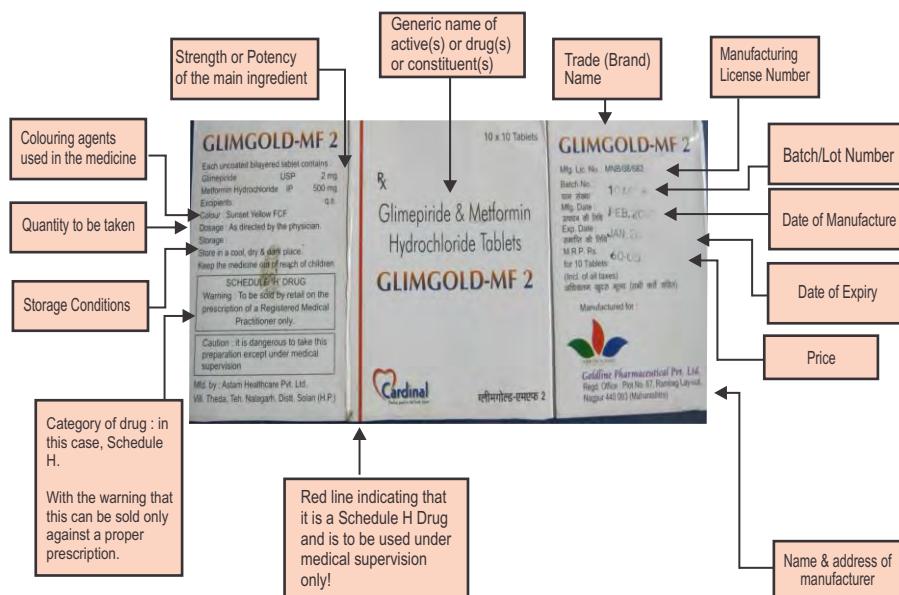
# 3

## Medicine Labels

There is a lot of information printed on medicine labels. Some of this is mandatory, and some of it is put to help patients use the medicine safely. Unfortunately, many a times, the printing on strips of medicines is quite unreadable even with a magnifying glass!



In such cases, patients must ask the pharmacy staff and read the label of the immediate bigger container/carton (like the carton label below) for getting more information.



**Fig. – Immediate carton of medication-different parts of the label explained.**

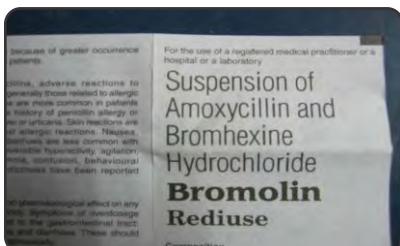
A look at various medicine labels in India makes it evident that most of these labels do not include patient oriented information. In most of the developed countries it is mandatory that the label or immediate container of medicines should bear comprehensive patient oriented information on them which will help the patient to make a responsible choice before using the medication.

Here is an example of what information is generally provided in USA:

<p><b>Drug Facts (continued)</b></p> <p>■ take more or for a longer time than directed</p> <p><b>Do not use</b></p> <ul style="list-style-type: none"><li>■ if you have ever had an allergic reaction to any other pain reliever/fever reducer</li><li>■ right before or after heart surgery</li></ul> <p><b>Ask a doctor before use if</b></p> <ul style="list-style-type: none"><li>■ stomach bleeding warning applies to you</li><li>■ you have problems or serious side effects from taking pain relievers or fever reducers</li><li>■ you have a history of stomach problems, such as heartburn</li><li>■ you have high blood pressure, heart disease, liver cirrhosis, kidney disease, or asthma</li><li>■ you are taking a diuretic</li></ul> <p><b>Ask a doctor or pharmacist before use if you are</b></p> <ul style="list-style-type: none"><li>■ under a doctor's care for any serious condition</li><li>■ taking aspirin for heart attack or stroke, because ibuprofen may decrease this benefit of aspirin</li><li>■ taking any other drug</li></ul> <p><b>When using this product</b></p> <ul style="list-style-type: none"><li>■ take with food or milk if stomach upset occurs</li><li>■ the risk of heart attack or stroke may increase if you use more than directed or for longer than directed</li></ul> <p><b>Stop use and ask a doctor if</b></p> <ul style="list-style-type: none"><li>■ you experience any of the following signs of stomach bleeding:</li><li>■ feel faint</li><li>■ vomit blood</li><li>■ have bloody or black stools</li><li>■ have stomach pain that does not get better</li><li>■ pain gets worse or lasts more than 10 days</li><li>■ fever gets worse or lasts more than 3 days</li><li>■ redness or swelling is present in the painful area</li><li>■ any new symptoms appear</li></ul>	<p><b>Drug Facts (continued)</b></p> <p>If pregnant or breast-feeding, ask a health professional before use. It is especially important not to use ibuprofen during the last 3 months of pregnancy unless definitely directed to do so by a doctor because it may cause problems in the unborn child or complications during delivery.</p> <p><b>Keep out of reach of children.</b> In case of overdose, get medical help or contact a Poison Control Center right away.</p> <p><b>Directions</b></p> <ul style="list-style-type: none"><li>■ do not take more than directed</li><li>■ the smallest effective dose should be used</li><li>■ adults and children 12 years and over: take 1 tablet every 4 to 6 hours while symptoms persist</li><li>■ if pain or fever does not respond to 1 tablet, 2 tablets may be used</li><li>■ do not exceed 6 tablets in 24 hours, unless directed by a doctor</li><li>■ children under 12 years: ask a doctor</li></ul> <p><b>Other information</b></p> <ul style="list-style-type: none"><li>■ read all warnings and directions before use.</li><li>■ Keep carton.</li><li>■ store at 20-25°C (68-77°F)</li><li>■ avoid excessive heat above 40°C (104°F)</li></ul> <p><b>Inactive ingredients</b></p> <p>acetylated monoglycerides, colloidal silicon dioxide, corn starch, croscarmellose sodium, methylparaben, microcrystalline cellulose, pharmaceutical glaze, pharmaceutical ink, povidone, pregelatinized starch, propylparaben, sodium benzoate, sodium lauryl sulfate, stearic acid, sucrose, synthetic iron oxide, titanium dioxide, white wax</p> <p><b>Questions or comments?</b> call toll free 1-800-88-ADVIL</p>
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## 1 Package Inserts :

In India, some medicine cartons contain a package insert. Unfortunately, this insert is meant only for the use of an R.M.P., a Hospital or a Laboratory, and is actually NOT meant for the common man/patient, since it contains a lot of technical/ medical information, which could be misleading to the patient or unnecessarily alarm him.



## 2 Patient Package Inserts :

In most countries of the world, medicine packs are accompanied by what are called as PPIs (Patient Package Inserts) or PILs (Patient Information Leaflets) – these leaflets/inserts contain simple information that is easy to understand (not medical jargon) about the medicine in the package. Here is an example of a PPI from USA:

This medicine is for use in adults and children aged 12 years and over.

**2 Before taking this medicine**

This medicine is suitable for most adults and children aged 12 years and over, but a few people should not use it. If you are in any doubt, talk to your doctor or pharmacist.

**Do not take this medicine...**

- If you have ever had a bad reaction to any of the ingredients.
- If it is for a child under 12 years old.
- If you have severe diarrhea while taking antibiotics.
- If you are having a fever or an inflammatory bowel condition like ulcerative colitis.
- If you are constipated or your stomach appears swollen.
- If you have acute dysentry, the symptoms of which may include blood in your stools and a high temperature. If any of these apply to you, get advice from a doctor or pharmacist without taking Imodium Plus Caplets.

**Talk to your doctor or pharmacist...**

- If you have AIDS and your stomach becomes swollen, stop taking the caplets immediately and contact your doctor.
- If you suffer from liver disease.
- If your diarrhea lasts for more than 48 hours.
- If you have severe diarrhea as your body loses fluid, sugars and salts than normal.
- If you are taking any other medicines, including:
  - quinavirine (used to treat HIV) or quinine (used to treat abnormal heart rhythms or malaria).

If you are unsure about any of the medicines you are taking, show the bottle or pack to your pharmacist.

**3 If any of these bullet points apply to you now or in the past, talk to a doctor or pharmacist.**

**If you are pregnant or breast-feeding**

- Ask your doctor or pharmacist for advice before taking this medicine if you are pregnant, think you are pregnant, or planning to become pregnant.
- Do not take this medicine if you are breast-feeding as small amounts may get into your milk. Talk to your doctor about a suitable treatment.

**Special warnings about this medicine**

- This medicine may make you feel dizzy, tired or sleepy. If affected do not drive or operate machinery.
- Imodium Plus Caplets only treat the symptoms of diarrhea. When you have diarrhea, your body can lose large amounts of fluids and salts. You will need to replace the fluid by drinking more liquid than usual. Ask your pharmacist about special powders (known as oral rehydration therapy) which replace fluids and salts lost during diarrhea.

**3 How to take this medicine**

Check the table overleaf to see how much medicine to take.

- Swallow the correct number of caplets whole with a drink of water.
- For oral use only.
- Do not use more than the stated dose shown in the table.

**1 Children under 12 years old**

This medicine is not recommended for children under 12 years old.



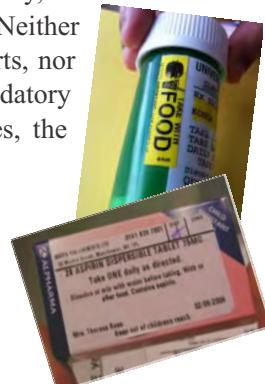
Avoid grapefruit or drinking grape fruit juice while being treated with this medicine.

**3 Ancillary labels :** Unfortunately, for us in India, this concept hardly exists. Neither do the companies introduce such inserts, nor do the laws of the country make it mandatory to do so. In most developed countries, the pharmacy personnel put an Ancillary Label on each medicine pack

dispensed to the patient.

**The Label bears on it :**

- Dose of the medicine
- Any warning or cautions to be taken while medicating



This is very useful for the patient because the dosing of each medicine is written on the medicine label itself. It is important that this concept is introduced in our country also.

# 4

## Medicines & Prescriptions



Allopathic medicines are mainly of two types : Prescription medicines and Non-prescription medicines (OTC or Over The Counter medicines)

Prescription Medicines	Non-Prescription (OTC) Medicines
Those allopathic medicines which, by law, can be purchased by patients/customers ONLY against a prescription of a qualified doctor (Registered Medical Practitioner-R.M.P.). A pharmacy/medical store is legally NOT permitted to sell such medicines to patients unless a proper prescription is produced / shown.	Those allopathic medicines which, by law, can be purchased by customer without a prescription of a doctor, or can be recommended by the pharmacist.
Can be dangerous if not taken as per doctor's advice or taken without being prescribed by a doctor. Need to be used carefully.	Relatively safe, have a history of safety, and can be self-medicated. However , they too can cause side effects, thus also need to be used carefully.
Cannot be advertised to the public.	Are often advertised to the public.
A large majority of the medicines available today in the market are prescription medicines : For example : Painkillers ( Voveran, Combiflam, etc.), Steroids, Blood Pressure Medicines, Antibiotics, Anti diabetics, Psychiatric Medicines, etc.	For example : Paracetamol, Aspirin, Electrolytes, Vitamins and Minerals, antiseptic creams, Calamine lotion, etc.

### 1 Who is an R.M.P. (Registered Medical Practitioner) ?

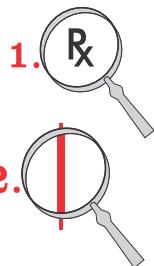
In India, an R.M.P. is a qualified allopathic Doctor/Dentist/Veterinarian, one who has a minimum of M.B.B.S./B.D.S./B.V.Sc. qualification through a recognized medical/dental/veterinary college, and is registered with the respective state council in which he/she wishes to practice.

Therefore, a doctor with only such minimum qualification is authorized to prescribe allopathic medicines.

## 2 Prescription medicines :

Watch out for these signs and warning on medicine labels:

1. The symbol Rx



2. Red Line \_\_\_\_\_



3. Schedule H/H/X Drug : Warning :  
To be sold by retail on the prescription  
of a Registered Medical Practitioner only.



Medicines bearing these on their label are called as **Prescription Medicines**.

**'NRx'** is written on the label of some prescription medicines which fall under the NDPS (Narcotic Drugs and Psychotropic Substances) Act. Example: Diazepam, Alprazolam.

**Schedule H1:** A new category “Schedule H1” is a new schedule introduced in the Drugs and Cosmetics Rule from 1st March, 2014, and which contains 46 drugs and their fixed dose combinations.

It has been introduced to reduce/prevent the present massive improper use/misuse/abuse of medicines, and includes 24 antibiotics, 11 psychotropic drugs and 11 anti-tubercular and anti-leprosy drugs.

The label of the product containing schedule H1 drug should bear on it :

- Rx which shall be in red and conspicuously displayed on left top corner of the label
- And a box with red border bearing the words :

### **“SCHEDULE H1 DRUG -Warning:**

- It is dangerous to take this preparation except in accordance with the medical advice.
- Not to be sold by retail without the prescription of a Registered Medical Practitioner”.

**SCHEDULE H1 DRUG - WARNING:**  
- It is dangerous to take this preparation except in accordance with the medical advice.  
- Not to be sold by retail without the prescription of a Registered Medical Practitioner.

Under this Rule it is also mandated that the pharmacy dispensing a Schedule H1 preparation has to maintain a Schedule H1 Register, which should contain the date, name of the drugs, quantity dispensed, name of the patient, name and address of the prescriber. For e.g. :

- |                  |                              |                                 |
|------------------|------------------------------|---------------------------------|
| 1. Alprazolam    | 2. Balofloxacin              | 3. Buprenorphine                |
| 4. Capreomycin   | 5. Cefdinir                  | 6. Cefditoren                   |
| 7. Cefepime      | 8. Cefetamet                 | 9. Cefixime                     |
| 10. Cefoperazone | 11. Cefotaxime               | 12. Cefpirome                   |
| 13. Cefpodoxime  | 14. Ceftazidime              | 15. Ceftibuten                  |
| 16. Ceftizoxime  | 17. Ceftriaxone              | 18. Chlordiazepoxide            |
| 19. Clofazimine  | 20. Codeine                  | 21. Cycloserine                 |
| 22. Diazepam     | 23. Diphenoxylate            | 24. Doripenem                   |
| 25. Ertapenem    | 26. Ethambutol hydrochloride | 27. Ethionamide                 |
| 28. Faropenem    | 29. Gemifloxacin             | 30. Imipenem                    |
| 31. Isoniazid    | 32. Levofloxacin             | 33. Meropenem                   |
| 34. Midazolam    | 35. Moxifloxacin             | 36. Nitrazepam                  |
| 37. Pentazocine  | 38. Prulifloxacin            | 39. Pyrazinamide                |
| 40. Rifabutin    | 41. Rifampicin               | 42. Sodium para-aminosalicylate |
| 43. Sparfloxacin | 44. Thiacetazone             | 45. Tramadol                    |
| 46. Zolpidem     |                              |                                 |

### **3 Non-prescription medicines :**

Some medicines do not carry a prescription warning, and even though there is no separate legal category called as “OTC Medicines” (a category which exists in most countries in the world) in India, such medicines, which do not need the prescription of a doctor, are called as **NON-PRESCRIPTION MEDICINES**.

**However, it is very important to note that:**

OTC medicines, even though easily available, are also SERIOUS medicines, and CAN CAUSE problems if not used properly.

**For e.g.,**

- even a single tablet of Aspirin could cause gastric irritation, or even precipitate an underlying ulcer, and in rare cases, can cause death in a susceptible person!
- repeated use of antacids can mask an underlying gastric ulcer or even cancer!

## Have a look at the label of Aspirin:

Important: Do not take this product during the last three months of pregnancy unless directed by a doctor. Aspirin taken near the time of delivery may cause bleeding problems to both mother and child. Not to be used in children below 12 years of age except under medical advice.

Besides, Aspirin should not be used in patients :

- Who have a history of gastric ulceration
- Who are on anticoagulant therapy like Warfarin (unless recommended by the doctor)
- Who have a history of asthma

Thus, one can see that, even though OTC medicines are meant for self-medication, they can create problems too!

Note

All medicines are foreign substances to our body !  
OTC medicines are serious medicines too !

If you are self-medicating, please do it with utmost care.

## 4 What is a prescription?

- A prescription is an important legal document. It is an order for medication, issued by a qualified physician, dentist, veterinary doctor, or a licensed medical practitioner, to a patient. The pharmacy honours the prescription by dispensing the medicines written on it to the patient.
- A prescription designates medicines written on it to the patient and dosages to be administered to a particular patient at a specified time.
- Generally, most prescriptions are handwritten by the doctor. However, in today's advanced world, a typed or computer printed prescription may be accepted, provided it is personally dated and signed with his usual signature by the prescriber.
- The patient is then expected to follow the order written on the prescription to consume the medicines. The prescription thus acts as a mediator between the doctor, pharmacist and the patient.



## 5 How should an ideal prescription be?

An ideal prescription should be on a properly printed letterhead (containing various informations related to the doctor), and be typed or written by the doctor to contain various details (related to the patient, the medicine, and other details), as follows:

### CONTENTS OF A PRESCRIPTION : A prescription should ideally consist of the following :

DOCTOR'S DETAILS	PATIENT DETAILS	MEDICINE DETAILS	OTHER DETAILS
<ul style="list-style-type: none"><li>• Full name</li><li>• Qualifications</li><li>• Registration number</li><li>• Address</li><li>• Phone number</li></ul>	<ul style="list-style-type: none"><li>• Full name</li><li>• Age</li><li>• Weight</li><li>• Address, Phone number</li><li>• Sex</li><li>• Married – Yes/No</li></ul>	<ul style="list-style-type: none"><li>• Name of the medicine</li><li>• Strength or potency</li><li>• Dosage form</li><li>• Dosage</li><li>• Dosing instructions</li><li>• Total quantity</li></ul>	<ul style="list-style-type: none"><li>• Date</li><li>• Doctor's signature</li><li>• Refill information</li></ul>

### IDEAL PRESCRIPTION

Dr. Full Name, M.B.B.S., M.D. Reg. No.: xxxxxxxx Address : Full Address, Tel No.: xxxxxxxx	Prescription on a letterhead, with Doctor's full name, Qualifications, Reg. No., Full address, Tel. No.				
Date : 29/8/2009	Date				
Patients' Name : _____	Patient's Full name & address				
Patient's Address : _____	Name of the drug and its potency, total quantity recommended				
Rx	Space for Pharmacy to put a "Dispensed Stamp"				
1.Valium 5mg 1 tab at night x 20	Usual signature of Doctor (not a scribble), & dated by Doctor.				
<table border="1"><tr><td>DISPENSED</td></tr><tr><td>Date : _____ Pharmacist : _____</td></tr><tr><td>Name of Pharmacy</td></tr><tr><td>City</td></tr></table>	DISPENSED	Date : _____ Pharmacist : _____	Name of Pharmacy	City	Rubber Stamp of Dr. with name, Qual, Reg.No.
DISPENSED					
Date : _____ Pharmacist : _____					
Name of Pharmacy					
City					
--- 20 tab  Doctor's usual sign Date  Dr.'s Full name, Qual(M.B.B.S.),Reg.No	To avoid refilling of prescription, (thus misuse).				
DO NOT REFILL (DISPENSE ONLY ONCE)					

## 6 Importance of carrying a prescription to buy prescription medicines :

Unfortunately, in India, many people do not carry a prescription to the pharmacy, and have got into the wrong habit of asking for medicines by various other means :

- Asking verbally by name.
- Asking verbally by colour or price of the medicines.
- Showing old strips/cartons/bottle/bottle caps.
- Writing name of the medicine/s on bits of paper or on the hand.
- Showing name of the medicine/s on mobile messages.
- Bringing VERY OLD prescriptions (sometimes many years old!).
- Informing the name of the medicine/s over telephone and asking it to be sent home.

All these can thus be dangerous practices !

Just writing or mentioning the name of the medicine may not always do. Medicines come in a variety of potencies, dosage forms and combination of drugs bearing the same trade name with minor changes in extensions (and containing drugs in different potencies and combinations).



For e.g.:



Blumox has various brand extensions as under:

Blumox (DT) Dispersible 125mg, 250mg Tablets, Blumox LB 250, 500mg Tablets, Blumox 250, 500mg Capsules, Blumox Suspension, Blumox Drops, etc.

## PLEASE CO-OPERATE WITH THE PHARMACY PERSONNEL

BY LAW, A PHARMACY IS SUPPOSED TO PUT A "DISPENSED" STAMP AFTER DISPENSING EVERY PRESCRIPTION



DISPENSED  
XYZ MEDICAL STORE

DATE: \_\_\_\_\_

SIGNATURE

OF PHARMACIST: \_\_\_\_\_



Note

Medicines must be taken only for the time/period/  
duration specified  
by the doctor on the prescription

The Pharmacist at the Pharmacy needs to have a  
look and verify your prescription each time!

A prescription is a legal document, and it is mandatory by law that a pharmacy must dispense "Prescription Medicines" only after physically verifying the prescription.

Pharmacists can help detect if the 'doctor' who has prescribed medicines for you, is actually qualified to do so. From the qualification and registration, pharmacists can help to detect if the 'doctor' who has prescribed medicines for you is actually qualified to do so.

A prescription has important information about age, weight, sex of the patient and which will help the pharmacist to provide you valuable Do's and Don'ts while on treatment.



It helps the pharmacy to check for correctness of medicines, dose, strength, etc.

In case there is any doubt/query regarding any item on the prescription, like illegibility, dosing intervals, drug interactions, etc., the pharmacist is able to consult the prescriber and clarify the same, for the benefit of the patient.

The prescription usually contains directions for use of the medication by the patient and efficacy of a medication largely depends on adherence to. If required, the pharmacist can translate this information and clarify any doubts the patient may have.



**Smart  
Moves**

**Better to be safe than sorry.  
Always carry your prescription when you visit the  
pharmacy for mutual protection!**

### **COMMON EXCUSES GIVEN BY CUSTOMERS FOR NOT BRINGING A PRESCRIPTION**

*"I forgot to bring!"*

*"The doctor has prescribed over the phone."*

*"The doctor is my relative and has verbally told me what to take."*

*"First time anyone has asked me for a prescription!"*

*"I know my medicines by heart; I'm taking them for years!"*

*"Why does one need a prescription for an antibiotic?"*

*"You want me to go all the way home and bring the prescription?"*

*"The prescription is at home. My wife told me the medicine over the phone"*

*"All pharmacies give - why can't you?"*

*"Here, speak to my doctor - he will confirm..."*

*"Don't worry, I won't hold you responsible..."*

*"We cannot afford going to the doctor every time for the prescription."*

*"If you can't give without a prescription, give only a few, and the rest later."*

*"My friend recommended this medicine as it was effective for him."*

*(avoids the time and cost factor of going to the doctor)*

## Check OUT

**Buying Medicines Without A Prescription Can Be Dangerous, As You May Be Buying The Wrong Medicine All The Time.....**

In India, the practice of dispensing of prescription medicines without a proper prescription is widespread and dangerous. Unfortunately it has remained so for the past several years and very little is being done to reduce the problem.

The problem is not an individual one and it needs to be addressed by all the stakeholders. Below are some possible solutions:

### 1. PUBLIC AWARENESS

- About proper use of medicines.
- About seriousness related to medicines.
- About laws related to medicines.
- About facts related to ethical pharmacy practice.
- ▶ That prescription medicines need to be purchased/ consumed only against a fresh prescription each time (as per law).
- ▶ Should not force a pharmacy to break laws

### 2. IMPLEMENTATION OF LAWS

- Sale of prescription medicines by pharmacies only against a proper prescription of an R.M.P.
- Proper inspection/ supervision of pharmacies from time to time.
- Regulate cross-practice & prescribing methods
- Eliminate QUACKS.
- Suitable modifications in the law.

### 3. PHARMACIES

- Presence of pharmacist in the pharmacy while dispensing prescription medicines.
- Ensure presence of pharmacist !
- Avoid dispensing prescription medicines without a proper prescription.
- Educate the public on good prescription habits.

### 4. DOCTORS

- Cultivate habit of writing complete prescriptions.
- Give fresh prescription for each visit/ after duration of prescription has lapsed.
- Avoid recommending prescription medicines over telephone/ verbally.
- Assist in instilling in the minds of the public, seriousness about medicines and prescriptions.

**SOLUTIONS TO  
REDUCE PROBLEM  
OF SALE OF PRESCRIPTION  
MEDICINES WITHOUT  
PROPER PRESCRIPTION.**

## **7 Doctor's handwriting :**

At times, patients find it difficult to clearly understand the doctor's handwriting: the name of the medicine or the instructions about how to use the medicine. It is important that the patient/care giver clarifies this either with the doctor or the pharmacist. It is very important to understand the prescription because this will help the patient use the medicines correctly.

<b>Incomplete prescription</b> - the doctor may have forgotten to write down the potency/strength or type of dosage form of the medicine.	<b>What is to be done</b> In such cases, it is best to talk to the doctor and clarify. It is wrong to assume that if no potency is written, the minimum potency should be used. Also, do not force the pharmacist to make a decision on what potency to dispense.
<b>Indecipherable prescription</b> - Even the pharmacist may not understand the doctor's handwriting.	

## **8 Dispensing of Ayurvedic, Homoeopathic, Siddha, Unani medicines:**

It is a misconception that these medicines are completely free from side effects. Since they are not strictly free from side effects, they also need to be used carefully. Some of these medicines, if not used properly, can also cause harm. Unfortunately, the laws of our country have not made any attempt to classify these medicines as prescription and non-prescription medicines. In fact, as per our laws, besides allopathic medicines, only for the sale of homeopathic medicines one needs to take a license from the drug control department, and needs the supervision of a pharmacist for dispensing.

For Ayurvedic, Siddha and Unani medicines, one does not need a license from the drug control department to sell these medicines. All these medicines can be purchased by the consumer without the need of a prescription. This is unfortunately not a correct practice (especially for some medicines which need to be taken only under medical supervision), because at times, it could be dangerous.

**Cross – practice :** This is a term used when a doctor of one system of medicine prescribes medicines of another system. By law, cross – practice in our country is not permitted. However, unfortunately, it takes place quite rampantly. And it is just not cross - practice. Even persons with no medical qualification, or bogus qualifications (**QUACKS**) practice medicine, prescribe even allopathic medicines. This is a very dangerous practice!

# 5

## Meet the Pharmacist

Pharmacists represent the 3<sup>rd</sup> largest healthcare professional group in the world, and in India today, there are around 10 lakh pharmacists, working in various positions, applying their unique knowledge and skills, contributing to the health of the nation.

Pharmacists are health care professionals, whose professional responsibilities include striving to ensure that people derive maximum benefit from their medicines. This requires them to keep abreast of developments and advances in knowledge and technology related to manufacture and use of medicines, professional standard requirements, laws governing pharmacy, etc.

Unfortunately, in the eyes of the public, the role of the pharmacy profession and its contribution to health care are often not duly recognized, and many times even misunderstood. This is possibly because both public and policy makers believe that pharmacists' role is restricted to merely buying and selling of medicines (like that of a salesperson in any ordinary shop).

Pharmacists work in a wide variety of health care settings : in the pharmaceutical industry (carrying out a wide range of activities – from R & D to manufacturing to quality control, packaging, quality assurance, etc), in practice settings (hospital & community i.e. retail pharmacy), in academics, regulatory affairs, clinical research, etc.

While, by nature of work/practice, many pharmacists work silently behind the scenes, some of them, who are in direct contact with patients, represent the face of the pharmacy profession. The pharmacists who are mainly in direct contact with the public/patients are the community (retail) pharmacists who work/practice in pharmacies/medical stores, and hospital pharmacists who work/practice in hospitals.

In India, pharmacists are obliged to follow the Code of Ethics prescribed by the PCI (Pharmacy Council of India) and are bound by various laws:

- The Drugs And Cosmetic Act(1940) and Rules (1945)
- The Pharmacy Act 1948



- The Drug Price Control Order 2013
- The Narcotics and Psychotropic Substances Act 1985 and Rules 1985
- The Food Safety and Standards Act and Rules 2011
- The Consumer Protection Act 1986

## **1 Know your pharmacist :**

**Did you know that...?**

- Your pharmacist is the vital link between you and your doctor in taking care of your health.
- Your pharmacist is much more than a mere medicine-seller.
- Your pharmacist is a competent, professionally qualified expert, who can help you derive maximum benefits from your medicines.

**Your pharmacist is the right person to guide you about:**

- The right way to take your medicines.
- The right way to store your medicines.
- The DO's and DONT's of your medicines.
- The general guidelines/tips to healthy living.



## **2 Rights of a patient at the pharmacy:**

- To have the medicines prescribed by the doctor dispensed adequately and with appropriate instructions.
- To be charged the correct price for the medicine/s purchased.
- To get satisfactory service at the pharmacy.
- To be told in a simple manner how to take the medicines.
- To be issued a neat cash memo, complete in all respects.
- To be ensured that all medicines are dispensed under the supervision of a registered pharmacist.

Some pharmacies are quite often very busy. The patients/customers, too, are under some time constraints. Often, they have already spent long hours at the doctor's clinic, and then are in a hurry to pick up the medicine and go home at the earliest. One can fix a time with the pharmacist when one could sit with him/her and get the necessary information about the prescribed medicines.



**Ask your pharmacist your medication queries.  
Derive maximum benefits from your medication !**

# 6

## Care While Purchasing Medicines

In India, medicines are available in any of the following points/locations:

1. **Pharmacy** (also called as Chemist & Druggist or Medical Store) – generally privately run
2. **Govt. Pharmacy** (or Dispensary) in the Sub-Centre, PHC, CHC or District or Tertiary Hospital
3. **Private Doctor's Clinic**
4. **Private hospital**
5. **Through the internet**

Most of the times, however, the medicines are purchased by people from private pharmacies.

There are some proportions of sub-standard, spurious and counterfeit medicines in the market today. In order to minimize the chances of coming across/buying such types of medicines, one must carry out certain checks and take certain precautions while buying medicines:

### Check OUT

- Is the pharmacy maintained in a neat, clean and systematic manner and due care taken of the medicines?
- Is the pharmacy authorized, duly licensed ? Are the drug licences of the pharmacy duly displayed in public view? Are they valid ?
- Is the Pharmacist present, and are the medicines sold under his/her supervision?

Consumers must ensure that they carry a prescription when they go to a pharmacy to buy their supply of prescription medicines.

### Note

By law, all prescription medicines need to be sold under the supervision of a Registered Pharmacist only.

## **1 Spend some time at the pharmacy :**

Many a times, people have to spend long hours waiting at the doctor's clinic. And very often, they are in a hurry at the pharmacy. Since the pharmacy is dealing with life saving medicines, it is advisable to be cautious. Therefore :

- At the pharmacy, DO NOT BE IN A HURRY.
- Do not force the pharmacy personnel to give you the medicines quickly....they could end up making a mistake in trying to please you.
- The pharmacy has to handle the rush, clients of different nature, prescriptions with difficult handwritings, thousands of medicines, many with similar names and similar looks and packings. The staff also have to search for the right medicine, make a correct bill, pack the medicines and also give instructions for use.

So, it is in your interest that you spend some time at the pharmacy, check out the medicines you are being dispensed, and discuss your medicines with the pharmacist... you will be taking good advice!

### **Check OUT**

#### **What to check for while receiving the medicines?**

- Outward appearance...signs of any tampering, degradation, spoilage.
- Check tablets for spoilage, mottling, discoloration, etc.
- Whether the correct medicine (correct brand) is dispensed as per the prescription?
- Are the following mentioned on the label?
  - ☞ Date of Expiry (and that it is not expired!), Batch No.
  - ☞ Name and address of the manufacturer.
  - ☞ Drug Manufacturing Lic. No.
  - ☞ Price.

#### **Trade (Brand) v/s Generic (Pharmacologic)**

- In our country, brand substitution is not permitted by law – so if a particular brand of drug is prescribed by the doctor, the pharmacy is obliged to give the same brand.
- The reason for this is that, for the same medication, there could be a difference in the amount of drug released in the blood from two different brands.

## **2 Cash Memo/Invoice/Bill :**

It is very important that you insist for cash memo for all the medicines you buy at the pharmacy.

### **Why it is important to take a cash memo ?**

- A bill/cash memo is a proof of legal sale of medicines.
- The patient can find out whether the batch number, expiry date from the bill is exactly same as designated on the strip/package, and if they are not on the part of the strip that is dispensed to them.
- The bill is the only proof available to the patient, that a medicine of particular batch and manufacturer was purchased from that particular pharmacy, especially in case any defects/complaints are detected.

### **What the BILL/CASH MEMO should indicate ?**

**The following particulars must be pre-printed (or printed along with medicines and patient details in case of a computerized bill) on the cash memo:**

- Name, address, and telephone number of the pharmacy.
- Serial number of bill.
- Drug license numbers.
- TIN i.e. Tax Identification Number (if applicable).

**The following particulars must be printed/written on the cash memo at the time of dispensing :**

- Date.
- Name and Address of the patient.
- Name and Address of the prescriber.
- Name of the product or medicine, quantity, Schedule under which it falls, name of the manufacturer, batch no., expiry date and the price. The cash memo must always be signed by the pharmacist under whose supervision the medicines are dispensed.

### **What you must ensure before leaving the pharmacy ?**

- The name, potency and the quantity of medicine tally with that on the bill.
- The Batch No., Expiry date tally with that on the bill.
- The package/strip/bottle seal is not tampered with.
- When you go home, you can do a thorough check on the above , plus confirm if you have been charged the right price in the bill.

### **What to do with the bill ?**

- Keep the bill at least till you have finished consuming the medicines.
- Preferably, keep all bills along with the prescription/s neatly in a file for future records. Keep this safely.

**Note**

Please wait to receive a  
Bill for the medicines you buy..  
The Bill is your best protection against  
spurious/counterfeit medicines !



**DO NOT Tear or Throw away the bills!!**



### **3 Expiry date :**

Expiry date is the date after which there is no guarantee that the medicine will maintain its safety and efficacy/potency.

It is mandatory for an expiry date to be printed on the covering (Packet/strip/package/satchet/carton/boxes) of medicines. These can be interpreted as follows :

What the label says	Interpretation
EXP DATE : June 2011	Can be used till the last date of June 2011
USE BEFORE : June 2011	Can be used till the last date of May 2011
BEST BEFORE : June 2011	Can be used till the last date of May 2011
Exp Date: 24 months from the date of manufacturing. (e.g. If date of manufacturing is June 2010)	Can be used till the last date of May 2012

Some medicines have shorter expiry periods (9 - 12 months from date of manufacture), while some may have up to a maximum of 5 years. This varies with the type of medicine and the dosage form.

#### **Expiry for homoeopathic, ayurvedic medicines:**

Till recently, the general concept for expiry date, if none was written on the label,

was to take it as 5 years. This was not a correct concept. Luckily, now it is mandatory that the date of expiry be written on all ayurvedic medicine also. This period of expiry varies with the type of dosage form.

#### **4 Buying medicines on the internet :**

In today's world of internet, our mail boxes are often flooded by advertisements of medicines claiming easy accessibility and discounts by ordering through the internet. In India, there are no licensed internet pharmacies, and secondly, the products mostly advertised are prescription products which need to be taken only under medical supervision. Therefore, purchasing of such medicines on the internet is very risky, and is likely to cause more harm than good. More often than not, one is likely to end up buying a cheap imitation of the original product, which, more often than not, will be spurious or counterfeit !

So, even if you have a prescription, it is much safer to buy it from an authorized pharmacy rather than the internet. In some developed countries, there are authorized internet pharmacies from which one can buy medicines. Presently, in India, there is no law in place for internet pharmacies.

#### **Some other reasons why buying medicines over the internet is not yet advisable in our country:**

- Most of the times the medicines you buy on internet are not been prescribed by a qualified Doctor.
- There may not be assurance or checks and controls on the quality and effectiveness of the medicines supplied.
- If there is any problem about the quality or efficacy of the product, there is nothing you can do, because you will realize that most of the internet medicine suppliers will never mention their physical address or contact number (or it will be incorrect)!!! And therefore, you can not try to take any legal action for the same.



**Buy your Medicines only  
from known and reliable sources!**

# Spurious, Sub-standard, Counterfeit Medicines



Unfortunately, there are black sheep everywhere.

And so also in the medicine market: some manufacturers, some dealers, some middlemen, and some pharmacies. Our country, too, has some of its share of medicines which are either spurious, misbranded, or sub-standard. Although indirectly covered under these definitions, the term "Counterfeit" is not yet defined in India, although it is used internationally, including by the W.H.O. Consumption of such medicines can cause harm to the patients.

## 1 Spurious Drug (Medicine):

According to the Drugs & Cosmetics Act, a drug is said to be spurious if:

- It is an imitation of, or is a substitute for another drug; or resembles another drug in a manner likely to deceive; or bears upon it, or upon its label or container the name of another drug (unless it is plainly and conspicuously marked so as to reveal its true character and its lack of identity with such other drug); or
- The label or container bears the name of an individual or company purporting to be the manufacturer of the drug, which individual or company is fictitious or does not exist; or
- It has been substituted wholly or in part by another drug or substance; or
- If it purports to be the product of a manufacturer, of whom it is not truly a product.

## 2 Misbranded drug (Medicine) :-

According to the Drugs & Cosmetics Act, a drug is said to be misbranded :

- if it is so coloured, coated, powdered or polished that damage is concealed or if it is made to appear of better or greater therapeutic value than it really is; or
- if it is not labelled in the prescribed manner; or
- if its label or container or anything accompanying the drug bears any statement, design or device which makes any false claim for the drug or which is false or misleading in any particular way.

## 3 Counterfeit Drug (Medicine):

According to the W.H.O., a counterfeit drug/medicine, is one which is deliberately and fraudulently mislabelled with respect to identity and/or source—

it may include products with the correct ingredients or with the wrong ingredients, without active ingredients, with insufficient active ingredients or with fake packaging.

#### **4 Sub - Standard (or Not-Of-Standard Quality) Drug (Medicine):**

According to the Drugs & Cosmetics Act, a sub-standard medicine is a genuine medicine produced by an authorized/licensed manufacturer, but which does not meet quality specifications set for it by national standards.

#### **5 Consequences of spurious / counterfeit medicines:**

Many of the times, these medicines are not efficacious and in most of the reported cases, they are not equivalent in safety, efficacy and quality to their genuine counterparts. In many cases, they could cause **HARM!**

##### **The effects of such medicines on our health:**

- Medicines which may contain harmful substances can cause grievous harm, disability or death.
- Medicines with little or no medicine in them may not cause harm – but they may not be effective either. These could worsen symptoms or even cause disabilities or death because of delay in proper medication/treatment.
- Even when such medicines do not endanger life, they can leave the patient seriously ill.
- Treatment with antibiotics which are ineffective can increase the risk of surfacing of resistant microorganisms and may have a deleterious effect on a wide section of the population.

##### **Such medicines also can:**

- Be a waste of resources spent on purchasing, managing stocks, transportation and dispensing of medicines with little or no effect or even cause harm to the patient.
- Reduce patients' trust in health professionals and health systems, which are seen as unable to provide adequate treatment – because the medicines are ineffective or cause side effects.

Unfortunately, because of advances in printing technology and master minds amongst the counterfeiters, it often becomes very difficult not only for consumers, but also for the drug control authorities and even the original manufacturers themselves, to distinguish between genuine and spurious/counterfeit medicines.

Consumers thus have to play an active role in protecting themselves from such medicines. They need to be very vigilant when buying and consuming their medicines, and look out for :

- Packing which looks different.
- Packing which looks the same but the medicine is other than what is prescribed.
- Price of the medicine is lower than the one at which it is purchased normally.
- If the spelling or name of the medicine is different. e.g.- Vicks as Veecks or Taxim as Taxem.
- Outward appearance of the medicine package...signs of any tampering, degradation, spoilage, etc.
- Check tablets for spoilage, spotting, discolouration, etc.
- A medicine which is not effective.

## **6 What to do if you suspect such medicines:**

- Report immediately to the doctor if there are some adverse reactions. If the doctor says that these reactions are not normal, then either the patient is allergic to the medicine or it could be spurious. Save the unused medicine and cash memo and complain to either the manufacturer or the Drug Control Department.
- If the medicine fails to be effective within a specific period, discuss with your doctor what is to be done.
- If there is a grievous reaction or death after consuming the medicine at home or hospital, then the matter should be immediately reported to the Drug Control Department for investigation.

If consumers and health care providers are alert and the authorities co-operate, the illegal trade of spurious drugs can be made ineffective and the culprits can be nabbed.

### **Smart Moves**

- Do not buy medicines from the internet. It is not easy to know which supplier is licensed and reliable. The chances are very high that you will get dubious/spurious medicines.
- Be cautious and very careful of medicines being offered on discount. You could get medicines which are compromised for quality.
- Avoid buying loose medicine (capsules/tablets) either from the pharmacy or your doctor. However, if there is no option, insist that you see the label of the original container for various details.

# 8

## Storage of Medicines

**It is very important that our medicines are stored in the appropriate storage conditions.**

This is essential to:

- Maintain their physical integrity.
- Maintain their potency/strength.
- Prevent their deterioration/ spoilage.
- Maintain their quality and safety throughout the shelf life (till the expiry date).
- Prevent formation of toxic substances within the medicines.

- Right temperature
- Right humidity
- No exposure to light/oxygen(air)

If not maintained

No assurance that the medicine will retain its potency till the date of expiry mentioned on the label, causing loss of efficacy.

Check  
OUT

Different medicines may require different storage conditions!

Check on the label of each medicine for the same, and ask your pharmacist in case of any doubts!

### 1 General tips for storage of medicines :

**When you are taking the medicine/s home from the pharmacy :**

- Ask the pharmacist about any special storage condition requirements.
- While taking it home, do not keep the medicine packet in the glove compartment of the car or scooter dickey, especially in the day time, since it can get heated up.
- If a medicine needs to be kept between 2 - 8°C, it is advisable to get it packed in an ice-pack and take it home at the earliest. At home, quickly transfer the medicine to a refrigerator (but not to the freezer compartment).
- Keep all medicines in their original containers.

### **Medicine storage at home :**

- Follow the storage guidelines mentioned on the medicine package.
- Keep all medicines in a dry place, away from direct sunlight.
- Keep the medicines in a cupboard or cabinet, preferably locked.
- Medicines of different members in the house should be kept in different boxes/container, neatly labeled with the name of the person. Common medicines can be kept in a separate box / container.
- Medicines for external use should be kept separately.
- **Keep medicines away from the reach of children and pets.**



### **Know what the following storage conditions on the label mean:**

Label storage conditions	What it means
<b>Store in a COOL place.</b>	Store at a temperature between 8 - 30°C.
<b>Store in a COLD place. Do not freeze.</b>	Store at a temperature between 2 - 8°C (in the refrigerator, but not in the freezer compartment)
<b>Store in a dry place.</b>	Do not keep in a place where there is excess moisture (e.g. kitchen, bathroom). Keep in the original container.
<b>Store away from light.</b>	Keep in the original container. Do not overexpose to light or sunlight.
<b>If no storage condition is mentioned on the label.</b>	Keep in a cool, dry place, away from exposure to direct sunlight, that is, protect from moisture, freezing, and excessive heat.

**Note**

**Ask your pharmacist about any specific storage instructions for your medicines.**

## **2 Carrying your medicines while travelling:**

**Those travelling to other parts of the country need to follow additional tips for safe storage and use of their medications:**

- Pack your medicines in a carry-on bag kept close to you.
- For your regularly used medicines, carry an extra supply with you in case your return is delayed. Sometimes, the particular brands of medicines you are taking may not be available in the place you are travelling to. Or, some medicines may not be dispensed by pharmacies without a prescription.
- Always carry your doctor's prescription (preferably freshly issued) with you, in case you lose your medicines, or have to purchase additional quantities. It is a good idea to carry copies of the prescription with the generic names of the medicines written.
- If you have to carry medicines which need storage between 2 – 8° C, you will have to carry them with an ice-bag or thermocol box with ice, during transit.

**Those travelling out of the country need to follow additional tips for safe storage of their medications :**

- Pack your medicines in a carry-on bag instead of a checked-in suitcase.
- Carry an extra supply with you in case your return is delayed. In other countries, the same medicines may not be available, and importantly, in many countries, prescription medicines are strictly not given by pharmacies without a prescription!
- Always carry your doctor's prescription with you in case asked to produce the prescription at the airport/customs. Get the prescription freshly issued by the doctor.
- Carry with you extra photocopies of the prescription, and write on them the generic name/s of the medicines prescribed. Get your doctor or pharmacist to help you out with this. This can be very useful if you fall sick in the country you have travelled to, and you have to inform the doctor which medicines you are currently taking.



- Do not store medicines near heat sources e.g. gas stoves, electrical appliances, or in the kitchen or bathroom.
- Do not store in direct sunlight, e.g. near windows.
- Do not store near moist place - e.g. bathroom, sink, kitchen.

- Watch time changes. If you are travelling to a separate time-zone, you may have to set a separate watch to your usual time so you can remember when to take any medication.

### **3 Clearing your medicine cabinet:**

At home, one generally ends up with a lot of medicines, many of them unused. Hence, be sure to look through your medicine cabinet at least once in 6 months:

- Get rid of expired (old) medicines and medicines you no longer use.
- Never use a medication that has changed color, consistency, or odor, regardless of the expiration date.
- Throw away capsules or tablets that stick together, are harder or softer than normal, or cracked or chipped.
- Check the expiration date each time you take medicines. Throw out and replace any medications that are out of date.

### **4 Safe disposal of medicines:**

Safe disposal of these unwanted or expired medicines often is a major problem, as such instructions are not available in most cases. Many medicines, if disposed off in household garbage bins, can be risky. However, in India, we do not have any proper systems in place. In many other countries, it is recommended that medicines should neither be thrown into household garbage, nor flushed down the toilet, as this may contaminate the environment. In these countries, pharmacies or specific agencies accept unused/spoilt medicines and arrange for safe disposal.

Burning of the expired medicines at low temperature or in open containers results in release of toxic pollutants to the air. Ideally, this should be avoided. Therefore,

- If no instructions are given, throw the medicines in the household trash, but first take them out of their original containers and mix them with an undesirable substance, such as used coffee grounds. The medication will be less appealing to children and pets, and unrecognizable to people who may intentionally go through your trash.
- Put the medicines in a sealable bag, empty can, or other container to prevent the medication from leaking or breaking out of a garbage bag.
- Small quantities of liquid medicines, including antiseptics, can be disposed off after diluting them by flushing down the toilet.

# 9

## Self Medication

Self medication is the treatment of common health problems with medicines specially designed for use without medical supervision and approved as safe & effective for such use (*World Self Medication Industry - WSMI*).

Self medication has several advantages and disadvantages:

Advantages	Disadvantages
<ol style="list-style-type: none"><li>1. The number of doctors available is limited. Besides, it is impractical that every minor ailment be treated only through a doctor. Doctors instead can focus on areas where they are really needed.</li><li>2. People do not always have the time to visit a doctor for every minor ailment. Thus time can be saved.</li><li>3. It costs to visit a doctor and pay the fees, beside the cost of travel and time spent and often work hours lost. Costs can be reduced.</li><li>4. Wide choice of OTC medicines available.</li><li>5. OTC medicines are generally cheaper than prescription medicines.</li><li>6. OTC medicines are relatively safer and of well established efficacy.</li></ol>	<ol style="list-style-type: none"><li>1. Common man is not trained in diagnosis and treatment. And therefore can lead to wrong diagnosis and also wrong choice of medicines.</li><li>2. Can thus delay proper diagnosis and treatment.</li><li>3. Can lead to adverse effects.</li></ol>



Therefore, self medication is very useful, but it is important that it is done in a responsible manner where the patient is aware about the exact diagnosis, and knows which medicine/s (OTC medicine/s) to use and in what exact manner to take them, in order to treat himself, and then takes the medicine/s in the right dose and manner.

1

### Responsible self medication :

As per the WHO the term “responsible use of medicines” implies that the activities, capabilities and existing resources of health system stakeholders are aligned to ensure patients receive the right medicines at the right time, use them appropriately, and benefit from them.

### Note

**Self medication is necessary, however, it is important to take care that it is “responsible” self medication, where the patient takes the decision as to which drug to take and how much, after having background information about it.**

For umpteen reasons, it is not practical to see a doctor for every ache and pain, itch or fever – it would involve higher costs, need more manpower/doctors, lot of time spent, etc. Therefore, self medication has become a worldwide accepted practice. And precisely for this reason, the medicines of the OTC category are available to the public. Many OTC medicines are advertised, and also promoted and recommended by pharmacies.

Self medication should be considered only in case of minor illnesses, where intervention of a doctor may not be necessary. However, it is important to realize from this, that a patient may or should self medicate only when he is sure about the exact nature/diagnosis of the illness, and has certain basic information of the medicines he is consuming.

In most developed countries, these OTC medicine labels are patient-friendly, carrying sufficient information for the patient to make a suitable choice/decision of the medicine he/she is about to take. It is also mandatory to have a certain minimum amount of information to be available to the patient to make these choices. Generally, when it is not practical because of space constraints to put all such information on medication labels, it is made mandatory to include PPIs “Patient Package Inserts” along with the medicine packet.

Unfortunately, a study of the non-prescription medicines in India reveals that there is hardly any beneficial information on the label, and most of the times there is no accompanying information leaflet meant for patient reading.

In such situations, patients could ask the Pharmacist at the retail/community pharmacy for information and advice about proper use of non-prescription medicines.



**Self medicate only when sure about the exact nature of illness and about certain basic aspects of medicines.  
It is very risky to self medicate with prescription medicines.**

*As we live longer, work longer, and take a more active role in our own health care, the need to become better informed about self-care grows. Information is the best prescription !*

## **How do patients generally know about medicines and self medication ?**

- OTC medicines are advertised in the media and in the pharmacy.
- A friend/family member recommends medicine/s.
- A doctor prescribes it once or a few times, and then the patient decides to take it as and when required.
- Patient reads about medicines on the internet.

### **2 Cautions while self medicating :**

- Be sure that you are able to diagnose your illness, and that your illness is minor.
- Self medicate ONLY with OTC medicines, and NOT with prescription medicines.
- Be sure you understand what is the correct medicine to be taken for the particular illness/condition, and understand why you are taking the medicine in the first place.
- Read the label on the OTC medicine and any accompanying leaflet carefully, to obtain and understand as much information about the medicine as possible.
- Follow the correct dosing instructions on the label. DO NOT exceed the stated dose!
- Follow age limits, if any, on the label.
- Do not self medicate for more than 2 or 3 days. If the illness/symptoms are not alleviated, it is better to consult a doctor!

#### **Note**

##### **When giving OTC medicines to children .....**

- ★ Remember that kids aren't just small adults, so don't estimate the dose based on their size.
- ★ If you are not sure of the illness or the dose, please consult your doctor or pharmacist.
- ★ Before you give your child two medicines at the same time, talk to your doctor or pharmacist.

*Unfortunately, self medication not only with OTC medicines but with prescription medicines also is rampant. This is a very dangerous practice, and needs to be curbed!*

# 10

## Understanding your Medicines

Smart  
Moves

REMEMBER : You spend a lot of time and money in getting the :

- Best Diagnostic report by the Best lab
- Best diagnosis by the Best doctor
- Best treatment/medicine prescribed
- Best medicines bought from the Best pharmacy

**BUT ALL WILL BE IN VAIN IF YOU DO NOT TAKE/CONSUME YOUR MEDICINES PROPERLY!**

It is the right of every patient to know various aspects about their illness/disease and the treatment/medicines that they are prescribed/recommended!

An informed consumer is a wise consumer. An informed consumer has more chances of following the prescribed course of therapy. The patient should take active part in his own welfare and treatment.

### 1 When you visit a doctor :

- Write down all your questions before you visit. List the most important questions first.
- Take an up-to-date "history" (or your medical records) with you. Also take a list of all medicines that you consume. Write down when and how often you consume your medicine/s.
- Tell the doctor about everything you take for your health. E.g. OTC medicines, herbs, etc.
- Tell your doctor about your main health problem first, then discuss the secondary symptoms.
- If you have X-ray films, test results, and medical records, show them to your doctor.

Check  
OUT

Always check the qualifications of the doctor you visit : Is he a qualified doctor, having proper qualifications and registration with the respective State Council and eligible to practice in his respective system of medicine?

Look out for the doctor's certificates in his/her clinic !

## **2 Before you leave the doctor or pharmacy :**

Be sure you understand some basic things about your medicines (whether prescribed, or whether OTC medicines taken on your own).

### **1. What is the name of the medication (Brand or Trade Name) and what are the active ingredients (Generic name/s)?**

For e.g.

Trade Name	Ingredients/Generic Name	Type
Glycomet GP2 tab.	Metformin 500 mg + Glimiperide 2 mg	Contains 2 active ingredients (called as FDC-Fixed Dose Combination)
Crocin tab.	Paracetamol 500mg (Acetaminophen)	Single ingredient medicine
Supradyn tab.	Contains around 11 vitamins & 7 minerals	Multiple ingredient medicine in FDC

### **2. What is the medication supposed to do? Will it cure or relieve my symptoms?**

For e.g.

- Anti-inflammatory medicine (e.g. Ibuprofen) - will relieve/reduce the pain and inflammation – but will not heal the tear or muscle pull (this will heal only with rest to the body part).
- Antibiotics – will kill the bacteria and thus cure/get rid of the infection (if the entire recommended dose is completed).
- Asthalin inhaler – will dilate the bronchioles and relieve the symptoms temporarily. It cannot cure asthma.
- Anti-diabetic medicines will help to reduce your blood sugar levels, but will not cure diabetes.

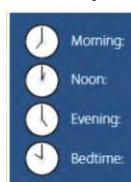
### **3. WHEN & HOW do I take it?**

How many tablets/amount of liquid, how many (and which) times of the day ? In relation to food – whether to take before or after food, and how much time before or after?

Whether to swallow, or chew, or suck the tablet. Or place it below the tongue?

For e.g.

- Amoxicillin capsules – swallow one capsule three times a day (every 8 hours) along with a glass of water,



preferably on an empty stomach (at least half or one hour before food or two hours after food).

- Sustained Release tablets are not to be cut, broken, or chewed.
- How to use the inhaler? How to use the Insulin injection...? – one needs to be told and demonstrated how this is to be done. If incorrectly used/ incorrect technique is used, the medicine may not work effectively.

#### **4. How long should I take it? Can I stop taking it earlier if I start feeling better?**

**For e.g.**

- Antibiotics – you should not miss a dose, and should complete the prescribed course of therapy.
- Blood Pressure medications – need to be taken everyday without fail – and you must not stop taking unless advised by the doctor. This applies to most medications taken for chronic diseases like diabetes, cholesterol, hypertension, etc.
- Pain killers – these must be taken only as long as the doctor advises! Excess usage may cause severe side effects.
- Anti-anxiety medicines – these need to be taken preferably for a short term, and never longer than what the doctor recommends! Long term usage may cause habituation; and in such cases, an increasing dose may become necessary.

#### **5. Should I avoid alcohol, any other medicines, specific foods, beverages, and/or activities while I am on this medication?**

**For e.g.**

- A person who is consuming Metronidazole should not consume alcohol for at least 1 day before to 2 days after consuming Metronidazole – it may cause a rash or a severe reaction.
- If one takes an antihistamine (anti-allergic medicine) and also consumes alcohol – it can cause excessive drowsiness.
- Consuming grapefruit juice while on Losartan (a BP medication) – can reduce the effect of Losartan.
- When milk or milk products are taken within 2 hours of consuming Ciprofloxacin (an antibiotic) it can reduce the effect of Ciprofloxacin, as most of it does not get absorbed.

- Antihistamines can cause drowsiness. When taking these, you should not drive, or operate machinery till you are sure how they affect your motor skills.

## **6. What are the most common side effects ? Are there any rare serious side effects ? What should I do if I experience side effects ?**

**For e.g.**

- Doxycycline can cause hypersensitivity reactions on the skin if there is over exposure to sunlight. Therefore when on this medication, avoid going out in the sunlight, especially when the sun is strong (e.g. 10 a.m.- 4 p.m.) or cover your body as much as possible when you are outdoors.
- Amoxicillin may cause mild diarrhea. If this is tolerable, please continue the medication and complete the prescribed course. But, in case the diarrhea becomes severe, please contact your doctor at the earliest.
- Atorvastatin may cause muscle pain in some patients. If the problem becomes severe, it could lead to kidney problems. Patients taking Atorvastatin should keep a watch on any muscle pain and contact the doctor immediately.
- Oral Contraceptives, on long term usage, may increase the risk of breast & cervical cancer/s. Therefore every woman should be informed about the various side effects of oral contraceptive before beginning use of the same.



## **7. What if I forget to take my medications once or several times?**

**For e.g.**

Antibiotics, Anti-diabetic medication, Oral Contraceptives, etc.  
There could be different advice for different medications!

## **8. Is it safe to become pregnant or breastfeed while taking this medication?**

**For e.g.**

- Women in the reproductive age should take extra precautions not to become pregnant while they are taking any medications. and consult the doctor before conceiving.
- Breastfeeding women should take medicines only after confirming with their doctor. (For more details, please refer chapter no. 19)

## 9. How should I store my medications?

- At what temperature should I store them?
- Which place in my house is the best to store medicines?
- Which of my medicines need refrigeration?

**For e.g.**

- Some eye drops need to be stored in a refrigerator (between 2 - 8°C) till the container is opened. Once it is opened, it should be kept in a cool place (8-30°C) and discarded after 30 days of opening.
- Nikorandil tablets should be kept in a refrigerator (between 2 - 8°C).
- Not all injections are to be kept in a refrigerator.
- Once you start using an Insulin pen/cartridge you should not keep it in the refrigerator.



**Individuals who don't take the time to learn about their medications, both prescribed and over-the-counter, run the risk of using them improperly in ways that could damage their health!**

**Therefore you must become 'Medicine Smart' by asking questions, keeping track of what medications are being taken, and building a relationship with your doctor and pharmacist.**

*Under the watch of the Drug Control authorities and other pharmaceutical regulatory agencies, great care is taken by the manufacturers to manufacture/prepare medicines by following Good Manufacturing Practices and ensuring that good quality medicines are introduced in the market.*

*All this will be in vain if the medicines are not used properly by the patient.*

# 11

# Prescription Abbreviations, Common terms & Measurements

Tab 2 yloric 100mg tria daily.  
 Cap Fludac 50mg daily (60)  
 Tab Vah 50mg 1 tablet daily (60)  
 Mixr Diagene 100mg flumic daily  
 d — d — d.

Tab Emeset  
 i — i — i  
 Tab Rantae  
 i — o — i

Very often, doctors write various short forms, abbreviations, symbols, in the prescriptions. Some of these have long standing recognition worldwide, while some are country specific. Some of them could be ambiguous and convey different meanings to different people.

Many a times, a patient may not be able to interpret or understand them. We have tried to list out some of the common short forms, abbreviations and symbols and explain the exact meaning / interpretation for the common man to understand.

It is important to make ourselves aware about abbreviations, so that we ensure that we take our medicines correctly & in accurate doses.

## 1 Time of the day, how many times:

Short forms	Interpretation / meaning	Additional comment/information
<b>OD or q.d</b>	OD- "omni die" or q.d "quaque die" (in latin) 1 OD - Take one, once a day. 2 OD would mean take 2, once a day.	To be taken once a day, at the same time everyday.  The doctor should specify at which time of the day.
<b>b.d. (b.i.d)</b>	b.d.or b.i.d.“Bis in die” (in latin)  1 b.d. - Take one, 2 times a day 3 b.d. - Take three, 2 times a day	One to be taken 2 times a day.  (Ideally, this would mean every 12 hours – morning and night).
<b>t.i.d or t.d.s</b>	t.i.d. - “ter in die” or t.d.s.“ter dies sumendum” (in latin) – 1 t.d.s. - Take one, 3 times a day 2 t.d.s. - Take two, 3 times a day	Ideally, this would mean every 8 hours. The gap between two doses should be uniform, so as to maintain adequate blood levels.

<b>q.i.d</b>	q.i.d - "quatre in die" 1q.i.d. - Take one, 4 times a day	Ideally, this would mean every 6 hours
<b>S.O.S.</b>	"si opus sit" - as and when required / when necessary	To be taken whenever required. Ideally, the doctor should specify the minimum time period before the next dose can be taken, and the maximum permitted daily dose.
<b>p.r.n.</b>	"pro re nata" - when needed (as situation arises)	
<b>1 hs</b>	"hora somni" - at the time of sleeping (at bedtime), or after dinner	
<b>X-O-X</b>	1 in the morning, none in the afternoon, and 1 at night	These are the common ways in which doctors in India write to simplify and make the patient to understand the doses to be taken. This is very useful, especially because of the high rates of illiteracy in the country.
<b>X-X-1</b>	1 at night	
<b>O-X-O</b>	1 in the afternoon	However, this could at times be confusing, as in some cases 'x' could mean 'no dose' & in some cases it could mean 'take one'.
<b>O-O-X</b>	1 at night	
<b>0-1-0</b>	1 in the afternoon	
<b>1-0-1</b>	1 in the morning, none in the afternoon and 1 at night	
<b>½ - ½ -1</b>	Half in the morning, half in the afternoon and 1 at night	

## 2 Common Measurements :

Short forms	Interpretation / meaning	Additional comment / Information
tsp	1 tsp = 1 teaspoonful = 5ml 2 tsp = 2 teaspoonful = 10ml	Different teaspoons in the house may be of different measure (could range even from 3-6ml). For children, for potent medicines like antibiotics, etc., it is advisable not to use the household teaspoon (lesser dose may be ineffective, while higher dose may cause side effects). It is advisable to use the measuring cup or measuring spoon which generally accompanies the medicine bottle.
tbsp	1 tbsp = 1 tablespoonful 1 tablespoonful = 3 teaspoonfuls = 15 ml  2tbsp = 2 tablespoonful = 30ml	Different household tablespoons may give different measures. This is okay for measuring non-critical liquids like antacids, tonics etc. However, for critical medicines, it is better to use a measuring cup or spoon.
1 oz	1 oz = 1 ounce = 30ml or 30gm = 2 tablespoonfuls	



Which one of these is 5 ml??  
It is better to use a measuring cup  
a measuring spoon.



## **Additional Tips :**

- Use a measuring cup or spoon which generally accompanies the medicine bottle -especially for antibiotics, digoxin, steroids, etc
- For children, especially in case of antibiotics, steroids etc., the dose to be administered is often not the figure found on the measuring cup. Therefore, for measuring quantities like 2.6 ml, 3.4 ml, 1.5 ml, etc. it is advisable to use a calibrated dropper, or a syringe.
- ✓ Use a 1 ml calibrated dropper, measure accurately, put in a spoon and give it to the child (measure out more than once if the dose is more than 1 ml).
- ✓ Use a disposable syringe to measure the quantity, pour it out into a spoon or a cup and give it to the child. Since oral syringes are not commonly available in India, we may use disposable syringes meant for injection (without using the needle), for measurement.
- If the dose is to be measured in drops (generally not the best method), then one has to use dropper provided along with the same medicine bottle. Different droppers and different liquids may give different volumes of drops/doses.

### **3 Cutting a tablet:**

A tablet can be correctly cut into 2 equal halves if there is a scored line on the tablet. Otherwise, it is very difficult to do so - especially for smaller tablets. Some tablets like sustained release (SR), controlled release (CR) and coated tablets ideally should not be cut (unless so specified on the label by the manufacturer).



#### **Are 2 tablets of 25mg = 1 tablet of 50mg?**

Yes, but **not** if they are sustained release/controlled release/extended release tablets. E.g. 2 tablets of Retpure XL (extended release) 25mg ≠ (is not equivalent to) 1 tablet of Retpure XL (extended release) 50mg. The amount of drug released and the blood levels of the two are not likely to be matching. This could cause variation in effects.

# 12

## Improper Use of Medicines

Medicines have been of great benefit to patients and the community. However, inappropriate use of these can have significant detrimental consequences (harmful effects). Many a times, people may not be aware that they are using their medicines improperly.

Improper use could be due to following various reasons:

### a) Non-compliance:

#### What is compliance?

Compliance is how much a person obeys medical or health advice given.

#### What is non compliance?

Noncompliance is when a patient does not take a prescribed medicine or does not follow a particular course of therapy.

### Reasons For Non Compliance:

- Economic reasons: the patient may not be able to afford the therapy. This can lead to delay in buying the prescribed medicines, or not buying some of the medicines or not buying the medicines at all.
- Forgetting to take a medicine.
- Did not understand how or when to take the medicine: E.g. taking vaginal tablets orally instead of inserting in the vagina, swallowing inhalation capsules instead of inhaling the contents, taking cholesterol - reducing medicines in the morning instead of at night, taking 2 tablets at once instead of taking one tablet two times a day, etc.
- Difficult to administer the dosage form or medication device: for example, many times a patient may not know how to use asthma inhalers in the correct manner.
- Complicated regimen: Too many medicines may be prescribed at the same time and each may have to be taken at a different time.
- Failure to understand the importance of therapy: Patients know relatively less about their therapy and this may lead to non compliance.
- Not wanting to take the treatment as per the prescription or not taking any medicine at all: this could be due to several reasons, namely, the patient has no faith in the doctor, no faith in the system of medicine or is scared of side effects of the medicines.

## **COMPLIANCE AIDS :**

Many times, a patient has to take many medicines, and each at different times. It often becomes very difficult for patients, especially the elderly, to remember and keep track of the same. In such cases, it is a good idea to use one or more of the following compliance aids:

### **1. Medicine chart :**

MY DAILY MEDICATION CHART									
This chart is to help you take your medications correctly, and at the right time. Fill this chart (or get it filled from your pharmacist) based on your doctor's prescription.									
Refresh this chart every 15 days or whenever your doctor changes your prescription.									
Put up this chart on your refrigerator, or near your bed or dressing table for easy reference.									
Patient Name : _____				Prescribed By : _____					
SR NO	BRAND NAME OF THE MEDICATION	CONDITION PRESCRIBED FOR	BEFORE FOOD (BF) OR AFTER FOOD (AF)	How many and what time to take			DATE STARTED	DATE TO STOP	ANY SPECIAL DIRECTIONS
				MORNING	AFTERNOON	EVENING	NIGHT		

Reviewed on : \_\_\_\_\_

Any query/point to be raised with the Doctor or Pharmacist : \_\_\_\_\_

**2. Pill Box :** This is a special box for storing scheduled doses of one's medications. Pill boxes are usually made with compartments for each day of the week. Many of them have sections for different times of the day (morning, noon and night). They help the patient and even the family members to know which medicines have been consumed and which not, and also helps to reduce errors on the part of the patient. This is useful, especially when many medicines have to be taken at different times of the day. The elderly find these especially useful.



**3. Medicine diary :** Sometimes keeping a diary is very useful not only for the patient but also for the doctor. The diary may be in the form of a book or even on a computer. You must note the name of the medicine as well as the date and time of taking each dose of medicine. You can also note side effects, if any, that you experienced while taking the medicine.



**4. Post - it reminders:** Post - its can be conveniently stuck on refrigerator doors, dressing table mirrors or any other place frequently viewed. Thus, whenever you see the post - it, you will be reminded to take your medication.

### b) Improper self medication:

This is when a patient makes his/her own decision to take medicine/s , but takes the incorrect medicine/s or for the wrong indication/s or in the wrong doses, etc. This could be mainly because of ignorance, or self medication after seeing an advertisement, or simply taking a medicine that someone else suggested.

#### For e.g.

1. Using antibiotics for viral infections.
2. Using strong painkillers for minor pains.
3. Use of cough suppressants instead of using expectorants.
4. Using corticosteroids for simple allergies or coughs.

People feel that it is easier to self medicate rather than go to visit the doctor – visit to a doctor involves perceived wastage of time, and also paying fees of the doctor – which many feel are unaffordable or not worth it. They often feel it reasonable/justifiable to take the same medicine they were given last time by the doctor for a similar illness. The medicine to be used is either lying at home or can be easily purchased by visiting the nearest pharmacy.

Improper self medication can cause a lot of harm to the patient – sometimes noticeable immediately, and often not. Even children are at risk from parents who take their own decisions to medicate their children – more often based on past prescriptions/medicines prescribed by the doctor for same/similar ailments.

This is not at all a good practice. In India, the situation is worse because even prescription medicines are available easily without a proper prescription (unfortunately)!

### c) Misuse of medicines :

The use of many substances is regulated by law, which makes some substances illicit or unlawful. In turn, this may result in criminal and other undesirable activities associated with the supply and use of such substances.

Some medicines are known to be misused. If used in the correct manner, they can be very useful, but some people use these medicines for recreation / pleasure/performance enhancement, some use sedatives, which may possibly become habit forming.

Some drug addicts also use such medicines because sometimes they have difficulty in getting their illegal drugs due to restrictions and high costs.



**Some of the medicines which are commonly misused and abused are :**

- Steroids (used for body building)
- Various anti-anxiety and sleeping pills
- Codeine containing cough syrups
- Propoxyphene
- Buprenorphine
- Pentazocine
- Pethidine
- Ketamine
- Sildenafil

*It is illegal to sell these medicines without a proper prescription. So, if a pharmacy staff insists on a prescription to dispense such medicines, it is highly justified in doing so. You must cooperate with the pharmacy staff because they are doing their duty.*

**Below are some examples of improper use of some common medicines :**

## **1. ANTIBIOTICS**

- One of the most improperly used category of medicines
- Self medication by patients – people tend to use these to treat coughs, colds, sore throats, wounds, etc.
- The prescribed course is often not completed - often patient does not take the dose regularly or stops the dose in between (often when he/she starts feeling better).
- Problem is that the bacteria which the antibiotic is supposed to kill develop resistance – the same antibiotic then is likely to become ineffective in its future usage.
- Can cause side effects.

## **2. ORAL CORTICOSTEROIDS**

- Often improperly used to treat allergies, skin problems, inflammations, coughs, colds, wheezing, asthma, to gain weight, etc.
- Side effects may not occur in everyone, and the extent will vary from person to person, and depends upon which medicine is used & in what doses, and for how long.
- Some of the side effects include gastrointestinal irritation or ulceration, weight gain, muscle weakness, etc.
- It could lead to activation of diabetes mellitus, osteoporosis, etc.

**Note**

Both, antibiotics and corticosteroids are actually very valuable tools – they are life saving medications. However, they have to be used carefully, judiciously, and only if considered clinically necessary by the doctor – for specific conditions.

### **3. CORTICOSTEROIDS FOR LOCAL USE (OINTMENT/LOTION)**

**For e.g.:**

Clobetasol, Hydrocortisone, Betamethasone, Mometasone, Fluticasone, Beclomethasone, etc.

- Corticosteroids applied on the skin can be absorbed into the blood. Absorption is easier through open skin.
- They are not always curative, and on discontinuation, a rebound, and possibly, worsening of the disease could occur.
- They may worsen ulcerated or secondarily infected lesions.
- They may change the bacterial flora of the skin.
- Not only do people use cream/ointments containing corticosteroids on their own, but they use ointments containing the combination of antibiotics, corticosteroids, antifungals, etc. In most cases, combining corticosteroids with such other medicine is ***not rational***.
- People commonly misuse such creams for skin rashes, allergies, redness, itching, and for almost ANY skin conditions, including ringworm (fungal), and even wounds! These are wrong and very harmful practices.

**Note**

Different corticosteroids have different strengths/potencies; some of them are mild, while some of them are very potent, and even small quantities can cause potent effects. All the more reason to use them very carefully!

*Use Corticosteroids Only When Recommended By Your Doctor.  
Do Not Use Again, Unless Specifically Informed By The Doctor!*

### **4. BENZODIAZEPINES :**

**For e.g.:**

Alprazolam (Restyl, Alprax, Anxit); Diazepam (Valium, Calmose), Lorazepam (Larpose)

- People commonly refer to them as sleeping pills.
- Benzodiazepines are used for anxiety or as sedatives to assist in sleeping. They are generally meant for very occasional or short term use (2 to 3 weeks).
- By law, they should be made available to the patient only through a proper prescription.
- Some common side effects include drowsiness, reduced alertness and may lead to falls (especially in elderly).

- Long term use of Benzodiazepines can cause psychological and physical dependence (habit forming), and increasing doses may become necessary. If one tries to stop using them, withdrawal symptoms will be experienced.
- The misuse of benzodiazepines together with other CNS (Central Nervous System) depressants (e.g. alcohol) places the user at risk for overdose and death.

## **5. NON STEROIDAL ANTI INFLAMMATORY DRUGS (NSAIDS) :**

**For e.g:**

Ibuprofen, Diclofenac, Piroxicam, Aceclofenac, etc.

- People commonly refer to these as “Painkillers”
- Prescription and OTC analgesics are effective in the treatment and management of both short and long-term pain and inflammations.
- People have got into the habit of taking painkillers for every little ache and pain.
- Medium to long term use can lead to gastrointestinal irritation, discomfort and/or ulceration.
- Long term usage can lead to kidney damage or even heart problems.

## **6. CODEINE - CONTAINING COUGH SYRUPS :**

- They are one of the most commonly used and misused amongst medicines. A couple of brands of these syrups are among the top ten sellers amongst medicines in India. Many people have become habituated to such preparations, and misuse them by consuming large quantities.
- Codeine acts on the CNS (Central Nervous System) and has pain relieving as well as cough suppressant action. It is recommended for use in coughs which are dry and are very irritating (it is not to be used for wet coughs - these need an expectorant).
- Many people do not realize that there are a large variety of cough syrups, containing different ingredients, and used for a variety of cough related conditions. Unfortunately, names of a few Codeine - containing syrups are synonymous in the minds of people as a “common remedy” for coughs.
- By law, they should be made available to the patient only through a proper prescription.

# 13

## Side Effects of Medicines

Technically speaking, the term “side effect” is now replaced by ADR (Adverse Drug Reaction).

### What is an ADR ?

Any response to a drug, which is noxious and unintended, which occurs at doses normally used in man for prophylaxis, diagnosis, or therapy of disease or for the modification of physiological function.

- World Health Organisation

However, we can continue to use the term "side-effect" as it is easier for the common man to relate to or understand.

No medicine can be considered totally safe. Some medicines have more chances of causing side effects [Very Common side effect means, more than 1 in 10 people taking a medicine will experience a side effect]. On the other side of the spectrum, some medicines have much lesser chances [Very Rare side effect means, less than 1 in 10,000 people taking the medicine will experience a side effect]. However, for the person who gets the side effects from a so called “relatively safe medicine”, it is his bad luck!

### 1 Short term v/s long term

While some side effects may be experienced with a single dose, others may be experienced with a few doses or on long term use of a medicine.

Some examples of side effects with a single dose or short term use:

- \* Aspirin or anti-inflammatory medicines can cause gastric irritation, or even gastric bleeding.
- \* Antihistamines can cause drowsiness.
- \* Paracetamol may cause nausea or vomiting.

Some examples of side effects on long term use:

- \* Aspirin or anti-inflammatory medicines, on long term usage, can cause gastric ulceration or even kidney damage.
- \* Long term use of corticosteroid eye drops can cause cataract.
- \* Long term use of oral corticosteroids can cause peptic ulceration, osteoporosis, diabetes, etc.

While some side effects may be seen or felt by the patient, some may not be known to the patient or even to the health care professional until something drastic happens.

## 2 Predictable v/s unpredictable

Whilst some side effects are **predictable** (but may not occur in every patient), some are **unpredictable**.

Predictable side effects are an expected extension of known properties of the medicine on different parts of the body.

**For e.g.**

- Anti – cancer medicines causes nausea, vomiting, hair loss.
- Amlodipine (used for BP) may cause swelling of the feet.
- Enalapril (medicine for BP) may cause dry cough.

Unpredictable side effects are uncommon, but are many times the most serious potentially life threatening of all side effects.

**For e.g.**

- Life threatening anaphylactic reaction to Penicillin injection.
- Steven – Johnson's syndrome (a severe skin condition) due to Cefixime (antibiotic) or various other medicines..
- Allergic reaction to ANY medicine in susceptible patients.

## 3 Minor v/s major

Whilst some side effects could be considered as minor, some medicines can cause major side effects or disability, hospitalization, or even death.

### Some examples of minor side effects:

- **Antihistamines may cause drowsiness. However, it could be dangerous if this happens if the person is driving a vehicle.**
- **Any medicine could cause a minor rash in a susceptible patient, which goes away after stopping use of the same medicine.**
- **Iron preparations may cause constipation, black coloured stools.**

### **Some examples of major side effects:**

- Penicillin could cause a major allergic reaction in susceptible patients. This could be life threatening or even cause death.
- Steven Johnson's syndrome caused by certain medicines like allopurinol, Valproate, Levofloxacin, Diclofenac, Fluconazole, Penicillins, Barbiturates, Sulfonamides, Phenytoin, Azithromycin etc.
- Rhabdomyolysis (breakdown of muscle fibres resulting in the release of muscle protein contents into the bloodstream) in a patient who takes Atorvastatin (anticholesterol medicine).

While some people are averse to taking any medicines because they are worried about side effects, on the other hand, we have people who like to take medicines on the slightest of pretexts, often leading to rampant and unnecessary use of medicines.

People must understand that medicines must be taken only when necessary, in the right dose and for the right time, and in the appropriate manner. They must, therefore, always consult their health care professional for the right advice.

### **Realities of ADRs (side effects to medicines)**

- Over 2 Million serious ADRs happen yearly.
- 1,00,000 DEATHS occur yearly.
- ADRs are 4th leading cause of death - ahead of pulmonary disease, diabetes, AIDS, pneumonia, accidents and automobile deaths.
- Expenses due to ADRs are \$136 Billion yearly, which is greater than the total costs of cardiovascular or diabetic care.
- ADRs cause 1 out of 5 injuries or deaths per year in hospitalized patients.
- Mean length of stay, cost and mortality for ADR patients are DOUBLE those of the regular patients.

### **ADRs thus cause :**

- Increased health care cost.
- Increased rate of mortality and morbidity.
- Increased length of hospital stay.
- Reduced health outcomes.

### **Increased incidences of side effects could be due to:**

- Easy access to OTC and prescription medicines and improper self medication with these.
- Improper prescribing.
- Multiple prescribers. More than one doctor prescribing conflicting medicines.
- Polypharmacy (many medicines are prescribed or consumed at the same time).
- Special patient populations like the elderly, children are more prone to side effects.
- Failure to take medicines as advised.

It is a misconception that ayurvedic or herbal medicines or homoeopathic medicines are totally safe and free from side effects! It is true that they are relatively safe, but these medicines may also cause side effects in some patients, if not used in the right manner and dose.

### **Which medicines are safe ?**

#### **Safety is a relative term**

- No medicine is said to be completely safe.
- All medicines can cause side effects in susceptible individuals.
- If you are lucky, you may not get any side effect!
- If you are unlucky, you may get a side effect.
- Doctors cannot always predict which patient may get which side effect.
- Some individuals may not experience side effects even when they take larger doses, while some may get side effects even with the minutest of doses.
- All medicines can give a variety of side effects, but not all side effects are seen at the same time and in the same individual.

**Note**

**Every occasion when a patient is exposed to a medical product,  
we can never be certain what might happen.**

**Smart  
Moves**

#### **So use medicines :**

- Wisely
- Only when necessary
- Under the guidance of a doctor or pharmacist.

**And follow the advice given!**

## Pharmacovigilance

Pharmacovigilance is the science and actions relating to detection, evaluation, understanding and prevention of adverse effects or any other likely medicine related problems. The public have a large role to play in reporting of any suspected side effects that they experience.

### Where should you report?

If your doctor or pharmacist does not have the facility to report your suspected ADRs, you may report to any of the Pharmacovigilance Centres in the country - presently there are 60 such centers set up in medical college hospitals in the country and the government is setting up many more, to monitor side effects of medicines.

### Why should you report side effects to medicines that you experience?

Each of the reports of ADRs received are sent to the National Pharmacovigilance Centre, which maintains a database of ADRs to different drugs. This, in turn, helps the Drug Control Department of our country to make decisions regarding putting extra warning regarding use of certain drugs, or even withdrawal/banning of drugs.

### What should you report/which reactions to report?

You may report all suspected ADRs that you experience, may it be to allopathic, ayurvedic, siddha, unani, homeopathic medicines, food supplements, or vitamins/minerals, neutraceuticals (another term for dietary or nutritional supplements), herbal products, etc. Even if you are not sure which particular product is the cause of your suspected ADR, you must still report the ADR. You may report any suspected ADRs no matter whether they are mild/minor or serious.

### How do you report?

The person who experienced the suspected ADR must report to his doctor or pharmacist, or go to the Pharmacovigilance Centre and report the reaction (unless it is a child, wherein the guardian can report).

### What information will you have to provide?

Your age, sex, suspected reaction, date of event starting and ending, description of the problem, name of the product/s being taken, doses taken, dates of therapy, etc.

Only your initials are required to be written on the reporting form. The data entered is kept strictly confidential. The reporting is voluntary and there is no compulsion for you to report. However, in public interest, it is important that you report !

For more details, visit [www.cdscnic.in](http://www.cdscnic.in)

# 14

## Drug Interactions

Drug Interactions can be of following types :

### A) Drug - Drug Interactions :

Two or more medicines/drugs, which we consume, may interact with each other in our body, causing either a beneficial effect, or reduced effect, harmful effect, or no significant difference in effect.

**Harmful effects:** Harmful effects are broadly classified as minor, moderate and major. Below are some examples:

Minor	Moderate	Major
Alcohol + Antihistamines – can cause excessive drowsiness.	Aspirin + Warfarin – can increase the risk of bleeding.	Digoxin + Verapamil – can lead to increased blood level of Digoxin leading to toxicity.
Thiazide type Diuretics + NSAIDs – decreased hypertensive and diuretic effects.	Theophylline + Ciprofloxacin – may increase the blood level of Theophylline leading to toxicity.	Clonidine + Tricyclic Antidepressants – Can lead to possibly life threatening elevation in blood pressure.

Beneficial effects	Reduced effects
<ul style="list-style-type: none"><li>Oral Contraceptives : Estrogen + Progesterone are combined to give better contraceptive effects.</li><li>Septran (Sulphamethoxazole + Trimethoprim) – these 2 medicines, if given together, are more effective in getting rid of the bacterial infections.</li></ul>	<ul style="list-style-type: none"><li>Ciprofloxacin + Antacids = reduced absorption of Ciprofloxacin.</li><li>Rifampicin + Oral Contraceptives (OCs) = reduced effect of OCs – this could lead to pregnancy.</li><li>Enteric coated Omeprazole + antacids = will cause the enteric coating to disrupt before hand, and the efficacy of Omeprazole will be lost.</li></ul>

It is not true that when 2 or more medicines are taken together, they will always cause drug-drug interactions. However, more the number of medicines a patient consumes during the same period, higher are the risks/chances of drug-drug interactions occurring. Therefore, to prevent or reduce the chances of drug interactions, prescribers must prescribe only the minimum required medicines.

For the same reason, if a person is already taking some medicines, he should not self-medicate with other medicines without consulting the doctor or pharmacist.

**By taking a few simple steps, you can reduce the chances/risk of drug interactions:**

- Tell all of the doctors and pharmacists you visit about all the prescription and OTC medications you use. Be sure to include those you take every day as well as those you use only once in a while. Also, include vitamins or herbal products that you might be taking. This will help your pharmacist and doctor to spot possible drug interactions.
- If you are already taking medicine/s, take the advice of your doctor/pharmacist before you consume any other medicine/s including prescription or OTC medicines (including ayurvedic medicines). Your doctor or pharmacist will help you choose the medicine that will not interact with the medicines you are currently taking.
- Take your prescribed medicines as per doctor's instructions.

**B) Drug – Food Interactions :**

Absorption and the effect of some medicines could be affected by presence of food in the stomach and also the type of food we eat. This could lead to beneficial effects, reduced effects or harmful effects.

<b>Beneficial effects :</b> The absorption of Griseofulvin (an antifungal antibiotic) is increased in the presence of food (especially fatty foods).	<b>Reduced effects :</b> The absorption of antibiotics like Ampicillin, Ciprofloxacin, is reduced if taken within 2 hours of food.	<b>Harmful effect :</b> Erythromycin, if taken along with grapefruit juice, can cause irregular heart beats.
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Thus, some foods may affect the way in which the body handles medicines and therefore have the potential to either increase or decrease a drug's therapeutic effect or cause side effects. One needs to know about this before one starts to take medicines. Generally your doctor or pharmacist will inform you about this, but in case they do not, please ask them!

## 1 Before Or After Food?

**Q. Should medicines be taken after or before food?**

**Ans. The answer is different for different medicines..**

### MISCONCEPTION:

IT IS A COMMON MISCONCEPTION THAT ALL MEDICINES NEED TO BE TAKEN ON FULL STOMACH !

Some medicines need to be taken on full stomach, while some may need to be taken on an empty stomach, for various reasons .

Presence of food may either delay, reduce, increase or may not affect drug absorption

**For e.g.:**

Delayed	Decreased	Increased	Unaffected
Aspirin	Penicillin	Griseofulvin	Methyldopa
Paracetamol	Erythromycin	Diazepam	Propylthio-uracil
Diclofenac	Tetracycline	Water soluble vitamins	
Digoxin	Iron		

### FULL STOMACH V/s EMPTY STOMACH :

Empty stomach	Full stomach
Empty stomach means at least half an hour or preferably one hour before food/snacks, or at least two hours after food/snacks.	Full stomach (after food) means with or after food or meals. The medicine can be taken whilst one is eating food or just after it (preferably up to a maximum of half an hour after).

### Few reasons why some medicines need to be taken on an empty stomach:

Reason	Examples
Presence of food reduces absorption.	Ciprofloxacin, Azithromycin, Azithromycin
Presence of food may lead to incomplete or variable absorption	Thyroxine
Presence of food may disrupt the enteric coating of tablet/granules in the capsule, and expose the drug to the acidic environment of the stomach, which can degrade the drug.	Enteric coated tablets Omeprazole and Pantoprazole capsule/tablet.
To give sufficient time for another medicine to start acting, to prevent vomiting.	Anti vomiting medicines e.g. Domperidone, Promethazine (generally given $\frac{1}{2}$ hour before food, before giving a medicine, or beginning of a journey).

### Some reasons why some medicines need to be consumed on a full stomach:

Reasons	Examples
The medicine can cause stomach irritation/upset, acidity, nausea, vomiting, etc.	Anti inflammatory medicines, Corticosteroids, Allupurinol, Doxycycline, etc.
The medicine is absorbed better in presence of food (especially fatty foods).	Griseofulvin, Fluconazole, Fat soluble vitamins A, D & K.

At times when a medicine cannot be taken by the patient on a full stomach, the medicine should be taken at least after a small snack. In extreme cases, where even a snack is not possible and the medicine has to be taken, it should be taken along with 2-3 glasses of water (but it is better to confirm this with the doctor or pharmacist, as it may vary from medicine to medicine).



### THUMB RULE

- Drugs are better absorbed under fasting conditions and presence of food delays or reduces it.
- Food does not significantly affect the absorption of a drug taken 1 hour or more before meals and 2 hours or more after meals.

## 2 Fluids

It is best to take medicines with WATER.

- It is better to have medicines with cool water to avoid heat-labile drugs from being destroyed.
- Milk can affect the absorption of some drugs, e.g. Tetracycline.
- Fruit juices may decrease the effectiveness of acid-labile drugs like Penicillin.
- Tea might decrease the absorption of certain medicines, e.g. Iron.

## 3 Times of the day

Besides relation to food, certain drugs have to be taken at certain times of the day for better effect.

### For e.g.:

- Diuretics are to be taken preferably in the morning to minimize the effect of increased frequency of urination during the night and a disturbed sleep.
- Simvastatin - To be taken at night after dinner. It works better when synthesis of cholesterol is maximum - i.e. during the night.
- Clonidine HCl - To be taken at bedtime. To ensure overnight control of blood pressure and reduce daytime drowsiness.
- Alendronate tablet should be taken only in the morning. Swallow a tablet with a full glass of water on an empty stomach. Do not lie down or eat anything for at least 30-60 minutes after swallowing the tablet.

**SO, THE NEXT TIME YOU ARE FACED WITH A DILEMMA  
WHETHER TO TAKE A MEDICINE BEFORE OR AFTER FOOD...**

**ASK YOUR PHARMACIST!!**

The public must be cautious of the various advertisements appearing in various sections of the media. Advertisements for OTC medicines are generally permitted by law. However, some of these advertisements make tall claims for cures. As per the Drugs & Magic Remedies Act & Rules, advertisements of claims for cures for certain illnesses/diseases are prohibited. However, the law has certain loopholes, and secondly, the implementation of these laws is not proper in our country. As a result of this, advertisements for such products are quite rampant, and unfortunately, people get misled/carried away by these, are tempted to “try out” these products, and are often fooled and/or harmed.

Generally, a large number of these advertisements and claims are for so called ayurvedic products. Taking advantage of the misconception amongst people that ayurvedic medicines are “safe”, the advertisers play on the psyche of the people.

**Often, we see advertisements for the following:**

- Treatment/cure of diabetes
- Increasing sexual prowess/pleasures
- Increasing vitality
- Increasing memory
- Hair loss/baldness
- Increasing height
- Slimming, weight loss
- Fairness of skin

Another problem is that, at times, the manufacturers of these products may put in them certain modern medicines, and get away with it. Such cases are noticed only when someone complains / or someone happens to get it tested in the laboratories.

Advertisement of modern drugs is also controlled by Schedule J of Rule 106 of Drugs and Cosmetics Rule.

**Caution:**

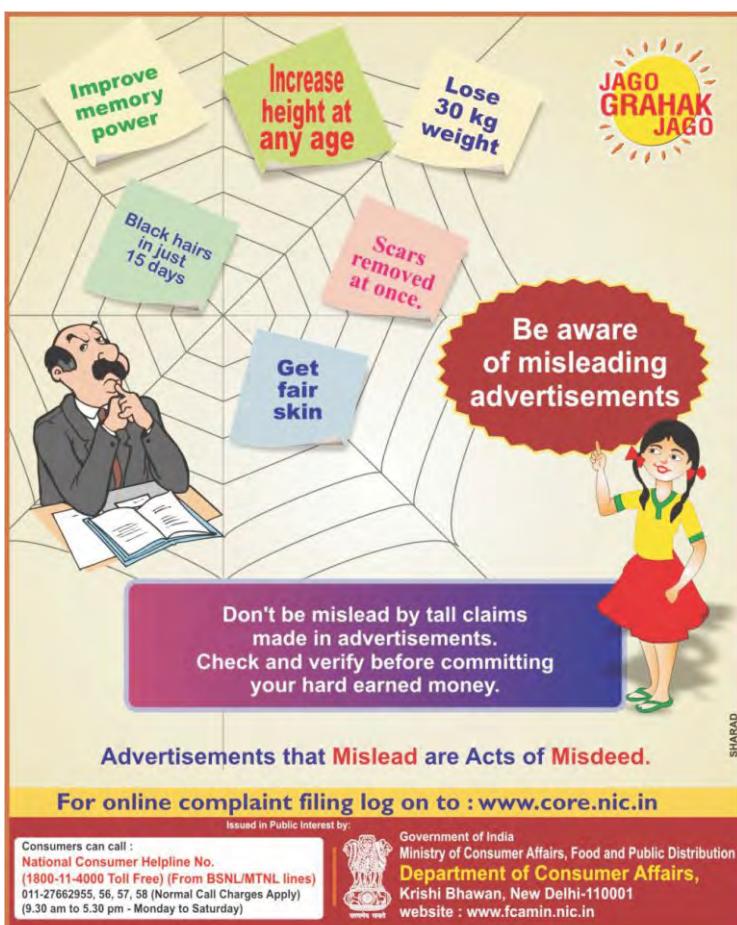
First of all, it is advisable not to fall for such advertisements. Secondly, following things may be considered/thought of, before making a decision as to whether to use a medicine or not:

- What is the background of the company?
- Is the advertisement making tall claims? Are these reliable and reasonable claims? Are they scientifically correct?
- Are there any authentic studies to prove the effectiveness of the claims made?
- Is the medicine reasonably priced?

The next step is to discuss with your doctor or pharmacist whether the claims made in the advertisements could be true.

Another thing to consider is that, if you are already taking so many medicines (generally allopathic) for a current illnesses, will the new medicine interact with the existing medicines and cause some problems? We hardly have any data or studies in India, in which it has been proved that there is no problem in taking such medicines along with allopathic medicines. Therefore, if, even then, you choose to try out such medicines, it is at your own risk.

### Have a look at the advertisement given by the Government of India, to alert people against misleading advertisements :



# 16

## Rational Use of Medicines

The concept of Essential medicines was first introduced by the WHO in the 1970s. **Essential Medicines** are those that satisfy the priority health care needs of the population. They are selected with due regard to public health relevance, evidence of efficacy and safety, and comparative cost-effectiveness.

Essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality and adequate information, and at a price the individual and the community can afford.

### The Essential Medicines Concept

'Selecting a limited range of medicines to improve access to health care and quality of health care'. The implementation of the concept of *essential medicines* is intended to be flexible and adaptable to many different situations.

#### 1 WHO Model List of Essential Medicines

The WHO Model List of Essential Medicines is a list of around 350 medicines. The WHO Model List includes treatment options for most of the common conditions and illnesses. The list is based on evaluation of the best available evidence.

The WHO Model List of Essential Medicine is a useful reference derived from the consensus of recognized international experts and updated every 2 years by the Expert Committee for the Selection and Use of Essential Medicines, using a transparent, evidence-based process. The medicines that appear on this list are recognized as safe, efficacious and cost effective.

Essential medicines are listed by their International Non-proprietary Name (INN) or generic name, without specifying a manufacturer. In 2007, the first ever WHO Model List of Essential Medicines for Children was developed and published.

#### 2 Rational use of medicines

As per WHO, rational use of medicines requires that "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time and at the lowest cost to them and their community".

The aim of any medicines management system is to deliver the right medicine to the patients who need the medicine. The steps of selection, procurement and distribution are necessary precursors to the rational use of medicines.

### 3 Irrational use of medicines

Irrational use of medicine is a major public health problem worldwide. The W.H.O. estimated that more than half of all medicines are prescribed, dispensed or sold inappropriately, and that half of all patients fail to take them correctly. Thus, the prescriber, dispenser, and the user could be responsible for irrational use of medicines.

#### Irrational uses of medicines include :

- Medicine/s is/are prescribed where none is/are needed.
- There is failure to prescribe in accordance with clinical guidelines. Medicines are not prescribed according to standard treatment guidelines, or ineffective or unsafe medicines are prescribed.
- Inappropriate use of antimicrobials, often in inadequate dosage, for non-bacterial infection.
- Use of too many medicines by the patient (polypharmacy).
- Effective and easily available medicines are underused.
- Costly medicines are used where cheaper, equally effective medicines are available.
- Use of injections when a oral formulation would be more appropriate.
- Prescribed medicines are used incorrectly or dosing regimen not adhered to.
- Inappropriate self-medication, often of prescription medicines.



Irrational use of medicines has an adverse impact on the outcome of therapy and cost, and may cause adverse reaction or negative psychological impacts.

The overuse, underuse or misuse of medicines results in wastage of scarce resources and widespread health hazards.

### **Irrational use of medicines thus leads to:**

- Ineffective and unsafe treatment.
- Exacerbation or prolongation of illness.
- Distress and harm to patient, adverse effects.
- Increase in the cost of treatment.

Beside policy changes, rational use of medicines can be promoted amongst the public by:

- Education of public in appropriate and rational use of medicines.
- Mass awareness campaigns – through lectures, media, talks and sessions, patient information leaflets, booklets, etc.
- Education on these aspects, in schools and colleges.
- Education of women on these aspects.

### **4 Medication Errors :**

A medication error is any error that occurs with medication therapy. We all accept that to err is human, but when it comes to medication, the consequences can often be drastic! Medication errors can occur at the level of the doctor, pharmacy/pharmacist, nurse, or the patient.

There are innumerable reasons for medication errors at these various levels, and is a cause for serious concern. We do not have proper statistics in India, but have a look at the statistics in the U.S.A. :

- More than 7, 00,000 patients are victims of medication errors every year.
- More than 50,000 Americans die each year as a result of a medical error.
- Medication errors are the 8<sup>th</sup> leading cause of death among Americans.
- 2% of hospital admissions were due to medication errors.
- 4% of medication error related injury resulted in prolonged hospital stay.
- 14% of injuries were serious or fatal.
- 69% of errors were preventable.
- Medical errors carry a high financial cost to America - \$37.6 billion each year.

The problem could be worse in India considering the various inherent factors :

- Large population and high illiteracy rates.
- Shortage of health providers.
- Practice of medicine by unqualified persons.
- More than 1 lakh brands in our country, many with similar sounding names.
- Lack of proper information about medicines and their usage.

# 17

## Medicines and Children

Children are not miniature adults. So the concept of giving 'half' the dose of the adult to the child is totally wrong and dangerous.

In the children, the organs are still developing and some of the metabolic activities like enzyme function, etc., may be slow, while some may be faster than adults. In children, the body water content is higher, while the protein content is lower. Children thus may give a different response to medicines than adults. Secondly, handling of medicines by the body will further differ depending on the age and weight of the child.

Children thus are at a higher risk for toxicities if the dose is higher, or poor clinical response if the dose is sub-optimal (lesser than that required). Paediatric patients thus are unique in many ways:

- They require a dose which depends on their body weight, i.e dose per kg of body weight.
- They need special dosage forms – e.g. dispersible tablets, palatable syrups, etc.
- Children are often prone to sickness or illnesses, and the fact that children just don't like medicines, makes parents more worried!

There is a need to be more careful with children, since they might not be able to clearly express what they are going through. Secondly, parents have to take up the responsibility of keeping in mind the dosing of the medicines and keep a track of the right time to administer the medicines as per the doctor's advice.

Right since 1962, worldwide, it has become mandatory to test any medicine for both efficacy and safety before the drug control authorities can approve it for use in paediatric patients.

### 1 Safe Medication for Children

- Make sure all the prescriptions, reports, x-rays, etc, of the child are filed together in chronological order in a neat file and shown each time you visit a doctor – this will give the doctor a complete picture of the child's medical history. These records will also prove very useful in the future, to detect allergies, drug resistance, or to treat a recurring condition.
- Discuss with the doctor or pharmacist, for what purpose/s the different

medicines are given, and understand when, how and how much to give to the child.

- Double check the prescription before administering the medicine, so as to confirm that you are giving the right one.
- Administer the medicine to the child carefully. Follow doctor's instructions strictly. If you are not sure of the instructions, or the medicine, or the dose, **DO NOT GIVE IT**; instead, call up the doctor or your pharmacist and seek their advise.
- If a tablet has been prescribed, confirm with the pharmacist whether the tablet is dispersible or has to be swallowed whole. Most of the time, doctors prescribe dispersible tablets (DT) for children. If DT is not available, or if tablets to be swallowed are prescribed and the child has difficulty swallowing tablets, ask the doctor if liquid preparations could be prescribed. Liquids are swallowed more easily than tablets.
- It is convenient and accurate to use the measures that accompany the liquid preparations (droppers/measuring cups/measuring spoons). DO NOT use teaspoons from home.
- Measure out the accurate dose carefully from the bottle, using such measuring devices. It is important to adhere to the prescribed dosage in children because, overuse (unnecessary extra intake could lead to side effects) and underuse (lesser dose intake is ineffective for treatment) both could be dangerous.
- Note down any allergies or unusual reactions to any medicine, that you notice.
- Make a note of any OTC medicines that the child might have been given for any minor illness or any symptoms.

Check  
OUT

Many a times, children need more of your love,  
presence, and attention. Sometimes,  
that is the best and only medicine they need!



**DO NOT SEND CHILDREN TO THE PHARMACY  
TO BUY YOUR MEDICINES..  
IT IS NOT A GOOD PRACTICE !**



## Some Dos and Don'ts

### Dos....

1. Keep all medicines safely away and out of reach of children. Even if you have to "just" go to the next room and come back, do not leave your medicines lying around. Children, at times, are lightening fast!
2. Tablets of attractive colours, or flavored syrups, might catch the attention of children, and most children want to taste whatever looks attractive, since toys, eatables or medicines are all the same for them. Therefore, the instruction 'Keep away from sight or reach of children'.
3. Tell children that medicines are taken only when one is not well, and to give relief from the suffering.

### Don'ts....



1. Do not consume medicines in front of children.  
Children are like monkeys; they like to imitate their elders, and can end up consuming medicines when you are not around.
2. Do not try to convince children that medicines are sweet and like chocolates. You never know, they could drive you mad asking for them again and again!
3. Do not give medicines prescribed for you to your children, even if you feel you are giving part of the dose.
4. Same symptoms might recur, but could indicate a different diseases. Do not use old prescriptions or earlier prescribed medicines for your child for the present condition/similar symptom,
5. Do not halve an adult dose and administer to children. **SOME MEDICINES ARE JUST NOT MEANT FOR CHILDREN !!!**
6. Do not get carried away by advertisements of medicines. Give medicines to your child **ONLY** after confirming with your physician or pharmacist.

**Aspirin :** Aspirin (Acetylsalicylic acid) should NOT be given to children below 12 years for minor illnesses like fever, pain. This is because it could cause Reye's syndrome (a nervous system disorder) in some children. It may be used in certain major illnesses like juvenile arthritis, only on the advice of a doctor.

**Note**

**Before the child is given any OTC medicine,  
always check that it does not contain aspirin.**

**Mefenamic acid, Ibuprofen :** These are prescription medicines. So, these should be given to your child only if recommended by the doctor. It is advisable not to keep giving them each time the child has fever, unless the doctor specifies. These medicines could cause side effects.

A safer alternative for pain and fever would be Paracetamol. This is an OTC medicine, and can be kept handy at home for use whenever your child has fever. You should ask your doctor what dose is to be given, because the dose will change as per the weight of the child. Do not use Paracetamol on your own for more than a couple of days or if the fever runs very high.

**Nimesulide :** This has always been a controversial medicine. It has never been approved for use in most developed countries because of its potential liver toxicity. It was very commonly used in children in India for fever and pain. It has now been banned for paediatric use by the Drug Control authorities with effect from 10th February 2011.

**Anti-diarrhoeals :** According to the WHO, most anti-diarrhoeal medicines should never be used in ordinary or viral diarrhoea, as none have proven practical value and some are dangerous (The Government of India, many years ago has banned the marketing of medicines like Kaolin, Pectin, oral Streptomycin, and also the paediatric formulations of Loperamide , Diphenoxylate, etc.)

Diarrhoea is one of the leading causes of childhood deaths. Diarrhoea aggravates malnutrition and allows other diseases to invade the child. Sufficient breastfeeding during and after diarrhoea, corrective measures for prevention and treatment of dehydration, are the only ways to prevent childhood death due to diarrhoea. ORS (Electral, Electrobion etc.), or a simple home alternative, i.e. a pinch of salt plus a spoonful of sugar in a glass of water, is recommended to prevent and treat dehydration due to body water

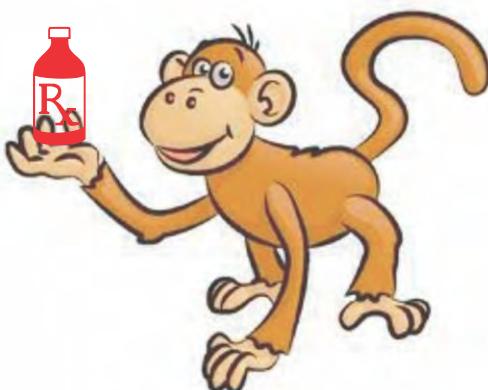
and salt losses. Always keep a few sachets of ORS in your medicine cabinet at home, and give the solution to your child in any type of diarrhoea. If the diarrhoea is because of parasites, e.g amoebic or bacterial infection e.g *Shigella*, then the doctor will decide which antibiotic or anti-amoebic is to be prescribed. It is not advisable to use such antibiotics, anti-amoebics or a combination of the two, on your own, for your child, just because the doctor had prescribed them the previous time. If the diarrhoea is because of viral infection, it is likely to limit itself within a couple of days, and ORS is the only remedy which needs to be given.



**Keep medicines out of reach of children  
.....and out of sight too!!**

**Tablets of attractive colours or tasty flavoured  
syrups might catch the attention of children.....  
toys, medicines or eatables are all the same  
to them !!**

**Children are like monkeys...  
Keep medicines away and out of sight from them.  
Do not consume medicines in front of children.**



The elderly are generally defined as those who have attained an age of 60 and above.

The elderly generally :

- have started living longer (in today's age, “ with the advancement in science and healthcare delivery”),
- have more health problems,
- and therefore need to take more medicines,
- and are likely to get more side effects (because their body organs, metabolisms and detoxifying mechanisms have slowed down with age),
- sustain more deaths from improper use of medicines.

**Following are some reasons for possible improper use of medicines in the elderly.**

Problem	Consequences
<b>Eyesight problems</b>	May not see the label of the medicines properly. Could end up not reading and following the instructions of taking medicines properly.
<b>Hearing</b>	May not hear the doctor's or pharmacist's instructions properly, as to how to take the medicines.
<b>Arthritis in the hands, tremor, shivering hands</b>	May not be able to open medicine bottles or tablet foils, or may not be able to take their medication properly without spillage, etc.
<b>Memory</b>	May not remember to take their medicines on time, or may take at wrong times, or may not remember whether they took the medicine, and may end up forgetting to take their dose/s, or even taking extra doses!
<b>Slow reactions, alterations in mood, energy, attitude or memory may be attributed to aging process, and thus ignored/overlooked.</b>	The patient may not realize whether a medicine is working or not, or if a side effect has taken place.

## **Safe Medication Usage for the Aged :**

Since the elderly have difficulties, the best one can do for them, is to keep a watch, and if necessary, assist them in taking their medications – the right medicines, at the right time and in the right manner.

### **One must remember :**

- The elderly may require modifications in their dose (generally lower doses than adults).
- In certain cases, the same dose as that of an adult could be an overdose and increase the risk of side effects in the elderly.
- In certain cases, the medicine may not work as efficiently, because the body system does not give it enough support to do so.
- If the patient is already on medications, it is better he consults his doctor before taking any other medicine – be it an OTC medicine or ayurvedic or herbal medicine, as it could increase the chances of drug interactions, and thus, side effects.



**Thus, self medication is to be done very judiciously or avoided totally.**



### **Medicines And**

### **Fireworks**

**Prescription medicines are**

**like fireworks.....**



**They are not to be fooled around with!**

**A medicine that is safe and useful for you,**

**can be harmful to someone else!**

# 19

# Medicines during Pregnancy & Lactation

## 1 Medicines During Pregnancy :

One needs to be extra careful with medicines in pregnancy. Some medicines (even OTC ones) can harm the foetus/baby, because they can pass through the mother's placenta. The alarm for this was raised in 1962, when hundreds of children born to mothers who took the medicine 'Thalidomide' for anxiety during their pregnancy, were born with deformities of limbs, heart defects, etc. From then on, worldwide, there has been a lot of caution and only those medicines for which there is sufficient proof of safety in pregnancy, are recommended. Therefore, during pregnancy, only medicines recommended by the doctor should be taken. If the pregnant woman falls ill – say an infection or pain, severe constipation or some other illness, and it becomes a must to prescribe a medicine, the doctor will take a decision as to which medicine should be used (by comparing the risk v/s the benefits for the mother and baby).

If you are pregnant and visiting ANY other doctor/pharmacist or nurse (whether it is dentist or a ayurvedic or a homoeopathic doctor) you should inform the doctor about the pregnancy, and at what stage it is.

Even a non-pregnant but sexually active female should take extra precautions when she is taking any medicines, NOT to become pregnant during that period.

**WHEN YOU ARE PREGNANT DO NOT TAKE MEDICINES  
(WHETHER IT IS ALLOPATHIC/ HERBAL/ AYURVEDIC /  
HOMOEOPATHIC), WITHOUT ASKING YOUR DOCTOR.**

**Below are few examples of medicines which could cause harm to the foetus if used in pregnancy:**

Drug	What harm it could do to foetus
Warfarin	Retarded growth; defects of limbs, eyes, central nervous system
Corticosteroids	Cleft palate and congenital cataract (rare)
Androgens	Masculinisation in female
Oestrogens	Testicular atrophy in male

## **Some tips on medicines during pregnancy:**

- Whether a medicine is safe or not depends not only on the medicine, but also upon the trimester during which it is taken. Some medicines may be dangerous to take during the 1<sup>st</sup> trimester but safer in the second or third or vice versa.
- If you want to take ANY medicines while you are pregnant, weigh the risks and benefits with your doctor.
- Consult your doctor whether to continue taking medications for chronic illnesses like hypertension, epilepsy, diabetes, etc. when you become pregnant. Do not stop taking these medicines on your own since untreated illnesses could have harmful effects on your pregnancy.
- Pharmaceutical companies that develop medicines rarely perform trials or actual studies of their medicines on pregnant women because of ethical reasons. Therefore, only a few medicines are actually licensed for use during pregnancy.
- Keep in mind that other substances like caffeine, vitamins, and herbal teas and remedies can also affect the growing foetus.

## **2 Medicines During Lactation**

Medicines taken by a lactating mother may pass on to the baby through her milk. Some medicines could be safely used, while some may harm the baby (some may cause minor harm, others major). Therefore, a lactating mother:

- Should take only those medicines which are specified by the doctor (including OTC/ ayurvedic/homoeopathic medicines).
- Should inform any doctor, pharmacist or nurse she visits, that she is breastfeeding.

If, in certain cases, prescribing a medicine to the breastfeeding mother becomes inevitable, the doctor will assess the benefits v/s the risk for the mother and baby, and then decide which medicine is to be prescribed. Some medicines may not cause harm to the baby. If a medicine could cause harm to the baby, if the mother breastfeeds while on the medication, the doctor may inform the mother not to breastfeed while the medication is being used.

**Examples of some medicines which could harm the baby being breastfed:**

Medicines	Possible harm to baby
Aspirin	Haemolysis, prolonged bleeding time and metabolic acidosis on long term therapy
Antihistamine	May make the baby drowsiness, sleepiness
Diazepam	Lethargy, drowsiness, and weight loss
Ciprofloxacin	Risk of permanent injury to the musculoskeletal system

**Some tips on medicines for lactating mothers:**

- Tell your doctor clearly, that you are a lactating mother, so that he can take this into account while prescribing medicine that is possibly harmful for the baby.
- Breastmilk should not be given to the baby, as long as any medicine with a potential to harm the baby is being given to the mother.
- Mothers who must take daily medication for conditions such as epilepsy, diabetes, or high blood pressure, may be able to breastfeed. But they should first consult with the child's paediatrician.
- To minimize baby's exposure to medicines, the doctor may advise the mother to take the medicine just after breastfeeding, or after the child sleeps.
- Avoid caffeine and alcohol. Both pass into breastmilk. Caffeine can make your baby irritable and sleepless.

# 20

## Various Dosage Forms

### Need for dosage forms :

Medicines cannot be administered as such in their original form (powder/liquid), either because the quantities are too less, their taste is revolting, it is difficult to administer it in this form, or the drug may be destroyed if taken in this form. They are therefore formulated into various dosage forms for easy consumption and convenience. At times, different dosage forms may be needed for different purposes or routes of entry/administration into the body.

A dosage form relates to a particular formulation consisting of the drug substance and compounds with no medicinal activity, also known as pharmaceutical ingredients or inactive ingredients.

**Dosage form = Active ingredient (Drug) + Inactive ingredients**

There is a wide range of inactive pharmaceutical ingredients used in various dosage forms, all of which have a particular action on the drug substance, such as solubilising, suspending, diluting, emulsifying, preserving, etc. and which assist in taking the medicine to its site of action in the body.

### ORAL DOSAGE FORMS

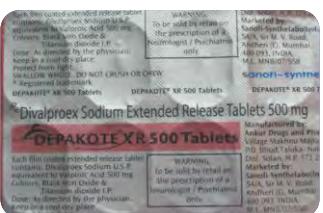
The oral route (swallowed through the mouth) is the most convenient and widely used route of administration of medicines. While very few of the medicines may be absorbed through the stomach, majority are absorbed through the small intestine and thus go into the blood stream and then to the site of action in the body.

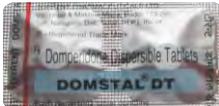
Types of oral dosage forms:

- **Tablets**
- **Capsules**
- **Lozenges**
- **Oral liquids**



## TABLETS

Type of tablet	Some characteristics	Some important information and tips
CONVENTIONAL TABLET	Uncoated tablets, usually round, capsule shaped, oval, oblong, bevel-edged, flat, etc.	Do not take while lying down. Swallow the whole tablet with a glass of water, preferably in a sitting position. A tablet may be cut / broken / powdered only if the doctor or pharmacist advises.
FILM COATED TABLET	Thinly coated to give aesthetic look or to mask the bitter taste, or to protect ingredients inside the tablet.	
SUGAR COATED TABLET	Coated to give aesthetic look or to mask the bitter taste or to protect the ingredients inside the tablet. The coat is thicker, containing syrup.	
SUSTAINED RELEASE (SR) TABLET  Also called as CR (Controlled Release), SR (Slow Release), TR (Timed Release), ER (Extended Release) etc.	Tablet specially coated to provide prolonged action. The drug is slowly released from it in the gastrointestinal tract, from where, it gets absorbed into the blood.  	Swallow <b>whole</b> with a glass of water. Strictly <b>do not</b> break, cut, chew or crush the tablet. This will cause it to lose its potency, or release too much drug at once, or irritate the stomach. Some tablets may be permitted to be broken into 2 along a marked line – (and if so, the manufacturer will

		write on the label that it can be broken into 2).
ENTERIC COATED	Coated with special material, which disintegrates only in the alkaline medium of the intestines, not in the acidic environment of the stomach. The medicine is thus released in the small intestine.	Swallow <b>whole</b> with a glass of water. Strictly <b>do not</b> break, cut, chew or crush the tablet. This will cause it to lose its potency, or release too much drug at once, or irritate the stomach. Some tablets may be permitted to be broken into 2 along a marked line –(and if so, the manufacturer will write on the label that it can be broken into two).
BI-LAYERED TABLET  	Tablet with two layers compressed one above the other, of different colours, each containing different drug/s; generally, one of them containing the drug in sustained release form.	Do not swallow whole. Disperse the tablet in about 5ml of water (in a spoon or measuring cup). Swallow the dispersion or suspension.
DISPERSIBLE TABLET (DT)  	Uncoated tablet which disperses in water.	Do not swallow whole. Dissolve slowly in the mouth and then swallow the dissolved drug with saliva.
MOUTH DISSOLVING TABLET (MD)  	Tablet is to be kept in the mouth and dissolved in the oral cavity.	Keep the tablet below the tongue. Do not bite/chew or swallow the tablet. Do not spit.
SUB-LINGUAL TABLET  	Tablet is to be kept beneath the tongue so that the drug is released here and goes directly into blood circulation.	

<b>SCORED TABLET (SINGLE/DOUBLE)</b> 	Tablets with break line, so as to break in 2 halves or one-fourth.	If necessary, can be neatly cut/broken into 2 halves and sometimes 4 quarters (if there are 2 scored lines) by using a little force with fingers.
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Some general points on tablets :-

- Those tablets to be swallowed can be taken with a whole glass of water.
- Large tablets can be broken – provided there are no restrictions – such as coated, layered, SR, etc., but ask your pharmacist to confirm this.
- If the doctor has advised  $\frac{1}{2}$  or  $\frac{1}{4}$  of the tablet to be taken, the same can be done properly only if it is scored. Else, it is very difficult to make an exact half or quarter – however skilful the person may be.
- For persons who cannot swallow the whole tablet, it can be powdered, and mixed with water – if it is to be mixed with milk or food, or fruit juice, it needs to be confirmed first with the pharmacist, whether this could cause any drug-food interaction !

## LOZENGES

<b>LOZENGE</b> 	Solid preparations, usually candy type, containing medicine/s, sugars and gums used for local action on the throat.	Do not swallow, and preferably do not break or chew. Suck on the lozenge in the mouth. Keep swallowing the saliva.
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## CAPSULES

<b>HARD GELATIN CAPSULE</b> 	A capsule, containing within it powder/s or granules containing the medicine (Uncoated and/or enteric coated or coated for sustained release in the stomach), the outer shell of the capsule dissolves and the contents inside are released.	Do not take while lying down. Swallow whole with a glass of water, preferably in a sitting position. Do not cut open, unless otherwise recommend by the doctor or pharmacist.
<b>SOFT GELATIN CAPSULE</b>	A soft capsule containing liquid/semisolid medicine.	

## ORAL LIQUIDS

<b>ORAL SOLUTION, SYRUP, ELIXIR, LINCTUS</b> 	<p>Various liquid preparations containing the medicine/s dissolved in them. The liquid base could be water, syrup, alcohol, glycerin, propylene glycol, or a mixture of two or more of the above.</p>	<p>The prescribed dose is to be measured with a measuring cup or a measuring spoon provided with the bottle.</p> <p>To be swallowed. To be diluted only if instructed to do so.</p>
<b>EMULSION</b> 	<p>The medicine/s is/are dissolved in the oil or water portion of the emulsion.</p>	<p>Shake the bottle well before use, so as to disperse the suspension/emulsion uniformly.</p> <p>Dose to be measured with measuring cup or measuring spoon provided with the bottle.</p>
<b>SUSPENSION</b> 	<p>The medicine/s is/are suspended in the liquid in the form of small particles.</p>	<p>To be swallowed without dilution.</p>

DRY POWDER FOR SUSPENSION	Available as powder or granules put in a bottle. Before use, water is to be added to the powder to form a suspension.	
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### Reconstitution of dry powder for suspension :

**It is very important to reconstitute the suspension correctly to ensure that the medicine remains stable and is delivered in the correct potency.**

For doing this, read the instructions on the label of the bottle carefully before preparing the suspension (there might be slight difference in procedure recommended, from company to company).

1. Heat some (around 50 ml for a 30 ml bottle and around 100 ml for a 60 ml bottle) drinking water in a clean vessel, & bring it to boil. (In some medicine packages, sterile water may be supplied in a vial or ampoule, and which may be directly used for making the suspension without boiling).
2. Cover the vessel with a clean lid and allow water to cool to room temperature.
3. Shake the bottle to loosen the powder. Open the cap of the bottle and / or seal if any, with clean hands. Slowly add the cooled water exactly up to the ring mark on the bottle / arrow on the label.



4. Close the bottle and shake vigorously, till all of the powder is uniformly suspended.



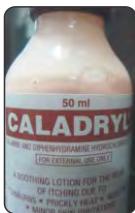
5. Adjust the volume up to the arrow mark / ringed mark by adding more water, if necessary.
6. Now the suspension is ready for use.



### Note

- After reconstitution, keep the bottle at the storage condition mentioned on the label (some medicines may be stored in a cool place, while some have to be stored in a refrigerator).
- The reconstituted suspension has to be used within 4 - 7 days of reconstitution (slight variation in number of days may be there for different medicines). The exact number of days is to be noted from the individual label.
- The bottle is to be shaken well before using it each time.
- The exact dose is to be measured using the measuring cup or spoon or syringe supplied along with the bottle.

## DOSAGE FORMS FOR EXTERNAL USE

<b>LINIMENT</b> 	<p>A liniment is a medicated preparation to be rubbed on the skin. It is used to relieve muscular aches and pains.</p>	<p>For external use only. A small quantity is to be rubbed in with gentle friction on the affected portion of the skin. Not to be applied on broken skin or exposed mucous membranes, as it can cause irritation.</p>
<b>LOTION</b> 	<p>A lotion is a low to medium-viscosity liquid, for application on the skin.</p>	<p>For external use only. A small quantity is to be dabbed on the affected portion of the skin with cotton or clean cloth, or spread thinly with clean fingers.</p>
<b>CREAM</b> 	<p>These are solid dosage forms packed either in tubes or jars. In these, the medicine/s is/are dissolved /mixed/ spread uniformly in either a creamy/greasy / water base.</p>	<p>For external use only. A small quantity is to be applied on the affected area of the skin and spread gently with fingers. A thin layer is to be applied.</p>
<b>ointment</b> 	<p>Depending on the type of wound/condition of the skin, the doctor recommends which type of base is to be used.</p>	<p>These are used for pain /inflammation, small quantity is to be gently rubbed to generate heat.</p>
<b>GEL</b> 		

### POWDERS



These are free flowing, very fine powders for external use.

Not for use on open wounds unless the powders are sterilized.

For external use only.

To be used as a dusting powder.

Sprinkle over the affected area of the body and spread uniformly with clean fingers.

### TRANSDERMAL PATCH



A **transdermal patch** or **skin patch** is a medicated adhesive patch that is placed on the skin. A specific dose of the medication is slowly delivered through the skin and into the bloodstream.

#### For e.g.

Nicotine patches, oestrogen patches.

### PLASTERS



Plasters are solid or semisolid masses which adhere to the skin. The medication is delivered locally on the skin.

For external use only.

Peel off the backing film and apply to the affected area.

Apply to clean dry skin.



## NASAL DROPS

These are to be instilled in the nose for local action in the nasal cavity.  
They are available packaged in different types of bottles/droppers :



### Plastic squeeze bottle with built-in dropper

Turn the bottle upside down and squeeze the bottle to let the drops out with the nose.



### Glass bottle, with a removable dropper

Squeeze the dropper and release it to draw the liquid in the dropper. Then squeeze the dropper again to let the drops out, into the nose.

#### Instruction for use

- Gently blow your nose before administering the drops.
- Lie down, with the head slightly tilted backward OR sit in a chair, with the head tilted backward as far as possible.
- Hold the dropper just vertically above the nostril, so that the drop falls directly into the nostril.
- Avoid direct contact of the dropper tip/surface to the nostril, as it may induce a sneeze or contaminate the dropper.
- Put 1, 2 or 3 drops, as instructed by the doctor.
- Remain in the head backward/tilted position for 5 – 10 mins.
- After use, close the cap of the dropper bottle/screw back the dropper on the bottle and store away in the right place.



## CAPSULE OR LIQUID FOR INHALATIONS

These are used as inhalations, for local action in the upper respiratory tract.  
(NOT TO BE INSTILLED IN THE NOSE).

There could be two ways of using this:

**1. Inhalation using a handkerchief / cloth :**

- a. Cut the tip of the capsule, pour/sprinkle the liquid within it on a handkerchief, and inhale.
- b. Pour out a few drops of the liquid from the bottle on a handkerchief, and inhale.

**2. Inhalation using hot water :**

- a. Cut the tip of the capsule and pour its liquid contents into a vessel containing hot water (not boiling) [Or put a few drops of the liquid from the bottle].
- b. Use a towel to cover the head, in the manner shown in the picture below. Inhale the vapours, keep your eyes closed to avoid burning/irritating the eyes.
- c. Do this process carefully, taking adequate care not to spill the hot water on to you.
- d. If this is to be done for children or the elderly, special care and supervision is necessary to avoid mishaps.



*Note*

**NOT TO BE SWALLOWED. CLOSE EYES  
WHILE INHALING  
(WILL IRRITATE THE EYES IF VAPOURS GO INTO THEM)**

## NASAL SPRAY

A nasal spray contains the medication in aerosol form, packed in a canister.

Instructions for use of nasal sprays:

1. Gently blow your nose to clear it of mucus before using the medication.
2. Make sure the canister fits snugly in its holder. Shake the canister several times just before using it.
3. Keep your head upright. Breathe out slowly.
4. Hold the nasal spray canister below one nostril and use your finger to close the nostril on the side not receiving the medication.
5. Press down on the canister as you begin to breathe in slowly through your nose. Repeat these steps for the other nostril. If you are using more than one spray in each nostril, follow all these steps again.

Try not to sneeze or blow your nose for a few minutes after using the spray.

## EAR DROPS

These could be in the form of solutions, suspensions or emulsions. Suspension and emulsion eye drops should be shaken well each time before use.

### Instructions for use of ear drops:

- If you want to instill in a sitting position, keep your head tilted to one side.
- If you want to instill the ear drops lying down, lie on your side so that the affected ear faces upwards.
- Gently pull the ear lobe away from your neck with one hand.
- With the other hand, hold the bottle or dropper over the ear opening and gently squeeze the correct number of drops into your ear.
- Keep your head tipped or stay lying on your side for a few minutes, to let the drops spread into the ear canal.

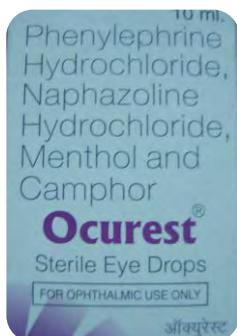


### Note

Some formulations come as eye/ear drops. These could be used for the eye and ears. However, it is very important to note that, once you use the drops container/dropper for the ears, you must not use the same container/dropper for the eyes.

## EYE DROPS

**Eye drops** are sterile (free from micro organisms) liquid preparations used to administer medication in the eye. These may be in the form of solutions, suspensions or emulsions and packed in bottles of no more than 10 ml. Beside the medications they contain one or more preservatives which help to protect the eye drops from microbial contamination.



### Care Of Your Eye Drops:

- Store in a dry place, away from direct light, within the temperature stated on the label and keep away from children. Some eye drops may have to be stored in the refrigerator.
- Eye drops must be used within one month of opening the container. Discard after one month of opening. When you open the container, write down the date of opening on it, so that you know, beyond which date you must not use the bottle.
- Discard the drops if the color changes from the original color/if it turns cloudy/ if they have foreign particles floating in them.
- If using contact lenses, they should be removed while using the eye drops, unless otherwise advised.
- Do not touch the dropper tip or other dispensing tip to any surface, as this may contaminate the eye drops.

### Instructions for use:

- Wash your hands with soap and water. Rinse and dry your hands.
- If the eye drops are in suspension or emulsion form, gently shake the bottle well (with the dropper on) before using.
- Lie down flat without using a pillow OR sit in front of a mirror.
- Remove the cover of the dropper of the eye drop bottle. Hold it in 2 fingers of one hand, without touching the opening (Do not keep it on any surface).



- Tilt your head back, look up to the ceiling with both the eyes and with the index (pointer) finger of the hand holding the dropper cover, gently pull down your lower eyelid to form a pouch/pocket.
- With the other hand, squeeze the eye drop bottle gently and put 1 drop in this pouch. Try not to touch your eye, eyelashes, or anything else with the dropper tip. This is to keep the eye drops free from bacteria (germs).
- After putting in the drop, let go the eyelid gently. Close your eyes gently and try not to blink or squeeze your eye after the drop is put. Remain lying down for a few minutes,
- Repeat in the other eye if the eye drop is prescribed for both the eyes.
- Use the eye drops for the number of times per day recommended and ONLY for the period/number of days recommended by your doctor.



### **Useful Tips:**

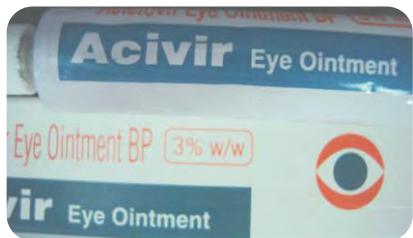
- If you are prescribed and asked to use both eye drops and an eye ointment, use the eye drops first, then put the eye ointment after 5 minutes.
- If you are prescribed and asked to use more than one type of eye drops at the same time, leave a gap of 5 minutes between each of the drops. This allows the first drop to 'settle in' and not be washed out by a second drop if it is put in too quickly. Ask your doctor, which of the eye drops is to be used first.
- Some eye drops may cause temporary irritation after putting in the eye. Tell your doctor if eye symptoms become worse after using eye drops. If irritation persists or increases, discontinue use and consult your doctor immediately.
- You may get a taste of eye drops in your mouth, or a feeling that the drops are running down your throat. This is normal, as the tear duct which drains tears to your nose will also drain some of the eye drop.
- Do not let anyone else use your drops, and do not use anyone else's drops yourself. This can transfer infection.
- Eye drops are sterile (free from microorganisms) before the bottle top is opened.

Hence do not keep used eye drops open for a long time, as they may get contaminated.

## EYE OINTMENT

A special ointment (which is sterile, free from particles) and meant for application to the eye. It must be non-irritating to the eye.

Some ointments may cause blurring of vision for a few minutes. Do not drive or operate heavy machinery until vision is cleared.



### Care Of Your Eye Ointment:

- Squeeze the small amount of ointment (about 1/2 -1/4") inside the lower lid.
- Use tissue paper or clean cloth to wipe out any excess of the ointment around the eye.
- Store in a dry place, away from direct light, within the temperature stated on the label and keep away from children.
- Eye ointments must be used within one month of opening the container. Discard after one month of opening. When you open the container, write down the date of opening so that you know, beyond which date you must not use the ointment.
- Discard the ointment if the color changes from the original color.
- Do not touch the tip of the tube with finger or to the eye or any surface.

### Instructions for use:

- Wash your hands with soap and water. Rinse and dry your hands.
- Lie down flat without using a pillow or sit in front of a mirror.
- Remove the cap of the ointment. Hold it in two fingers of one hand, without touching the opening (do not keep it on any surface).
- Tilt your head back, look up at the ceiling with both eyes, and with the index finger of the hand holding the cap, gently pull down your lower eyelid.
- With the other hand, squeeze the tube gently and allow 1 cm line of ointment to be put along the inside of the lower eyelid, taking care not to touch the eye or eyelashes with the tip of the tube. This is to keep the eye ointment free from bacteria (germs).
- After applying the ointment, let go of the eyelid gently. Close your eyes gently to spread the ointment over the surface of the eyeball.
- Your vision may be blurred when you open your eyes -  
DO NOT RUB YOUR EYES.

The blurring will clear after a few moments.

- Repeat this procedure for the other eye, if you have been advised to do so by your doctor.
- Replace the cap of the tube taking care not to touch the tip with your finger.
- Use a tissue paper or a clean cloth to wipe out any excess of the ointment around the eye.

### Some Useful Tips:

- If you are using more than one type of ointment, wait for about half-an-hour before using the next ointment, from the drug in the first to be absorbed into the eye.
- Some ointments may cause blurring of vision for a few minutes. Do not drive or operate heavy machinery until vision is cleared.
- If using contact lenses, they should be removed while using the eye ointment, unless otherwise advised.

## GARGLE

A medicated gargle is used for local action on the pharynx / throat.



- Not to be swallowed.
- 10 - 15 ml to be taken in the mouth, head to be tilted backward, allowing the medication to the throat / pharynx, and gargled for a least 30 secs. Repeat immediately only if recommended. Do the same for the number of times specified per day.
- There is no harm if small quantities of the medication gets swallowed in the process.
- Check on the label whether the gargle is to be taken undiluted or it can be diluted with water. (May be diluted 1:1 if used over a long period.)

## MOUTH WASH

Medicated solution to be used locally in Oral/mouth cavity.



- Around 10 - 20 ml of the solution is to be swished in the mouth for 30 - 60 sec, and then spitted out.
- Not to be swallowed.
- Very small quantity, if swallowed causes no harm.
- Check on the label whether the liquid they can be diluted with water. May be diluted with equal quantity of water, if it is to be used over a long period.

## DOSAGE FORMS FOR RECTAL / VAGINAL USE

### SUPPOSITORIES

A suppository is a small medicated solid dosage form, in various shapes and sizes, adapted for insertion/introduction into the rectum (rectal suppositories), vagina (vaginal suppositories or pessaries) or urethra of the human body. It is generally made of a base of solid vegetable oil that contains the medicine. It is meant to melt, soften or dissolve at body temperature, and deliver the drug.



**NOT FOR ORAL USE**

**NOT TO BE SWALLOWED**

**FOR RECTAL USE ONLY!**



#### A) Rectal suppositories

##### Instructions for use :

- Read the directions on the label carefully.
- Wash your hands clean with soap and water.
- Remove the suppository from the foil or wrapping and moisten it with luke warm water.
- Hold for few seconds in the palms of the hand to soften it. (to prevent melting,

do not hold for too long)

- Lie down sideways on your left, keep your left leg straight and hold your right leg upward towards your stomach.
- Hold the pointed end front way.
- Gently but firmly, push the suppositories in the rectum. Push it far enough, so that it does not slip out.
- Close your legs and lie down for a few minutes.
- Wash your hand after these.
- Store the remaining suppositories in a cool and dry place.
- Try not to empty your bowels for at least half an hour, unless the suppository is a laxative.
- Clean with warm water and soap, then rinse and dry.
- You may get symptoms such as itching, burning. Inform your doctor if they are too troublesome.

Rectal suppositories may be used for local action of the drug in the rectum (e.g. laxative), or for absorption of the drug into the blood through the rectum as there is a rich supply of blood vessels (e.g. paracetamol suppositories for fever, diazepam suppositories for epilepsy) as an alternative to oral dosage forms, generally when the patient is ill/cannot swallow a tablet, etc.

In India, suppositories are not very common as they are generally considered messy. However; they have a lot of utility.



Smart  
Moves

**ALWAYS FOLLOW THE DIRECTIONS  
WHEN USING MEDICATIONS!**

## **B) Vaginal Suppositories**

The packet of vaginal suppositories will contain:

- a. Vaginal tablets / Suppositories
- b. An applicator

### **Instructions for use:**

- Wash your hand with soap and water, and dry them.
- Remove the applicator from its plastic wrap.
- Peel/pull out one vaginal tablet from the foil.
- Pull out the applicator or plunger, as much as possible, and place the suppository in the applicator.

- Stand with one leg up on a chair or lie down on your back with the knees bent (to facilitate the insertion of the applicator), whichever is most comfortable for you to relax.
- Hold the applicator in one hand, with a finger on the end of the plunger.
- Use the other hand to gently guide the applicator into the vaginal opening (Take care not to allow the tablet to fall out). If the tablet falls out of the applicator, do not try to replace it. Throw away that tablet and use another one.
- Insert the applicator into the vagina as far as is comfortable. Do not force the applicator into the vagina or insert more than half of the applicator into the vagina.
- Gently press the plunger to release the tablet.
- Remove the empty applicator from the vagina. Lie down for about 10 minutes to allow the tablet to melt completely into the vagina.
- Clean the plunger with warm water and soap, then rinse and dry.
- You may get symptoms such as itching, burning. Inform your doctor if they are too troublesome.

**Note:** some tablets come without an applicator. These should be inserted with the finger.

## VAGINAL CREAMS

### Instruction for use :

- Wash your hand with soap and water.
- Use sanitary napkins (rather than tampons) to prevent staining the clothes.
- Remove the cap from the tubes and screw on the applicator to the tube.
- Squeeze the tube and fill the applicator until the plunger is fully extended.
- Unscrew the applicator from the tube.
- Lie down on the back, raise the knees and gently insert the applicator into the vagina as far it goes comfortably.
- Press the plunger gently to release the cream into the vagina. Keep the plunger depressed and remove the applicator from vaginal canal.
- Recap the tube.
- After each use, take apart the applicator. Wash it with soap and warm water.
- Rinse and dry the applicator thoroughly and reassemble.



## DOSAGE FORMS INHALED THROUGH THE MOUTH

### METERED DOSE INHALER (MDI)

An inhaler is an assembly of a solution, suspension or emulsion of drug/s in a mixture of inert propellants, held under pressure in an aerosol dispenser. The drug/s is released from the assembly on pressing the canister. It is to be inhaled through the mouth, for local action on the lungs, bronchi and alveoli.

#### Instructions for use

- Remove the cover of the mouth piece.
- Hold the inhaler with the thumb at the bottom and the forefingers at the top , and shake the inhaler well.
- Breathe out gently through your mouth.
- Tilt your head slightly backward.
- Place open end of the mouth piece into your mouth. Close the lips closed around it.
- Begin breathing in slowly and deeply through the mouthpiece. At the same time, press down on the canister to spray/release the medication into your mouth.
- Continue breathing in slowly and steadily until the lungs are full. The drug is delivered to the lungs.
- Hold your breath for 10 seconds or as long as comfortable. Breath out slowly.

### ROTACAPS



**NOT TO BE SWALLOWED  
TO BE USED ONLY WITH A ROTAHALER,  
FOR INHALATION**

Rotacaps are capsule which contain the medicine in the form of granules or powder. The Rotacaps are inserted in the Rotahaler.

#### Instructions for use :

1. Hold the Rotahaler vertically.

**Note.** It is important to position the two halves of the Rotahaler such that the fin (a part in the Rotahaler) is not directly below the raised square hole.

2. Take a Rotacap capsule from its container. Insert the Rotacap, transparent end first, into the small raised square hole of the Rotahaler.
3. Press the Rotacap firmly such that the top end of the Rotacap is at the level of the top of the hole.
4. Holding the mouth piece with one hand rotate the base. The fin separates the two halves of the Rotacap and the medicine within spills out of the Rotacap. This can be seen through the transparent body of the Rotahaler. The Rotahaler is now ready for use.
5. Breathe out fully. Grip the mouthpiece between your teeth and seal your lips around it. Tilt your head slightly backwards. Breathe in through your mouth as deeply as you can.

**Note: If you are doing this correctly you will hear the Rotacap shell rattling inside the Rotahaler.**

6. Remove the Rotahaler from your mouth and hold your breath. Continue holding your breath for as long as you can, before breathing out. In case powder remains in the Rotacap after inhalation, repeat steps 5 and 6 till Rotacap is empty.
7. After use separate the two halves of the Rotahaler and discard the empty Rotacap. Reassemble the Rotahaler for subsequent use.
8. Wash Rotahaler with soap water.

### **DOSAGE FORMS FOR PARENTAL USE INJECTION**

An injection is a **STERILE** (free from microorganisms) preparation and it is important that it remains so. Because injections are introduced directly below the protective barrier of skin, unsterile preparations containing micro-organisms create serious problems.

An injection can be in the form of a solution, suspension, or emulsion. It needs to be injected using sterile needle and syringe. Larger quantities ( 50ml and above) are given as slow infusions through the veins using other devices like catheters, using I. V. Infusion set.

**Unnecessary use of injections should be avoided! Don't insist your Doctor to give you an injection. Let the Doctor decide if an injection is necessary!**

TYPE OF INJECTION	WHERE IT IS INJECTED
Intravenously (IV)	Vein
Intramuscularly (IM)	Muscle
Intra arterial	Artery
Subcutaneously (SC)	Sub-cutaneous tissue below the skin
Spinal	Spinal cord
Intra-articular	Joints
Intracardiac	Heart
Intradermal (ID) injection	Dermal layer of the skin
Intra cerebral	Brain
Intraosseous infusion	Bone marrow
Intracisternal	Between the first and second cervical vertebrae
Intra cerebroventricular	Ventricular system of the brain

Generally, injections are to be used as a last resort, when oral or other medications may not be sufficient. The decision, whether to use an injection or not, should be left exclusively to the doctor.

### **Injections need to be used very carefully:**

- Once the medication goes into the system, it is not possible to remove it. The action, many times, is immediate, so it is not immediately possible to reverse the effect if something wrong happens.
- We are penetrating the protective barrier of the body – i.e. the skin, and going beyond it.
- One needs to take great care to ensure that the injection, the syringe-needle are sterile, and the correct technique is used. A wrong technique can cause problems like abscesses, nerve damage if wrongly injected, etc.
- Use of unsterile needle-syringes, sharing of the same, could transmit infections like HIV, hepatitis, etc.

Generally, injections are to be administered by trained health care personnel. However, insulin injections are generally injected by a member of the family, or the patient himself has to administer/inject it. This needs to be taken subcutaneously (In the subcutaneous layer of the skin), and the patient /family member must learn (from a trained health care provider), the precautions to take while injecting, the correct technique for injection, and the correct site/s for injection. All other injections are to be given only by a trained health care provider.

## LIST OF WEBSITES

### List of some of the USEFUL HEALTHCARE WEBSITES

(For drug , disease related information )

1. www.who.int
2. www.fda.gov
3. www.cdsco.nic.in
4. www.cimsasia.com
5. www.medicines.org.uk
6. www.ipc.gov.in
7. www.mspcindia.org
8. www.kspcdic.com
9. www.dailymed.nlm.nih.gov/
10. www.ema.europa.eu
11. www.bnf.org
12. www.familydoctor.org
13. www.patientsafetyalliance.in
14. www.drugs.com
15. www.nlm.nih.gov/medlineplus
16. www.webmd.com
17. www.rxlist.com
18. www.patient.co.uk
19. www.medicinenet.com
20. www.drugwatch.com
21. <http://www.nhp.gov.in/> (National Health Portal of India )
22. www.core.nic.in (Consumer Online Resource and Empowerment center.)  
**(This is the Indian Online Consumer Resource website & a place where you can lodge complaint online.)**



**Indian Pharmaceutical Association**

[www.ipapharma.org](http://www.ipapharma.org)



**Pharmacy Council of India**

[www pci nic in](http://www pci nic in)