

## Research and Reviews: Journal of Pharmacy and Pharmaceutical Sciences

### Methods and Guidelines in the Medication and Drug Administration: A Review

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#### Review Article

**Received:**17-03-2016

**Revised:** 28-03-2016

**Accepted:**05-04-2016

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#### Keywords:

Medication, Drug administration, Contraindication, Side effects, Intramuscular, Subcutaneous

#### ABSTRACT

Medication is a process which is distinguished into five phases, those are assessing, prescribing, dispensing, administering and monitoring of the drug. The drugs or medicines which are prescribed by medical practitioner or physician should be followed according to the guidelines. There are various ways of administration of medications as such few are oral, parenteral, intramuscular and intravenous. Route of administration differs from patient to patient based on the state or condition of the patient, so that can be convenient for giving the drug. As such few disadvantages and loop holes are with the administration of drugs, if they are consumed in larger quantities or if any misuse is done. Proper guidelines and ethics should be followed before administering the medicine or drug in to the body.

#### INTRODUCTION

The Terminology which is generally used for the administering of medicines or drugs is Medication. Before going to knowing the advantages of the administration of drugs [1-9], we need to have an overlook on the terminology of medicines that we use. The major terms used in general are described below:

**Medication:** A substance or drug or any other form of medicine which is intended to treat or prevent disease. Medication is well said to be a drug or medicine in common language.

**Routes of Administration:** There are various methods existing that a drug can be administered to be a patient or a needy in present scenario [5,10-25]. So well route of administration can be said as the pharmacological or toxicological entity is the path by which a drug or medicine is taken into the body.

**Types of administration:** The major sources are oral, parenteral and topical.

#### Oral route

The oral (enteral) route of administration is the safest, most economical, feasible and convenient way of taking medicines [26-30]. So medications should be given orally until unless some distinct advantage is to be gained by using another route. The major forms of oral route include tablets, capsules, emulsions, gels, powders etc. A major

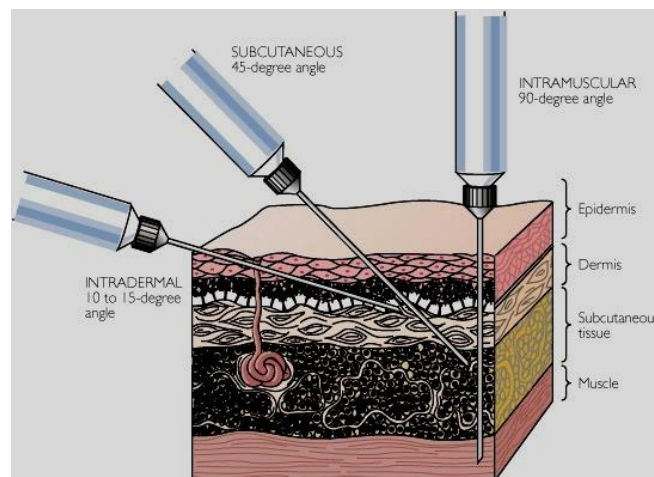
advantage of oral route is the prolonged effect of a medicine and the disadvantage of oral route is objectionable odor or taste, nausea, vomiting and irritation in gastric mucosa.

**Parenteral route:** The term parenteral route defines that any route other than the gastrointestinal (enteral) and the word is derived from Para-other than and enteron or gut [12,18,31-33]. The popular routes of parenteral administration are:

- a. Subcutaneous (under the skin)
- b. Intramuscular (in a muscle)
- c. Intravenous (in a vein)
- d. Intrathecal (around the spinal cord)

A drug or medicine can be prepared in such a way that it can prolong drug absorption from the injection site for hours, days and months too [34-39].

**Subcutaneous route:** Injection is made into the loose subcutaneous fatty tissue under the skin. A common site of subcutaneous route is upper arm, abdomen, and front of the thigh. Subcutaneous administration can be having below 2 ml of amount of drug (**Figure 1**).



**Figure 1.** Different ways of drug administration (Parenteral)

**Intramuscular:** Intramuscular is given with the longer and heavier needles such that it penetrates of the subcutaneous tissues, and drug or medicines is administered in between the layer of muscle mass [6,40-48]. Usually preferred is upper arm and buttock.

**Intravenous:** This route is much preferable when an immediate effect is required or desired or in such case where you cannot the drug or medicine into the other tissues or if the patient is not supported with the oral route such as accidental cases [49-57]. The injection or infusion can be administered into the cubital vein, which is present at the bend of the elbow. Infusions are said to be the ones which are given in a quantity of 500 ml and more and injections are to be given in the range of 0.5 ml to 10 ml [58-66].

**Intrathecal injection:** With this method of administration drug is injected into the subarachnoid space, and here in this needle is injected between two vertebrate in the lower spine and onto the space around the spinal cord. Local anesthesia is given before Intrathecal administration so as to avoid the pain.

Following cited ones are the minor routes, which are less preferable and rarely use:

- a. Sublingual and buccal routes - Under the tongue Rectal route- rectum
- b. Vaginal route-vagina
- c. Ocular route- eye
- d. Nasal route-nasal
- e. Cutaneous route-skin
- f. Transdermal route- beneath the skin

## DISCUSSION

Here in this clause discussed with the precautions and care to be taken while administering the medicines. We have discussed regarding the types of administration in the introduction and here in this clause we will elaborate with the do's and don'ts while having a medicine <sup>[67-72]</sup>, here are the few things to be followed while having the medicines:

- a. Do take medicine or drugs as in prescribed form or as mentioned by doctor or physician.
- b. Do keep away children's and pets from medications.
- c. Have the medicines from a retailer or pharmacy who is registered pharmacist.
- d. If any drug or medicine passed with the expiration dates, discard them from consuming a medication that may have become ineffective or even toxic.

**Do follow the precautions while having medication:** Should not change the medication dose or schedule without having a word with your doctor. It should be prescribed from the registered practitioner, and should not crack or break the pills, should not humid <sup>[24,73-79]</sup>, too hot or too cold. Most difficult part during sickness is consuming those bitter pills <sup>[80-82]</sup>.

**Take medicines with water:** Water is the best beverage for taking medicines. Drink a full glass and do not mix medicines into hot drinks. Hot temperatures can destroy the effectiveness of certain drugs <sup>[83-85]</sup>.

**Do not mix medicines with food:** Don't take any medicine that is expired or decayed.

**Know your prescription label information and the indications:** Labels provide information about how to use medicine.

### Medical prescriptions are of two types

**Generic Medicine:** Generic drugs are facsimile of brand-name drugs that have exactly the same dosage, intended use, effects and side effects, route of administration, risks, safety, and strength as the original drug.

**Generic drugs:** Aspirin

**Brand Name:** A name given by the manufacturer to a product or range of products, especially a trademark.

**Eg:** Bayer, Bufferin, Anacin; **Generic:** Diazepam; **Brand name:** Valium; **Generic:** Acetaminophen; **Brand name:** Tylenol

### Pharmacological terminology used for the drug dosage:

**Dosage:** Medicines in large amounts can be poisonous, consuming in large quantities of drug is said to be over dose.

**Drug action:** Drug action is what the medication is intended to do, or helpful effects that the medicine is supposed to have on the body. Many drugs will show more than one action <sup>[44,86-88]</sup>.

**Eg:** Acetaminophen is an analgesic (pain killer) and an antipyretic (which reduces the body temperature).

**Contraindication:** A contraindication is condition where a medication should not be given.

**Side effects and adverse effects:** An adverse effect is an unusual event or an undesired harmful effect which results from a medication or other sources as surgery <sup>[78,89]</sup>. An adverse effect may be termed as a "side effect", when it is secondary to a main or therapeutic effect.

## CONCLUSION

There is a wide range of research in addressing medication and its safety in health care in current generation. This overview covers the extent of the problem of medication errors, routes of administration and adverse drug events.

**Overview on medication and its administration:** We usually take medicines or drugs to diagnose, treat, or anticipate illness. Medications are conceivably dangerous, even if they are meant to improve our health. It is essential that you take all medications in time, by following physician's directions. Always take medicines as per the instructions given by the prescriber or medical practitioner. Administration of medications requires guidelines that how the medication works in our body. It also requires knowledge of when the medication needs to be administered, possible side effects, and toxicity <sup>[33,36,90-91]</sup>.

**Contraindications in medicine:** Contraindication is a state or factor that acts as a reason to holdback to a medical treatment due to the harm that it would cause the patient. Contraindication is the antagonist of indication [92-96], which is a cause to use a certain treatment. Some contraindications are *absolute*, in the sense there are no particular circumstances for having a course of action [12,97-100].

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