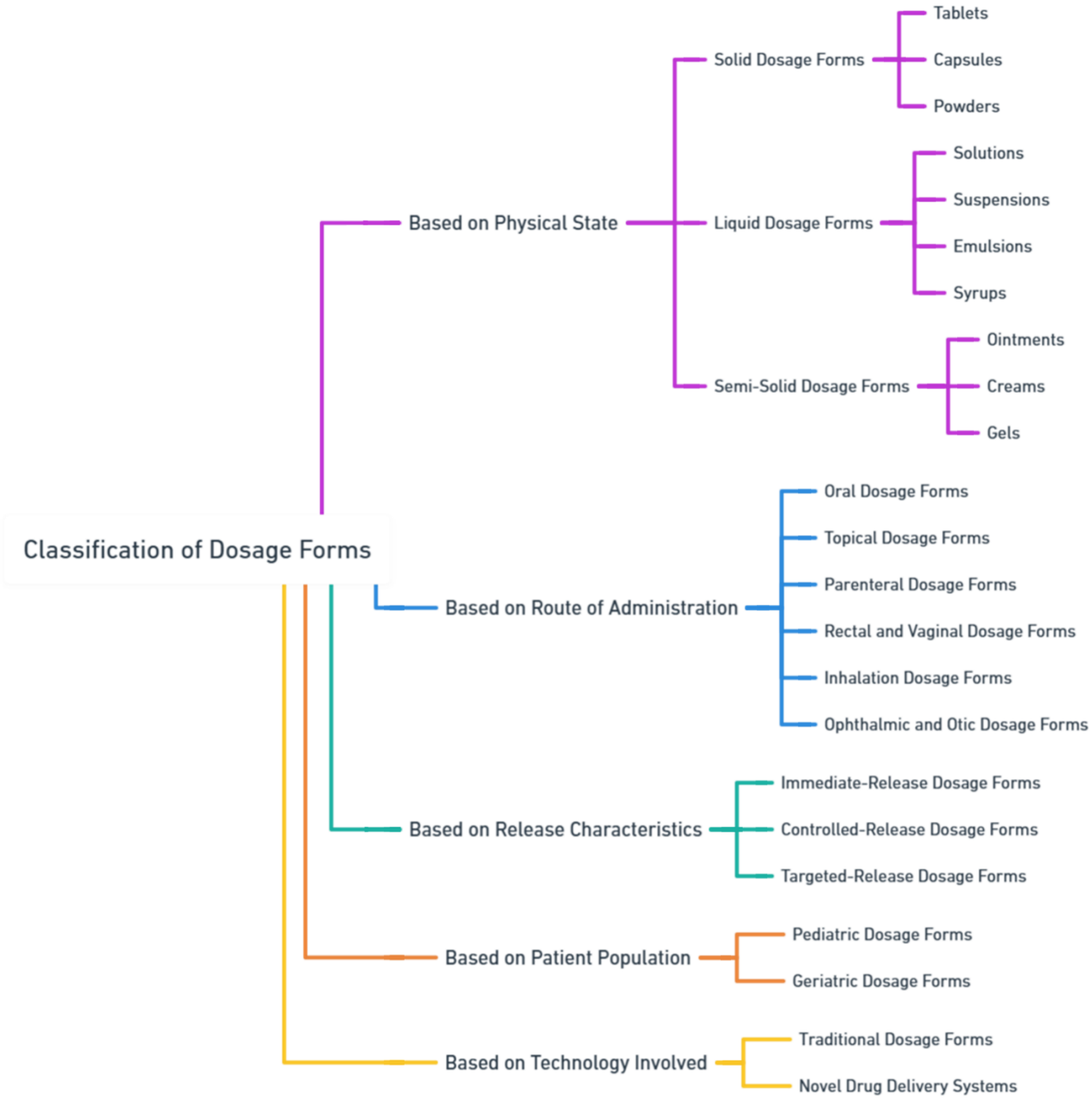
Dosage forms

Introduction to Dosage Forms



- Dosage forms are the physical formulations of drugs, prepared to ensure the safe, effective, and accurate administration of the active pharmaceutical ingredient (API) to patients.
- They are designed to account for various factors, including the drug's properties, pharmacokinetics (how the drug is absorbed, distributed, metabolized, and excreted), pharmacodynamics (the effects of the drug on the body), the route of administration, and patient compliance.

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- Dosage forms can be classified in multiple ways, based on factors like the physical state, route of administration, release characteristics, patient population, or the technology used in their preparation.
- This classification helps optimize drug delivery for specific therapeutic needs.

Classification of Dosage Forms

A. Based on Physical State:

Dosage forms can be solid, liquid, or semi-solid.

1. Solid Dosage Forms:

- **Tablets**: Compressed or molded solid forms containing one or more APIs and excipients. They may be swallowed whole, chewed, or dissolved in the mouth.
- **Capsules**: Gelatin or cellulose-based shells containing powdered, granulated, or liquid APIs. They are easy to swallow and often mask unpleasant drug tastes or odors.
- **Powders**: Fine, dry particles of the API used directly or mixed with food or beverages, or reconstituted into liquid forms.

2. Liquid Dosage Forms:

- **Solutions**: Homogeneous mixtures of APIs dissolved in a solvent like water or alcohol.
- **Suspensions**: Formulations where insoluble drug particles are dispersed in a liquid medium, often stabilized by suspending agents to prevent settling.
- **Emulsions**: A mix of two immiscible liquids (e.g., oil and water) stabilized by emulsifying agents. Used when the drug is poorly soluble in water.
- **Syrups**: Sweetened aqueous solutions of APIs, often used to mask the taste of drugs and provide a pleasant flavor.

3. Semi-Solid Dosage Forms:

- **Ointments**: Greasy formulations meant for topical application, where APIs are dispersed in a hydrophobic base.
- **Creams**: Semi-solid emulsions (oil in water) that are less greasy than ointments and are easily absorbed by the skin.
- **Gels**: Semi-solid systems where the API is suspended in a liquid phase within a three-dimensional polymeric network, used for topical, oral, or other applications.

B. Based on Route of Administration:

The route of administration determines how the drug enters the body.

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- These are administered through the mouth. Examples include tablets, capsules, solutions, suspensions, emulsions, and syrups.

2. **Topical Dosage Forms:**
   - Applied directly to the skin or mucous membranes. Examples include ointments, creams, gels, lotions, and transdermal patches.
3. **Parenteral Dosage Forms:**
   - Administered via injection, infusion, or implantation. Examples include solutions, suspensions, and emulsions.
4. **Rectal and Vaginal Dosage Forms:**
   - Designed for insertion into the rectum or vagina. Examples include suppositories, creams, and gels.
5. **Inhalation Dosage Forms:**
   - Delivered directly to the lungs via inhalers or nebulizers in the form of aerosols, powders, or mists.
6. **Ophthalmic and Otic Dosage Forms:**
   - Administered to the eyes or ears. Examples include solutions, suspensions, or ointments.

C. Based on Release Characteristics:

The drug release profile can vary depending on the dosage form design.

1. **Immediate-Release Dosage Forms:**
   - Designed to release the API quickly upon administration, providing rapid onset of action.
2. **Controlled-Release Dosage Forms:**
   - These release the API over an extended period, maintaining therapeutic levels for a prolonged duration and reducing the need for frequent dosing.
3. **Targeted-Release Dosage Forms:**
   - These deliver the API to a specific site in the body, enhancing efficacy while minimizing systemic side effects.

D. Based on Patient Population:

Special considerations are made for different patient groups.

4. **Pediatric Dosage Forms:**
   - Designed for infants and children, with considerations for age, size, and physiological differences from adults.
   - Examples include oral suspensions, chewable tablets, and pediatric drops.
5. **Geriatric Dosage Forms:**

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- Tailored to meet the unique needs of elderly patients, who may have altered drug metabolism or physical impairments.
- Examples include easy-to-swallow tablets, liquid formulations, and transdermal patches.

E. Based on Technology Involved:

Different technologies are used to enhance drug delivery.

1. Traditional Dosage Forms:

- These include conventional forms such as tablets, capsules, solutions, suspensions, and ointments that have been used for many years in pharmaceutical practice.

2. Novel Drug Delivery Systems:

- Innovative dosage forms or technologies that improve drug delivery, efficacy, and safety.
- Examples include liposomes, nanoparticles, microspheres, and hydrogels.

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Prescription

Parts of a Prescription & Overview

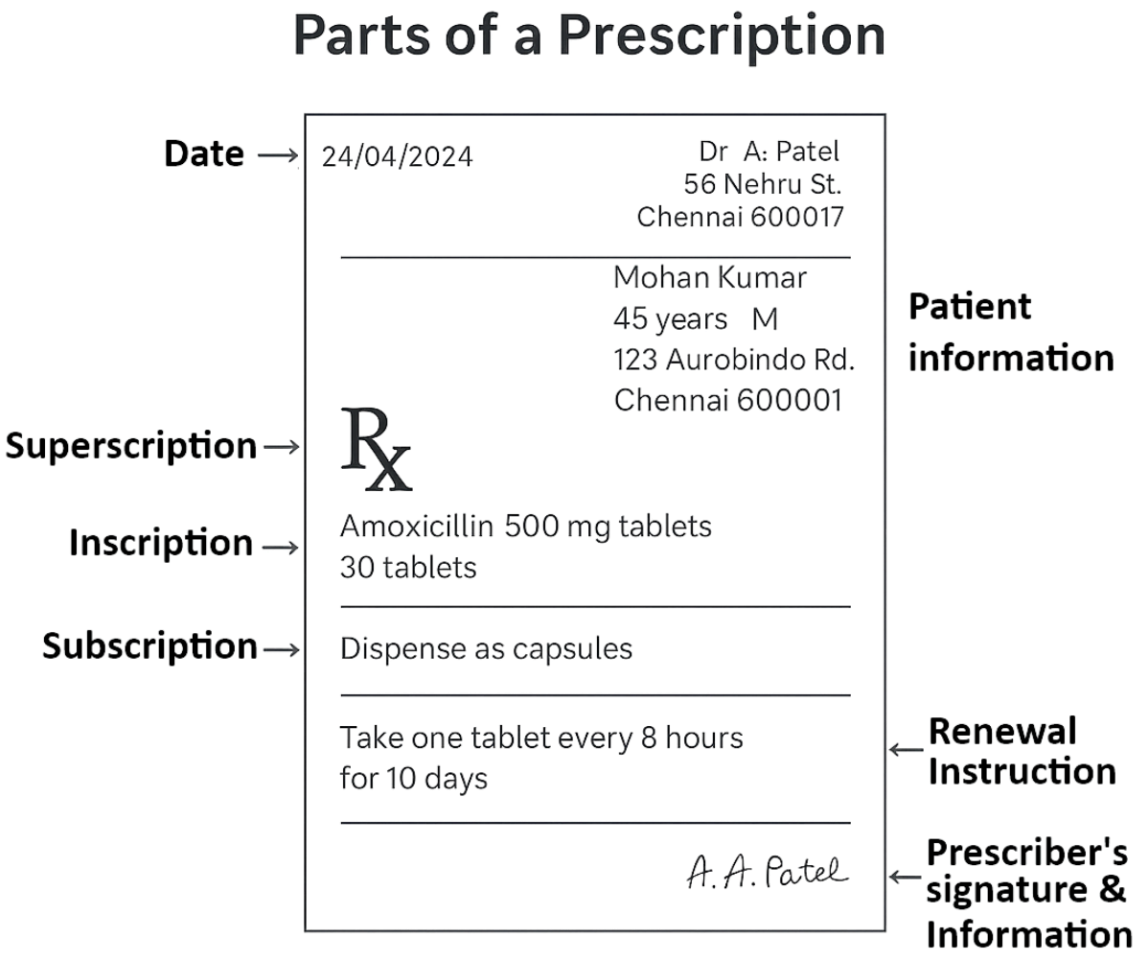
Prescription

- A **prescription** is a written, electronic, or verbal order issued by a **licensed healthcare professional** (such as a physician, dentist, or other authorized prescriber) to a **pharmacist**, directing the preparation, dispensing, and administration of a specific medication to a patient.

It serves as:

- A **legal document** authorizing the supply of medicines.
- A **communication tool** between the prescriber, pharmacist, and patient.
- A record ensuring **safe, effective, and appropriate** medication use.

Parts of a Prescription



1. Date

- Indicates when the prescription was written, ensuring that the medication is dispensed within a valid period.

2. Patient Information

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