Pharmaceutical Calculations

Prescription Interpretation

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The prescription

❑ **Definition:**

- It is a **medication order** designed by a physician, dentist or veterinary surgeon for the **supply of a medicine** to the patient.

- Prescriptions designate a specific medication & dosage to be **prepared by a pharmacist** and administered to a particular patient at a specified time.

❑ **The prescription form:**

1. **Prescriber information:**
2. **Patient information (name, address, age):**

✓ The patient's **name, address and age** must be written by prescriber.

✓ For the child, the age is also given to help when the pharmacist is checking the dose.

3. **Date of prescription:**
4. **The superscription :(Rx symbol)** is the abbreviation of the Latin verb ***"Recipe"*** **meaning *"you take".***

5. **The inscription:**

- It is the main part of the prescription which contains the **prescribed ingredients** with their **specified quantities** to be used in compounding the prescription.
- It is called **the base.**

6. **The subscription:**

- This part consists of **dispensing directions of the pharmacist.**
- It includes the instructions to the pharmacist for:

i. **Compounding of the several ingredients** into a form suitable for use by the patients.
ii. The **class of preparation** [capsules, ointment, mixture etc.].
iii. Also, the **number of doses** to be prepared is indicated.

7. **Signa or sig.:** includes the **directions for the patient's use** of the medication **(i.e. label to the patient).**
8. **Prescriber signature:**

❑ **The following types of prescriptions should be well known:**

A. First classification:

1) Prescriptions **not requiring compounding** by the pharmacist, in this type the medicaments are prefabricated.
2) Prescriptions **requiring compounding.**

- **Nowadays,** although prescriptions are frequently written in English, the inscription, the subscription & the signa are commonly written as abbreviated English or Latin terms or a combination of both.

- The correct interpretation of such abbreviations plays an important part in pharmaceutical calculations.

❑ **Examples for prescriptions requiring compounding:**

Superscription ← **Rx**

Inscription

Chlorpromazine	**0.04 g**
Orange syrup	**10 ml**
Water to	**100 ml**

Subscription ← **Ft. Mist. Mitte. 120 ml**

Signa ← **Sig. One teaspoonful to be taken four times daily**

Chlorpromazine (The drug)	Ft. = Make Mist. = Mixture Mitte. = Send
Orange syrup (Sweetener)	

1	November, 9th , 2025	Date of prescription
2	Ahmed Maher st., Masnsoura	Patient information (name, age, address).
3	Age: 15 years	
4	Rx	The superscription
5	Sodium bicarbonate 0.6 gm Sodium Carbonate 0.3 gm	The inscription
6	Ft. Pulv. i., mitte., 20 gm	The subscription.
7	Sig. Pulv. i., t.d.s., P.C	Signa.
8	Dr. Ahmed Maher	Prescriber signature

Pulv. = Powder	t.d.s = Three times daily
i = 1	P.C. = After meals.

B. Second classification:

1) Simple prescription:

- In which the inscription consists of **one or two substances** as active ingredients.

2) Compound or complex prescription:

- In which the inscription **may contain four distinct portions.**

a) The base: is the **main active ingredient**, and from it, the patient will have a **greater therapeutic effect** than from any other ingredient.

b) The adjuvant: it **aids or assists the base** and acts at the same time; it enhances its activity.

c) The corrective:

- It is a substance added to **qualify the action** of the base and adjuvant.

- Correctives are used to:

i. Make other drugs **less irritating.**
ii. To serve as **flavoring agents** i.e. mask the odor and taste.

d) The vehicle:

- It is added to **dilute the active constituents** to a reasonable dose, so that the patient can take the dose by household measures.

- The vehicle is some materials that is **usually devoid of therapeutic activity** and simply **act as a diluent** (e.g. distilled water).

- It forms the medium in which the **substances are dissolved or suspended.**

- Also, it may:

i. Have a preservative and/or sweetening characteristics **(e.g. chloroform water).**
ii. Or it has a **flavoring property** such as **peppermint water, anise water.**

1		**October, 10, 2025**
2 **3**		**Ahmer Maher St., Mansoura** **13 years old.**
4	**Rx**	
5	Chloral hydrate Sodium carbonate Syrup of raspberry Anise water	3 III The base 3 X The adjuvant Fl 3 III Corrective Fl ʒ II Vehicle
6	Ft. Mist.	
7	Sig. Fl 3 I o.n.	
8		Dr. Ahmed Mohamed

3) Narcotic prescription:

- It is a prescription which **contains a narcotic substance** or contain other habit-forming drugs.

- It must include, in addition to the contents of the simple prescription, the **address of the patient**, the narcotic **registry number of the prescriber.**

- Such prescription should be:

i. Written by **ink or typewriter.**
ii. The **quantities** of the narcotic substance **must be written in words and numbers.**
iii. The **prescription should be stored in a special file** which must be opened all times for inspection by the proper authorities.

1		Patient's name:..... Address:..... Age: .....
2	Date:	
3	R_x	
4	Morphine ampoules 3 (three)	
5	Sig. Ampoule I (one) when pain is sever	
6		Prescriper's name:..... Address:..... Registry no.:..... Signature: Dr. .....

Narcotic prescription always not require compounding

Abbreviations commonly used in the prescription

Abbreviation	Meaning
a.c.	Before meals
b.i.d	Twice a day
t.i.d or t.d.s	Three times daily
q.i.d	Four times daily
Sig.	Write on label
a.m.	morning
Emuls.	emulsion
e.m.p. or u.d.	As directed
i.c.	Between meals
p.r.n.	As needed (when necessary)
q.s.	Sufficient quantity
q.	Every
q.d.	Every day
q.h.	Every hour
p.o.	By mouth (orally)
q.m.n	Every morning and night

Abbreviation	Meaning
O.d.	Once daily
h.s.	At bed time
Pulv.	Powder
Ung.	Ointment
Tab.	Tablet
Cap.	Capsule
Emuls.	Emulsion
Susp.	Suspension
Sol.	Solution
i.v.	Intravenous
i.M	Intramuscular
ad.	Up to

❑ Handling of the prescription:

- The pharmacist is responsible for proper handling of the prescription including receiving, checking, compounding, finishing and delivery.

I. Receiving the prescription:

1. The pharmacist personally **must receive the prescription from the patient**, or the person who represents the prescription for the patient.
2. If the patient's name does not appear, the pharmacist should obtain this information.
3. If the prescription is **intended for a child**, the **age** for whom the medicine is intended **should be recorded in the prescription.**
4. If there is **any doubt concerning reading** of the prescription ingredients or directions or if it appears that an error has been made in writing it, the pharmacist **must consult other pharmacists** or the prescriber without arousing **fear of doubt** on the part of the customer.

II. Checking the prescription for safety:

- The pharmacist should **understand it very well.**

- Must be sure that is **no dangerous overdose or incompatibilities**, otherwise he should consult the physician who wrote it.

- All the following should be checked:

1. **Dose based on age, weight, or body surface area.**
2. **Route of administration.**
3. Pharmaceutical **dosage form.**
4. **Frequency of administration**.

III. Compounding the prescription

1. Check any **calculation** and storage requirement.
2. Collect **the container.**
3. Write **the label.**
4. **Prepare the medicine.**
5. **Pack the medicine** into the container.
6. **Fix the label.**
7. Check the finished preparation.

NUMERALS

Arabic numerals

1. Used with the **metric system (official system).**
2. The numeral comes **before the unit** (e.g 5 Gram, 5 Liter, 5 meter).

Roman numerals

1. Used with the **common system.**
2. The numeral comes **after the unit.**

Mnemonic
"I Value Xtra Large Candy Daily Milk"

ss	½
I or i	1
V or v	5
X or x	10
L or l	50
C or c	100
D or d	500
M or m	1000

Rules of roman numerals

1. When the **second letter** of the two letters has an **equal** value or **smaller** than **the first letter** → Their values are **added**.

ii	1+1= 2	Li	50+1= 51
iii	1+1+1= 3	LXVi	50+10+5+1= 66
VI	5+1= 6	LXXXVIII	50+30+8= 88
xii	10+1+1= 12	DV	500+5= 505
DC	500+100= 600	MDCLXVI	1000+500+100+50+10+5+1 = 1666
DLXII	500+(50+10)+2 = 562	DCLXXIV	(500+100)+(50+10+10)+(5-1) = 674

2. When the **second of the two letters** has a value **greater than the first letter**
   → The smaller one is to be **subtracted.**

iv	**5 – 1 = 4**	**iX**	**10 – 1 = 9**
XiV	**10+(5-1) = 14**	**XiX**	**10+ (10-1) = 19**
XXiV	**10+10+(5-1) = 24**	**XL**	**50 – 10 = 40**
XLiV	**(50 – 10) + (5-1) = 44**	**XC**	**100 – 10 = 90**
CDXCIX	**(500-100)+(100-10)+(10-1) = 499**	**CCCLXIX**	**(100+100+100) + (50+10) + (10-1) = 369**

3. **Ⅰ , X and C** are to be **subtracted only from the two characters on the next higher value.**

Ⅰ is used to be subtracted from V and X
X is used to be subtracted from L and C
C is used to be subtracted from D and M

❑ **Examples:**

49 = XLIX (NOT IL)	**490 = CDXC (NOT XD)**
99 = XCIX (NOT IC)	**990 = CMXC (NOT XM)**
44 = XLIV → (50–10) + (5–1)	**445 = CDXLV → (500–100) + (50–10) + 5**

4. **Ⅰ , X or C** is placed so as to precede **only one** character higher than itself (e.g **19= XiX not iXX**).

4. Use the **least** number of symbols.


Thank you