



Rational use of drugs, medication errors & Prescribing

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JORDAN 2024/2025



Medicines

- Drugs/medicines can do good
- Drugs can do harm
- Whenever a drug is taken a risk is taken
- In some countries most drugs are available over the counter
- Population include a very wide range of people with different knowledge , beliefs and attitudes about medicines
- More than 50% of all medicines worldwide are prescribed, dispensed or sold inappropriately
- 50 % patients fail to take them correctly
- A good percent of doctors describe drugs now online
- Prescribing drugs for yourself and family is also a problem

1- what's the rational use of drug?

2- what're the important-
right should be take
care of them?

3- what're the principles of rational drug use?

Rational use of drugs

- Rational use of drugs requires that patients receive medications appropriate to their clinical needs: have therapeutic indication.
- ① • in doses that meet their own individual requirements.
- ② • for an adequate period of time ⇒ suitable time.
- ③ • and the lowest cost to them and their community.
- This is often simplified as the five rights – the right drug at the right dose by the right route at the right time for the right patient
- (according to WHO 1988)

Principles for rational drug use :

1. Appropriate drug to be prescribed → suitable for the case.

2. Taken in right dose ⇒ specific doses for each age.

3. Taken at the right time and intervals

4. Administered by the right route of administration

5. It should be effective

↪ look for the severity of case to choose away from resistance of drug & suitable rest.

6. Safe (high therapeutic index)

7. Available when needed

8. At affordable price

↪ according to economic status.

Clark's Rule

$$\frac{\text{Weight (lbs)}}{150} \times \text{Adult dose} = \text{Dose for child}$$
$$\frac{46 \text{ lbs}}{150 \text{ lbs}} \times 12.5 \text{ mg} = \boxed{3.83 \text{ mg}}$$

2 - 3 x daily

Young's Rule

$$\frac{\text{Age}}{\text{Age} + 12} \times \text{Adult dose} = \text{Dose for child}$$
$$\frac{5}{5 + 12} \times 12.5 \text{ mg} = \boxed{3.67 \text{ mg}}$$

2 - 3 x daily

Causes Of Irrationality Of Drug Use

Doctor
patient
Company.

السبب

1. **Polypharmacy**: high number of drugs on each prescription

side effect ↑
↑ drug interaction.

2. **Incomplete pharmaceutical information** about drugs ✓

3. **Incorrect prescribing** (e.g. low efficacy drugs, or given at unsuitable circumstances and wrongly given antibiotics)

4. **Patient compliance** : low patient compliance (the degree to which a patient correctly follows medical advice) (20-50%)

5. **Low income of patient** pushes the pharmacist towards dispensing doses for one or two days only

6. **Self medication**: (patients do not know the mode of drug action, duration of treatment, side effects)

7. **Availability of numerous medicinal alternatives**

الشركات

Causes of patient non compliance

- ① Failure of Communication and Lack of Comprehension.
- ② Cost ...
- ③ Fear due to fear of adverse effect.
- ④ Psychological factors: depression
- ⑤ Forgetfulness
- ⑥ Drug or alcohol dependence
- ⑦ Complex medication schedules simple prescribing / not polypharmacy.
- ⑧ Lack of symptoms
- ⑨ Drug adverse effects

→ degree to which a patient follow the medical advice.

- Efforts to achieve rational use of medicines intensified after the **thalidomide tragedy** in the 1960s
- **Thalidomide** was a mild sedative marketed as safe even for pregnant women.

- However, it caused thousands of infants worldwide to be born with malformed limbs (**phocomelia**)



1- what's the medication error?

3- what's the near miss?

2- Do Adverse effect and side effect follow a medication error?

Medication errors

- **Medication Error**: is any preventable event that may cause or lead to PATIENT HARM.
↳ I can prevent it by rational use.
- **Adverse reaction**: harm to the patient arising from drug action.
where the correct process was followed ⇒ not medication error → can't be preventable.
- **Near Miss**: incidence about to happen but didn't occur: an error caught before reaching the patient.
- **Side effects**: unwanted unavoidable drug effects

↳ Not medication error

↳ Harm → patient

what are the

Steps In Using Medication



- **I. Prescribing**
- **II. Preparation and Dispensing**
- **III. Administration**
- **IV. Monitoring**
- **NOTE:**

• These steps may be carried out by healthcare workers or the patient; e.g. self-prescribing over the counter medication and self-administering medication at home

Sources Of Error In Prescribing

- 1. **Inadequate knowledge** about drug indications and contraindications
- 2. **Not considering individual patient factors** such as allergies, pregnancy, co-morbidities, other medications
- 3. **Wrong drug**, wrong dose, wrong time, wrong route wrong patient
- 4. **Mathematical error** in calculating dosage
- 5. **Inadequate communication** (written, verbal)
- 6. **Documentation**: illegible, incomplete, ambiguous abbreviation e.g. 2 mg instead of 2 mcg
غير مقروءة . لا ختمبارت من سعادة الدكتور النايط !
- 7. **Incorrect data entry** when using computerized prescribing e.g. wrong number

***Example For Error Prone Abbreviations

| | | |
|--|---|---|
| U (for units) | Mistaken for: "0" (zero), "4" Write "unit" (the number four), or "cc" | Write "unit" |
| <u>Ug</u> (for micrograms) | Mistaken for mg (milligrams) resulting in one thousand-fold overdose | Write "mcg" or "micrograms" |
| IU (for international units) | Mistaken for : "IV" (intravenous), "10" (the number ten) | Write "international unit(s)" |
| OD, O.D., od, or <u>o.d.</u> (for daily) | Mistaken as "right eye" (oculus <u>dexter</u>) which could lead to administration of liquid medication in the eye | Write "daily" |
| QD, Q.D., <u>qd</u> , <u>q.d.</u> (for daily) Q.O.D, <u>q.o.d</u> (for every other day) | Mistaken as " <u>q.i.d.</u> " especially if the period after the "q", the letter "O", or the tail of the "q" is misinterpreted for the letter "I" | Write "daily" or "every other day" as appropriate |

**Example For Prescribing Error-illegible Handwriting:

The image shows a handwritten medical prescription that is extremely difficult to read due to cursive and slanted handwriting. The text is mostly illegible but appears to contain the following information:

- Top line: "Meds, why fill d"
- Second line: "stronger z..."
- Third line: "meds + h needs"
- Fourth line: "bring to work"
- Fifth line: "notes w/ us"
- Sixth line: "in ex. in g ar"
- Bottom line: "the ..."

Strategies To Reduce Prescribing Errors

- 1. Avoid illegible handwriting
- 2. Write complete Information
- 3. Look at Patient-Specific Information
- 4. Do Not Use Abbreviations
- 5. Decimals 2 mg not 2.0 mg, 0.5 mg not .5 mg
- 6. Be alert to drug name, use generic name rather than trade names:
- **Metronidazole**: antiprotozoal, **metformin**: antidiabetic
- **Amicar**: antibleeding, **omacor**: omega-3
- 7. Know the high alert medications
- 8. More attention to dosage calculations
- 9. Verbal orders

الدسم العلمی بدك الدسم التجاری

Factors For Medication:Errors Staff Factors

- Inexperience
- Rushing “ there is no time to check the system or communicate with the patient “
- Doing two things at the same time “ clear mind is very important “
- Interruptions
- Fatigue, boredom, or stress
- Lack of checking and double checking habits
- Poor teamwork and/or communication between colleagues

Remember the 5 Rs when prescribing and administering

•Can You Remember What They Are?

- 1. Right Patient** (check the name of the patient & ask the patient to identify himself/herself).
- 2. Right drug** (check the medication label & order).
- 3. Right Route** (Confirm that the patient can take or receive the medication by the ordered route)
- 4. Right Time** (Check the frequency of the ordered medication & Confirm when the last dose was given).
- 5. Right Dose** (Confirm appropriateness of the dose using a current drug reference & correct calculation)

Prescription

• **A prescription is:**

• A doctor's order for medicine (drug) or another intervention.

• In writing prescriptions, use English (in the U.S.) or the dominant language of the patient

• **Rx**: an abbreviation for the Latin word **recipere**, meaning "take": as a direction to a pharmacist, preceding the physician's "recipe"

• The abbreviation "**Signa**" for the Latin **Signatura**, is used on the prescription to mark the directions for administration of the medication.

↓
For the patient.

WHO CAN PRESCRIBE MEDICINES?

- **Only physician (doctor)**
- **Note that: in some countries**
- Healthcare practitioners other than physicians can write prescriptions. Licensed physician's assistants , nurse practitioners, pharmacists, and clinical psychologists can prescribe medications under various circumstances.

Parts of prescription

- The prescription consists of:

- The **superscription**

- The **inscription** → التعليمات باليه يوا

- The subscription → بإرشادات المريفي

- The signa → direction.

- **The name and signature of the prescriber** → توقيع الطبيب

- **All contained on a single form**

Rules in writing a prescription

- The prescription must be **accurately** and **legibly** prepared
- To **identify** the **patient**, the **medication** to be dispensed, and the **mode of drug administration**.
- Avoid abbreviations** and **Latin**; they lead to dispensing errors.
- **Include the therapeutic purpose** in the subscription (e.g., "for control of blood pressure") to prevent errors in dispensing.

PARTS OF A PRESCRIPTION

1. Date: / /

Name:

Age:

Weight:

R_x 3. Superscription

Paracetamol – 500 mg

4. Inscription

tab Paracetamol 10

5. Subscription

BID for 5 days

6. Signatura

7. Signature

8. Reg no. & Seal

| | | |
|---|---|-------------------------------------|
| Phone: 555-3752 | DEA # AC1273628 | DEA Number |
| Eva Adams, M.D. 298 Appleby Street Eden, NY 14057 | | Prescriber Information |
| Name <u>Laurel Hardy</u> | Age <u>41</u> | Patient Information |
| Address <u>Abel St, Eden</u> | Date <u>06/16/06</u> | Date Prescription was Written |
| R_x | Phenobarbital 0.075 Pimethicone 0.020 Magnesium Carbonate 0.050 m. fl. 712 | Inscription (Medication prescribed) |
| Refill _____ | <u>E. Adams</u> M.D. | Signa (Directions for Patient) |
| Sig: <u>2 capsules tid and ho</u> | | |
| THIS PRESCRIPTION WILL BE FILLED GENERALLY UNLESS PHARMACEUTICAL WRITES "do not" IN THE BOX BELOW | | |
| <div style="border: 1px solid black; width: 50px; height: 50px; margin: 0 auto;"></div> Dispense as written | | |

Superscription (Meaning Recipe)

Subscription (Instructions to Pharmacist)

Special Instructions

Inscription (Medication prescribed)

Signa (Directions for Patient)

- Prescriber information
- The **date**
- The **name, address, weight, and age of the patient;**
- The ***superscription*** includes and the **Rx (*Take*)**.
- **The body of the prescription: *inscription***, contains the **name** and **amount or strength of the drug** to be dispensed
- The **subscription** is the **instruction to the pharmacist**, usually consisting of a short sentence such as: "dispense 30 tablets.
- "**The signa** is the **instruction for the patient (written in Arabic)** as to how to take the prescription, interpreted onto the prescription label by the pharmacist.