Basic Aspects about Drugs

Dr. Suryaprakash Dhaneria

M.D. (Pharmacology),
D.M. (Clinical Pharmacology),
D.N.B. (Clinical Pharmacology & Therapeutics)
M.Sc. (Biochemistry), LL.B. (Hons.)
MNAMS

Dean (Academics)
Professor & Head
Department of Pharmacology
All India Institute of Medical Sciences
Raipur (C.G.)
Drugs

It is a substance used for diagnosis, prevention, treatment of disease or alteration of physiological state.

PHARMACOLOGY

A branch of medical science which deals about the knowledge of drugs.
Drug Nomenclature

- Chemical name
- Generic name (Official/approved/non-proprietary)
- Brand or trade name (proprietary)
Medicine Strip - Information

- **Generic name (Non-proprietary name):** Paracetamol Tablets IP 650 mg
- **Brand name (Proprietary name):** Calpol 650 mg
- **Strength of tablet:** 650 mg
- **Dosage form:** Tablets
- **Indian Pharmacopeia:**
- **Batch No.:** B.No.EN560
- **Manufacturing date:** MFD.MAR.11
- **Expiry date:** EXP.FEB.14
- **Manufacturer:** GlaxoSmithKline
- **Retail price for 10 tablets Rs. 16.00 inclusive of all taxes M.L.No.25A-AD/258-A MFD.AT:D-5, M.I.D.C. AREA, PAITHAN 431148, DIST. AURANGABAD.
Sources of Drugs

1. Plants
2. Animals
3. Micro-organisms (fungi, bacteria)
4. Minerals
5. Synthetic
6. DNA recombinant technology
Plant source – Examples

**Drug**: Morphine

**Plant**: *Papaver somniferum*

**Parts of plant used**: Unripe capsule, seeds

**Drug Class**: Opioid analgesics

**Use**:
- Acute and chronic severe pain
- Acute myocardial infarction
- Acute pulmonary edema
Plant source – Examples

**Drug**: Digitalis

**Plant**: *Digitalis lanata*

**Parts of plant used**: Leaves, flowers

**Drug Class**: Cardiac glycosides

**Use**:  
• Congestive heart failure
Plant source – Examples

**Drug:** Artesunate

**Plant:** *Artemisia annua*

**Parts of plant used:** Leaves

**Drug Class:** Antimalarial drugs

**Use:**
- Treatment of malaria
**Drug**: Atropine

**Plant**: *Atropa belladonna, Datura stramonium*

**Parts of plant used**: Fruits, seeds, flowers

**Drug Class**: Anticholinergic drugs

**Use**:
- Organophosphate poisoning
- Corneal ulcer
- Refractive error testing
Plant source – Examples

**Drug**: Quinine

**Plant**: *Cinchona officinalis*

**Parts of plant used**: Bark

**Drug Class**: Antimalarial drugs

**Use**:
- Treatment of malaria
Drug: Vincristine, Vinblastine

Plant: *Catharanthus roseus* (Vinca rosea)

Parts of plant used: Flowers

Drug Class: Antineoplastic drugs

Use:
- Acute lymphocytic leukaemia
- Non-Hodgkin’s lymphoma
- Hodgkin’s lymphoma
Insulin
Heparin

Protamine

Vitamin D
Minerals as source of drugs

- Ferrous sulphate for treatment of Iron deficiency anemia.
- Aluminium hydroxide + Magnesium hydroxide for the management of hyperacidity.

**Human as a source of drugs**

<table>
<thead>
<tr>
<th>Human source</th>
<th>Drugs</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine of postmenopausal women</td>
<td>Human menopausal gonadotropins (Menotropin)</td>
<td>Female Infertility treatment</td>
</tr>
<tr>
<td>Placenta and urine of pregnant woman</td>
<td>Human chorionic gonadotropin (hCG)</td>
<td>Female Infertility treatment</td>
</tr>
<tr>
<td>Urokinase</td>
<td>Human kidney cells</td>
<td>For lysis of clot in AMI.</td>
</tr>
</tbody>
</table>
Oral formulations

- Tablet
- Capsule
- Lozenge
- Syrup
- Suspension
- Granules
Parenteral formulations

Ampoules

Vial

Saline bottle & Infusion set
Indication

- Clinical condition in which drug is used

Contra-indication

- Clinical condition in which drug should not be used

For combined pill (Estrogen + Progestin)

Indication – for female contraception

Contraindication – Deep vein thrombosis
Adverse drug reactions

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

- Moon facies (Cushingoid facies)

- Glucocorticoids
Adverse Drug Reactions

- Steven’s Johnson Syndrome
- Sulpha drugs
Adverse Drug Reactions

- Yellowish discoloration of teeth
- Tetracycline
Adverse Drug Reactions

- Gingival hyperplasia
- Phenytoin
Adverse Drug Reactions

- Angioedema

- ACE inhibitors
  - Enalapril
  - Lisinopril
Adverse Drug Reactions

- Ankle edema
- Calcium channel blockers
Drug Development

- Animal studies
- Phase I clinical trial
- Phase II clinical trial
- Phase III clinical trial
- Post-marketing surveillance
Pharmacovigilance

Is defined as the science and activities relating to the detection, assessment, understanding and prevention of adverse effect or any other possible drug related problems.
Who can report ADR?

- Doctor
- Dentist
- Pharmacist
- Patient
- Nurse
### Medicines Side Effect Reporting Form (For Consumers)

**Patient Details:**

<table>
<thead>
<tr>
<th>Patient Initials</th>
<th>Gender/Sex (V): Male/Female/Other</th>
<th>Age (Year or Month):</th>
</tr>
</thead>
</table>

**Health Information:**

a. Reason(s) for taking medicine(s)/Disease/Symptoms:

b. Medicines Advised by:

- [ ] Doctor
- [ ] Pharmacist
- [ ] Friends/Relatives

Self (Past disease experienced/No past disease experienced):

- [ ] Yes
- [ ] No

**Details of Person Reporting the Side Effect:**

- Name (Optional):
- Address:
- Telephone No.:
- Email:

**Details of Medicine Taking/Taken:**

| Name of Medicine(s)/
| | Quantity of Medicine(s) taken (e.g., 250 mg, Twice a day) |
| | Expiry Date of Medicine(s) |
| | Date of Start of Medicine(s) |
| | Date of Stop of Medicine(s) |

**Dosage form/Route of Administration:**

- [ ] Tablet
- [ ] Capsule
- [ ] Injection
- [ ] Oral Liquid

**About the Side Effect:**

- When did the side effect start?
- When did the side effect stop?

**How bad was the Side Effect? (Please check the boxes that apply):**

- [ ] Did not affect daily activities
- [ ] Affect daily activities
- [ ] Admitted to hospital/Readmission
- [ ] Death

**Describe the Side Effect:**

This reporting is voluntary, has no legal implication and aims to improve patient safety. Your active participation is valuable. The information provided in this form will be forwarded to ADR Monitoring Centre for follow-up. You are requested to cooperate with the programme officials when they contact you for more details. Please do not report even if you do not have all the information.

Please turn the page to read the Instructions.
Instructions to Complete the Reporting Form

इस फॉर्म का पूरा करने के लिए निर्देश:

Section 1 - Patient Details
- वित्तरी का विवरण
  - वित्तरी के प्राप्तकर्ता में, नाम के पहले का शब्द और उपनाम या उनका आयाम आधुनिक वित्तविशेषज्ञ के सारण से प्राप्त किया गया है।
  - वित्तविशेषज्ञ उपक्रम की जिंदगी में वित्तविशेषज्ञ की रोल के सारण से प्राप्त किया गया है।

Section 2 - Health Information
- आपकी तस्करी के बारे में आपके मद्दत के लिए ठीक से चुनें।
  - इसके साथ उपग्रह और उपग्रह की रोल के सारण से प्राप्त किया गया है।

Section 3 - Details of Person Reporting the Side Effect
- उपग्रह की तस्करी के बारे में आपके मद्दत के लिए ठीक से चुनें।
  - इसके साथ उपग्रह और उपग्रह की रोल के सारण से प्राप्त किया गया है।

Section 4 - Details of the Medicines Taken/Consumed
- आपकी तस्करी के बारे में आपके मद्दत के लिए ठीक से चुनें।
  - इसके साथ उपग्रह और उपग्रह की रोल के सारण से प्राप्त किया गया है।
1. Patient initials______________________________
   रोगी के हस्ताक्षर : (In confidence).

2. Gender/ लिंग
   Male/ पुरुष  Female / स्त्री  Other/ अन्य

3. Age (Years or month)_________________________
   आयु (वर्ष या माह)
a. Reason(s) for taking medicine(s)

(Disease/ Symptoms):

दवा (दवाएं) लेने का कारण (रोग / लक्षण):
b. Medicines Advised by/ (√) :

दवाई की सलाह देने वाला :
Doctor/ डॉक्टर
Pharmacist/ फार्मासिस्ट
Friends/Relatives/ मित्र/ रितेदार
Self (Past disease experienced/No past disease experienced)/ स्वयं (पूर्व बीमारी का अनुभव/पूर्व बीमारी का कोई अनुभव नहीं)
Details of person reporting the side effect

Name (Optional)/ नाम (वैकल्पिक) ____________________

Address/ पता: __________________________________________

________________________________________

Telephone No. / टेलीफोन नं _____________________________

E-mail / ईमेल: _________________________________________
Details of Medicine taking/taken
ली जा चुकी दवाई का विवरण

Name of Medicine/ दवाइयों के नाम

Quantity of Medicine taken (Dose, frequency)

Expiry date of Medicine/ ली गई दवाई की मात्रा (उदाहरण के लिए 250 मिग्रा. एक दिन में दो बार)

- Expiry Date of Medicines/ दवा के निशिक्य होने की तिथि
- Date of start of Medicines/ दवाइयां आरंभ करने की तिथि
- Date of stop of Medicines/ दवाइयां रोकने करने की तिथि

Dosage form/ खुराक का स्वरूप (√):

Tablet / गोली (टेबलेट) ☒ Capsule/ कैप्स्युल ☐
Injection/इंजेक्शन ☐ Oral liquids/ मौखिक तरल ☒

If others (Please specify………)/ यदि अन्य (कृपया निर्दिष्ट करें ...........)
About the side effect / दुष्प्रभाव के बारे में

When did the side effect started? / दुष्प्रभाव की भुलूआत कब हुई थी?

When did the side effect stop? / दुष्प्रभाव कब समाप्त हुआ था?

Side effect is still continuing – Yes/No / क्या दुष्प्रभाव जारी है (हां/नहीं):
How bad was the Side Effect?
(Please √ the boxes that Apply)

Did not affect daily activities/

Affect daily activities

Admitted to hospital/

Death / मृत्यू

Others / अन्य
Describe the Side Effect (What did you do to manage the side effect?)

दुष्प्रभाव की व्याख्या करें (आपने दुष्प्रभावों से छुटकारा प्राप्त करने के लिए क्या किया)?
Confidentiality:

• The patient’s identity is held in strict confidence and protected to the fullest extent. Programme staff is not expected to and will not disclose the reporter’s identity in response to a request from the public.

गोपनीयता: रोगी की पहचान को पूर्णतः गुप्त और सुरक्षित रखा जाता है । कार्यक्रम के स्टाफ से उम्मीद की जाती है कि स्टाफ का कोई भी व्यक्ति सार्वजनिक अनुरोध पर रिपोर्ट देने वाले की पहचान का खुलासा नहीं करेगा ।
Pharmacovigilance Programme of India
National Coordination Centre,
Indian Pharmacopoeia Commission,
Ministry of Health & Family Welfare, Govt. of India
Sector-23, Rajnagar, Ghaziabad-201002. Uttar Pradesh
Tel.: 0120-2783400, 2783401, 2783392
Fax: 0120-2783311
Email: pvpi.compat@gmail.com
For more information visit us at www.ipc.gov.in
1800180-3024 (Toll Free)
(9.00 AM to 5.30 PM, weekdays)
KEY OF RATIONAL DRUG PRESCRIBING

IS TO USE -

* RIGHT DRUG
* IN RIGHT PATIENT
* IN RIGHT DOSE
* BY RIGHT ROUTE
* AT RIGHT TIME
* WITH RIGHT DOCUMENTATION
Guidelines for Rational Use of Drugs

First decide whether the drug is needed or not in the patient.

Select the group of drug to be prescribed on the basis of efficacy and safety in the patient.

Select a drug from the group which is time tested and about which doctor has sufficient knowledge.

Decide the dose in the patient / Decide the route of administration.

Decide interdose interval / Decide duration of therapy.

Monitor the efficacy and safety of drug. If it is not emergency, then give sufficient time to drug to manifest its effect. Do not change the drug on the basis of whims, fancy and material consideration.

Avoid repeat prescription. Review the patient regularly.

Give the information to the patient regarding the significance of drug therapy in the illness, how to take the drug, how long to take, any precaution while taking the drug, how to store the drug and if any undesirable effect occurs what is to be done.
Newer drugs are always better drugs.
Costly drugs are always better drugs.
Polypharmacy is always better.
Antibiotics have saved our lives for so long and now it is the time for us to save antibiotics.
“The drugs that satisfy the healthcare needs of majority of the population, therefore these should be available at all times, at all the places, in adequate amount, in appropriate dosage form and at affordable cost.”
Essential medicines

376 drugs including 24 FDCs

WHO Essential Medicine List (2017)
437 drugs including 33 FDCs
INDIAN SCENARIO

- INDIA IS DEVELOPING COUNTRY WITH LIMITED RESOURCES.
- SIGNIFICANT BURDEN OF DISEASES IN INDIAN POPULATION.
- LOT OF RESOURCES GET WASTED IN UNNECESSARY DIAGNOSTIC PROCEDURES AND DUE TO IRRATIONAL USE OF MEDICINES.
“Medicines are nothing in themselves, but are the very hands of gods if employed with reason and prudence.”

-Herophilus