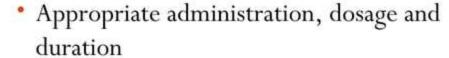# RATIONAL DRUG USE

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Outline

- Definition of rational use of medicines
- Rationale behind rational use of medicines
- Reasons of irrational use of drugs
- Dangers of irrational drug use
- Steps to be taken for rational use of drugs
- Conclusion

Definition

- In simplest words rational use means "prescribing right drug, in adequate dose for the sufficient duration & appropriate to the clinical needs of the patient at lowest cost

- **WHO:** *The rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, and at the lowest cost to them and their community*

'Criteria' for Using Medicines

- Appropriate indication
- Appropriate drug
- Affordable
- Appropriate administration, dosage and duration
- Appropriate patient
- Appropriate patient information

Reasons for Irrational use of Drugs

1. Lack of information
2. Role models – Teachers or seniors
3. Lack of diagnostic facilities/Uncertainty of diagnosis – medicine for all possible causes
4. Demand from the patient
5. Patient load
6. Promotional activities of pharmaceutical industries
7. Drug promotion and exaggerated claim by companies
8. Defective drug supply system & ineffective drug regulation

Absolutely Irrational Use

1. Injudicious use of antimicrobials: Antibiotics in Viral fever and diarrhea
2. Unnecessary combinations
3. Use of drugs not related to diagnosis
4. Incorrect route
5. Incorrect dosing – under or overdose
6. Incorrect duration – prolong or short term use
7. Unnecessary use of expensive medicines
8. Unsafe use of corticosteroids
9. Polypharmacy

Hazards of Irrational Use

1. Ineffective & unsafe treatment
   - over-treatment of mild illness
   - inadequate treatment of serious illness
1. Exacerbation or prolongation of illness
2. Distress & harm to patient
3. Increase the cost of treatment
4. Increased drug resistance - misuse of anti-infective drugs
5. Increased Adverse Drug Events
6. Increased morbidity and mortality

Various obstacles in rational drug use

- 1. Lack of objective information & of continuing education & training in pharmacology.
- 2. Lack of well organized drug regulatory authority & supply of drugs.
- 3. Presence of large number of drugs in the market & the lucrative methods of promotion of drugs employed by pharmaceutical industries.
- 4. The prevalent belief that "every ill has a pill."

Steps of rational drug use

- **Step:- I**
  - Identify the patient's problem based on symptoms & recognize the need for action
- **Step:- II**
  - Diagnosis of the disease – define the diagnosis
- **Step:- III**
  - List possible intervention or treatment (drug or no drug) – Identify the drug
- **Step:- IV**
  - Start the treatment by writing an accurate & complete prescription e.g. name of drugs with dosage forms, dosage schedule & total duration of the treatment

... contd.

- **Step:-V**
  - Give proper information, instruction & warning regarding the treatment given e.g. side effects (ADR), dosage schedule & dangers/risk of stopping the therapy suddenly
- **Step:-VI**
  - Monitor the treatment to check, if the particular treatment has solved the patient's problem.
    - Passive monitoring – done by the patient himself. Explain him what to do if the treatment is not effective or if too many side effect occurs
    - Active monitoring - done by physician and he make an appointment to check the response of the treatment

Conclusions

- Drug use is usually the end of therapeutic consultation. Ensuring that the correct drug is given to the correct patient is a high priority for all health professionals.

- We all have a duty and responsibility to the public to ensure that the right drug is prescribed, dispensed and taken.

- Medicines although 'public good' are not ordinary articles of commerce

- Improving drug use improves the quality of care and frequently lowers cost.

ESSENTIAL DRUGS

- In 1975, the 28th World Health Assembly reviewed the main drug problems facing the developing countries & outlined possible new drug policies

- The Director General of WHO, referred to the experience gained by some countries, where schemes of basic or essential drugs had been implemented with tremendous success

- Such schemes were intended to extend the accessibility & rational use of most necessary drugs to their respective populations, whose basic health needs could not be met by the existing supply systems

- The concept of essential drugs was born, & the first model list of essential drugs was published in 1977

Current versions

- 18th WHO Essential Medicines List in April 2013

- 4th WHO Essential Medicines List for Children updated in April 2013

- 19th WHO Model List of Essential Medicines in April 2015

Essential drugs are those that satisfy the health care needs of the majority of the population which is available at all times in adequate amounts & in appropriate dosage forms.

- The model list of essential drugs is important in developing countries because of the reasons:

✦ **Development of treatment guidelines**

✦ **Development of national formularies**

✦ **Measures to improve drug use information for patients & general public**

Choice of essential drugs depends on many factors like;

* Pattern of prevalent diseases in the country

* Treatment facilities available

* Level of training & experience of the personnel, who will actually handle the drugs

* Financial resources available in the country

* Genetic, demographic & environmental factors

Selection of essential drugs must always be

- Evidence-based; not situation based

- Selected drugs should have sound & adequate data on their efficacy & safety, based on clinical studies

- Performance of a drug in general use has been proved in variety of medical settings

- It must have assured quality, including bioavailability & stability, under various conditions prevailing in the country

- When 2 or more drugs appear to be similar in quality, bioavailability, stability, choice should be made on the basis of careful evaluation of their relative efficacy, safety, quality, price & availability

- When cost becomes an issue in the selection of drugs, only the unit cost of the drug alone should not be considered

- Comparative pharmacokinetic properties of drugs in the same therapeutic category, proves helpful for the choice

- Local facilities to manufacture drugs or their storage should also be considered

- ED's should contain only one single basic drug or active ingredient

Tasks After The Formation Of Essential Drug List

1. Updating the ED list

Guiding principles have been laid down by WHO:

2. EDL for primary health care centres

a) Existing system of medicines
b) National Health Infrastructure
c) The pattern of endemic diseases
d) Supplies

3. Specialist control of drug use

Eg of situations where specialist control of drug use is necessary are;

a) The use of reserve antimicrobials (antibiotics) for multi resistant bacteria

b) Establishing adequate regimens for treatment of TB & leprosy

c) The use of antineoplastic & immunosuppressive drugs

d) The use of antiretroviral (AIDS) drugs

e) The use of antimicrobial, antifungal, antiviral agents for TB treatment, respiratory infections of HIV positive & AIDS patients, who are highly susceptible to such infections.

4. Research & Development

Pharmaceutical aspects

➢Development of local or regional capacities in quality assurance, inorder to ensure that quality is maintained.

➢Development of procurement procedures, especially for large quantities, to get best price.

➢Development of processing & packaging of dosage forms, to ensure quality of products.

➢Development of efficient distribution systems with suitably trained personnel

Clinical & Epidemiological aspects

✚To assess efficacy & safety of new candidate drugs

✚To assess benefits & safety of traditional medicines & medicinal plants in the region

✚To assess effects of genetic & ethnic differences among local population

c) Educational aspects

Development of training programmes in policy formation, quality control, information system, drug procurement, storage & distribution aspects.

5. Drug information & educational activities

- For safe, effective & prudent use of ED, relevant & reliable drug information is a must.

7. Post- Registration drug studies

● Although the EDL is made out all due considerations & extensive data including clinical trial data, on the drugs included, there will be occasions, when drugs used in practice will fail to produce benefit that was expected out of it.

The reasons are;

1) Clinical trials do not include groups like children, pregnant women, old people

2) Genetic & environmental factors differ from population to population

3) Data on overdose or longer term medication of the drug are usually not available

4) Unexpected use of the drug, other than for what it was meant to be used

5) Poor manufacturing practices in some countries which may lead to poor dissolution & ultimately poor bioavailability

1. The original 1977 WHO definition of "essential medicines" was that they were 'of utmost importance, basic, indispensable, and necessary for the healthcare needs of the population'.

2. The concept was mentioned in one of the ten points of the 1978 Alma Ata Declaration on primary health care.

'Essential medicines are those the priority health care,

- Evidence on efficacy and safety,
- Comparative cost-effectiveness.
- Available all times
- Adequate amounts, in the
- Appropriate dosage forms, with
- Assured quality
- Adequate information
- Community can affordable price

1. The implementation of the concept of essential medicines is intended to be flexible and adaptable to many different situations; exactly which medicines are regarded as essential remains a national responsibility.'

2. The "WHO Model List of Essential Medicines" has been updated every two years since 1977. The current version, the 19th, was published in 2015.

3. The fifth edition of "WHO Model List of Essential Medicines for Children", was also published in 2015.

Number of medications

1. The number of medications has nearly doubled, from the original 208 in 1977 to more than 340.

2. The range has increased over the years and now includes an **anti migraine** drug, **antidotes**, and **antineoplastic drugs**.

3. The third list for children from 2011 contains 269 medications.