

# RATIONAL USE OF MEDICINES

(The need of hour in the interest of society)

**Dr. Suryaprakash Dhaneria**

M.D. (Pharmacology),

D.M.(Clinical Pharmacology),

D.N.B.(Clinical Pharmacology & Therapeutics)

M.Sc.(Bio chemistry), LL.B.(Hons.)

**MNAMS**

Dean (Academics)

Professor & Head

Department of Pharmacology

All India Institute of Medical Sciences (AIIMS)

Raipur (C.G.)

## ACCORDING TO W.H.O.

***"RATIONAL USE OF DRUGS REQUIRES THAT PATIENTS RECEIVE MEDICATION APPROPRIATE TO THEIR CLINICAL NEEDS, IN DOSES THAT MEET THEIR OWN REQUIREMENTS FOR AN ADEQUATE PERIOD OF TIME AND THE LOWEST COST TO THEM AND THEIR COMMUNITY."***

# 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**

# CRITERIA FOR RATIONAL DRUG PRESCRIBING

- ❖ **APPROPRIATENESS**
- ❖ **EFFICACY**
- ❖ **SAFETY**
- ❖ **COST OF THERAPY**

# GOAL OF RATIONAL USE OF MEDICINES

- ❖ **Is to ensure therapeutically sound and cost effective use of medicines by health professionals and consumers.**
- ❖ **This would definitely help mankind to fight disease and illness for a better tomorrow.**

# WHO ESTIMATES THAT -

- ***WORLDWIDE MORE THAN 50 PERCENT OF ALL MEDICINES ARE PRESCRIBED, DISPENSED, OR SOLD INAPPROPRIATELY, WHILE 50 PERCENT OF THE PATIENTS FAIL TO TAKE THEM CORRECTLY.***
- ***ABOUT ONE-THIRD OF THE WORLD'S POPULATION LACKS ACCESS TO ESSENTIAL MEDICINES.***

# DETERMINANTS OF IRRATIONAL USE OF MEDICINES

- ❖ **WRONG CHOICE OF DRUG/  
INCORRECT USE OF DRUG**
- ❖ **“ME TOO” DRUGS**
- ❖ **LACK OF DRUG INFORMATION**

# DETERMINANTS OF IRRATIONAL USE OF MEDICINES

- ❖ **SELF MEDICATION OR OTC MEDICATION WITHOUT ADEQUATE KNOWLEDGE**
- ❖ **PRESCRIBING BY - UNQUALIFIED PERSONS**



# DETERMINANTS OF IRRATIONAL USE OF MEDICINES

- ❖ **BUSY DOCTOR**
- ❖ **REPEAT PRESCRIPTION**
- ❖ **POOR COMMUNICATION BETWEEN  
HEALTH PROFESSIONAL AND PATIENT**

# **DETERMINANTS OF IRRATIONAL USE OF MEDICINES**

- ❖ **NON AVAILABILITY OF DOCTORS IN REMOTE AREAS.**
- ❖ **LACK OF DIAGNOSTIC FACILITIES / UNCERTAINTY OF DIAGNOSIS.**

# DETERMINANTS OF IRRATIONAL USE OF MEDICINES

- ❖ **PRESCRIBING WITH INTENTION TO IMPRESS PATIENT & ATTENDANTS**
- ❖ **PRESCRIBING INFLUENCED BY PATIENT**
- ❖ **OVERUSE OF INJECTIONS**

## PRESCRIPTION WITH MISCONCEPTS -

**“ NEWER DRUGS ARE ALWAYS  
THE BETTER DRUGS . ”**

*You should not be the first person  
to use a new drug and at the same  
time you should not be the last  
person to discard an old drug.*

## Prescription with misconcepts -

**“ COSTLY DRUGS ARE ALWAYS  
THE BETTER DRUGS .”**

**“BRAND NAME DRUGS ARE ALWAYS  
BETTER THAN GENERIC .”**

# Prescription with misconcepts -

**“ POLYPHARMACY IS ALWAYS  
BETTER ”**

*The young physician starts life with twenty drugs for each disease and the old physician ends life with one drug for twenty diseases.*

*Bean W B, Sir William Osler*

*Polypharmacy is a prosthesis for the physician' s incompetence. The less he knows, the more prescriptions he writes.*

*Zeljko Poljak*

## Prescription with misconcepts -

**“ FIXED DOSE DRUG  
COMBINATIONS ARE ALWAYS  
SUPERIOR. ”**

**WHO EML (2017) - 33 FDCs OUT OF 437 DRUGS**

**NLEM (2015) - 24 FDCs OUT OF 376 DRUGS**

# FDCs IN EML (NATIONAL & WHO)

- Sulfamethoxazole + Trimethoprim.
- Amoxicillin + Clavulanic Acid.
- Piperacillin + Tazobactam

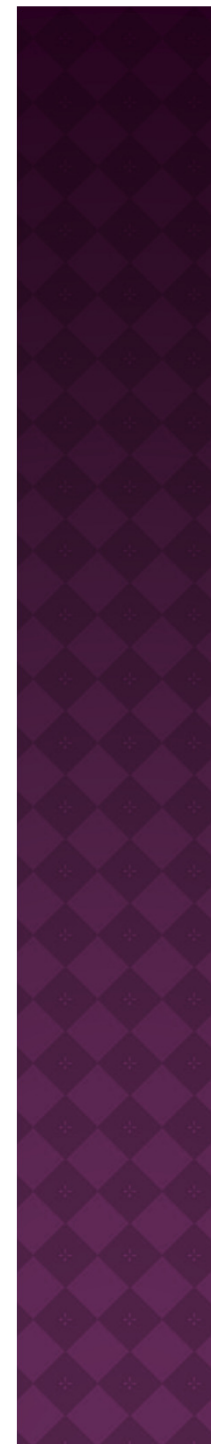


# FDCs IN EML (NATIONAL & WHO)

- Artemether + Lumefantrine.
- Artesunate + Amodiaquine.
- Sulfadoxine + pyrimethamine.
- Artesunate + Mefloquine.
- Artesunate + Sulfadoxine + Pyrimethamine
- Artesunate + Pyronaridine
- Dihydroartemisinin + Piperaquine

## FDCs IN EML (National & WHO)

- **Efavirenz + Emtricitabine + Tenofovir.**
- **Emtricitabine + Tenofovir.**
- **Lamivudine + Nevirapine + Stavudine**
- **Lamivudine + Nevirapine + Zidovudine.**
- **Lamivudine + Zidovudine.**
- **Lopinavir + Ritonavir ( LPV/R).**
- **Atazanavir + Ritonavir**
- **Tenofovir + Lamivudine**
- **Tenofovir + Lamivudine + Efavirenz**
- **Stavudine + Lamivudine**
- **Ledipsvir + Sofosbuvir**
- **Ombitasvir + Paritaprevir + Ritonavir**
- **Abacavir + Lamivudine**
- **Sofosbuvir + Velpatasvir**



# **FDCs IN EML (National & WHO)**

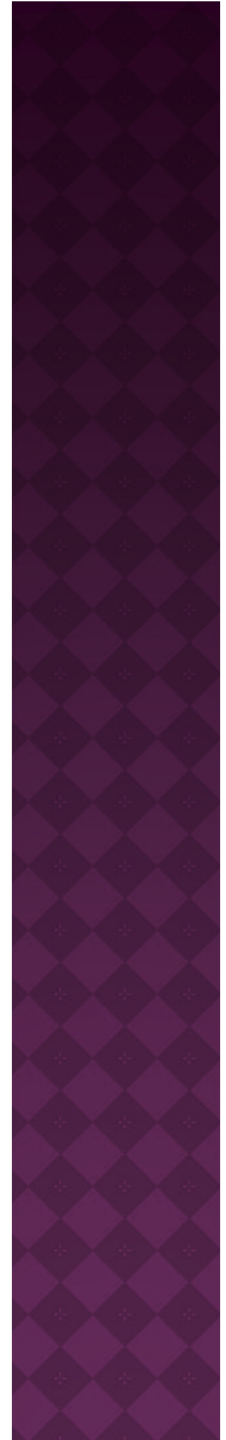
- **Isoniazid + Rifampicin.**
- **Isoniazid + Pyrazinamide + Rifampicin.**
- **Ethambutol + Isoniazid + Rifampicin.**
- **Ethambutol + INH + Pyrazinamide + Rifampicin.**
- **Ethambutol + INH**
- **INH + Pyridoxine + Sulfamethoxazole + Trimethoprim**

# FDCs IN EML (National & WHO)

- **Ethinylestradiol + Levonorgestrel.**
- **Ethinylestradiol + Norethisterone.**
- **Estradiol cypionate + Medroxyprogesterone acetate.**
- **Levodopa + Carbidopa.**
- **Lignocaine + Adrenaline.**
- **Lignocaine + Prilocaine.**
- **Oral Rehydration Salts.**
- **Glucose with Sodium Chloride.**
- **Ferrous Salt + Folic Acid.**
- **DPT + HIB + HEP B Vaccine.**
- **Formoterol + Budesonide**

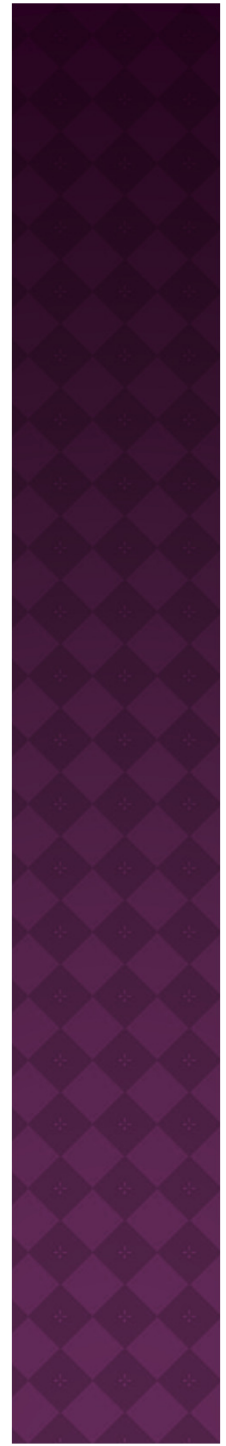
**DETERMINANTS OF IRRATIONAL  
USE OF MEDICINES**

**UNETHICAL PROMOTION  
OF  
DRUGS**



# DETERMINANTS OF IRRATIONAL USE OF MEDICINES

**MISTAKE BY DISPENSER**



# Guidelines for Rational Drug Prescribing

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, safety, suitability, influence on quality of life and cost of therapy.



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



Decide - Dose of drug in patient , Its route of administration, Inter-dose interval & duration of therapy.



## Guidelines for Rational Drug Prescribing



**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.**



# **RESPONSIBILITY FOR PROMOTION OF RATIONAL USE OF MEDICINES**

**LIES ON -**

- \* REGULATORY AUTHORITIES**
- \* TEACHING INSTITUTIONS**
- \* PHARMACEUTICAL INDUSTRY**
- \* NGOs**
- \* PATIENTS**

## **RESPONSIBILITY OF REGULATORY AUTHORITY**

- **To establish multidisciplinary national body to prepare standard treatment guidelines for common illnesses and emergency.**
- **To prepare, update and circulate EML.**
- **Discourage irrational drug combinations.**
- **Make arrangements for rapid dissemination of ADRs.**
- **Enforce regulation against unethical drug promotion.**
- **Set up drug & therapeutic committee in hospitals.**
- **To provide unbiased and updated drug information.**

## **RESPONSIBILITY OF ACADEMIC INSTITUTIONS**

- **To hold CMEs on Rational Use of Medicines regularly.**
- **To include training on rational use of drug in curriculum for both undergraduate and postgraduate medical students.**

## **RESPONSIBILITY OF PHARMACEUTICAL INDUSTRY**

- **Be ethical while promotion of drugs.**
- **Assist in PMS (post marketing surveillance)**
- **To support drug awareness programme.**

## RESPONSIBILITY OF NGO

- To make people aware of rational use of drug.
- To highlight discrepancies.

## RESPONSIBILITY OF PATIENTS

- Observe compliance to prescription strictly.

# ESSENTIAL MEDICINES

“THE MEDICINES 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.”

# HISTORICAL BACKGROUND

- TANZANIA FIRST PREPARED EML IN 1970.
- WHO STARTED PUBLISHING EML FROM 1977.
- 20<sup>TH</sup> EML OF WHO PUBLISHED IN 2017 CONTAINS 437 MEDICINES INCLUDING 33 FDCs.
- NATIONAL LIST OF ESSENTIAL MEDICINES -

YEAR	NO. OF MEDICINES
1996	279
2003	354
2011	348
2015	376

- NLEM - 2015 CONTAINS 24 FDCs.

# CRITERIA FOR PREPARING EML

**AFTER IDENTIFYING THE DISEASES MORE PREVALENT IN MAJORITY OF POPULATION, A MULTIDISCIPLINARY COMMITTEE PREPARES ESSENTIAL MEDICINE LIST ON THE BASIS OF -**

- EFFICACY
- SAFETY
- COST
- EASE OF ADMINISTRATION
- LOCAL AVAILABILITY
- STORAGE FACILITY



# NLEM (2015)

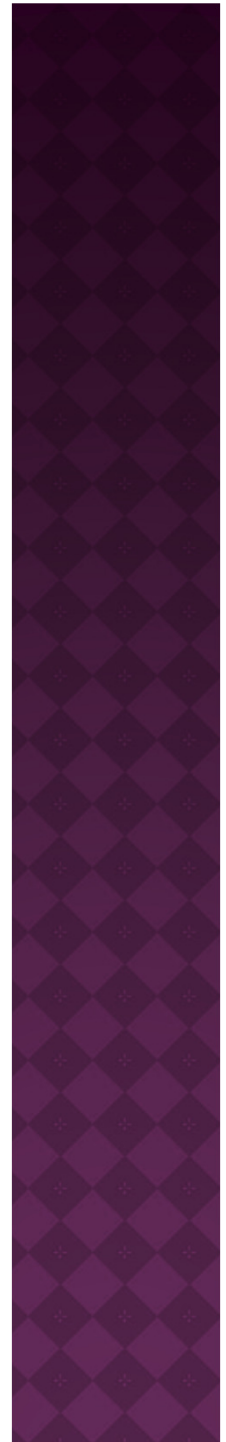
<b>LEVEL OF HEALTH CARE</b>	<b>NUMBER OF MEDICINES INCLUDED IN LIST</b>
<b>PRIMARY, SECONDARY &amp; TERTIARY</b>	<b>209</b>
<b>SECONDARY &amp; TERTIARY</b>	<b>115</b>
<b>TERTIARY</b>	<b>79</b>

## EML - A DYNAMIC DOCUMENT NOT STATIC

**SELECTION OF ESSENTIAL MEDICINES IS  
A CONTINUING PROCESS TAKING INTO  
CONSIDERATION THE CHANGING  
HEALTH PRIORITIES, EPIDEMIOLOGICAL  
SITUATION, PROGRESS IN THE  
PHARMACOLOGICAL AND  
PHARMACEUTICAL KNOWLEDGE.**

# **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.**

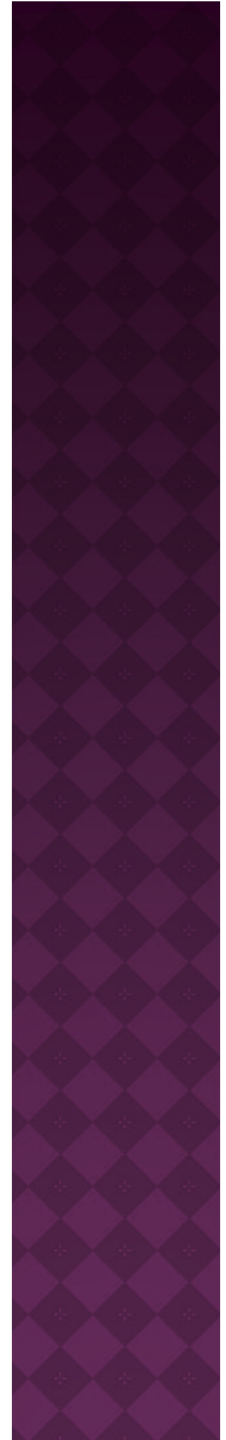


# INDIAN SCENARIO

- ❖ **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.**

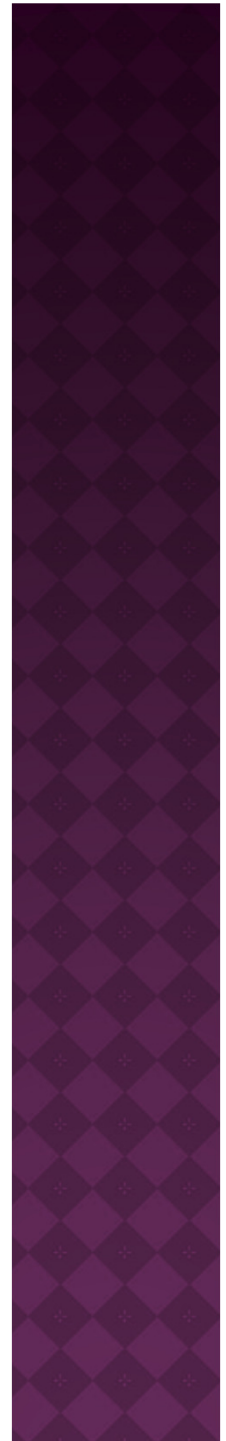
# **SHORTCOMING OF MEDICAL CURRICULUM**

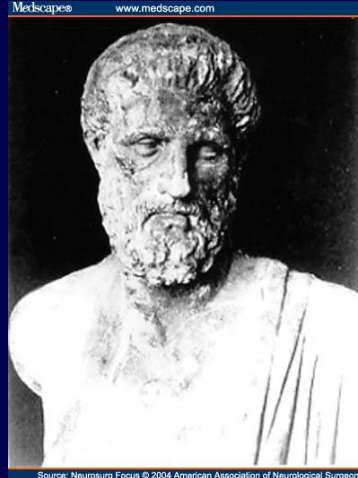
**TEACHING AND TRAINING PUT  
MORE EMPHASIS ON DIAGNOSTIC  
RATHER THAN THERAPEUTIC  
ASPECTS OF DISEASES.**



# **MEDICAL CURRICULUM NEED TO BE** **MODIFIED**

**MEDICAL CURRICULUM MUST ENABLE THE MEDICAL GRADUATES TO ACQUIRE KNOWLEDGE AND SKILLS TO MANAGE COMMON ILLNESSES PREVALENT IN COUNTRY PROMPTLY AND EFFECTIVELY THROUGH PROFICIENCY IN CLINICAL ACUMEN AND RATIONAL APPROACH TOWARDS USE OF MEDICINES.**





“Medicines are nothing in themselves, but are the very hands of gods if employed with reason and prudence.”

*-Herophilus*

*Every prescription is the beginning of a new experiment, begin it carefully, remain vigilant, make the patient healthy and get blessed from the almighty.*





आरोग्यम् सुख सम्पदा

**अखिल भारतीय आयुर्विज्ञान संस्थान, रायपुर (छत्तीसगढ़)**  
**All India Institute of Medical Sciences, Raipur, Chhattisgarh**



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