



**MEDICAL UNIVERSITY - PLEVEN
FACULTY OF MEDICINE**

Department of Pediatrics

Lecture № 3

**RATIONAL DRUG THERAPY IN
CHILDREN**

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RATIONAL DRUG THERAPY IN CHILDREN

COMPLEX THERAPY

1. **Drugs:**
 - **Etiologic** therapy
 - **Pathogenetic** therapy
 - **Symptomatic** therapy
2. **Surgical** procedures
3. **Physiotherapy**
4. Daily regular **regimen**
5. **Diet**
6. **Monitoring**



PHARMACOLOGIC PRINCIPLE OF THE DRUG THERAPY

- Drugs play a vital role in protecting, maintaining and restoring the health in children
- Administration of a drug is not synonymous with good care!



General guidelines for drug prescribing:

- There should be a **indication** for the use of a drug in the patient
- A **minimum number** and **inexpensive** drugs should be used
- Drugs should be prescribed by **generic name**
- **The dosage** should be **optimum** (may vary in specific disease)
- **Oral route** in children when it is possible
- **Adverse drug reaction** should be monitored and managed



Drug choice – appropriate selection of the drug

Drug dose

- The **relatively larger dose** in children (age depending dose)
- Dosage **per kg/BW** or per **m²/body surface**
- Daily **dose/24 hrs**
- For some drugs (theophyllin, phenobarbital, digoxin) dosage requirement is **greater in infants** than adults
- **Loading/maintenance dose** (inotropic agents, Phenobarbital)
- **Low dose/maximum** dose
- **Safe dose/overdose**



Interval of administration

- **More frequent** administration in children
- Daily dose is given in divided doses **every 6 or 8 to 12 hours**
- A decreased ability of the drug to clear the body of **the neonates** (low dose)



Route of administration

- Oral administration
- Intramuscular administration
- Intravenous injection, continuous infusion
- Subcutaneous administration
- Rectal administration
- Inhalation



Medical form

- Syrup
- Tablet
- Capsule
- Pill
- Drop
- Ampoule



Duration of therapy

- **short** or **long** course
- **replacement** therapy for all life



Drug disposition refers to:

Absorption

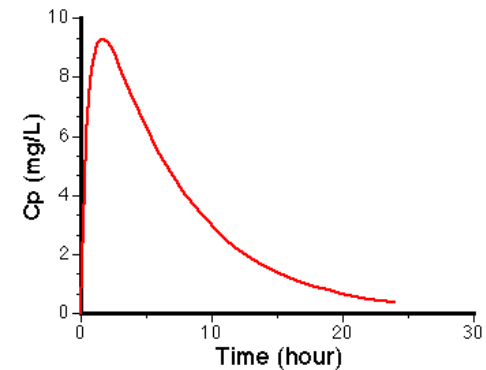
- rapid or slow rate,
- complete/uncompleted,
- time of the peak drug concentration

Distribution to various tissues in the body,

- plasma protein binding (transport form)

Biotransformation, drug metabolism and excretion

- Infants may **metabolize some drugs slowly** resulting in **accumulation** of toxic concentration of the drug (**maturation of the liver and renal function**)



Drug disposition refers to:

Toxic effects

- nephrotoxic,
- ototoxic,
- “**The gray baby syndrome**” (chloramphenicol in neonates)

Therapeutic drug monitoring:

- Target serum drug concentration
- Side effect and toxicity
- Loss of efficacy

GENERAL ASPECT OF THE ANTIMICROBIAL THERAPY

ANTIMICROBIAL DRUGS (ANTIBIOTICS)

- **Killing** microorganism (**bactericidal** AB)
- **Inhibiting** microorganism (**bacteristatic** AB)
- **Wide** spectrum effect
- **Narrow** spectrum effect

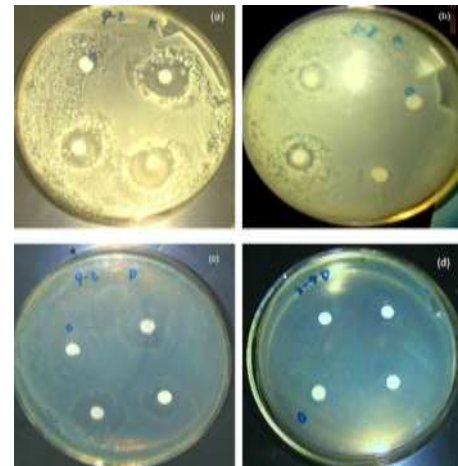
PRINCIPLES OF ANTIBIOTIC THERAPY

1. **When we have to begin AB therapy?**
 - Presence to **bacterial infection**
 - **Microorganism** causing the disease **is well known** (blood culture, urine culture)
 - **We guess who** microorganism causes a disease (specific clinical feature for Scarlet fever, Whooping cough, Croupous pneumonia)
 - We expect a bacterial infection (**ESR, CRP, WBC>15 000**)
 - Patient in **life-threatening condition**
 - Patient has **impaired host defense**



PRINCIPLES OF ANTIBIOTIC THERAPY

2. What AB have to choose?
3. What dose have to prescribe?
4. When AB combinations is appropriate ?
5. When we could expect the effect of treatment?
(48 hrs)



6. When it is necessary to change the AB?
7. Testing the microbial sensitivity.

For most useful AB in Pediatrics every student has to know:

- Indication for use
- Dosage
- Dosage forms
- Adverse reactions
- Administration and dosage intervals
- **Skin testing** before application and taking a **history for drug allergy**
- How to write prescription

