



Bio Pharma

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علم الكميات

POSODOLOGY AND DOSAGE REGIMEN





Posology and dosage regimen:

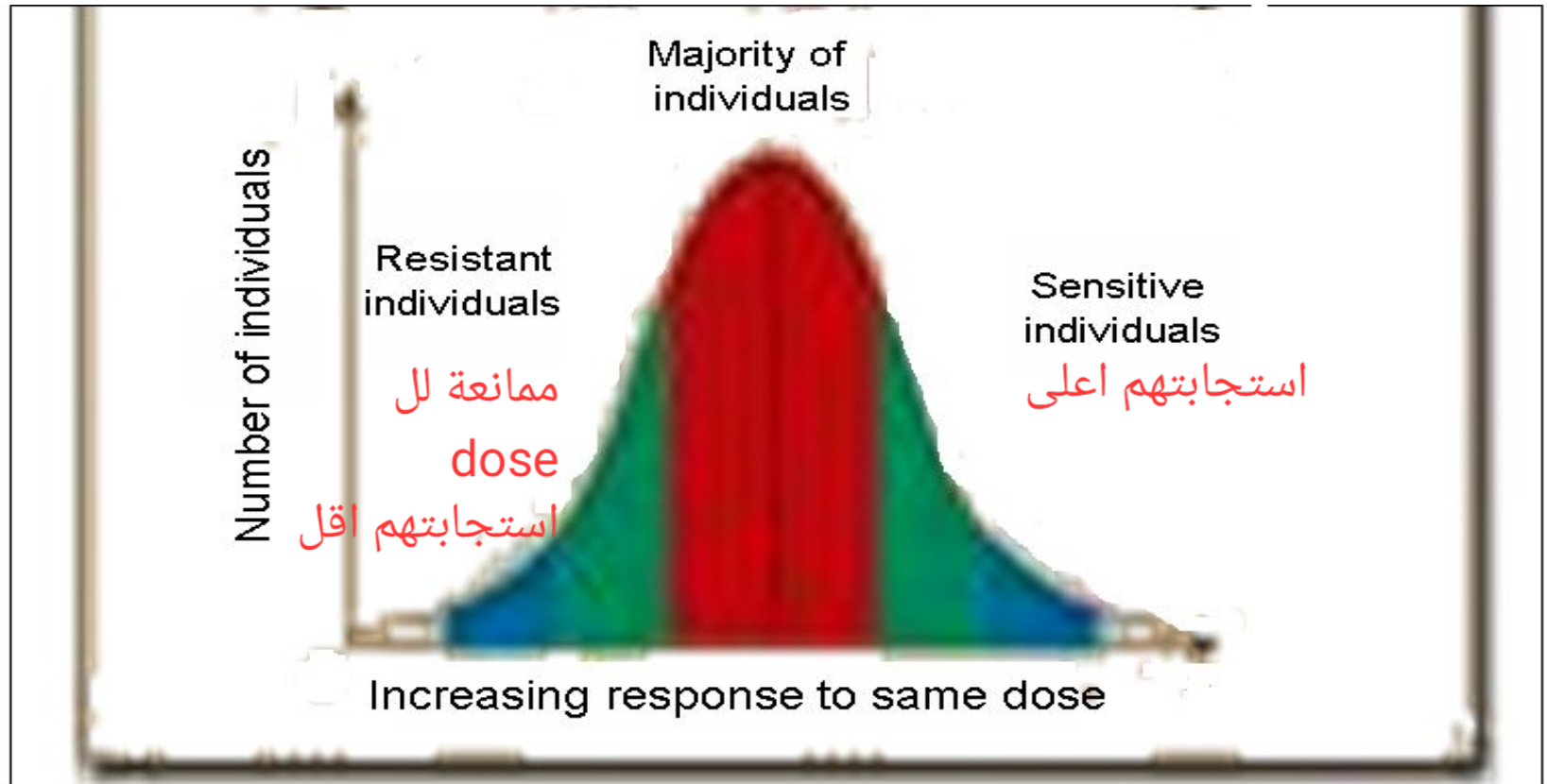
- Posology: (Derived from the greek posos, how much, and logos, science) is the branch of medicine/pharmacy dealing with doses.
- **Dose**: is the quantitative amount administered or taken by a patient for the intended medicinal effect.

Factors affecting drug dosage:

- The idea being to produce the optimum therapeutic effect in a particular patient with the lowest possible dose.
- **The familiar bell-shaped curve shows that:** اعطاء افضل تأثير بأقل جرعة
- 1- In a normal distribution of patients, a drug's usual dose will provide an average effect in the majority of individuals.
- 2- In a portion of the patients, the drug will produce little effect (resistant individuals).
- 3- In another group of similar size, the drug will produce an effect greater than the average effect (Sensitive individuals).

بنعطي للمريض اول اشي الجرعة العادية بعدين بنتحكم بالجرعة حسب استجابة المريض
So, the drug's usual dose would be the starter dose for an individual taking the drug for the first time, then the physician may increase or decrease subsequent doses to meet the requirements of his patient.

Average



**Drug effect in a population
sample
(Dose – response curve)**

Factors affecting drug dosage:

Factors affecting drug dosage:

1- Age:

- Newborn infants (pediatric) are abnormally sensitive to certain drugs because of the immature state of their hepatic and renal function by which drugs are inactivated and eliminated from the body. Failure to detoxify and eliminate drugs results in their accumulation in the tissues to a toxic level. **Metabolism** عندهم ضعيف فكونوا **Sensitive**
- The decline in renal and hepatic function in the elderly (geriatric) may slow drug clearance and increases the possibility of drug accumulation in the body and subsequent toxicity. Elderly individuals may also respond abnormally to the usual amount of a drug because of changes in drug-receptor sensitivity or because of age-related alterations in target tissues and organs. **response** اقل بسبب يكون عندهم
قلة ارتباط الدوا بالمستقبل الخاص فيه فبقل ال **clearance** وحالات قليلة بكونوا **sensitive**

Factors affecting drug dosage:

Various rules of dosage in which the pediatric dose was a fraction of the adult dose:

1- Young's rule, based on age:

- For calculating doses for children two years of age or older.

$$\text{Dose for child} = \text{Adult dose} \times \frac{\text{Age}}{\text{Age} + 12}$$

Factors affecting drug dosage (Cont.):

2- Cowling's Rule:

For calculating doses for children two years of age or older.

$$\text{Dose for child} = \text{Adult dose} \times \frac{\text{Age at next birthday (in years)}}{24}$$

3- Fried's Rule for infants:

For calculating doses for infants younger than one year of age.

$$\text{Dose for infant} = \text{Adult dose} \times \frac{\text{Age (in months)}}{150}$$

Factors affecting drug dosage:

خصوصا الاطفال لانو الطفل الي بنفس
العمر يكون في بينهم اختلاف بالوزن

2- Body weight:

- The official usual doses for drugs are considered suitable for 70 kg (150 pounds) individuals.
- The ratio between the amount of drug administered and the size of the body influences the drug concentration at the site of action. Therefore, drug dosage may require adjustment from the usual adult dose for abnormally lean or obese patients.

Factors affecting drug dosage:

To calculate the dose of a drug for children based on body weight:

The determination of drug dosage for children on the basis of body weight is more dependable than that based on age.

Clark's Rule:

$$\text{Dose for child} = \text{Adult dose} \times \frac{\text{Weight (in lb)}}{150 \text{ (average weight of adult in lb)}}$$

$$1 \text{ kg} = 2.2 \text{ lb}$$

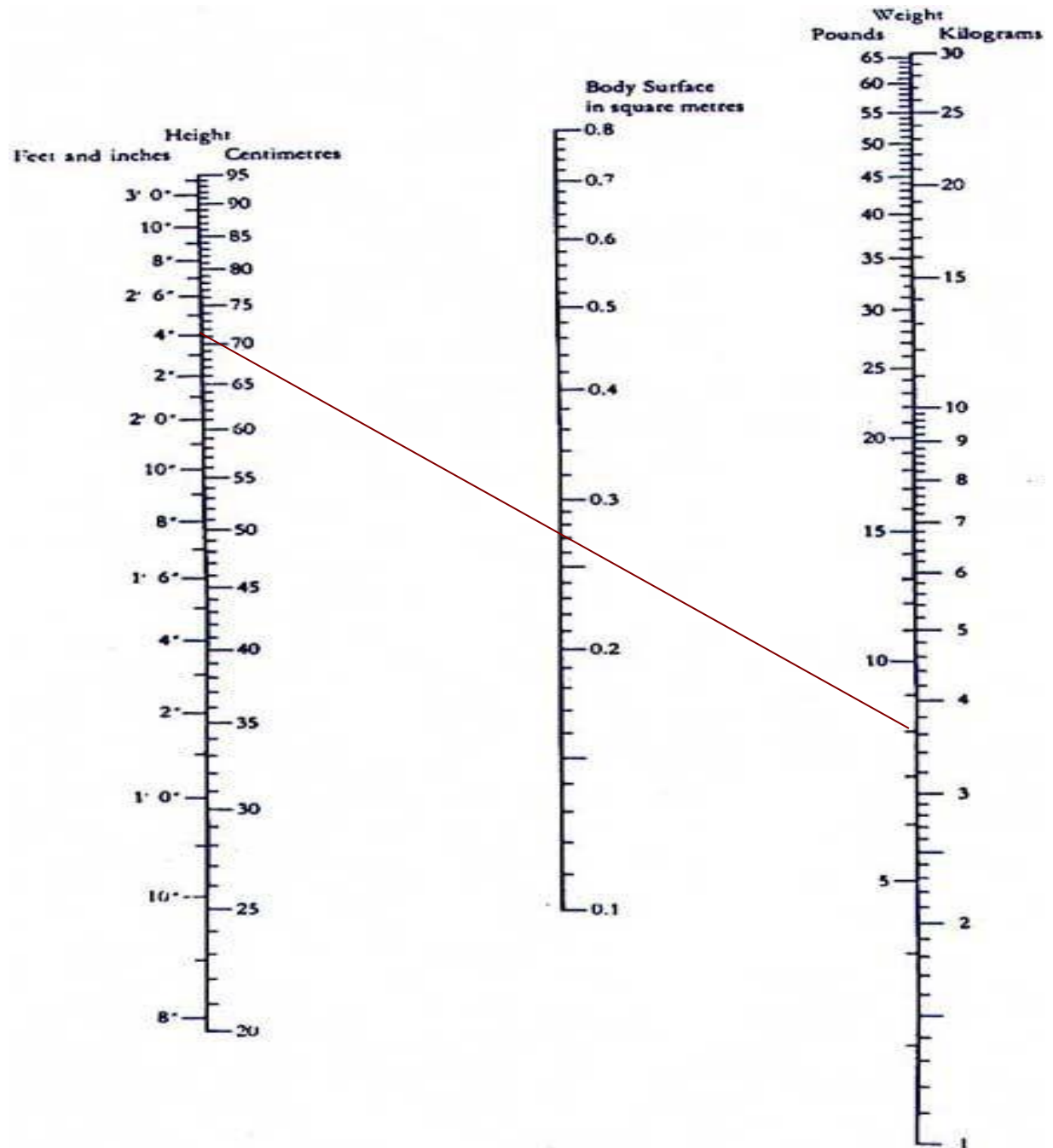
Factors affecting drug dosage:

تعتبر ادق اشي وتقاس ب متر مربع

3- Body surface area:

- ❑ A close relation exists between a large number of physiological processes and body surface area (BSA).
- ❑ The surface area of individuals may be determined from a nomogram composed of scales of height, weight and surface area.
- ❑ Two such nomograms are presented, one for adults and one for children.  Scale for the surface area
- ❑ Surface area is indicated where a straight line drawn to connect the height and weight of an individual intersects the surface area column. **Intection** (تقاطع)

Nomogram



Factors affecting drug dosage:

To calculate the dose of a drug for children based on body surface area as related to weight:

Many physicians believe that doses for children should be based upon body surface area, since the correct dosage of drugs seems more proportional to the surface area.

$$\text{Approximate dose for child} = \text{Adult dose} \times \frac{\text{BSA of child (in m}^2\text{)}}{\text{m}^2 \text{ (average adult BSA) } 1.73}$$

-If the dose per m² is given,

$$\text{Approximate dose for child} = \text{Dose per m}^2 \times \text{BSA of child (in m}^2\text{)}$$

Factors affecting drug dosage:

women have less
metabolism than men

4-Sex:

- ❑ Women are more susceptible to the effects of certain drugs than are men.
- ❑ Pregnant women and nursing mothers should use medications only with the advise and under the guidance of their physician. *لأنو بعض الادوية يمكن تنتقل مع الدم الى الجنين*
- ❑ Examples of drugs that are transported from the maternal to the fetal circulation e.g. **alcohol, anesthetic gases, barbiturates, anticoagulants, etc.** *in fetals the hepatic are not developed*
- ❑ Because of the undeveloped drug detoxification and excretion mechanisms present in the fetus, concentrations of drugs may reach a higher level in the fetus than in the maternal circulation.

Factors affecting drug dosage:

الادوية الي ينتقلوا بكونو base and lipophilic



- The transfer of drugs from the mother to the nursing infant through human milk may occur with various drugs with the drug effects becoming manifest in the infant.

5- Pathological state:

- The effects of certain drugs may be modified by the pathological condition of the patient and must be considered in determining the dose.
- Warning and precautions are used in the drug labeling to alert the physician to certain restrictions in the use of a particular drug.

Factors affecting drug dosage:

تنبيه لمشاكل محتملة يمكن تصير

A- Precaution: Is used to advise the prescriber of some possible problems attendant with the use of the drug. It is less restrictive than warning.

e.g. The use of tetracycline antibiotic may result in overgrowth of fungi.

In such a case, the physician may prescribe an alternate drug.

تحذير

B- Warning: It is used when the potential for patient harm is greater than in instances in which the precaution is used. بوخذ الدوا بس بعمل فحوصات

آخر سلايد بالمحاضرة

بالتوفيق





Artery Academy