



Math Study Strategies

Math for Nursing

Dosages based on Body Surface Area

Many pediatric dosages as well for oncologic dosages the calculation of medication is based on the patient body surface area

To find out the body surface area, we use the formula

$$A = \sqrt{\frac{W \cdot H}{3600}}$$

Where:

A - patient's body surface area (m²)

W - patient's weight in (kg)

H - patient's height (in)

3600 - is a conversion/ corection factor $\left(\frac{\text{kg}}{\text{m}^3}\right)$

If the weight is expressed in pounds (lbs) and the height inches (in).

$$A (\text{m}^2) = \sqrt{\frac{W \cdot H}{3131}}$$

To calculate a child's medication use the formula:

$$\frac{\text{child body surface area}}{1.73} \times \text{adult dose}$$

Example:

The physician prescribed Benadryl 150mg/m² /day for an 8-year old child who weighs 75 pounds and is 4 feet 2 inches tall. The normal adult dose is **25 mg q. i. d.** How many mg of Benadryl will be administered four times a day for the child?

Change feet in inches 4x12=48 48+2=50in and then use the formula:

$$A = \sqrt{\frac{75 \text{ lb} \times 50 \text{ in}}{3131}} = 1.09\text{m}^2$$

$$\frac{1.09\text{m}^2}{1.73\text{m}^2} = 0.63 \times 25\text{mg} = 15.75\text{mg}$$

Since 15.75 is closer to 16 then to 15 we **round up.** Making the dosage **16mg q.i.d**