Slide 1

Nursing 131 Dosage per Day Calculations

Calculating Dosage per Day

This tutorial discusses a process for calculating a recommended daily dosage range.

Our first example: Tegretol (Caramazepine) has been prescribed for a patient currently weighing 143 lbs. The drug literature recommends 7-15 mg/kg/day. In checking the appropriateness of the drug order, you determine that___ to ____ mg of Tegretol would be an appropriate dose per day.

Calculating Dosage per Day

Step One – Write down the patient weight – convert.

Step Two – Write down the recommended strengths.

Step Three – Reduce the units.

Step Four – Perform the math.

Slide 4 Solution to First Example

Calculating Dosage per Day

Our first example: Tegretol (Caramazepine) has been prescribed for a patient currently weighing 143 lbs. The drug literature recommends 7-15 mg/kg/day. In checking the appropriateness of the drug order, you determine that___ to ____ mg of Tegretol would be an appropriate dose per day.

Step One – *Write down the patient's weight and convert to the same weight units the literature uses.*

In our example, the patient weighs 143 lbs.

We'll write this as a fraction with a denominator of 1.

Since the literature recommendation uses kg, we need to convert to kg. (Round to tenths.)

$$\frac{143 \text{ lbs}}{1} \quad \frac{1 \text{ kg}}{2.2 \text{ lbs}} = \frac{143 \times 1}{1 \times 2.2} = \frac{143}{2.2} = 65 \text{ kg}$$

Step Two – *Write down the recommended strengths.*

Since the dosage has a range, we will need to calculate both a low and high recommended dosage.

(low dosage) (high dosage)

$$\frac{65 \text{ kg}}{1} \quad \frac{7 \text{ mg}}{1 \text{ kg}} \qquad \frac{65 \text{ kg}}{1} \quad \frac{15 \text{ mg}}{1 \text{ kg}}$$

day day

Step Three – *Reduce the units.*

Cross off any matching pairs of unit labels. The labels left should be what you want to find.

(low dosage) (high dosage)

$$\frac{65 \text{ kg}}{1} \quad \frac{7 \text{ mg}}{1 \text{ kg}} \qquad \frac{65 \text{ kg}}{1} \quad \frac{15 \text{ mg}}{1 \text{ kg}}$$

day day

In this example, the units left are mg/day which is what we want to find.

Step Four – *Perform the math.*

(low dosage) (high dosage)

$$\frac{65 \text{ kg}}{1} \times \frac{7 \text{ mg}}{1 \text{ kg}} \qquad \frac{65 \text{ kg}}{1} \times \frac{15 \text{ mg}}{1 \text{ kg}}$$

day day

$$\frac{65 \times 7}{1 \times 1} = \frac{455}{1} \qquad \frac{65 \times 15}{1 \times 1} = \frac{975}{1}$$

Reduce any fractions and remember the units label.

455 mg/day 975 mg/day

You determine that 455 to 975 mg of Tegretol would be an appropriate daily dosage.

Slide 8 Second Example

Calculating Dosage per Day

Our second example: Penicillin G has been prescribed for a patient currently weighing 12 lbs 13 oz. The drug literature recommends 100-250 units/kg/day. In checking the appropriateness of the drug order, you determine that___ to ____ units of Penicillin G would be an appropriate dose per day.

Calculating Dosage per Day

Step One – Write down the patient weight – convert.

Step Two – Write down the recommended strengths.

Step Three – Reduce the units.

Step Four – Perform the math.

Slide 9 Solution to Second Example

Calculating Dosage per Day

Our second example: Penicillin G has been prescribed for a patient currently weighing 12 lbs 13 oz. The drug literature recommends 100-250 units/kg/day. In checking the appropriateness of the drug order, you determine that___ to ____ units of Penicillin G would be an appropriate dose per day.

Step One – *Write down the patient's weight and convert to the same weight units the literature uses.*

In our example, the patient weighs 12 lbs 13 oz. To begin convert the weight to lbs only .
We'll write this as a fraction with a denominator of 1.
Since the literature recommendation uses kg, we need to convert to kg. (Round to tenths.)

$$12 \text{ lbs } 13 \text{ oz} = 12 + \frac{13}{16} = \frac{12.8125 \text{ lbs}}{1} \times \frac{1 \text{ kg}}{2.2 \text{ lbs}} = \frac{12.8125 \times 1}{1 \times 2.2} = \frac{12.8125}{2.2} = 5.8 \text{ kg}$$

Step Two – *Write down the recommended strengths.*

Since the dosage has a range, we will need to calculate both a low and high recommended dosage.

(low dosage) (high dosage)

$$\frac{5.8 \text{ kg}}{1} \quad \frac{100 \text{ units}}{1 \text{ kg}} \qquad \frac{5.8 \text{ kg}}{1} \quad \frac{250 \text{ units}}{1 \text{ kg}}$$

day day

Step Three – *Reduce the Units.*
Cross off any matching pairs of unit labels. The labels left should be what you want to find.

(low dosage) (high dosage)

$$\frac{5.8 \text{ kg}}{1} \quad \frac{100 \text{ units}}{1 \text{ kg}} \qquad \frac{5.8 \text{ kg}}{1} \quad \frac{250 \text{ units}}{1 \text{ kg}}$$

day day

In this example, the units left are units/day which is what we want to find.

Step Four – *Perform the math.*

(low dosage) (high dosage)

$$\frac{5.8 \text{ kg}}{1} \quad \frac{100 \text{ units}}{1 \text{ kg}} \qquad \frac{5.8 \text{ kg}}{1} \quad \frac{250 \text{ units}}{1 \text{ kg}}$$

day day

$$\frac{5.8 \times 100}{1 \times 1} = \frac{580}{1} \qquad \frac{5.8 \times 250}{1 \times 1} = \frac{1450}{1}$$

Reduce any fractions and remember the units label.

580 units/day 1450 units/day

You determine that 580 to 1450 units of Penicillin G would be an appropriate dose per day.