

Math Strand 4: Measurement

CLE: 4.2 Apply appropriate techniques, tools and formulas to determine measurements.

Health Profession: Nurse

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References:

Jelic, Sanja (2008). About.com. Retrieved February 2, 2008, from Tips for Preventing Medication Errors

Website: http://lungdiseases.about.com/od/generalinformation1/qt/tips_med_errors.htm

Kee, J.L., & Marshall, S.M. (2004). *Clinical Calculations*. Philadelphia: Elsevier's

Objectives:

At the completion of this presentation the high school student will be able to:

1. Explain how to calculate the correct medication dosage.
2. Demonstrate how to calculate a correct dosage for medication using one of the two possible equations.
3. Identify the importance of this exercise with how it relates nursing to the general public.

Background Summary

There are many medication errors that occur every year. This not only occurs with the nurse, but also with the physicians and general public. Please visit the website, http://lungdiseases.about.com/od/generalinformation1/qt/tips_med_errors.htm to review a copy of preventative measures one can take to avoid medication errors.

Scenario:

A football player is playing in the district championship his senior year. In the fourth quarter he blows out his knee. He is rushed to the ER. The ER physician prescribes the following medications for the football player:

acetaminophen 650mg, q6h, PRN (as needed) for pain

Drug available - acetaminophen elixir 65mg/ml.

People can only have 4g of acetaminophen within 24 hours.

The football player took 80ml in one day. Did the football player overdose on pain medication?

Activity:

Students will read the scenario. Students will divide up into groups of 3. The teacher will write on the board the definition of ratio and proportion plus the two possible equations.

Ratio is the relation between two numbers and is separated by a colon, e.g., 1:2
(1 is to 2)

Proportion is the relation between two ratios separated by a double colon (::) or equal

$$\frac{D}{H} \times V \qquad \text{OR} \qquad H :: V :: D \ X$$

D= dose

H= on hand

H= on hand

V = volume desired

V= volume desired

D= dose

The teacher will then read the scenario out loud. The students will be given all the information needed to calculate if the football player overdosed.

$$\frac{D}{H} \times V = \frac{650}{65} \times 1 = 10\text{ml} \qquad \text{OR} \qquad H :: V :: D \quad :: X$$
$$65\text{mg}: 1 :: 650\text{mg} :: X \text{ ml}$$
$$65 X = 650$$
$$X=10 \text{ ml}$$
$$10\text{ml} \times 4 = 40\text{ml/day}$$

$$10\text{ml} \times 4 = 40\text{ml}$$

(**you get 4 because the medication is taken every 6 hours, which would be 4 times a day)

The football player took twice the dose prescribed for the day. He overdosed and ended up back in the ER. Teacher will reference to Heath Ledger's death or another person who has overdosed on prescription medication to emphasize the importance of taking medication as prescribed.

Supplies Needed: Blackboard