

Technical Math for Allied Health
Class notes
Calculating Dosages: Part I (Module 7)

We will learn how to read and interpret drug labels to figure patient dosages. In the next module, we will use a patient's body surface area (BSA) or weight to determine dosages.

Abbreviations like **bid**, **qid**, and the like as well as unit abbreviations pop up a lot. Look them up if you do not know what they mean. We'll start with some definitions.

Definition: Enteral medication: a medication that is absorbed by the body via the gastrointestinal tract. These can be taken by mouth (abbreviation **po**) and would be in the form of tablets, capsules, caplets, or a liquid solution. They are absorbed by the digestive system so they should *not* be used if vomiting is occurring. More details are given in the 114 Book.

Definition: Parenteral medication: a medication that is absorbed by the body via some other system than the digestive tract. Examples include **intravenous** (abbreviation **IV**), **intramuscular** (abbreviation **IM**), or **subcutaneous** (abbreviation **SC**) injections. These, respectively, mean injections into the vein, the muscle, or the fatty tissue under the skin. **Mucosal** medications are delivered up the nose or are inhaled (or are delivered through a mucus lining like that of the vagina). **Percutaneous** medications are absorbed directly through the skin into the blood stream. The nicotine patch comes to mind as an example. More details are given in the 114 Book.

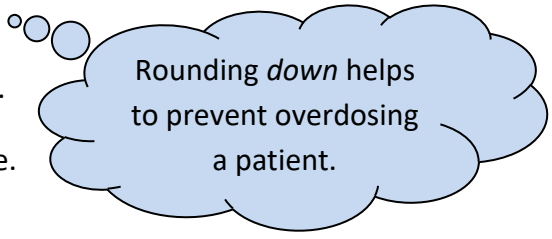
Many more details are given in the 114 Book. You should read it over. We will focus on conversions needed to fill a prescription given the medicine's instructions. We will use these special rounding rules.

Rounding Rules:

1. Tablets should be **rounded down** to the nearest one-half (or one-quarter if the problem so states).

2. Milliliters are to be **rounded down** to the nearest tenth.

3. Capsules should be **rounded down** to the nearest whole.



If a prescription calls for multiple doses in one day and the question asks, "How much will you administer?", assume they mean for **one dose**.

We will use the 114 Book's Appendix for the drug labels referred to in examples. We will use our all-powerful dimensional (or unit) analysis.

Suggested Procedure:

1. Start with the physician's order.
2. Note any details needed from the medicine's label.
3. Use dimensional analysis to convert the order into the form and quantity of drug on hand.

expl 1: Find the label for Thorazine (Appendix: Drug Labels, label number 10).

a.) What type of administration route(s) should be used for this medication?

b.) How many milligrams of the drug are in each milliliter of this preparation?

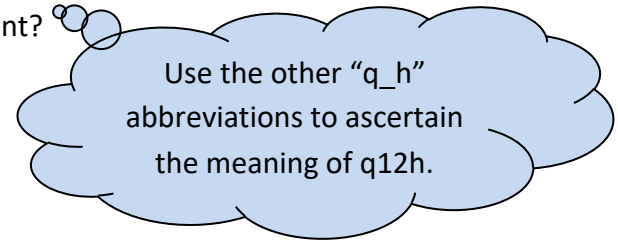
c.) Suppose a patient order reads "40 mg Thorazine bid IM". How many milliliters should be administered (for one dose) and how should we administer it?

expl 2: Find the label for CIPRO (Appendix: Drug Labels, label number 13).

a.) How many tablets are in a full bottle of CIPRO?

b.) What is the name of the pharmaceutical company that makes CIPRO?

c.) Suppose a patient order reads "500 mg CIPRO q12h for 2 days followed by 250 mg CIPRO q12h for eight days". How many tablets should be given for the first dose and how many total tablets are to be given over the course of the entire treatment?



expl 3: Find the label for Cloxacillin Sodium (Appendix: Drug Labels, label number 21).

a.) Who manufactures Cloxacillin Sodium?

b.) How many capsules are in a full bottle?

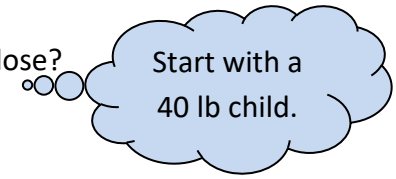
c.) How many milligrams of the drug are in each capsule?

d.) What is the usual adult dose for one day, in total milligrams?

e.) A doctor orders “250 mg qid for ten days”. How many capsules is that in total?

expl 4: Find the label for Ceclor (Appendix: Drug Labels, label number 15). Dosage is often based on weight. A doctor orders “350 mg in three divided doses per day” for a child who weighs 40 pounds.

a.) According to the label, is the doctor’s order similar to the usual dose?



b.) How many milliliters should be administered per day to satisfy the order? How many milliliters should be administered for each dose?

