

Proper Dosage Administration

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How many times do you remember your mother, guardian or even yourself reaching for the cough syrup or pain reliever when you have an annoying cough or fever? How many times do you remember using a household teaspoon or tablespoon to measure out this syrup? Few give it much thought, but common household utensils are not very accurate for measuring liquid medications, and should be avoided whenever possible.

Proper dosing is always a concern whether it's splitting tablets, taking a 'tablespoon' of cough syrup or giving an infant Tylenol® drops to reduce a fever. Although we may always intend to use the correct dosage we often inadvertently use the incorrect dosage. In this newsletter, we will discuss some of the more common dosing errors.

Liquid Dosing:

Cough syrups, antibiotic suspensions/solutions, and allergy suspension are a few examples of commonly prescribed liquid medications that require patient dosage measurement. The preferred measuring device such as a dosing spoon, oral syringe, or a dropper can often be purchased right at the pharmacy. Each of these devices are calibrated to supply you with the correct dose every time.



- A teaspoon is 5 milliliters
- A tablespoon is 15 milliliters
- One fluid ounce is 30 milliliters (about two tablespoons)

If a common household spoon is used the dose given can be quite variable, and often inaccurate. Lab measurements of common household teaspoons show that the actual dose given can range anywhere from 2-10 milliliters. Household tablespoons can range anywhere from 10-25 milliliters. This can lead to dosing errors where you could receive as little as half, or as much as twice of the intended dose! If you do not receive a dosing device do not hesitate to ask your pharmacy to ensure you receive the correct dose!



Pediatric Liquids:

Infant drops are another area that can be confusing and prone to dosing errors. Common pain relievers and fever reducers such as Tylenol® and Motrin® come in multiple different formulations, and are a common source of medication errors.

Available Products	Concentration (per mL)
Tylenol® Infant Drops 80mg/0.8mL	100mg/mL
Tylenol® Children's Suspension 160mg/5mL	32mg/mL
Motrin® Infant Drops 50mg/1.25mL	40mg/mL
Motrin® Children's Suspension 100mg/5mL	20mg/mL

As you can see above, a teaspoonful of Tylenol® infant drops can give three times the dose of a teaspoonful of children's Tylenol® suspension. The similar is true when comparing Motrin® infant drops to Motrin® children's suspension, whereas the infant drops are twice as potent.

Always read the directions on the medication bottle carefully to determine the correct dose. If unsure of the dose call your pharmacist or physician for clarification prior to taking or administering any of the medication in question to avoid a potential overdose.

Storage of Medications:

While some medications must be kept cold in the fridge, the majority of drugs, especially oral dosage forms can be stored right at room temperature. Carefully read your medication label to determine proper storage requirements. It is important to always protect your medication from extremes in temperatures such as leaving them in your car during the cold of winter, or the hot of summer.

One of the most common, and potentially dangerous storage mistakes seen is keeping your prescriptions in the medicine cabinet in your bathroom. While the medicine cabinet may seem like the obvious place to store medicine, the extreme heat and humidity produced from the shower can decrease stability of many medication altering their safety and effectiveness.

**Note: liquid suspensions should always be shaken well before use. This assures that the active drug is evenly distributed within the suspension, and also assures the correct dose of active drug will be supplied every time.*

Timing of Administration:

Why is it that some medications should be taken at night, while some are in the morning. Why are some given with food, others on an empty stomach. What's the difference, and does it really matter?

While some medications can be taken at any time, without regard to meals or other medications it is important to follow the directions associated with your specific medication.

Many medications that should be taken with food are done so to help alleviate the stomach irritation that may otherwise be associated with its use. On the other hand, those taken on an empty stomach may be done to reduce the risk of drug interactions or to help increase absorption. Those given in the evening may make you drowsy, while those given in the morning may be done so to help maximize the benefit and alleviate symptoms during the day.

Take with food:	Take on an empty stomach:
Ibuprofen (Mortin®), Advil®)	Fosamax®
Naproxen (Aleve®)	Boniva®
Prednisone	Actonel®

Some medications high in Calcium and/or magnesium and other agents can lead to poor absorption of other medications, and thus should be taken 1-2 hours apart from these products. Some interactions such as that of some drugs with grapefruit should lead to discontinuation of the offending agent (grapefruit product) altogether, as even separating your drug from this product by 1-2 hours may be insufficient in preventing this drug/food interaction.

Separate from milk, calcium, iron and antacids:
Levothyroxine (Levoxyl®, Synthroid®)
Ciprofloxacin (Cipro®) Levofloxacin (Levaquin®)
Tetracycline

It is important to remember that these are just a few examples of special administration requirements for a few select products. Each drug has its own dosing requirements to help maximize efficacy, while decreasing side effects. Whenever you start a new medication, either over the counter, or prescription, carefully read all labels associated with your medication, and never hesitate to ask your pharmacist the optimal time and conditions in which it should be taken.

CONTACT US:

While it is important to keep open lines of communication with your physician and local pharmacist regarding your prescriptions, we understand that the amount of information received can sometimes be overwhelming.

We would like to remind you that our clinical department is here to help! We want to see our members taking the right medication at the right cost. While not all medications have a true generic, there are often therapeutic alternatives available that could provide the same benefit, while costing you less.

Please feel free to contact our clinical department at any time for questions regarding your prescriptions, or for cost saving alternatives.

Tablet Splitting:

Sometimes a patient's medication regimen needs specific tuning in order to get the proper therapeutic levels. While most drugs are available in a number of different strengths, it may be necessary to split a tablet to obtain the correct dose.

Other times it may be financially beneficial to get a larger dose of a medication and split it in half to make the same medication last you twice as long at a comparable cost.

For example if you are taking Lipitor 10mg once a day (30 tablets for 30 days). Both you and your plan would save if you choose to get 30 tablets of Lipitor 20mg and take 1/2 tablet a day. This would still provide you with the same daily dose of 10mg, but would reduce your annual copayments, as well as charges to your plan by as much as 50% as 30 tablets will now last 60 days.

It is important to remember that not all tablets should be split as it may impact the rate at which the drug is released into your body. Check with your pharmacy to find out which drugs can be split.

ProAct currently supports a half-tablet program that includes the following medications:

- Citalopram
- Cozaar®
- Crestor®
- Diovan®
- Lexapro®
- Lipitor®
- Metoprolol ER
- Paroxetine
- Sertraline
- Simvastatin



****Please have your pharmacy call the ProAct helpdesk to be sure you receive the maximum quantity when filling a half tablet program drug.****

Tablets should be split one at a time to keep your dose consistent. To follow our Lipitor example from above, this would assure that even if slightly more or less were taken today then tomorrow, the entire 20mg dose would still be given over the two day period.

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29 East Main St.
Gouverneur, NY 13642

Phone: 315-287-3652 ext. 624

Fax: 315-287-7864

E-mail: ClinicalPharmacist@proactrx.com