Days' Supply Calculation

PHARMACY TECHNICIANS play an important role in making sure that the right patient receives the right drug at the right dose. To maintain overall medication safety there are several calculations that pharmacy technicians must be able to perform proficiently. One of the most common calculations that is performed by a pharmacy technician is finding the days' supply of a medication.

Objective:

Calculate days' supply of medication for tablets, capsules, and fixed quantity medications.

Key Terms:

bid	otic	reimbursement
days' supply	po	Rule of Hand
inhaler	prn	subcut
insulin	qid	suspension
nebulizer	QS (quantity sufficient)	tid
ophthalmic	reconstituted	

Calculating Days' Supply of Medication

CALCULATE DAYS' SUPPLY OF TABLETS OR CAPSULES

When entering a prescription into the pharmacy computer system a technician must often perform certain calculations to determine proper dosages, amount to dispense, or days' supply. One of the most common calculations that the pharmacy technician will perform is finding the **days' supply**, the number of days of medication that the physician prescribes. This is the

number of days a medication should last if it is used correctly. A 30 day supply is defined as a supply lasting the customer for a period consisting of 30 consecutive days.

Understanding this calculation is essential for insurance purposes as errors could result in incorrect **reimbursement**, to pay back, refund, or repay, or rejection of the insurance claim. A technician must perform these calculations carefully and swiftly to provide excellent and safe customer service.

While many drugs are dosed once daily, some medications must be taken more often. For instance, some prescriptions may instruct for the medication to be taken **bid**, two, to **qid**, four, times a day. This will impact the amount of medication necessary for a 30 or 90 day supply. It is important for pharmacy technicians to pay close attention to the dosing instructions on each individual prescription. For oral solids, including tablets and capsules, the days' supply can be calculated the following way:

Oral Solids

A prescription is written for ampicillin 500mg 1 cap qid #28. What is the days' supply of this medication? Another way to look at this would be how long will this medication last if the patient takes each dose properly? To find the days' supply first determine how many units will be taken in 1 day.

Dose = 1 capsule

Frequency = qid (4 times a day)

1 capsule × 4 times daily = 4 capsules daily

FIGURE 1. The most common way to take medication is by mouth. Oral medications can be swallowed, chewed, or placed under your tongue to dissolve.

Next, to determine the amount of days this medication will last, divide the total quantity dispensed by the daily quantity taken.

Daily amount = 4 capsules

Amount of medication to dispense = 28 capsules

28 capsules ÷ 4 capsules = 7 days' supply

Oral Liquids

This calculation often needs to be performed for liquid dosage forms. Because the dose is most often written for teaspoons (tsp) or milliliters (mL), the amount per dose must be considered to determine the days' supply. The conversions for household volumes are:

1 teaspoonful (tsp) = 5mL

1 tablespoonful (tbsp) = 15mL

A prescription is written for Promethazine 6.25mg/5mL solution. Take 1 tsp **po**, by mouth, every 4 to 6 hours, **prn**, when necessary, for nausea and vomiting. Dispense #240 mL. First determine how many units will be taken in one day.

24 hours ÷ 4 hours = 6 tsp per day

Next, determine how many mL are needed each day.

6 tsp × 5mL/tsp = 30mL per day

Finally, calculate the amount of days this medication will last.

240mL ÷ 30mL = 8 days

FIGURE 2. Liquid medications are easier to swallow than pills. Most liquid medications come with a dosing device. Always keep the dosing device together with the bottle of medicine to help you measure the right dose.

It is also important to calculate how much medication a patient will need to complete a course of therapy. Liquid formulations, such as a **suspension**, a liquid in which small particles of a solid are dispersed but not dissolved, often require dispensing **reconstituted**, restored to its original state by the addition of water, bottles with more medication than the actual quantity written on the prescription.

The instructions call for the suspension to be given 1 tsp **tid**, three times per day, × 10 days and the prescriber writes **QS**, quantity sufficient, or the amount which is enough, on the prescription. The pharmacy must determine the total volume to dispense for the entire course of therapy. Determine how many units will be taken in one day.

Dosage = 1 tsp = 5mL

Frequency = tid = 3 times per day

5mL × 3 times daily = 15mL per day

15mL × 10 total days = 150mL

150mL is needed for 10 days of therapy

The same can be done to calculate days' supply. If a prescription calls for a medication to be taken 2 tbsp bid, dispense 300mL, how long will this order last the patient.

Dosage = 2tbsp × 15mL/tbsp = 30mL

Frequency = bid = 2 times per day

30mL × 2 times daily = 60mL per day

300mL ÷ 60mL = 5 days' supply

CALCULATE DAYS' SUPPLY FOR FIXED QUANTITY MEDICATIONS

Calculating days' supply of fixed quantity medications such as inhalers, insulin, creams or ointments, and eye or ear drops that come in container sizes with specific amounts can be difficult. An incorrect days' supply calculation can lead to the patient receiving too much or too little medication for the specified time. Miscalculations can also lead to rejected insurance claims or cause the pharmacy to be audited and not reimbursed for the cost of the medication.

The basic idea for calculating days' supply of fixed quantity medication is the same as that for tablets and capsules. You will need to figure out how much of the medication the patient will use each day and then figure out how many days the container of medication will last. The quantity to dispense is usually not written on the prescription so the pharmacy will need to choose the most appropriate container size and calculate the days' supply from that quantity. The difficulty is to convert both the prescribed dose and the amount of drug in the whole container into the same unit of measure (drops, mL, puffs, and units).

Inhaler

An **inhaler** is a device that gets medicine directly into a person's lungs. The pharmacy will need to determine how many "puffs" there are in one inhaler. This information can usually be found on the box or outer wrapping of the inhaler or the package insert. A patient brings in a prescription for an albuterol inhaler 2 puffs qid. The inhaler has 200 puffs. Calculate the days' supply.

2 puffs × 4 times per day = 8 puffs per day

200 puffs ÷8 puffs per day = 25 days' supply

FIGURE 3. Inhalers are small, hand held devices filled with medicine. These devices deliver a certain amount of medicine through your mouth and into your lungs.

Nebulizer

A **nebulizer** is an electrically powered machine that turns a liquid medication into a mist so that it can be breathed directly into the lungs through a face mask or mouthpiece. For nebulized medications you need to know how many vials are contained in one box. Some patients may need to use more than one vial for a dose. However, partial vials are usually discarded after each use and so each vial can't be counted more than once toward the days' supply. A patient has a prescription for levalbuterol 0.63mg nebulized tid. Calculate the days' supply if one box of levalbuteral 0.63mg/vial has 24 vials.

1 vial × 3 times per day = 3 vials per day

24 vials ÷ 3 vials per day = 8 days' supply

Insulin

Insulin is a hormone produced by the pancreas that allows the body to use glucose for energy. Some people cannot make insulin or are resistant to the insulin their bodies make. These individuals must receive injected insulin to replace or supplement their body's insulin. For insulin you need to know how many units are in one vial. The standard concentration for most insulin is 100units per every 1mL. Insulin vials are usually 10mL (1000 units). A patient brings in a prescription for Lantus Insulin 50 units **subcut**, subcutaneous or under the skin, once daily. Calculate the days' supply.

Dosage = 50 units

Frequency = once daily

Total units of insulin per vial = 100units/mL × 10mL = 1000units

1000units ÷ 50 units per day = 20 days' supply

Eye and Ear

Pharmacies may encounter issues when dispensing **ophthalmic**, relating to the eye, and **otic**, relating to the ear, products. To solve days' supply for these medications, it is essential to know how many drops are in 1mL. This number varies based on the medication and physical properties of the solution or suspension. Usually the conversion factor is 20 drops per 1mL. However, this is only an estimation and some insurance claims use 15 drops per 1mL or 12 drops per 1mL. Technicians should check with the pharmacist to find out which conversion factor to use. The patient has a prescription for Cortisporin Otic four drops in the left ear tid for 10 days. Cortisporin comes in 10mL bottles. Calculate the days' supply.

FIGURE 4. Always wash your hands before using eye drops. Avoid touching the dropper tip against your eye or anything else. This can give bacteria or other contaminants a chance to grow in your eye drops.

Dosage = 4 drops

Frequency = 4drops × 3 times per day = 12 drops per day

10mL bottle × 20drops/mL = 200 drops per bottle

200 drops ÷ 12drops/day = 16 days' supply

Topical

FIGURE 5. Topical medications are simple to apply directly to the skin. However, make sure you are applying the medication only to the affected areas of the skin.

For topical creams and ointments you will need to find out the general size of the area being treated. How long a product will last depends on the size of the area to be treated. Information about the size of the area is almost never written on prescriptions. You can use the "Rule of Hand," to calculate days' supply. The **Rule of Hand** states that one gram will cover the area of about four flat hands, wrist to fingertips with fingers together. A patient has a prescription for Fluticasone 0.05% cream, apply bid to left forearm for 14 days. You look at the patient and see that the surface of your hand is roughly half of the patient's forearm. So according to the rule of hand you will need about 0.5grams (two flat hands) to cover his forearm one time. This means he will need about one gram per day or a minimum of 14 grams to fill the prescription. Fluticasone 0.05% cream comes in 15g, 30g, and 60g tubes.

15g/tube ÷ 1g = 15 days' supply

30g/tube ÷ 1g = 30 days' supply

60g/tube ÷ 1g = 60 days' supply

The 15g tube would contain enough cream to last the patient 14 days.

FURTHER EXPLORATION...

ONLINE CONNECTION:
Will Limiting Opioid Prescriptions to 7 Days Have an Impact?

The opioid crisis or epidemic is a term that refers to the rapid increase in the use of prescription and non prescription opioid drugs in the United States. Opioids are a class of moderately strong painkillers. The potency and availability of these substances, despite their high risk of addiction and overdose, have made them popular as both medical treatments and as recreational drugs. However, drug overdoses, have become the leading cause of death of Americans under the age of 50, with two thirds of those deaths from opioids. Read the article "Will Limiting Opioid Prescriptions to 7 Days Have an Impact?" at the web site https://www.healthline.com/health-news/will-limiting-opioid-prescriptions-have-impact#1. Do you agree with placing restrictions on prescriptions for opioids? Research the laws regarding the days' supply of opioids in your state.

Hospital

In the hospital setting, dispensing fixed quantity medications is a little easier than in the community pharmacy setting. Often, just one container size of a medication is stocked and when a patient's supply is depleted, a nurse will just reorder a new supply. For example, if a vial of insulin is dispensed to a patient, the vial will be used until it is gone, or the beyond use date is reached, and then a new vial will be ordered for the patient.

Tips

Pharmacy technicians play a very important role in the prescription filling process. Not only do they ensure that the patient gets the correct medication, but they also ensure that the patient gets the correct dose. In order to do this pharmacy technicians must be able to confidently and accurately calculate doses for prescription orders. Some tips to help minimize the chances of making a calculation error are:

- While attempting to perform simple calculations in your head, it is important to remember that a simple error can lead to severe medical consequences or even death. Therefore, even the simplest pharmacy calculation should be completed on paper. There are a number of activities that take place simultaneously in the pharmacy. The chances of becoming distracted or interrupted while performing a calculation are very high. If you are interrupted, you have a record of where in the calculation you were before you had to stop.
- When performing calculations in the pharmacy it is imperative to include all mathematical units. Using the incorrect unit could lead to an incorrect calculation or dosage and could potentially harm a patient.
- After performing the calculation, make sure that your answer makes sense to you. This is especially true if the dosing supply or quantity dispensed seems unusually higher or lower than what is typically dispensed. Technicians should check, check, and double check all pharmacy calculations so that patient safety is maintained.

FIGURE 6. Pharmacies should establish a procedure for double checking all calculations before dispensing medications. Repeated checking and counterchecking is an important strategy to minimize dispensing errors.

Summary:

The days' supply of medication refers to how long a prescription order will last. Physicians often just include a quantity of medication to dispense and directions on how frequently to use it. They don't usually include the actual intended time frame. The pharmacy technician will need to translate that order into the days' supply. It is not always as simple as giving a tablet once a day for 30 days. Quite often the pharmacy technician will need to do a calculation for oral solids and liquids, inhalers, insulin, and ear and eye drops. It may be necessary to make estimations for ointments, creams, and lotions. A pharmacy technician must always remember that even a simple error can lead to severe medical consequences or even death for the patient.

Checking Your Knowledge:

1. Explain what is meant by days' supply of medicine.
2. Explain how to calculate a days' supply for oral solids and liquids.
3. Explain how to calculate a days' supply for inhalers and nebulizers.
4. Explain how to calculate a days' supply for insulin.
5. Explain how to calculate a days' supply for eye and ear drops.
6. Explain how to calculate a days' supply for topical creams and ointments.

Expanding Your Knowledge:

Research the Internet for legal cases involving calculation errors that may have led to serious disability or death for the patient. Report your findings to the class.

Web Links:

Dosage Calculations
https://wps.prenhall.com/wps/media/objects/4468/4576050/Pharmacy_Calc/ch05.pdf

Eye Drop Days Supply
https://www.pharmacy-tech-resources.com/Eye-Drop-Days-Supply.html

Fingertip Units and Days Supply
https://www.pharmacy-tech-resources.com/Fingertip-Units.html