**Technician Tutorial:**

**Topical Dosage Forms**

In most any pharmacy practice setting, pharmacy technicians will be dispensing topical dosage forms such as creams, foams, gels, lotions, ointments, pastes, powders, and sprays. Topical dosage forms can be used to treat chronic conditions such as acne or psoriasis or more acute conditions such as burns, infections, or bites or stings.

Many eye drops, ear drops, and nasal sprays are considered topical dosage forms. This is because they usually act locally where they’re applied and their effects aren’t dependent on absorption of drug through the skin and into the bloodstream. Check out our *PL Technician Tutorial, The Ins and Outs of Eye and Ear Meds*, for information about dispensing eye drops and ear drops. Suppositories can be used to deliver medications topically to the rectum or vagina. For example, hydrocortisone suppositories act locally to reduce the swelling caused by hemorrhoids. Transdermal patches are applied topically since they adhere to the skin. However, patches usually contain a drug that is absorbed into the bloodstream, instead of acting locally where the patch is applied. Some examples are the pain med fentanyl and the male hormone testosterone. Go to our *PL Technician Tutorial, Dispensing the Right Patch with the Right Instructions*, for information about dispensing transdermal patches.

Sometimes topical dosage forms must be specially compounded in the pharmacy. One example of this is some diaper rash treatments. “Magic mouthwash” that is used for mouth sores is another topical product that’s often compounded. For more information about compounding, see our *PL Technician Tutorial, Non-Sterile Compounding*.

*Mary Pinkus, a 32-year-old female patient, presents the following prescription:*

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Halog
Apply to left hand BID x 10d
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*Ms. Pinkus is a massage therapist, and tells you that she has been having a bad skin reaction to some of the products she uses in her work. She holds her left hand out, and indeed it looks red and itchy on the palm side. The only other prescriptions she has filled at your pharmacy are her birth control pills and a one-time Rx for ciprofloxacin. You ask if she has any new allergies, and she says “no.” So you start to enter her prescription in the computer, and notice that the prescriber did not indicate whether you should dispense Halog cream or ointment.*
**What are the main types of topical dosage forms and what are the differences between them?**

There are distinct differences between different topical dosage forms.

- **Creams** are opaque and nongreasy to moderately greasy. When rubbed into the skin, creams are mostly absorbed. Creams are good for areas that are weeping or oozing.

- **Gels** are translucent and nongreasy. Gels provide a cooling sensation when applied to the skin and can dry quickly. Gels are good for hairy areas.

- **Lotions** are opaque, thinner than creams, and nongreasy. Lotions evaporate rapidly when rubbed onto the skin, and may also provide a cooling sensation. Lotions are good for hairy areas or parts of the body where there might be friction, like the armpits.

- **Ointments** are opaque or translucent, thick, and often greasy. Ointments can leave an oily coating when rubbed onto the skin. Ointments are good on skin that needs protection, or on dry scaly areas.

- **Pastes** are opaque; thicker than creams, gels, or lotions; and are greasy. Pastes aren’t well absorbed into the skin, and they provide a protective layer.

Of course, certain solutions and suspensions, like clindamycin (Cleocin T [U.S.], etc) and erythromycin (Erythra-Derm [U.S.], etc) are applied topically, such as to the face for treatment of acne.

**Can one topical dosage form be substituted for another if the active ingredient is the same?**

If a prescriber writes for a specific formulation of a product that comes in more than one dosage form (i.e., the prescription says “ointment” and the product comes as both a cream and an ointment), the prescribed formulation should be dispensed. If the prescriber doesn’t specify, let the pharmacist know and he or she can contact the prescriber.

You tell the pharmacist that Ms. Pinkus’ prescription is missing some information, and you hand the prescription over. The pharmacist says that he will call the prescriber. He also notes that the amount of drug to be dispensed is missing. Halog comes in a small tube (30 g) and in a larger tube (60 g).

The prescriber says he would like ointment to be dispensed. Since it’s a little thicker and greasier, it should have more staying power. The prescriber also says to just dispense whichever size tube will provide enough medication for a full ten days of therapy.

**How do I know how much of a topical dosage form to dispense?**

The prescriber will usually write how much of a cream, ointment, etc. to dispense. However, if that information is not included on the prescription, or if instructions are vague such as “use as directed” or “apply to affected area,” you might need to ask the patient for more details and figure it out. You’ll want to dispense enough medication to last for the patient’s full course of therapy. Otherwise, the patient may have to come in for frequent refills. But you don’t want to dispense too much medication, which could be a red flag to third party payers. We have more on this in our PL Technician Tutorials, Billing for Rx Drugs and Calculating Days’ Supply.

There’s an easy method that can help you estimate how much cream or ointment a patient will need. It’s called the “fingertip unit.” The fingertip unit is the amount of a topical preparation that can be squeezed out of a standard tube along an adult fingertip (from the tip of the finger to the
crease of the first joint). One fingertip unit is enough to cover both sides of an adult hand with the fingers together. One fingertip unit is about 0.5 g, or 500 mg, of the cream or ointment.

Here’s more on estimating with fingertip units:

- 2 fingertip units cover one adult foot;
- 2.5 fingertip units cover an adult face and neck;
- 3 fingertip units cover one adult arm (shoulder to wrist);
- 6 fingertip units cover one adult leg;
- 7 fingertip units cover the adult trunk, either front or back;

Ms. Pinkus will be applying Halog to one side of her left hand twice a day for ten days. To cover one side of the hand she will use about one-half of a fingertip unit for each application. Since she will be doing this twice a day, she’ll need about one fingertip unit each day. This is about 0.5 g of ointment per day. So 0.5 g per day for ten days is 5 g (0.5 g x 10 days = 5 g). A 30 g tube will be more than enough drug for her.

You double-check your estimation with the pharmacist, and he agrees that you are correct.

In the hospital, it’s also important to dispense an appropriate amount of a topical product. As in the outpatient setting, the amount to dispense will usually be specified. If it’s not, ask the pharmacist. The patient might require just a small amount of medication for some conditions (e.g., a small sore, athlete’s foot, ringworm, etc), but you might also encounter situations where a patient is using a very large amount of medication for extensive application (e.g., burns, Stevens-Johnson syndrome, etc). You might notice this after the fact, if the drug is being reordered very frequently. If that’s the case, take the time to investigate the situation and let the pharmacist know. In both the inpatient and outpatient settings, adjusting the amount of drug to the most appropriate package size will save everyone time in the long run.

What should I watch for when dispensing topical dosage forms?

There are lots of different things that can lead to mix-ups or confusion with topical dosage forms. We already covered the differences between creams, ointments, etc. But in addition to these different types of products, some topicals also come in several different strengths. Topical steroids in general are great for illustrating this, and a specific example is hydrocortisone cream. It comes in at least three different strengths (e.g., 0.5%, 1%, 2.5%, etc). Just as topicals that come as both creams and ointments may have similar packaging, these different strengths may also be packaged very similarly.

Different salt forms can cause confusion, too. Betamethasone is a good example. It comes as betamethasone dipropionate (Diprolene, etc) and as betamethasone valerate (Luxiq, etc). Plus, betamethasone comes as an augmented form (Diprolene, etc), which means that it’s in a vehicle that helps increase absorption of the drug, making it more potent. (Increased potency can mean that the drug is more effective, but it can also mean there’s a higher risk for side effects.) These products shouldn’t be interchanged. Be careful that you choose the right one when entering the prescription in the computer and when pulling the product from the shelf during dispensing. If you feel like you need more information to choose the right product, let the pharmacist know.
Watch for patients’ allergies, too. A fairly common one is sulfa allergy. Patients who are allergic to sulfa drugs shouldn’t get silver sulfadiazine (Silvadene [U.S.], etc) cream. Learn more about drug allergies with our PL Technician Tutorial, Drug Allergies.

It might be a good idea to note if a patient is currently pregnant or breastfeeding as well. Many topical meds are okay for these women to use. But there are some, such as adapalene (Differin) and tretinoin (Retin-A, etc), which should be avoided.

**Is there any special labeling required for topical dosage forms?**

Topical dosage forms should always have an auxiliary label that says “for external use only.” It’s a good idea to specify where the product should be used, if you can (e.g., “for the ear,” etc). It may seem obvious that topical dosage forms aren’t to be taken internally or swallowed. But many a pharmacist has a story about a patient who misunderstood the use of one of these products and swallowed a gel or suppository, for example. In fact, there have been a number of reports of patients swallowing an OTC topical diphenhydramine (Benadryl) gel. Hospitalization or emergency treatment was required for these individuals. Clear labeling is important to help prevent these types of problems and ensure patients use topical products properly.

Some topical products can cause patients to be more sensitive to sunlight. These should get an auxiliary label warning the patient to limit exposure to sunlight. Examples of topical preps that require this warning are tretinoin (Retin-A, etc) and fluorouracil (Efudex, etc).

Of course, any topical dosage form that requires refrigeration (e.g., benzoyl peroxide with clindamycin [Duac-U.S.], etc) should get a “refrigerate” label. In the community setting, be sure to follow your pharmacy’s procedure for storing refrigerated meds that are filled but are waiting to be picked up by a patient. In the hospital setting, be sure to deliver these to the refrigerator instead of the patient’s bin or drawer. Consider letting someone know that the drug is in the fridge, since the fridge is likely to be the last place that a nurse will check for a topical product.

As you label Ms. Pinkus’ Halog you are sure to apply an auxiliary label indicating that it’s for external use. You let the pharmacist know the Rx is ready to check, so Ms. Pinkus can check out with the cashier and be on her way to see her next client.

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