**Technician Tutorial:**
**What Drug Names Really Mean**

In recent years, there have been numerous examples of new formulations of old drugs coming to market. There’s a new salt form of esomeprazole available in the U.S., esomeprazole strontium. Others include reformulation of ropinirole as **Requip XL** - U.S. only, reformulation of nisoldipine (**Sular** - U.S. only), and reformulation of fenofibrate (**Tricor** - U.S. only; **Lipidil EZ** - Canada only). Sometimes these formulations offer advantages, such as more convenient dosing. Other times, the benefits are less clear or there’s really no difference at all. Unfortunately, the availability of new formulations can increase the risk of medication errors due to confusion associated with drug names, suffixes, etc. They may also increase costs to patients if a more expensive formulation is prescribed unnecessarily. This **PL Technician Tutorial** covers the ins and outs of different formulations of drugs and nuances associated with drug names.

Ms. Johnson, a 62-year-old female patient, brings in a new prescription for **Paxil CR** 25 mg once daily. She has been taking generic paroxetine 20 mg once daily for about six months, with no complaints.

Ms. Johnson explains that she had a routine visit with her family doctor earlier today. During the visit, her doctor wrote this new prescription. Ms. Johnson is unsure why he changed her to this formulation. She is confused about what appears to be an increase in her dose and wonders if this formulation will work as well or cost the same as paroxetine 20 mg.

**Why are some Rx drugs available in multiple or new formulations?**
Multiple or new formulations of a drug may be available for a few different reasons. Advances in technology since the original formulation was approved may make the production of a better formulation (e.g., more convenient, more effective) possible. A drug company may be able to extend their patent on a brand name product by developing a novel formulation. Or another company might be able to get in on the action by making a different formulation of a drug due to a patent loophole. (An example of this is esomeprazole strontium.)

**Patent extension.** Just as with other inventions or products, brand name drugs are protected by patents. When a patent expires, less expensive generic versions of the drug can come to the market. One way that a drug manufacturer can qualify for a patent extension is to develop a newer formulation of a brand name drug. In these cases, the newer formulation is different enough to get a new patent, so the company has added years to sell the brand name drug before a generic for that product can come to market to compete.
For example, *Ambien CR* (zolpidem controlled-release-U.S. only) was marketed within the year before *Ambien* (zolpidem-U.S. only) went generic. Same for *Paxil CR* (paroxetine controlled-release). The new formulations of *Sular* (nisoldipine) and *Tricor* (fenofibrate) are also benefiting drug companies with regard to patent life. Generics for the older formulations might be available, but the newer formulations are often heavily marketed to sway prescribers.

**Therapeutic benefit.** Occasionally, a new formulation of an old drug has the potential to offer benefits over the old formulation. One example of this is *Requip XL*. There’s information to suggest that *Requip XL* might be better than regular *Requip* at controlling some of the symptoms of Parkinson’s disease. New formulations of analgesic combos such as *Vicodin* products (U.S. only) and *Fioricet* (U.S. only) have less acetaminophen to improve safety but are as effective as the old formulations for treating headaches.

But sometimes there aren’t any significant therapeutic benefits. For example, *Paxil CR* is supposed to cause less nausea over the first week of therapy than regular *Paxil*. The controlled-release formulation allows drug to be released in a different portion of the gastrointestinal tract than with the immediate-release formulation. However, about the same number of patients stop taking these formulations because of nausea.

**Dosing convenience.** Many times, new formulations offer less frequent dosing, which can improve patient compliance. There’s a long list of examples. *Coreg CR* (carvedilol controlled-release-U.S. only) is given once daily and regular *Coreg* (carvedilol) is given twice a day. *Requip XL* is given once daily and regular *Requip* is given three times a day. The schedule for *Wellbutrin XL* (bupropion extended-release) is once daily. *Wellbutrin SR* (bupropion sustained-release) is given twice a day. Regular *Wellbutrin* (bupropion-U.S. only) is given three times a day.

But sometimes the dosing is no different. For example, *Paxil* and *Paxil CR* are both given once a day. *Ambien* and *Ambien CR* are both given once daily at bedtime.

**What do common drug name suffixes (CR, ER, XL, etc) mean?**

Many new formulations will have suffixes on the ends of their names. These suffixes aren’t standardized, so they don’t always mean the same thing. Even though LA stands for “long-acting,” ER for “extended-release,” etc, this doesn’t necessarily tell you much about the formulation. For example, “CR” usually stands for “controlled-release” but it doesn’t always mean that the formulation is dosed just once daily. *Coreg CR* is given once daily, but *Zyflo CR* (zileuton controlled-release-U.S. only) and *Tegretol CR* (carbamazepine extended-release-Canada only) are given twice a day. “Controlled-release” may even refer to where the drug is released in the gastrointestinal tract, instead of referring to its onset of action, such as with *Paxil CR*.

Sometimes, there are formulations with different suffixes that are available in the same strengths. Some examples include *Wellbutrin SR* and *Wellbutrin XL* 150 mg tabs and *Depakote* (valproic acid delayed-release-U.S. only) and *Depakote ER* (valproic acid extended-release-U.S. only) in 250 mg and 500 mg strengths. *Ritalin LA* (methylphenidate long-acting-U.S. only) and *Ritalin-
SR (methylphenidate sustained-release) are both available in a 20 mg strength. (We have a PL Chart comparing the methylphenidate products for U.S. subscribers and Canadian subscribers.)

Keep in mind that new formulations of drugs don’t always have suffixes. Sular (nisoldipine) and Tricor (fenofibrate) are examples of products that have been reformulated with exactly the same name as the older product. The tablets have been changed so that the strengths are different from the older formulations. For example, Sular used to be available as 10 mg, 20 mg, 30 mg, and 40 mg tabs, but is now only marketed as 8.5 mg, 15 mg, 22.5 mg, and 34 mg tablets.

The pharmacist consults with Ms. Johnson and explains that Paxil CR is formulated to cause less nausea than paroxetine in the first week of therapy, but most patients don’t notice a difference with this reformulation.

What should I know about drugs that are available as different salt forms?
There are a number of drugs that are available as different salt forms. This has to do with the chemistry of the drug and pairing the drug molecule up with another “piece” such as hydrochloride, phosphate, sulfate, etc. A classic example is hydroxyzine. It comes as hydroxyzine hydrochloride (Atarax) and hydroxyzine pamoate (Vistaril-U.S. only). There is not a significant difference between the two, although similar to other drugs in different salt forms, they can’t generally be automatically substituted for one another.

An example where there is a significant difference is with metoprolol tartrate (Lopressor) and metoprolol succinate (Toprol-XL-U.S. only). Metoprolol succinate is a long-acting formulation, and it is preferred over metoprolol tartrate for patients who have heart failure. We have a PL Chart, Drugs with Different Salt Forms, that covers commonly used meds that come as different salts, with descriptions of the differences between the salt forms.

Do insurances typically cover newer drug formulations?
Usually, a newer formulation of a drug is more expensive. This is especially true if there’s not a generic available for the formulation. Some third parties will cover any formulation of a drug, while others will require substitution of a generic or less expensive formulation. In many cases, the rejection message from the insurance company will specify what drug or formulation to use as an alternative. When this occurs, it’s important to alert the pharmacist since the prescriber may need to be contacted to authorize switching the patient to the alternate product.

What are common issues with dispensing products with multiple or new formulations?
Order entry. Since new formulations can increase the number of products with a particular name, it’s important to be especially careful in choosing the right product when you are entering a prescription into the pharmacy computer. As mentioned, new formulations may have different strengths (e.g., Fioricet, Sular, Tricor), suffixes and different strengths (e.g., Coreg CR, Lipidil EZ, Paxil CR), or even suffixes and the same strength (e.g., Depakote ER, Wellbutrin SR, Wellbutrin XL).

It’s easy to see why confusion about dosing and product selection with different formulations is a known source of medication errors. Alert the pharmacist right away if you notice a problem when entering a prescription for a product with multiple formulations. A mismatched dosing
regimen noted at order entry is often the first clue to a prescribing error. For example, a prescription for Coreg CR 6.25 mg BID should immediately raise a red flag since this is a dosing regimen used for the immediate-release form of Coreg not the controlled-release Coreg CR.

For a drug that comes in different salt forms, it’s important to make sure the patient gets the one that’s ordered because the absorption, stability, tolerability, etc. can be different. If you’re not sure of the salt form that should be dispensed, such as if just the active drug is indicated on the Rx, clarify with the pharmacist. An example of this would be an Rx written for doxycycline. You need to know whether to dispense doxycycline hyclate or doxycycline monohydrate.

**Choosing the correct product from the shelf.** It’s important to be extra careful when choosing a product with multiple formulations from the shelf due to the potential for confusion and mix-ups. In most cases, new formulations will be stored next to older formulations on pharmacy shelves, such as Ambien and Ambien CR. Or different salt forms might also be stored alongside one another, such as betamethasone dipropionate and betamethasone valerate. It is easy to pull the wrong product by mistake. Consider using shelf tags or marking bottles to help avoid mix-ups among these products in your pharmacy.

**Therapeutic equivalence and generic substitution.** Sometimes it is unclear which formulations of products are okay to substitute for other formulations. For example, bupropion is available as Wellbutrin (U.S. only), Wellbutrin SR, Wellbutrin XL, Zyban, Budeprion XL (U.S. only), Budeprion SR (U.S. only), and generics. Some of these products are okay to substitute for each other, while others are not. As mentioned, different salts of a drug cannot generally be automatically substituted for one another.

Check with your pharmacist if you are unsure about substituting with different formulations. This can help prevent errors. Consider adding computer alerts or shelf tags for products that are easy to confuse in your pharmacy. You can also review our helpful chart of generic substitutions for commonly prescribed drugs available in the U.S.

**Cost and newer formulations.** Newer formulations are often more expensive or not covered by insurance. If this is a concern for a patient, let the pharmacist know. A call to the prescriber might enable the patient to switch to a less expensive alternative to help save the patient money. Or a patient assistance program for the drug might be available. (We have a PL Chart, Guide for Helping Patients Afford Their Medications, for U.S. subscribers.)

Since Ms. Johnson has been on paroxetine for a long time, this change is unlikely to be beneficial to her. Ms. Johnson would like to continue taking the paroxetine 20 mg. The pharmacist calls the prescriber and explains the situation, and he agrees to change the prescription back to paroxetine 20 mg.
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