

Double Trouble

Handwritten prescriptions and look-alike drug names

Double, double, toil and trouble! William Shakespeare wasn't talking about drug names when he wrote this line in his play, *Macbeth*, but he sure had the right idea! Today, many medicines have names that look very similar to the names of other medicines. So mix-ups are possible when a pharmacist fills your prescription, especially if it's a handwritten prescription, as the following example shows.

While reading a drug information leaflet about a new prescription medicine, a young man discovered he had received the wrong medicine from the pharmacy. His doctor had given him a handwritten prescription for **lamotrigine** (**Lamictal**) 100 mg to treat bipolar disorder, an illness that affects thoughts, feelings, and behavior. (**Lamictal** can also be used to help control seizures.) The pharmacist misread the handwritten prescription as "**levothyroxine** 100 mcg," a thyroid medicine. Fortunately, the young man discovered the error before taking the wrong medicine. He returned the **levothyroxine** to the pharmacy and received the correct drug, **lamotrigine**.

Handwritten prescriptions are a common factor leading to mix-ups between medicines with look-alike names. For example, when **levothyroxine** and **lamotrigine** are typewritten, the drug names appear to be very different. But when handwritten, the names can look remarkably alike,

- especially if using cursive letters, because both drug names:
- Start with the letter "l"
 - Have "ot" as the fourth and fifth letters of the name
 - Include a letter (y or g) that forms the same type of loop below the line in the middle of the name
 - End with the letters "ine."

Mix-ups between medicines with look-alike names happen because of "**confirmation bias**." That is, people tend to see what they expect to see, such as the name of familiar medicine.

For example, have you ever bought a can or carton of Pepsi when you intended to buy Diet Pepsi? If you have, you've experienced confirmation bias.

Doctors who include the reason you are taking the medicine on the prescription can help pharmacists avoid these kinds of mistakes. Most medicines with look-alike names are not used to treat the same condition. So, having your doctor list the reason for the medicine alerts the pharmacist to your condition and serves as a check to make sure the correct medicine is provided. But if a mix-up happens, reading the drug information leaflet that comes with your medicine can help you notice the error right away.

With the large number of drugs on the market today, the potential for medicines to have a name that looks or sounds like another medicine is high.

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Ask the pharmacist...

Q: Why do medicines have more than one name?

A: All medicines have a generic name. These generic names often contain word stems that help tell what type of medicine it is. For example, the generic names for many cholesterol-lowering medicines end with "**-vastatin**."

Medicines may also have one or more brand names. The drug company that makes a medicine chooses a brand name that is usually easier to say and remember than the generic name. For example, **Motrin** is a brand name for a medicine used to treat pain. Its generic name is **ibuprofen**. **Motrin** was chosen as a brand name by the company that first made ibuprofen. However, after the patent on **Motrin** ended, other manufacturers were allowed to make a generic version of the medicine, provided it met standards set by the Food and Drug Administration. While the generic name of the medicine will always be **ibuprofen**, all companies that now make ibuprofen can choose a different brand name for their products. So today, **Motrin**, **Advil**, **Nuprin**, and **Profen** are just a few of the many brand names for **ibuprofen**. Occasionally, a company chooses not to use a specific brand name. In that case, the medicine has only a generic name.

In **SAFE Medicine**, we use color to tell generic names apart from brand names. We list generic names in **red** and brand names (which always start with a capital letter) in **green**.

Your pharmacist needs a complete list of your medicines, even those purchased elsewhere

You may have heard from your doctor or pharmacist that it's important to fill all your prescriptions at the same pharmacy. This way, your pharmacist can keep a complete list of all the medicines you take. Some medicines can cause problems if you take them while taking other medicines at the same time. So, your pharmacist needs to know all the medicines you take to be sure it's safe to take them together.

Some people suggest shopping around or buying your medicines over the Internet to get the lowest price. Some large pharmacies offer a 1-month supply of certain generic medicines for just \$4. As expected, this encourages you to purchase whatever medicines you can for \$4. But you may get the rest of your medicines from your usual pharmacy. Insurance companies want to keep their costs down. So they sign up with mail-service pharmacies and encourage you to buy all long-term medicines through the mail. The insurance company allows you to buy a 3-month supply of medicine from the mail-service pharmacy for the same co-pay as a 1-month supply from your community pharmacy. But you still need to get your prescriptions for short-term use from your community pharmacy. This includes antibiotics, pain medicine, and many other medicines used to treat a short-term illness or injury.

Usually, a pharmacist checks that your doctor has prescribed a safe dose of the medicine and that it can be taken with your other medicines. But if your mail-service pharmacist knows some of the medicines you take, and your community pharmacists know others, none of them may know all the medicines you take. Therefore, they might not pick up a serious problem

with how your medicines react together in your body.

Ideally, you should fill all of your prescriptions at the same pharmacy. But in real life, this may not be possible or something you choose to do if lower-cost medicines are available at different pharmacies. Still, you can take the steps listed below to reduce the risk of problems.

- Keep a current list of all your medicines, including herbals, vitamins, over-the-counter medicines, and prescription medicines.
- Ask the pharmacist at your usual community pharmacy to keep a complete list in the pharmacy computer of all the medicines you take, even if certain medicines are not purchased at that store. Provide a list of all your medicines to your pharmacist, and then let him or her know if any new medicines are purchased from another pharmacy.
- If you purchase some of your medicines from a mail-service pharmacy, provide an updated list of all the medicines you take—even those not purchased through the mail—each time you send prescriptions to be filled.
- If you have computer access, there are free programs on the Internet that you can use to check whether your medicines will cause problems when they react together in your body. (Bad reactions are called *serious drug interactions*.) For an example, visit: www.drugdigest.org/DD/Interaction/ChooseDrugs. These programs sometimes warn about a possible reaction that may not be serious or likely to happen. So the information from these programs should not cause you to stop taking your medicine until you have sought advice from your doctor.

▶ Brand name medicines appear in **green**; generic medicines appear in **red**.



Poison Prevention Week: March 16-22, 2008

Sometimes it's hard to get children to take medicine. Parents have used creative ways to accomplish this important task. They may call the medicine candy or pretend to take the medicine to convince their child to take it. But these methods are dangerous and could lead to accidental poisonings. Children will put medicine in their mouth if they believe it is candy. They also like to imitate their parents if they have watched them take medicine. According to the U.S. Consumer Product Safety Commission, more than 1 million telephone calls are placed to poison control centers and close to 100,000 young children visit emergency departments every year to be treated for accidental poisonings. Tragically, about 30-35 children younger than 5 die from accidental poisonings each year.

During **National Poison Prevention Week**, we encourage you to become actively involved in helping to ensure the safety of children in your home.

- Avoid taking medicine in the presence of children.
- Don't call medicine candy.
- Don't call medicine patches a Band-Aid, sticker, or tattoo.
- Keep all medicine in its original, child-resistant container and out of reach of children.
- Avoid throwing medicine out in open trash cans in the kitchen or bathroom, within reach of a child.
- Be aware that children can have a bad effect from vitamin overdoses, especially vitamins containing iron.
- If a poisoning happens or is suspected, immediately call **800-222-1222** to reach a poison control center. If your child has collapsed or is not breathing, call 911 first.

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For this reason, most drug companies test the brand names they plan to use for new medicines. They contract with companies that get working nurses, pharmacists, and doctors to look at handwritten prescriptions of the medicine to see if it looks like another medicine. This process leads to fewer medicines with look-alike names. Still, there are a lot of medicines on the market with similar names. See Table 1 for examples. Electronic prescriptions that doctors enter into a computer produce legible prescriptions that are less likely to be misread.

But only 10% of doctors send prescriptions to pharmacies using a computer.

You can also help prevent errors:


- Make sure the pharmacist knows the reason you are taking a medicine
- Inspect the medicine before you leave the pharmacy to be sure it looks as expected if you are refilling a prescription
- Talk to a pharmacist about the medicine when picking up a new prescription
- Read the drug information leaflet that comes with your medicine.

Table 1. The drug name pairs listed below represent some prescription medicines that have been mixed up due to look-alike names. At least one of the medicines in each set of names was among the 200 most frequently prescribed brand or generic medicines in the US during 2007.** The number in parentheses following the medicine name shows its rank in the top 200 prescribed medicines. (Drugs without a number were not among the top 200 prescribed medicines.) Mix-ups with these medicines could lead to serious harm.

Common Brand Name Mix-Ups		
Toprol XL (7) <i>Use: high blood pressure or chest pain</i>	Topamax (48) <i>Use: seizures</i>	
Zyrtec (11) <i>Use: allergies</i>	Zyprexa (84) <i>Use: bipolar (manic-depressive) disorder</i>	
Humalog (89) <i>Use: insulin for diabetes</i>	Humulin (127) <i>Use: insulin for diabetes</i>	
Novolin 70/30 (180) <i>Use: insulin for diabetes</i>	Novolog Mix 70/30 (175) <i>Use: insulin for diabetes</i>	
Zetia (16) <i>Use: high cholesterol</i>	Zestril <i>Use: high blood pressure</i>	
Evista (71) <i>Use: osteoporosis (bone disease)</i>	Avinza <i>Use: relief of moderate to severe pain</i>	
Coumadin (83) <i>Use: prevent blood clots</i>	Cardura <i>Use: high blood pressure</i>	
Celebrex (25) <i>Use: relief of arthritis pain</i>	Celexa <i>Use: depression</i>	Cerebyx <i>Use: seizures</i>
Common Generic Name Mix-Ups		
alprazolam (9) <i>Use: anxiety</i>	lorazepam (23) <i>Use: anxiety</i>	
metformin (11) <i>Use: diabetes</i>	metronidazole (73) <i>Use: bacterial infections</i>	
hydroxyzine (79) <i>Use: anxiety</i>	hydralazine (162) <i>Use: high blood pressure</i>	
fluoxetine (19) <i>Use: depression</i>	duloxetine <i>Use: depression</i>	
tramadol (31) <i>Use: relief of moderate to severe pain</i>	trazodone <i>Use: depression</i>	

**The top 200 drugs for 2007 were compiled and published by *Drug Topics* in February 2008. For details, visit: <http://drugtopics.modernmedicine.com/Top+200+Drugs>.

Contact Information



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60-second safety tip

■ **Definitely not a Band-Aid!** A kindergarten student was wearing a **Daytrana** (**methylphenidate**) patch on his skin when he arrived at school. **Daytrana** is a medicine used to treat Attention Deficit Hyperactivity Disorder (ADHD), a condition that makes it hard for children to control their behavior and/or pay attention. The medicine on the patch is gradually absorbed through the skin. During the school day, the child removed his patch and said to another child, "Would you like to wear my special Band-Aid?" He then put the patch on the other child. Fortunately, a teacher noticed the patch on the other child before too much of the medicine was absorbed. **Daytrana** has certain government controls in place because it can be misused. A *consumer medication guide* that comes with the medicine warns that selling or giving the patches away is illegal and may harm others. Unfortunately, the *guide* does not tell parents to warn their children that the patch can only be applied to them, one at a time, and should never be shared with others. Parents with children who are using **Daytrana** patches should never refer to the patch as a special Band-Aid, sticker, or tattoo. Believing the patch is a Band-Aid, sticker, or tattoo may signal it's all right to put the patch on others. Parents should also alert the school if a child is wearing a medicine patch. The teacher or school nurse might not be putting the patch on the child during the school day, but they should be aware of its use so they can stay alert to the dangerous possibility of sharing the patch with others.