



Ever Wonder How Drugs Are Named? Read On

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IBRANCE. Xeljanz. Sildenafil. Viagra.

Most Americans have heard of at least one of those drug names. But where do those monikers come from? Is it scientific? Metaphorical? Both?

The drug-naming process is one that's long and involved, whether a company is devising a generic name or a brand name (there are different processes for each). In fact, according to Michael Quinlan, who is senior manager, trademark development, within the Customer Analytics & Insights group with Pfizer, naming a drug can be a long and laborious process that begins before the drug, itself, has been approved by the FDA. "In most industries, you create a name for the product and as long as the trademark is considered available you can start using that name on your product," says Quinlan. "But the drug name has to get reviewed and be considered safe before it'll be approved to be used on that potential product."

In some cases, Quinlan says it can take four years to go through the name selection and approval process. Still, he says, the exercise can be fun. "You're getting to name the baby," he says. And that name could be around for generations.

In this two-part series, we'll look at how drugs get both their generic and brand names.

The early days

It starts with a compound. Like anyone or anything, drugs need labels in order to distinguish them from one another. Marie-Claire Peakman, PhD., executive director of the Primary Pharmacology Group in Worldwide Research & Development with Pfizer explains that in the early days, chemists register a newly synthesized compound in a database, labeling it with PF—which stands for Pfizer—followed by 10 numbers (for example, PF-04965842-01). “When the chemists first make up compounds, they have to register them in the database as soon as they’re identified so that we can identify them and keep track of their performance in our studies,” says Peakman. If a compound shows enough promise to make it through early experiments and head towards clinical trials, two naming processes begin to devise a generic name and a brand name for the future drug.

How generic drugs get their generic names

The first step in coming up with a name for a drug is selecting its generic, or non-proprietary name. The generic-naming process arose in the 1950s, says Quinlan, as a way of establishing a standard so that drugs had the same name everywhere. “Generic names came about because of the world growing smaller,” says Quinlan. People were traveling abroad more frequently, and it became clear that in other countries, their drugs might be known by another name than back home and would not be able to be identified. Today, two different organizations must approve the names of generic drugs— the United States Adopted Names (USAN) Council and the World Health Organization (WHO) INN Programme—so that regardless of where someone is located, patients and health care professionals will be able to safely communicate about medications.

Generic names are, in part, based on a formula. The suffix, or, as Quinlan calls it, “the family name,” imparts an important piece of information to health care professionals about how the substance works in the body. Take Viagra, for example. Its generic name is sildenafil. The suffix, “afil,” explains the way it works, says Quinlan, referring to its role as a PDE 5 inhibitor, meaning it helps control blood flow. “Afil” is also the suffix of other erectile dysfunction generics, such as tadalafil (Cialis), vardenafil (Levitra and Staxyn) and avanafil (Stendra).

The prefix gets a little more creative. “We look for syllables that obviously are different from other existing generic names and that are pleasant enough in their tonality or

appearance so it doesn't become overly complex to try to pronounce the generic name," says Quinlan.

Celecoxib. Quinapril. Ziprasidone.

When devising those names, there are a number of rules that apply. Quinlan shared some of those rules:

It must use two syllables in the prefix. This will help distinguish the drug from others, and allows for more variety. **It must avoid certain letters.** The generic drug name is created using the Roman alphabet, and the goal is to create a name that can be communicated globally. Because the letters Y, H, K, J, and W aren't used in certain languages that use the Roman alphabet, they aren't used in the creation of the prefix of the name. **It can't be considered marketing.** Using the company's name within the drug's name must be avoided. Also, it's important to stay away from superlatives or laudatory terms (best, new, fastest, strongest) that could be considered promotional. **It avoids medical terminology.** You don't want to imply that a drug is intended only for one particular function, because in time, if it is also helpful for another purpose, the name could be reductive. "Say you were developing a treatment for oncology indications and you launched a product for those indications, but over time in further research you discovered it worked on inflammation and immunology indications. If you had something like "Onc-" in the beginning of your generic name that would be very limiting," says Quinlan.

When the team has three to six names they like, it submits them to USAN Council, which is made up of representatives from the American Medical Association (AMA), United States Pharmacopeia (USP) and the American Pharmacists Association (APhA). Sometimes, it's a success and one of the names is accepted. Other times, USAN declines to accept the names, and counter proposes a name of its choosing, which Pfizer can then choose to screen and accept.

When a name is accepted, USAN then submits it on behalf of Pfizer to the WHO, where a committee reviews it and decides whether to accept it or, again, counter propose a different name. When the WHO accepts a name, it's published on a proposed International Nonproprietary Names (INN) list, and, over the course of four months, the public can come forward and object to the name. If no one objects, it publishes to a recommended INN list and Pfizer can start referring to the drug by the nonproprietary name, rather than by code.

Want to know how branded drugs are named? Check out part two on how branded drugs are named..

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