

The Dose Makes the Medicine

By Heather Buschman, PhD | December 20, 2017

Capsule, tablet, liquid, skin patch, nasal spray, injection, IV ... there is a seemingly endless number of ways to take a medicine. But why?

“Most of the time, with over-the-counter medications, it’s all about patient preference,” said Christina Mnatzaganian, PharmD, assistant clinical professor in the Skaggs School of Pharmacy and Pharmaceutical Sciences at University of California San Diego. “Choice can help improve adherence — we want to make it as easy as possible for people to take their medications on time and every time, as directed.”



True, kids and some adults prefer taking liquid meds over swallowing pills. But sometimes the

patient doesn't have a choice. Mnatzaganian says a medication's delivery mode, or dose form, can depend on what the active ingredient is, how much is needed, where in the body it needs to be and for how long.

Even a solid dose form comes in many varieties, such as tablets, capsules, suppositories, effervescent salts, powders, implants and lozenges. Each has advantages and disadvantages, depending on the purpose. For example, capsules are useful when the drug's active ingredient would otherwise be destroyed by acid in the stomach. Capsules help the medication make it to the intestines where it can be absorbed into the bloodstream. That's why you shouldn't break open most capsules. Tablets have the advantage when it comes to personalizing the dose, since they can more easily be split in half or quartered. Both of these oral medications can also be found in a controlled-release dose form, meaning you don't have to take them as often.

To illustrate how different dose forms might be preferable in different situations, Mnatzaganian points to nitroglycerin, a prescription medication that treats chest pain caused by sudden decrease in blood supply to the heart. Nitroglycerin works by dilating blood vessels, improving flow and lowering blood pressure. It can be taken several different ways: by a tablet under the tongue, a skin patch or in ointment. The tablet is fast-acting, but doesn't last long. The patch is active for 24 hours, but takes about 30 minutes to kick in. The ointment also requires 30 minutes to take effect and it only lasts 12 hours, but it's cheaper than the patch.

There are similar examples found over the counter, too, Mnatzaganian said. Allergy sufferers have a choice between a nasal spray and a tablet antihistamine for allergic rhinitis. The nasal formulation is more likely to target nasal symptoms, while the tablet formulation is absorbed throughout the body, and can therefore cause more side effects, such as drowsiness.

"There are a lot of factors a medical provider and patient should take into account when finding the right dose form and delivery mechanism for a medication," Mnatzaganian said. "And if you're having difficulties or wondering if there are other options, you can always talk to your pharmacist."

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