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Well

When Are Expired Drugs Truly Expired?

Plenty of us have medications that are past their expiration date. But are they still OK to use?

By Melinda Wenner Moyer

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I don't know about your medicine cabinet, but mine is a jumble of mostly expired drugs: the muscle relaxants I got when I threw out my back a few years ago; the anti-nausea medicine I never took during my stomach woes last summer; the Xanax to occasionally help me cope with the dizzying state of the world.

I've often wondered what I should do with these expired medicines — whether and how I should get rid of them, if they're unsafe to use or whether some might still work perfectly well. For this week's newsletter, I dug into the research and reached out to three eminent pharmacists, one of whom has studied expired medicines, to gain some insight.

Here's what expiration dates and other 'use-by' labels really mean.

With guidance from the U.S. Food and Drug Administration, manufacturers set drug expiration dates based on tests they have conducted to determine how long the medication will remain safe and effective.

An expiration date “represents a promise that the medication is good at least that long, if properly stored,” explained Dan Sheridan, a medication safety pharmacist at OhioHealth Marion General Hospital. Many expiration dates are set between one and five years after the drug is made.

For many prescription drugs, however, what you see on your bottle is not an expiration date but a “beyond use” date. (On my prescriptions, this date appears after the words

“Discard by.”) The beyond use date is typically sooner than the medication’s original expiration date, explained James Stevenson, a pharmacist at the University of Michigan College of Pharmacy and the chief clinical officer at the health care technology company Omnicell. That’s because a pharmacist often has to handle, mix with other ingredients and move a medicine into a new container in order to give it to you, and doing so reduces the amount of time it will be usable, he said.

For some drugs, the beyond use date is just a few days or weeks after the medicine is dispensed. “A powdered antibiotic suspension may be good on the pharmacy shelf for two years, but for only 14 days once the pharmacy adds water and dispenses it to the patient,” Mr. Sheridan explained.

Some drugs may work past their expiration date.

Although expiration and beyond use dates provide useful information — you can feel confident your medicine will work for at least that long if it’s been properly stored (more on that in a minute) — drugs don’t necessarily become dangerous or less potent once that date has passed, said Lee Cantrell, a clinical pharmacist with the School of Pharmacy at the University of California, San Francisco.

In a small 2012 study, Dr. Cantrell and three colleagues tested eight drugs, containing 14 widely differing active ingredients, that had been sitting unopened in a pharmacy closet with expiration dates that had passed between 28 and 40 years earlier. They found that 86 percent of the drugs’ ingredients were still present in the concentrations they were supposed to be. The findings suggest that some medications, like acetaminophen and the opioid painkiller hydrocodone, retain their potency “for a long, long time,” he said.

Dr. Cantrell pointed out, though, that he and his colleagues did not actually test the drugs in people. “I can’t say that it’s OK to take expired medication,” he said. The F.D.A. also recommends against taking expired drugs. However, he has been working at the California Poison Control Center in San Diego for nearly 30 years, and said that people call the center regularly after realizing they have taken expired medicines, worried about what will happen. To his knowledge, nothing bad ever has, he said.

Dr. Cantrell’s study is one of just a few published studies that have evaluated the chemistry of expired medicines. In a study published in 2006, researchers with the F.D.A. and the pharmaceutical company Sandoz tested 122 different drug products and found that 88 percent were still safe to use an average of 5.5 years past their expiration date.

In fact, the F.D.A. sometimes tests expired drugs needed for public health emergencies and extends their expiration dates if they are found to work and be safe. You can check

whether the expiration dates of any of the drugs you own have been extended by searching here.

Some drugs should, however, be discarded.

When considering whether to take an expired drug, use your common sense. It's safer to take an expired drug to treat a health nuisance — like ibuprofen to aid a headache or allergy medicine to treat mild hay fever — than it is to take one to treat a serious medical condition, Dr. Cantrell said.

One class of drugs you shouldn't use past their expiration date are antibiotics, Dr. Stevenson said. If you take an antibiotic that is not as strong as it should be, "that could actually be harmful," he said, because the drug might not effectively fight your infection. Research from the 1960s also linked expired tetracycline to kidney problems, perhaps because the antibiotic produces dangerous chemicals when it breaks down, but it's unclear if current formulations pose this risk.

Mr. Sheridan also cautioned against using expired eye drops — they can become contaminated with microorganisms; and expired nitroglycerin, as the explosive that is also used to treat chest pain in people with heart disease loses its potency over time. The American Diabetes Association does not recommend using insulin past its expiration date, either.

Most drugs can be discarded in the trash, but the F.D.A. recommends that you mix them with coffee grounds, dirt or cat litter so that they are less appealing to children or pets who might consider eating them, and that they should be sealed in a bag or container. Some drugs that have abuse potential, including those containing opioids, should not be thrown away.

According to the F.D.A., these drugs can be flushed down the toilet, but the Environmental Protection Agency warns that doing so can cause drugs to contaminate drinking water, rivers and lakes, since many water treatment plants are not equipped to remove medicines. Mr. Sheridan instead recommended dropping drugs into secure medication disposal boxes found at pharmacies. Also, the Drug Enforcement Administration partners with local governments to collect drugs on designated "National Prescription Drug Take Back Day" events.

Store medications properly to maximize shelf life.

To ensure that your medications will work until — and perhaps past — their expiration or beyond use dates, store them properly. "Ironically, a medicine cabinet in a bathroom is not a good place to store medications," Mr. Sheridan said. "The high temperatures and

humidity may cause the medication to break down more quickly.” He suggested storing medicines in cool, dry locations that are out of the reach of direct sunlight (and children). But of course, if there are different storage directions on the bottle, be sure to follow them. Some drugs, for instance, need to be refrigerated.

Clearly, I have some changes to make at home: I keep my medicines in the bathroom, and I am pretty sure I have expired antibiotics hiding in my stash somewhere. But I may not throw all my expired medicines out — or at least, not just yet. I’ll keep my slightly expired ibuprofen around in case of emergencies. And maybe my Xanax.

How Body Size Affects Plan B

Some research suggests that the emergency contraceptive pill, known as Plan B, does not work as well among people with a high body mass index, or B.M.I. But doctors still understand very little about why this is, and about who is most at risk for contraceptive failure. That’s in part because the early research on contraception did not consider the effects of body size.

Read more:

[Does Plan B Have a Weight Limit?](#)

We want to hear from you.

Tell us about your experience with this newsletter by answering this short survey.

The Questions That Could Salvage Your Relationship

Many relationships are on the rocks these days because of the pandemic and other strains. But couples counselors and sex therapists say that asking certain questions can help couples rekindle their spark. These queries can prompt couples to have more fun together, split domestic burdens more equally, and share pressing concerns, among other things.

Read more:

[Are We Still Monogamous? And 6 Other Questions to Ask Your Partner.](#)

The Week in Well

Here are some stories you don't want to miss:

- If you've wondered how BA.4 and BA.5 Covid symptoms differ from those of earlier Omicron variants, read this piece by Dani Blum.
- Caira Blackwell digs into whether makeup reduces the effectiveness of sunscreen.
- Dani Blum explains what is known about prosopagnosia, the face-blindness condition that Brad Pitt says he might suffer from.
- Hope Reese shares tips from Richard Restak, a neurologist and author, for preventing age-related memory decline.
- And, of course, we've got the Weekly Well Quiz.

Let's keep the conversation going. Write to me at well_newsletter@nytimes.com.

Stay well!