

Properly Disposing of Medicines



Safely disposing of unneeded and expired medicines will help to save thousands of lives each year.

By Ronale Tucker Rhodes, MS

ACCORDING TO RESEARCH, most people understand the importance of disposing of unneeded and/or expired medicines, yet one in five reports being unaware of safe disposal guidelines.¹ Failure to heed the advice of health and government organizations on how to safely dispose of medicines can be dangerous for a variety of reasons. For starters, medications lose their effectiveness after the expiration date, and some may be toxic. More importantly, unneeded medicines create unnecessary health risks for toddlers, teens and even pets accidentally ingesting them. In 2018, a report by the American Academy of Pediatrics found the number of children hospitalized for opioid poisoning increased by three-fold between 1997 and 2012, and the largest overall increase was among toddlers and preschoolers.

And, a U.S. government review shows more than half of all people who first misuse prescription drugs get them from their friends, relatives or simply take them without asking. In fact, more than 115 people die each day from opioid (narcotic) overdoses.²

When to Dispose

It's not uncommon for people to find their cabinets are overflowing with medicines, including prescription and over-the-counter drugs. And, while many consider this just a nuisance, there are many reasons it may be time to dispose of them.

First, if a medication is expired, it may be less effective and can lead to overuse and potential overdose. Over time, the chemical composition of expired medicines can even change,

which can make even a harmless over-the-counter drug very risky to take. According to U.S. Food and Drug Administration pharmacist Lisa Bernstein, “Once the expiration date has passed, there is no guarantee that a medication will be safe and effective.”³

Second, people often fail to take all of their medication, and the remaining supply is often allowed to remain in the cabinet. This could happen when a prescription is changed, or the patient felt better and was advised to stop taking the medicine. Or, it could just be some over-the-counter medicines are no longer needed.

Third, medicines sometimes become unidentifiable. When the drug’s name is unfamiliar, especially if it has been years since the prescription was filled or the medicine was purchased, it is no longer useful. Frequently, adults simply fail to remember to take all of their medicines at the right time or in the correct dosages, resulting in leftover doses. Or, it could be because the medicines were transferred into other containers, and are no longer recognizable.⁴

Lastly, medicines can become damaged, which can make people sick. Individuals should always discard medicines that have changed color, texture or smell, even if they aren’t expired.⁴

Take-Back and Collection Options

The safest solution for disposing of unneeded prescription medicines is community take-back programs. There are two types of take-backs: periodic events and permanent collection sites.

In 2010, the U.S. Drug Enforcement Administration (DEA) began hosting no-questions-asked national drug take-back events twice per year at temporary collection sites in local cities throughout the U.S. for safe disposal of prescription drugs, including opioids. The initiative is one of several strategies to reduce prescription drug abuse and diversion in the U.S.² At the DEA’s last take-back event held Oct. 17, 2018, 914,236 pounds (457.12 tons) of prescription medicines were collected. Since 2010, 10,878,950 pounds of medicines have been collected.⁵ This year, the first national take-back day will be held April 27 (the fall take-back day has not yet been announced). Collection sites for this first event can be located starting April 1 at the Diversion Control Division website at www.dea diversion.usdoj.gov/drug_disposal/takeback/index.html. See Table 1 for a list of items that can and cannot be disposed of at take-back events.

DEA-registered collectors will also safely and securely collect and dispose of pharmaceuticals containing controlled

substances and other medicines. Permanent collection sites consist of retail pharmacies, hospital or clinic pharmacies, and law enforcement facilities. In addition, some authorized collection sites may offer mail-back programs or collection receptacles (also known as drop-boxes).⁶ DEA-registered collection centers can be found at the Diversion Control Division website using the controlled substance public disposal locations search utility at apps.dea diversion.usdoj.gov/pubdispsearch/spring/main?execution=e1s1.

Table 1. What Can and Cannot Be Accepted at DEA National Take-Back Events

Can Be Accepted:

- Prescription medications, including prescribed controlled substances (DEA Schedule II–V)
- Over-the-counter medications
- Liquid medications (small amounts in original, nonleaking containers)
- Medicated patches such as used Fentanyl and Duragesic patches, which are extremely hazardous (they may also be folded in half, sticky-side together, and flushed down the toilet)
- Medication samples
- Medicated ointments
- Vitamins
- Pet medications
- Unused drug injection cartridges such as unused EpiPens and insulin pens (must be unused with needle still protected inside)
- Unused inhaler canisters such as Advair, Spiriva, ProAir and Ventolin (must be unused, no empty canisters or unneeded plastic holders/mouth pieces)

Cannot Be Accepted:

- Marijuana
- Illicit drugs (e.g., DEA Schedule I drugs like heroin, LSD, etc.)
- Needles, syringes and other sharps
- Chemotherapy drugs
- Medical tools and supplies
- Bloody or infectious waste
- Personal care products
- Thermometers
- Empty containers
- Medication wastes generated by healthcare facilities, including nursing homes

Source: Colorado Department of Public Health Information. Items That Can or Cannot Be Accepted. Accessed at www.colorado.gov/pacific/cdphe/items-can-or-cannot-be-accepted.

Table 2. Medicines Acceptable by the U.S. Food and Drug Administration for Flushing

Active Ingredient	Found in Brand Names
• Benzhydrocodone /Acetaminophen	Apadaz
• Buprenorphine	Belbuca, Bunavail, Butrans, Suboxone, Subutex, Zubsolv
• Fentanyl	Abstral, Actiq, Duragesic, Fentora, Onsolis
• Diazepam	Diastat/Diastat AcuDial rectal gel
• Hydrocodone	Anexsia, Hysingla ER, Lortab, Norco, Reprexain, Vicodin, Vicoprofen, Zohydro ER
• Hydromorphone	Dilaudid, Exalgo
• Meperidine	Demerol
• Methadone	Dolophine, Methadose
• Methylphenidate	Daytrana transdermal patch system
• Morphine	Arymo ER, Embeda, Kadian, Morphabond ER, MS Contin, Avinza
• Oxycodone	Combunox, Oxaydo (formerly Oxecta), OxyContin, Percocet, Percodan, Roxicet, Roxicodone, Roxybond, Targiniq ER, Xartemis XR, Xtampza ER
• Oxymorphone	Opana, Opana ER
• Tapentadol	Nucynta, Nucynta ER
• Sodium Oxybate	Xyrem oral solution

Source: U.S. Food and Drug Administration. Disposal of Unused Medicines: What You Should Know (Updated April 2018). Accessed at www.fda.gov/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/EnsuringSafeUseofMedicine/SafeDisposalofMedicines/ucm186187.htm#Flush_List

Donation and Reuse Programs

Pharmaceutical donation and reuse programs are distinct prescription drug programs providing for unused prescription drugs to be donated and redispensed to patients. These drug repository programs began in 1997, and as of fall 2018, 38 states and Guam had enacted laws for donation and reuse. However, more than a dozen of these states do not have functioning or operational programs, which are defined as those that have participating pharmacies, charitable clinics and/or hospitals collecting and redistributing donated drugs to eligible patients. The reason for the lack of operational programs include lack of awareness about the programs, no central agency or entity designated to operate and fund the program, and added work and responsibility for repository sites that accept the donations.

For those that are operational, there are substantial restrictions on who can donate and what types of prescription products may be donated, as well as strict safety rules intended to protect patients who ultimately obtain and take the drugs. In many states, all donations must meet standards such as:

- Only professionally designated persons are allowed to make a donation, although some states do allow individual patients to donate directly;
- Pills in opened or partly used bottles are never accepted;

- Old drugs are never accepted, and expiration dates (often at least six months later than the date of donation) must be visible;

- Commonly, donated drugs must be delivered to a specific type of medical or pharmacy facility, and some may require the donor to sign a form or waiver; and

- Financial compensation or payment to the donor is usually prohibited, although donations may be tax-deductible if paid for by the individual patient and taxpayer. Beyond donation programs, patients and other individuals may not sell any prescription drugs; such transactions are strictly regulated by State Boards of Pharmacy and other state and federal laws.

In addition, while DEA take-back events do not allow cancer-related prescription drugs, drug depository programs do. In fact, the following 13 states accept these drugs for distribution: Colorado, Florida, Kentucky, Michigan, Minnesota, Montana, Nebraska, Nevada, Ohio, Pennsylvania, Utah, Washington and Wisconsin.⁷

Flushing Options

When take-back and donation options are unavailable, FDA recommends flushing certain potentially dangerous medicines (Table 2). However, some have raised concerns about these medicines' impact on the environment and

contamination of surface and drinking water supplies. Therefore, FDA investigated the ecological and human-health risks associated with the environmental release of the 15 active pharmaceutical ingredients (API) in the medicines FDA recommends flushing. In the investigation, researchers found “even when highly conservative assumptions are used, including that the entire API mass supplied for clinical use is flushed, all relevant sources in addition to clinical use of the API are considered, and no metabolic loss, environmental degradation or dilution of wastewater effluents are used in estimating environmental concentrations, most of these APIs present a negligible eco-toxicological risk, both as individual compounds and as a mixture.” However, the researchers did say additional eco-toxicological data will need to be developed for a few of these APIs. But, their final conclusion was all 15 APIs present negligible risk through ingestion of water and fish.⁸

Personal Disposal of Medicines

Individuals can also dispose of most medications on their own. If there are any specific instructions for disposal on the label, package or package insert, those instructions should be followed. Otherwise, disposal into the household trash is the common method. FDA recommends following these specific steps when disposing of medicines in the trash:⁶

- Mix medicines (do not crush tablets or capsules) with an unpalatable substance such as dirt, cat litter or used coffee grounds;
- Place the mixture in a container such as a sealed plastic bag;
- Throw the container into the household trash; and
- Delete all personal information on the prescription label of empty pill bottles or medicine packaging, and dispose of the container.

There are also technologies that have been developed that can be used to dispose of medicines that come in the form of pouches and liquids.

For instance, Cardinal Health developed the Deterra Drug Deactivation System, a bag containing a carbon that bonds to pharmaceutical compounds and neutralizes the active ingredients when water is added. According to Hooshang Shanehsaz, RPh, DPH, director of pharmacy at Cardinal Health, the system neutralizes 98 percent of the medication using a form of activated charcoal, whereas cat litter or coffee grounds only absorb between 15 percent to 23 percent of the active ingredients. The bag is then disposed of in the trash without risk of entering the water supply or landfill.⁹ There are many other similar products on the market.

In addition, eco-friendly disposable bottles can be purchased from several different manufacturers that contain a ready-to-use chemical digestion solution. Medications are inserted into the bottle and the bottle is inverted twice to mix and wash the solution over them. The bottle can be used again and again until it is full and then disposed of in the trash.

Eliminating the Unintended Consequences

Too often, unused and unneeded medicines pile up in people’s homes, resulting in unintended consequences. To quell this, the government has established the national take-back program, as well as other laws, to enable individuals to safely dispose of or donate these medicines. If these avenues aren’t an option, following FDA guidelines for flushing or placing medicines in the trash, or purchasing some of the new technologies that destroy the medications’ active ingredients are good alternatives. It’s worth the effort, as these many options for disposing of medicines can help to save thousands of lives each year. ■

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Sources

1. KnowYourOTCs.org. How to Safely Dispose Medicine. Accessed at www.knowyourotcs.org/safe-disposal.
2. Drugs.com. How to Safely Dispose of Your Old Medications, Oct. 18, 2018. Accessed at www.drugs.com/article/medication-disposal.html.
3. Safer Lock. How to Dispose of Unused Medicines, Feb. 10, 2016. Accessed at saferlockrx.com/how-to-dispose-of-unused-medicines.
4. Sink, M, and Marshall, M. Safe Disposal of Unneeded Medications. Purdue Extension, 2008. Accessed at www.iehfa-families.org/lessons/2018_Lesson_Area2_Safe_Disposal_Meds.pdf.
5. DEA National Rx TakeBack. Accessed at takebackday.dea.gov.
6. U.S. Food and Drug Administration. Disposal of Unused Medicines: What You Should Know. Accessed at www.fda.gov/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/EnsuringSafeUseofMedicine/SafeDisposalofMedicines/ucm186187.htm#Flush_List.
7. National Conference of State Legislatures. State Prescription Drug Return, Reuse and Recycling Laws, Oct. 1, 2013. Accessed at www.ncsl.org/research/health/state-prescription-drug-return-reuse-and-recycling.aspx.
8. Khan, U, Bloom, PA, Nicell, JA, and Laursen, JP. Risks Associated with the Environmental Release of Pharmaceuticals on the U.S. Food and Drug Administration “Flush List.” *Science of the Total Environment*, 2017 Dec 31;609:1023-1040. Accessed at www.ncbi.nlm.nih.gov/pubmed/28787777.
9. Vimont, C. New Drug Deactivation System Allows Patients to Safely Dispose of Opioids at Home. Partnership for Drug-Free Kids, July 13, 2016. Accessed at drugfree.org/learn/drug-and-alcohol-news/new-drug-deactivation-system-allows-patients-safely-dispose-opioids-home.

Medicine Disposal Resources

- *Environmental Protection Agency*: How to Dispose of Medicines Properly (go.usa.gov/xNwXc)
- *U.S. Food and Drug Administration*: Disposal of Unused Medicines: What You Should Know (go.usa.gov/xNw9z)
- How to Dispose of Unused Medicines (go.usa.gov/xNw9S)