

Spotlight

Medication Literacy Series: Drug Disposal

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Disposing of unused, unwanted, and expired drugs is a necessary but often overlooked task. As patients fill more than 4 billion prescriptions annually, unused medicines can accumulate in households across the United States. Prescription drugs may go unused for a variety of reasons, such as when individuals switch therapies, recover from medical procedures, remove drugs in consultation with their provider, or simply choose to stop taking a prescribed drug. One study estimated that two out of every three prescriptions are not fully used.¹

Unfortunately, many Americans often improperly dispose of unused drugs or hold on to them indefinitely.² Both practices can have serious consequences. Disposal of certain drugs directly into the trash can lead to pharmaceutical ingredients leeching from landfills into waterways.³ Inadvertently stockpiling unused drugs, particularly controlled substances, can also contribute to misuse by patients or their friends and family.⁴

This *Spotlight* examines proper drug disposal—the safe and timely removal of unused or unwanted drugs from an individual’s possession according to US Food and Drug Administration (FDA) standards—and what can make it difficult. Specifically, it considers the importance of proper disposal of prescription drugs for older adults, examines barriers that may limit older adults’ access to drug disposal options, and identifies solutions to help older adults properly dispose of their unused or unwanted drugs.

The necessity of proper drug disposal for older adults

Older adults are commonly prescribed multiple drugs—42 percent of adults ages 65 and older

Key Insights

- Older adults, who may take multiple medications daily, may accumulate unwanted and unused drugs.
- Many older adults improperly dispose of unwanted drugs (e.g., tossing them directly in the garbage or flushing them down the drain) or hang on to unused drugs each year. These drugs include controlled substances, other prescription drugs, and over-the-counter medications.
- The US Food and Drug Administration recommends that individuals dispose of drugs at approved take-back locations, whenever possible, to prevent misuse of unwanted drugs and avoid unnecessary environmental contamination.
- Barriers, including low awareness of proper disposal methods and variations in take-back locations across the states, may make it difficult for older adults to dispose of drugs properly.

take five or more drugs monthly and at least 18 percent take 10 or more⁵—and may be more likely than younger adults to possess unused or unwanted drugs. Keeping these drugs on hand can compromise good drug management practices and potentially lead to medical harm if taken incorrectly.

Disposal as part of drug management

Drug disposal is a vital component of good drug management. Whether an older adult participates in a formal drug management program (e.g., Medicare’s Medication Therapy

Federal and State Regulation of Drug Disposal

Regulation of drug disposal began recently with enactment of the Secure and Responsible Drug Disposal Act in 2010.^a In 2014, the US Drug Enforcement Administration (DEA) finalized implementing regulations that establish foundational requirements for DEA-approved permanent disposal locations and other aspects of drug take-back programs.^b

Thirty states have since enacted additional laws regulating drug disposal.^c States have used their regulatory authority to include law enforcement offices as approved locations, require drug manufacturers to fund collection and disposal of unwanted drugs, establish separate take-back programs for long-term care facilities, and require that all sites collecting controlled substances also collect noncontrolled prescription and over-the-counter drugs.

^a <https://www.congress.gov/111/plaws/publ273/PLAW-111publ273.pdf>

^b Drug Enforcement Administration, Department of Justice. Disposal of controlled substances. Final rule. Federal Register 2014; 79: 53519–570, <https://www.govinfo.gov/content/pkg/FR-2014-09-09/pdf/2014-20926.pdf>.

^c <https://legislativeanalysis.org/wp-content/uploads/2022/02/Drug-Take-back-and-Disposal-Programs-Summary-of-State-Laws-FINAL.pdf>

Management) or uses informal management tools (e.g., pill box, reconciliation with providers), proper disposal helps ensure that the right drugs are part of their current medication regimen.

The Centers for Medicare & Medicaid Services (CMS) makes the important connection between proper drug disposal and effective medication management by incorporating disposal as the final step in Medicare's Medication Therapy Management program (MTM). CMS requires health care providers who review medications with MTM participants to include information about safe disposal of drugs.⁶ Additionally, CMS recently required Medicare prescription drug plans to provide MTM participants with specific information about the safe disposal of controlled substances and other prescription drugs, including details on drug take-back programs in their area.⁷

Adverse drug events

Proper disposal removes unused drugs from a patient's home and can, thereby, reduce the potential for mixing older drugs with current therapies. Adverse drug events (ADEs), which include unintentional medication errors, intentional misuse, or drug reactions, may be

more likely when patients, like older adults, take multiple drugs and accumulate multiple unused drugs. One report estimates that the chance of an ADE increases 7 percent to 10 percent with each drug an older adult takes.⁸

Unfortunately, ADEs among older adults can result in emergency department visits and/or hospitalization. A recent study showed that 1 of every 80 adults ages 65 and older visited an emergency department due to ADEs, representing nearly a third (32 percent) of visits for all populations due to ADEs.⁹ The report also noted that two-thirds (69 percent) of these emergency department visits were due to therapeutic use, meaning an interaction when a drug is taken as directed or an unintentional error, and more than half of these visits among older adults led to hospitalization. Removing unused and unwanted drugs has the potential to reduce these ADEs.¹⁰

Challenges to proper drug disposal

Despite the FDA's clear framework, proper drug disposal remains challenging. Older adults may be unaware of proper disposal options, and once they learn about available take-back locations, they may have difficulty accessing a location.

Awareness of disposal options

Awareness of proper drug disposal has remained low among older adults. A 2018 survey of older adults prescribed an opioid showed that only 37 percent discussed how to dispose of unused pills with their doctor and only 25 percent discussed disposal with their pharmacist. Perhaps unsurprisingly, just 13 percent of respondents reported dropping off unused opioids at an approved location.¹¹

This lack of awareness continues despite attempts at both the federal and state levels to boost communication and improve education on drug disposal. Federal regulations encourage US Drug Enforcement Agency (DEA) approved disposal locations to educate consumers about proper disposal of drugs.¹² Also, the FDA has developed educational materials for consumers and pharmacists.¹³ At the state level, officials have established educational programs about drug disposal, and others have directed state boards of pharmacy to publish lists of disposal locations.¹⁴

It is worth noting that consumers are not the only group unaware of proper disposal options. A 2018 survey of pharmacists found that half of them were unaware of the FDA's recommendations for proper disposal, and their knowledge of specific disposal options was even more limited.¹⁵

Accessing a take-back location

The FDA recommends that individuals dispose of drugs at a DEA-approved location, if possible. More than 14,000 DEA-approved locations exist across the United States.¹⁶ More than half of these locations are pharmacies, but health clinics, hospitals, municipal government offices, and law enforcement agencies also serve as disposal sites.

However, identifying and accessing a location may prove tricky. Although some older adults may learn about locations directly from a provider, most must find the information on their own. They must have the motivation, tools, and skills necessary to conduct online searches of local, state, and federal

Framework for Proper Drug Disposal

According to the Food and Drug Administration (FDA), individuals should dispose of drugs:

- **At specified take-back locations**—Individuals may drop off drugs at a site during one of the US Drug Enforcement Agency's (DEA) annual Take-Back Days or at any DEA-approved permanent location. This is the FDA's preferred option.
- **Down the drain**—Individuals should use this option only if a take-back location is unavailable and the drug is on the FDA's "flush list." Drugs on this list are often misused or can cause extreme harm if taken accidentally.
- **In the garbage**—Before individuals dispose of any drugs in the trash, they should remove the drugs from their container and mix them with an undesirable substance, such as cat litter or coffee grounds. Next, individuals should seal the mixture in a bag, scratch out any personal information on the prescription drug container, and place all materials in the trash.
- **According to special instructions**—Certain drugs, such as inhalers, may require special disposal. Individuals should follow directions on the packaging for these drugs.

Source: <https://www.fda.gov/consumers/consumer-updates/where-and-how-dispose-unused-medicines>.

government websites for nearby locations—an arduous task for those who do not have adequate access to the internet or have limited medication literacy.^{17,18}

Older adults may have varying access to DEA-approved locations. In certain states, the number of locations is disproportionately low compared with the population of residents ages 50 and older. For example, Connecticut has limited locations (22), the lowest number of any state, for its 1.4 million older residents. Also, Tennessee has 186 locations for its 2.6 million older residents. Comparatively, Washington, which has the 13th largest population of older adults (2.7 million), has the fourth most locations (701) of any state.

An analysis of locations compared to the population of residents ages 50 and older broadly shows older adult access to locations in most states (figure).¹⁹ Overall, 81 percent of older adults live within 5 miles of a location. However, proximity is poorer in certain states. Fewer than two-thirds (66 percent) of individuals live within 5 miles of a location in 12 states, each of which had a small number of locations, a large rural older adult population, or both.

The distance to a take-back location may affect an older adult’s motivation to dispose of unused or unwanted drugs. A recent report looked at the distribution of DEA-approved permanent disposal locations and found that 90 percent of people live within 15 miles of a location.²⁰ Yet when asked how distance affected disposal, individuals reported that they were more likely to go if the location was within five miles of their home. Additionally, individuals may be even less likely to travel to a location if they have transportation challenges.²¹

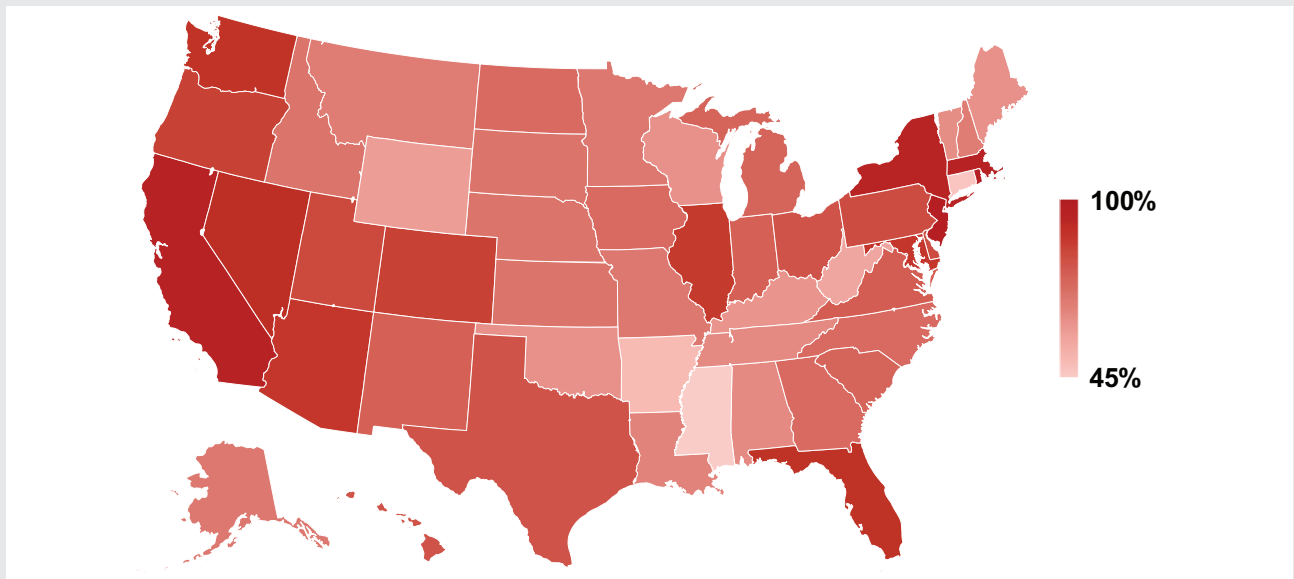
Simplifying drug disposal

Proper drug disposal is not as easy as it could be. Barriers abound at each step of drug disposal. Yet they can be reduced if providers and policymakers redouble their efforts to improve awareness of and accessibility to proper disposal options, such as these:

Making disposal convenient. Federal and state officials should evaluate available disposal options to better understand how they serve older adults. This may include identifying barriers (e.g., distance to disposal locations or availability of transportation to locations), examining best practices from other drug take-back programs, and considering what is missing (e.g., the lack of a way for consumers to mail unused drugs to a location) from existing programs. Officials should work with stakeholders to build on findings and augment disposal options in ways that allow for effective and easy disposal of unused drugs.

Enhanced education and outreach. As mentioned earlier, information about proper disposal is not reaching all older adults. When

FIGURE
Share of Older Adults Living within Five Miles of a DEA-Approved Drug Disposal Location



Source: AARP Public Policy Institute and AARP Research analysis.

evaluating disposal programs, federal and state officials should pay special attention to outreach and education. Among the issues that officials should consider are the utility and reach of outreach channels, the accessibility of materials by providers, and the accessibility of materials to all older adults (e.g., those with limited literacy or who live in rural areas). Future outreach should incorporate the findings.

Ongoing provider training. Primary care providers and pharmacists have a role both in the delivery of prescription drugs and in their removal. These providers must find ways to share information about proper drug disposal plainly and often. This may include attaching personalized information about drug disposal to each prescription, carving out time to discuss disposal options regularly with older adults, and targeting efforts to help older adults who take large numbers of prescription drugs.

Consider the disposal experience. Federal regulations provide a set of standards for DEA-approved permanent locations, and several

states have enacted further standards. Yet it is unclear how locations interpret these standards. Officials should review the extent to which the disposal experience varies from location to location and whether variance creates confusion, results in a poor experience, or otherwise acts as a barrier to disposal.

Conclusion

For many older adults, unused, unwanted, and expired drugs are common. These drugs accumulate as prescriptions are adjusted to accommodate new and changing health needs.

What is not as common is the quick and proper disposal of unused drugs. Too often, older adults do not know about proper disposal options, or the options are inconvenient—the danger is that these drugs get mixed into an older adult’s current drug regimen, fall into the hands of others, or contaminate the environment when disposed of improperly. Raising awareness through new and repeated communication and smoothing out the barriers that limit access to disposal can make proper disposal easier.

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