

## DrugFacts

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# Over-the-Counter Medicines DrugFacts

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## What are over-the-counter (OTC) medicines?

Over-the-counter (OTC) medicines are those that can be sold directly to people without a prescription. OTC medicines treat a variety of illnesses and their symptoms including pain, coughs and colds, diarrhea, constipation, acne, and others. Some OTC medicines have active ingredients with the potential for misuse at higher-than-recommended dosages.



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## How do people use and misuse OTC medicines?

Misuse of an OTC medicine means:

- taking medicine in a way or dose other than directed on the package
- taking medicine for the effect it causes- for example, to get high
- mixing OTC medicines together to create new products

"Behind-the-Counter"

## What are some of the commonly misused OTC medicines?

There are two OTC medicines that are most commonly misused.

**Dextromethorphan (DXM)** is a cough suppressant found in many OTC cold medicines. The most common sources of abused DXM are "extra-strength" cough syrup, tablets and gel capsules. OTC medications that contain DXM often also contain antihistamines and decongestants. DXM may be swallowed in its original form or may be mixed with soda for flavor, called "robo-tripping" or "skittling." Users sometimes inject it. These medicines are often misused in combination with other drugs, such as alcohol and marijuana.

Pseudoephedrine, a nasal decongestant found in many OTC cold medicines, can be used to make methamphetamine. For this reason, products containing pseudoephedrine are sold "behind the counter" nationwide. A prescription is not needed in most states, but in states that do require a prescription, there are limits on how much a person can buy each month. In some states, only people 18 years of age or older can buy pseudoephedrine.

**Loperamide** is an anti-diarrheal that is available in tablet, capsule, or liquid form. When misusing loperamide, people swallow large quantities of the medicine. It is unclear how often this drug is misused.

## How do these OTC medicines affect the brain?

**DXM** is an opioid without effects on pain reduction and does not act on the opioid receptors. When taken in large doses, DXM causes a depressant effect and sometimes a hallucinogenic effect, similar to PCP and ketamine. Repeatedly seeking to experience that feeling can lead to addiction—a chronic relapsing brain condition characterized by inability to stop using a drug despite damaging consequences to a person's life and health.

**Loperamide** is an opioid designed not to enter the brain. However, when taken in large amounts and combined with other substances, it may cause the drug to act in a similar way to other opioids. Other opioids, such as certain prescription pain relievers and heroin, bind to and activate opioid receptors in many areas of the brain, especially those involved in feelings of pain and pleasure. Opioid receptors

are also located in the brain stem, which controls important processes, such as blood pressure, arousal, and breathing.

## What are the health effects of these OTC medicines?

### **DXM**

Short-term effects of DXM misuse can range from mild stimulation to alcohol- or marijuana-like intoxication. At high doses, a person may have hallucinations or feelings of physical distortion, extreme panic, paranoia, anxiety, and aggression.

Other health effects from DXM misuse can include the following:

- hyperexcitability
- poor motor control
- lack of energy
- stomach pain
- vision changes
- slurred speech
- increased blood pressure
- sweating

Misuse of DXM products containing acetaminophen can cause liver damage.

### **Loperamide**

In the short-term, loperamide is sometimes misused to lessen cravings and withdrawal symptoms; however, it can cause euphoria, similar to other opioids.

## Opioid Withdrawal Symptoms

These symptoms include:

- muscle and bone pain
- sleep problems
- diarrhea and vomiting
- cold flashes with goose bumps
- uncontrollable leg movements
- severe cravings

Loperamide misuse can also lead to fainting, stomach pain, constipation, eye changes, and loss of consciousness. It can cause the heart to beat erratically or rapidly, or cause kidney problems. These effects may increase if taken with other medicines that interact with loperamide. Other effects have not been well studied and reports are mixed, but the physical consequences of loperamide misuse can be severe.

## Can a person overdose on these OTC medicines?

Yes, a person can overdose on cold medicines containing DXM or loperamide. An overdose occurs when a person uses enough of the drug to produce a life-threatening reaction or death (Read more on our [Intentional vs. Unintentional Overdose Deaths](#) webpage).

As with other opioids, when people overdose on DXM or loperamide, their breathing often slows or stops. This can decrease the amount of oxygen that reaches the brain, a condition called hypoxia. Hypoxia can have short- and long-term mental effects and effects on the nervous system, including coma and permanent brain damage and death.



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## How can these OTC medicine overdoses be treated?

A person who has overdosed needs immediate medical attention. Call 911. If the person has stopped breathing or if breathing is weak, begin CPR. DXM overdoses can also be treated with naloxone. Read more about naloxone at our [Naloxone webpage](#).

Certain medications can be used to treat heart rhythm problems caused by loperamide overdose. If the heart stops, health care providers will perform CPR and other cardiac support therapies.

## Can misuse of these OTC medicines lead to addiction?

Yes, misuse of DXM or loperamide can lead to addiction. An addiction develops when continued use of the drug causes issues, such as health problems and failure to meet responsibilities at work, school,

or home.

The symptoms of withdrawal from DXM and loperamide have not been well studied.

## How can people get treatment for addiction to these OTC medicines?

There are no medications approved specifically to treat DXM or loperamide addiction. Behavioral therapies, such as cognitive-behavioral therapy and contingency management, may be helpful. Cognitive-behavioral therapy helps modify the patient's drug-use expectations and behaviors, and effectively manage triggers and stress. Contingency management provides vouchers or small cash rewards for positive behaviors such as staying drug-free. Read more about drug addiction treatment in our [Treatment Approaches for Drug Addiction DrugFacts](#).

### Points to Remember

- Over-the-counter (OTC) medicines are those that can be sold directly to people without a prescription. Those that have the potential for misuse include:
  - Dextromethorphan (DXM), a cough suppressant found in many OTC cold medicines
  - Loperamide, an anti-diarrheal
- When misusing DXM, people swallow large quantities of the medicine, sometimes mixing it with soda for flavor, called "robo-tripping" or "skittling." Loperamide may also be swallowed.
- Short-term effects of DXM misuse can range from mild stimulation to alcohol-or marijuana-like intoxication. Loperamide misuse can cause euphoria, similar to other opioids, or lessen cravings and withdrawal symptoms, but other effects have not been well studied and reports are mixed.
- A person can overdose on cold medicines containing DXM or loperamide.
- Overdose can be treated with CPR and certain medications depending on the person's symptoms, but the most important step to take is to call 911.
- Misuse of DXM or loperamide can lead to addiction.

- There are no medications to treat DXM or loperamide addiction. Behavioral therapies, such as cognitive-behavioral therapy and contingency management, may be helpful.

## Learn More

For more information about OTC medicines, see our:

- [Commonly Used Drugs chart](#)
- [Emerging Trends and Alerts page](#)

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