

# The DAWN Report

January 19, 2012

## Methadone-Related Emergency Department Visits Involving Nonmedical Use

### In Brief

- The number of methadone-related emergency department (ED) visits involving nonmedical use rose 71 percent between 2004 and 2009 (from 36,806 to 63,031 visits)
- In 2009, nearly two thirds (65 percent) of methadone-related ED visits involving nonmedical use also involved another drug
- Pharmaceuticals were present in about half (53 percent) of methadone-related ED visits involving nonmedical use; the pharmaceuticals most commonly combined with methadone were drugs that treat anxiety and insomnia (involved in 29 percent of visits) and other narcotic pain relievers (involved in 28 percent of visits)

Methadone is a long-acting opioid (synthetic opiate)<sup>1</sup> that has been used for the past five decades in narcotic treatment programs to treat addiction to heroin, morphine, and other opioid drugs.<sup>2</sup> It is used as replacement therapy for patients addicted to opiates by reducing craving and withdrawal symptoms. More recently, methadone has been used to treat chronic pain, resulting in a 1,000 percent increase in retail methadone distribution between 1997 and 2006.<sup>3</sup> As methadone has gained popularity as a narcotic pain reliever, researchers have identified a concurrent rise in the number of fatalities associated with methadone use. Specifically, although methadone represents less than 5 percent of opioid prescriptions dispensed, one third of opioid-related deaths in the United States from 1999 to 2004 involved methadone.<sup>4</sup>

The nonmedical use of methadone is of particular concern because methadone remains active in the body even after its

therapeutic effects (such as pain relief) have subsided.<sup>5</sup> Thus, whether a patient seeks relief from breakthrough pain, a chronic opiate user seeks to stave off withdrawal, or someone seeks to get high or augment the effect of other drugs, individuals may mistakenly think that the dose of methadone has “worn off” and then use other medications, alcohol, or illicit drugs. This may create a dangerous mix of substances that can cause major medical complications, such as depressed respiration, irregular heartbeat, or death.

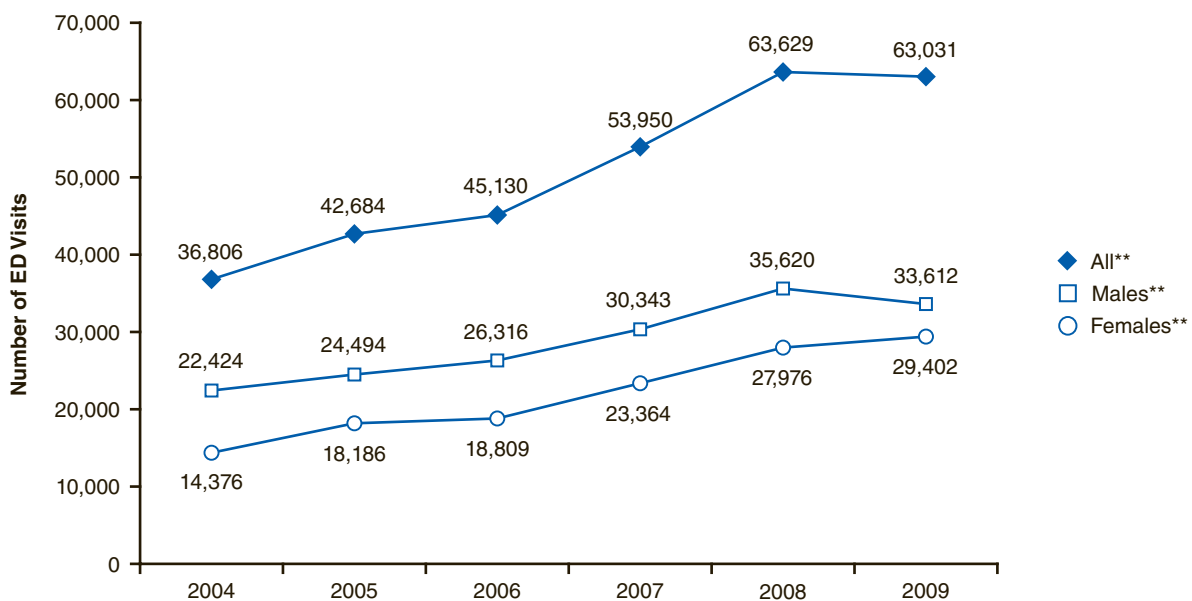
The Drug Abuse Warning Network (DAWN) is a public health surveillance system that monitors drug-related emergency department (ED) visits in the United States and can be used to track methadone-related ED visits involving nonmedical use. To be a DAWN case, an ED visit must involve a drug, either as the direct cause of the visit or as a contributing factor. Nonmedical use of drugs includes: (1) taking more than the prescribed dose, (2) taking a drug that was prescribed for another individual, (3) being deliberately poisoned with a drug by another

person, and (4) documented misuse or abuse of a drug. Nonmedical use visits may include the use of methadone alone or in combination with illicit drugs or alcohol; moreover, DAWN is not able to differentiate between methadone used to treat opioid dependence and methadone intended for pain relief. This issue of *The DAWN Report* highlights characteristics of methadone-related ED visits involving nonmedical use in 2009 as well as recent trends.

### Overview and Trends in Methadone-Related ED Visits

Since 2004, the majority of methadone-related ED visits involved nonmedical use. Specifically in 2009, there were 91,360 ED visits involving methadone; of these, 69 percent were nonmedical use visits. The number of methadone-related ED visits involving nonmedical use rose 71 percent between 2004 and 2009 (from 36,806 to 63,031 visits) overall, but has leveled off in recent years (Figure 1).

**Figure 1. Trends in Methadone-Related Emergency Department (ED) Visits Involving Nonmedical Use, by Gender\*: 2004 to 2009**



\*Because gender is unknown in a small number of visits, estimates for males and females do not add to the total.

\*\*The change from 2004 to 2009 is statistically significant at the .05 level.

Source: 2004 to 2009 SAMHSA Drug Abuse Warning Network (DAWN).

## Demographics

Among females, methadone-related ED visits involving nonmedical use doubled from 14,376 visits in 2004 to 29,402 visits in 2009 (Figure 1). During the same time period, visits among males increased 50 percent from 22,424 to 33,612 visits. In 2009, 53 percent of visits were made by males.

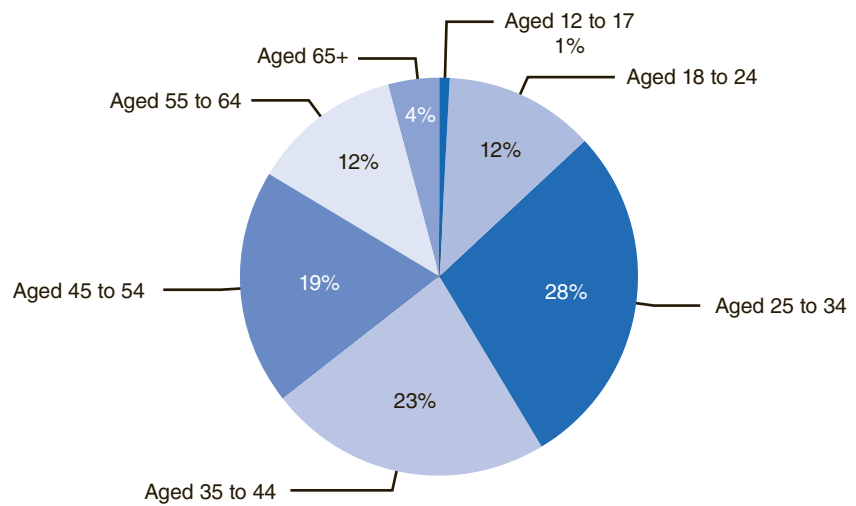
Visits made by patients aged 25 to 54 accounted for most (70 percent) of the methadone-related ED visits involving nonmedical use. More specifically, 28 percent were made by patients aged 25 to 34; 23 percent were made by patients aged 35 to 44; and 19 percent were made by patients aged 45 to 54 (Figure 2).

## Drug Combinations with Methadone

Nearly two thirds (65 percent) of methadone-related ED visits involving nonmedical use also involved another drug. Although there was an average of two drugs per visit, a substantial portion of visits (19 percent) involved methadone combined with three or more other drugs (Table 1).

In 2009, pharmaceuticals were present in about half (53 percent) of methadone-related ED visits involving nonmedical use; in one third (33 percent) of visits, pharmaceuticals were the only other type of drug involved (Figure 3). The pharmaceuticals

**Figure 2. Methadone-Related Emergency Department (ED) Visits Involving Nonmedical Use, by Age\*: 2009**



\* Due to rounding, the total adds to less than 100 percent.  
Source: 2009 SAMHSA Drug Abuse Warning Network (DAWN).

**Table 1. Number and Percentage\* of Selected Drugs Involved in Methadone-Related Emergency Department (ED) Visits Involving Nonmedical Use: 2009**

Drug Combination	Number of ED Visits	Percentage of ED Visits
<b>Total ED Visits</b>	<b>63,031</b>	<b>100</b>
Methadone Only	21,932	35
Methadone with One Other Drug	17,336	28
Methadone with Two Other Drugs	11,818	19
Methadone with Three or More Other Drugs	11,945	19
<b>Methadone with Other Drugs</b>	<b>41,099</b>	<b>65</b>
Other Pharmaceutical Drugs	33,397	53
Drugs That Treat Anxiety or Insomnia	18,244	29
Narcotic Pain Relievers Other than Methadone	17,686	28
Psychotherapeutic Drugs	3,599	6
Illicit Drugs	15,990	25
Marijuana	6,718	11
Heroin	5,741	9
Cocaine	5,271	8
Stimulants	1,956	3
Alcohol	6,493	10

\* Because multiple drugs may be involved in each visit, estimates of visits by drug may add to more than the total, and percentages may add to more than 100 percent.

Source: 2009 SAMHSA Drug Abuse Warning Network (DAWN).

most commonly combined with methadone were drugs that treat anxiety and insomnia (e.g., sedatives and sleeping pills) (involved in 29 percent of visits) and other narcotic pain relievers (involved in 28 percent of visits) (Table 1).

Illicit drugs were involved in one in four (25 percent) nonmedical use visits involving methadone (15,990 visits) (Table 1). Many of these visits also involved other pharmaceuticals and/or alcohol (Figure 3). Of the methadone and illicit drug combinations, marijuana (6,718 visits), heroin (5,741 visits), and cocaine (5,271 visits) were the most common (Table 1). Alcohol was involved in 10 percent of visits, often along with other pharmaceuticals and/or illicit drugs (Figure 3).

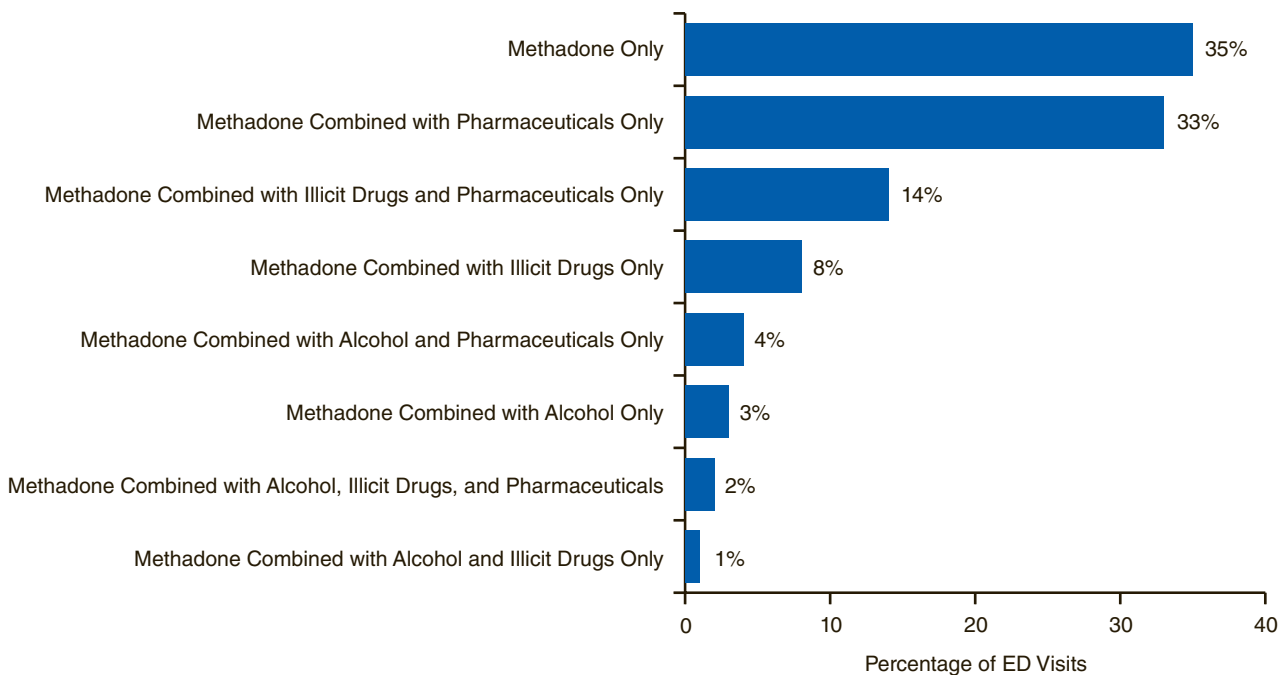
## Discussion

Methadone is a safe drug when used appropriately and monitored by medical staff. Although it has been historically used to treat opiate addiction, methadone has become a

commonly used pain reliever in recent years. As its popularity has increased among prescribing physicians, its availability—and therefore, its potential for diversion and misuse—has also increased. Consequently, this has made methadone more accessible, even for those who do not have a prescription.

In this report, approximately half of the methadone-related ED visits involving nonmedical use involved another pharmaceutical. However, combining methadone with other drugs can be risky, especially if those drugs mimic the sedative effects of methadone. The most common pharmaceutical combinations involved drugs that are known to be dangerous when combined with methadone (e.g., other narcotic pain relievers and drugs that treat anxiety or sleep disorders). Such drug combinations can result in depression of the respiratory and/or central nervous systems, which may result in a range of symptoms from shallow breathing, excessive drowsiness, or abnormal heart beat to loss of consciousness and death.

**Figure 3. Types of Drug Combinations in Methadone-Related Emergency Department (ED) Visits Involving Nonmedical Use: 2009**



Source: 2009 SAMHSA Drug Abuse Warning Network (DAWN).

Patients who are prescribed methadone should be educated about its appropriate use and the risks of misuse. These discussions should cover methadone's long-lasting effects and the dangers of combining it with other drugs. Education may prevent patients from taking more frequent or larger doses of methadone when they think the methadone has worn off and/or from consuming other drugs, including alcohol, in combination with methadone. Patients should also be instructed to store their methadone securely and not share it with others.<sup>6</sup> Family members and friends of methadone patients can be educated to recognize signs of an overdose (e.g., shallow breathing, weak heartbeat, confusion) and be urged to contact emergency services if they suspect an overdose.

In addition to educating themselves about appropriate methadone dosing and possible drug interactions, physicians who intend to prescribe methadone for pain management should also take steps to prevent nonmedical use of methadone by their patients. This includes first screening patients for substance abuse and mental health problems, monitoring patients' use, and prescribing only enough for the length of time that the pain is expected to last.<sup>6</sup> Resource materials are readily available online to help guide medical personnel when methadone is under consideration (e.g., [http://pain-topics.org/pdf/Methadone-Drug\\_Intx\\_2006.pdf](http://pain-topics.org/pdf/Methadone-Drug_Intx_2006.pdf)).<sup>2,7</sup>

In this report, nearly one third of the nonmedical use ED visits involved methadone only, underscoring the need for broader public awareness of the dangers of methadone misuse. Public health campaigns targeting methadone safety have been developed by the Substance Abuse and Mental Health Services Administration, including brochures, posters, fact sheets, and media materials.<sup>8</sup> These materials may be accessed via <http://www.dpt.samhsa.gov/methadonesafety/index.aspx>.

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## End Notes

- <sup>1</sup> Opiates are substances derived from the opium poppy plant, such as morphine, which act on brain receptors to produce euphoria, or "a high," as well as relief from pain. Opioids are manufactured substances that have some properties in common with opiates depending on their chemical composition and dosage.
- <sup>2</sup> Center for Substance Abuse Treatment. (2009). Emerging issues in the use of methadone (HHS Publication No. SMA 09-4368). *Substance Abuse Treatment Advisory*, 8(1). [Available as a PDF at <http://kap.samhsa.gov/products/manuals/advisory/pdfs/Methadone-Advisory.pdf>]
- <sup>3</sup> U.S. Department of Justice, Drug Enforcement Agency, Office of Diversion Control. (2006). *Report 2: Retail drug distribution by drug code for total U.S.* Springfield, VA: Author. [Available at [http://www.dea diversion.usdoj.gov/arcs/retail\\_drug\\_summary/2006/index.html](http://www.dea diversion.usdoj.gov/arcs/retail_drug_summary/2006/index.html)]
- <sup>4</sup> Webster, L. R., Cochella, S., Dasgupta, N., Fakata, K. L., Fine, P. G., Fishman, S. M., Grey, T., Johnson, E. M., Lee, L. K., Passik, S. D., Peppin, J., Porucznik, C. A., Ray, A., Schnoll, S. H., Stieg, R. L., & Wakeland, W. (2011). An analysis of the root causes for opioid-related overdose deaths in the United States. *Pain Medicine*, 12, S26-S35.
- <sup>5</sup> United States Food and Drug Administration. (2009, August 12). *Postmarket drug safety for patients and providers: Methadone hydrochloride (marketed as Dolophine) information*. Retrieved from <http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm142827.htm>
- <sup>6</sup> Centers for Disease Control and Prevention. (2011, November). *Vital signs: Prescription painkiller overdoses in the U.S.* Atlanta, GA: Author. [Available at <http://www.cdc.gov/vitalsigns/PainkillerOverdoses/index.html>]
- <sup>7</sup> Leavitt, S. B. (Ed.). (2006). *Pain treatment topics: Methadone-drug interactions*. Glenview, IL: Mallinckrodt Pharmaceuticals. [Available as a PDF at [http://pain-topics.org/pdf/Methadone-Drug\\_Intx\\_2006.pdf](http://pain-topics.org/pdf/Methadone-Drug_Intx_2006.pdf)]
- <sup>8</sup> Center for Substance Abuse Treatment, Division of Pharmacologic Therapies. (2009). *Follow directions: How to use methadone safely*. Rockville, MD: Substance Abuse and Mental Health Services Administration. [Available at <http://dpt.samhsa.gov/methadonesafety/index.aspx>]

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## Suggested Citation

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Findings from SAMHSA's 2004 to 2009 Drug Abuse Warning Network (DAWN)

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The Drug Abuse Warning Network (DAWN) is a public health surveillance system that monitors drug-related morbidity and mortality. DAWN uses a probability sample of hospitals to produce estimates of drug-related emergency department (ED) visits for the United States and selected metropolitan areas annually. DAWN also produces annual profiles of drug-related deaths reviewed by medical examiners or coroners in selected metropolitan areas and States.

Any ED visit related to recent drug use is included in DAWN. All types of drugs—licit and illicit—are covered. Alcohol involvement is documented for patients of all ages if it occurs with another drug. Alcohol is considered an illicit drug for minors and is documented even if no other drug is involved. The classification of drugs used in DAWN is derived from the Multum *Lexicon*, copyright 2010 Lexi-Comp, Inc. and/or Cerner Multum, Inc. The Multum Licensing Agreement governing use of the *Lexicon* can be found at <http://www.samhsa.gov/data/DAWN.aspx>.

DAWN is one of three major surveys conducted by the Substance Abuse and Mental Health Services Administration's Center for Behavioral Health Statistics and Quality (SAMHSA/CBHSQ). For more information on other CBHSQ surveys, go to <http://www.samhsa.gov/data/>. SAMHSA has contracts with Westat (Rockville, MD) and RTI International (Research Triangle Park, NC) to operate the DAWN system and produce publications.

For publications and additional information about DAWN, go to <http://www.samhsa.gov/data/DAWN.aspx>.



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