

# The CBHSQ Report

Short Report

November 30, 2017

## EMERGENCY DEPARTMENT VISITS INVOLVING THE ACCIDENTAL INGESTION OF OPIOID PAIN RELIEVERS BY CHILDREN AGED 1 TO 5

### AUTHORS

Elizabeth H. Crane, Ph.D., M.P.H.

### INTRODUCTION

As soon as infants learn to crawl and especially once they learn to walk, their mobility, curiosity, and tendency to put things in their mouths make many substances in the home a potential danger.<sup>1</sup> Although parents and other caregivers may be alert to securing obviously dangerous substances, such as cleaning products and chemicals, they may be less aware of the danger of accidental ingestion of medications. Every day, about 300 children are poisoned in the United States.<sup>2</sup> Many of these poisonings occur because of accidental ingestion (i.e., children taking medications when parents/caregivers are not looking or parents accidentally giving children the wrong medication).

The accidental ingestion of opioid pain relievers (e.g., oxycodone, hydrocodone) has been identified as particularly dangerous to children.<sup>3</sup> Because of their physiology and smaller size, accidental ingestion of small amounts of opioid pain relievers can lead to medical emergencies and even death.<sup>4</sup> According to the National Poison Data System, pain medications are the third most common substance implicated in pediatric poisonings (after cosmetics/personal care products and cleaning products) and are the most frequent cause of pediatric fatalities resulting from accidental ingestion.<sup>5</sup> The rates at which opioid pain relievers were prescribed increased dramatically between 1999 and 2011 to 2012.<sup>6,7</sup> The increased availability of opioid pain relievers in the home has resulted in increases in medical emergencies related to accidental ingestion of pain relievers by children.

The Drug Abuse Warning Network (DAWN) can be used to examine emergency department (ED) visits related to accidental ingestion of opioid pain relievers by children aged 1 to 5. DAWN was a public health surveillance system that monitored drug-related ED visits in the United States. Data were collected from a nationally representative sample of short-term, general, non-federal hospitals across the nation. Specialty hospitals, including children's hospitals, were not included in the DAWN sample. In each participating hospital, ED medical records were reviewed retrospectively to find the ED visits that involved drug use. To be a DAWN case, the ED visit must have involved a drug, either as the direct cause of the visit or



### In Brief

- According to the Drug Abuse Warning Network (DAWN), in 2011 an estimated 4,321 emergency department (ED) visits involved accidental ingestion of opioid pain relievers by children aged 1 to 5. The number of ED visits increased 200.7 percent from 1,437 visits in 2004 to 4,321 visits in 2011; however, the number of ED visits was stable between 2009 and 2011.
- Combined 2004 to 2011 DAWN data show that an estimated 22,174 ED visits involved accidental ingestion of opioid pain relievers by children aged 1 to 5. An estimated 5,977 of these ED visits involved hydrocodone products (Vicodin; Lortab), and 4,365 involved Oxycodone products (OxyContin; Percocet). About 5,222 visits involved buprenorphine (Subutex; Suboxone), a medication used to treat opioid addiction.
- Combined 2004 to 2011 DAWN data show that, among ED visits involving accidental ingestion of opioid pain relievers by children aged 1 to 5, 85 percent involved opioids only; additional drugs were involved in the remaining 15 percent of these ED visits.
- Combined 2004 to 2011 DAWN data show that, among children aged 1 to 5 taken to the ED for accidental ingestion of opioid pain relievers, 71 percent were treated and released; 16 percent were admitted to the hospital for inpatient care and 11 percent were transferred to another health care facility.

as a contributing factor. All types of drugs—illegal drugs, prescription drugs, over-the-counter drugs (e.g., dietary supplements, cough medicine), and inhalants—were included. DAWN data were classified into case types, such as drug misuse or abuse, adverse reactions, and accidental ingestion. Accidental ingestion ED visits include those in which the patient accidentally or unknowingly used a prescription drug or over-the-counter drug. The drug may have been taken by the patient or given to the patient by someone else (e.g., a parent giving medication to a child).

This issue of the CBHSQ report focuses on ED visits involving accidental ingestion of opioid pain relievers by children. Because the focus is on accidental ingestion, the report is limited to children aged 1 to 5, who might be able to get into medications themselves. The first section examines trends between 2004 and 2011 (the final year of DAWN data collection), and the second section presents findings from combined 2004 to 2011 DAWN data. Combining these years of data allows examination of ED visits in greater detail, making it possible to identify which specific opioid pain relievers were involved in the ED visits, to assess whether the visits involved a single drug or multiple drugs, and to learn the outcome of the ED visits. Unless otherwise noted, all comparisons described as increases, decreases, or differences are statistically significant at the .05 level.

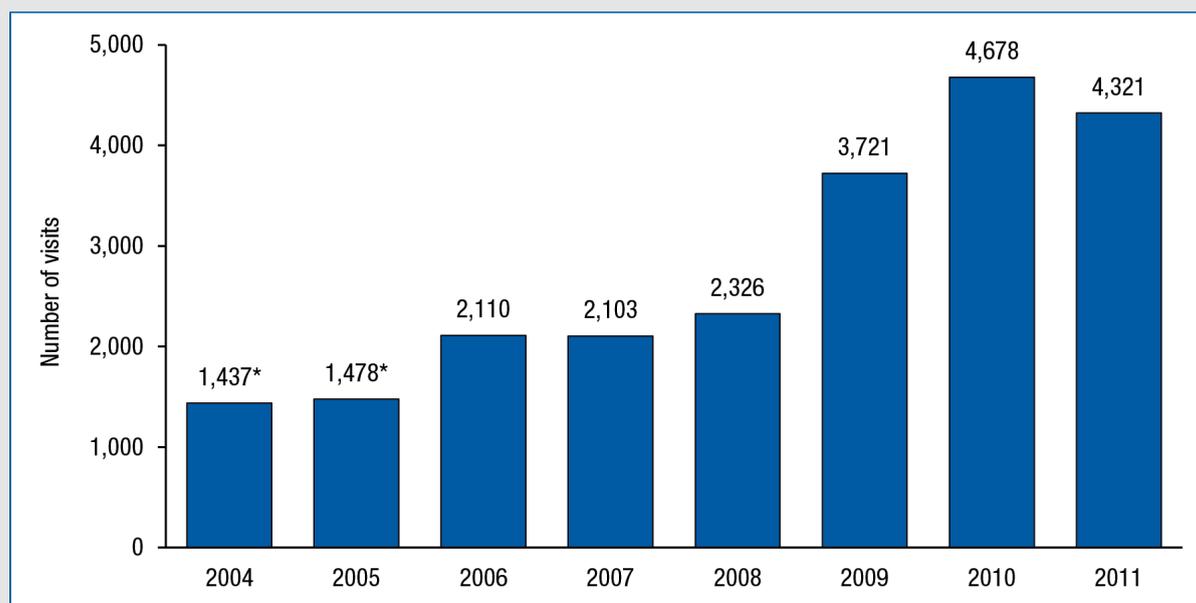
---

## ED VISITS: TRENDS 2004 TO 2011

---

In 2011, an estimated 4,321 ED visits involved accidental ingestion of opioid pain relievers by children aged 1 to 5 (Figure 1). The number of visits increased 200.7 percent from 1,437 visits in 2004 to 4,321 visits in 2011. However, the number of visits was stable between 2009 and 2011.

**Figure 1. Emergency department visits involving accidental ingestion of opioid pain relievers by children aged 1 to 5: 2004 to 2011**

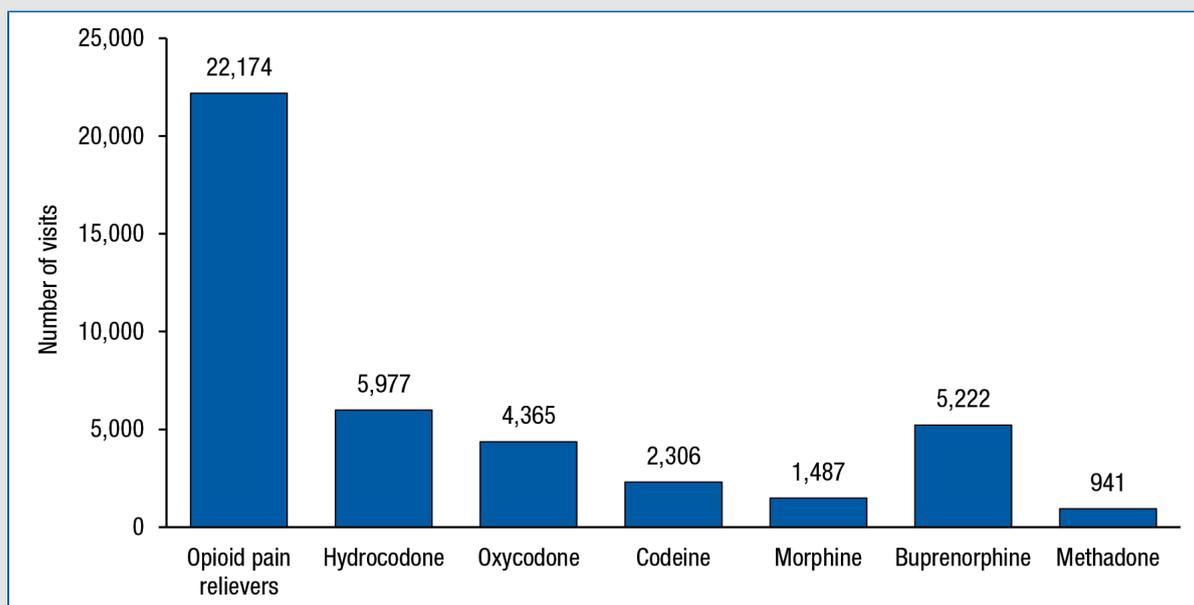


\* The estimate is statistically different from the 2011 estimate at the .05 level.

Source: Center for Behavioral Health Statistics and Quality, SAMHSA, Drug Abuse Warning Network (DAWN), 2004 to 2011.

**ED visits involving various types of opioid pain relievers.** Combined 2004 to 2011 DAWN data show that an estimated total of 22,174 ED visits involved accidental ingestion of opioid pain relievers by children aged 1 to 5 (Figure 2). About 5,977 of these ED visits involved a pain reliever containing hydrocodone (e.g., Vicodin, Lortab), 4,365 involved oxycodone (e.g., OxyContin, Percocet), 2,306 involved codeine, and 1,487 involved morphine. Two opioid pain relievers—buprenorphine and methadone—are used to treat addiction to opioids (i.e., heroin and opioid pain relievers) by reducing craving and withdrawal symptoms. About 5,222 accidental ingestion ED visits by children aged 1 to 5 involved buprenorphine (e.g., Subutex, Suboxone), and 941 involved methadone.

**Figure 2. Emergency department visits involving accidental ingestion of opioid pain relievers by children aged 1 to 5: combined 2004 to 2011**

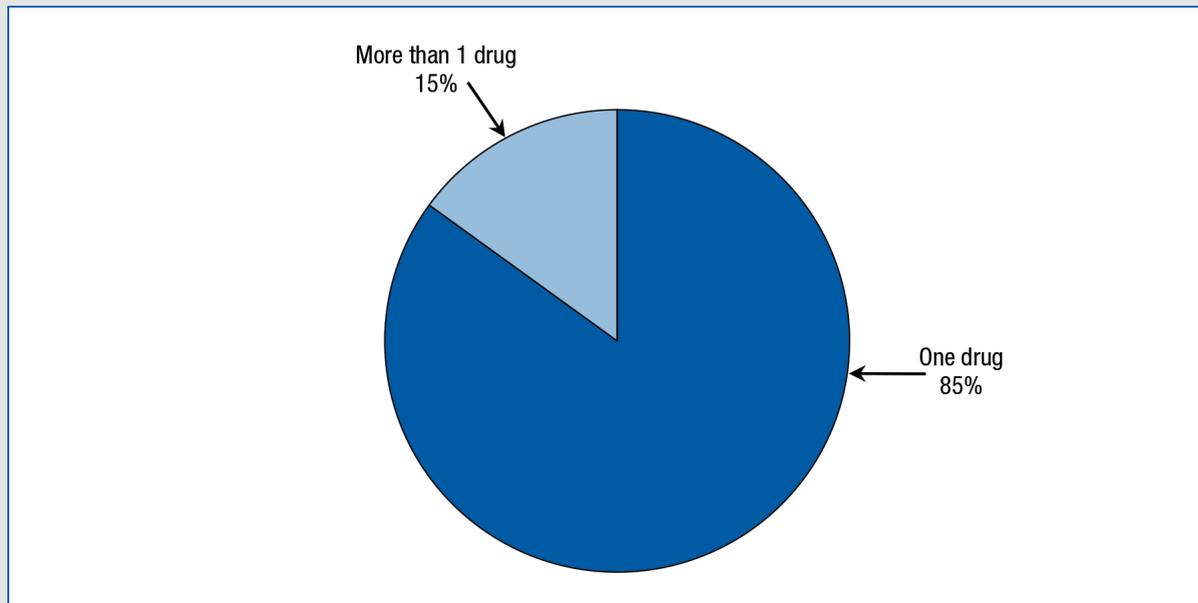


Source: Center for Behavioral Health Statistics and Quality, SAMHSA, Drug Abuse Warning Network (DAWN), 2004 to 2011.

**Number of drugs involved in ED visit.** To understand the role of opioid pain relievers involved in ED visits involving accidental ingestion by children aged 1 to 5, it is important to differentiate between the visits that involved a single drug and those that involved multiple drugs. When a single drug is involved, the ED visit can be attributed to that drug (whether it was the direct cause of the visit or a contributing factor), but when multiple drugs are involved, the visit cannot be attributed to a single drug.

Among ED visits involving accidental ingestion of opioid pain relievers by children aged 1 to 5, 85 percent involved opioids only (Figure 3). In the remaining 15 percent of these ED visits, the type of drugs most frequently combined with opioid analgesics were non-opioid pain relievers (2,303 visits) followed by psychotherapeutic medications (349 visits).

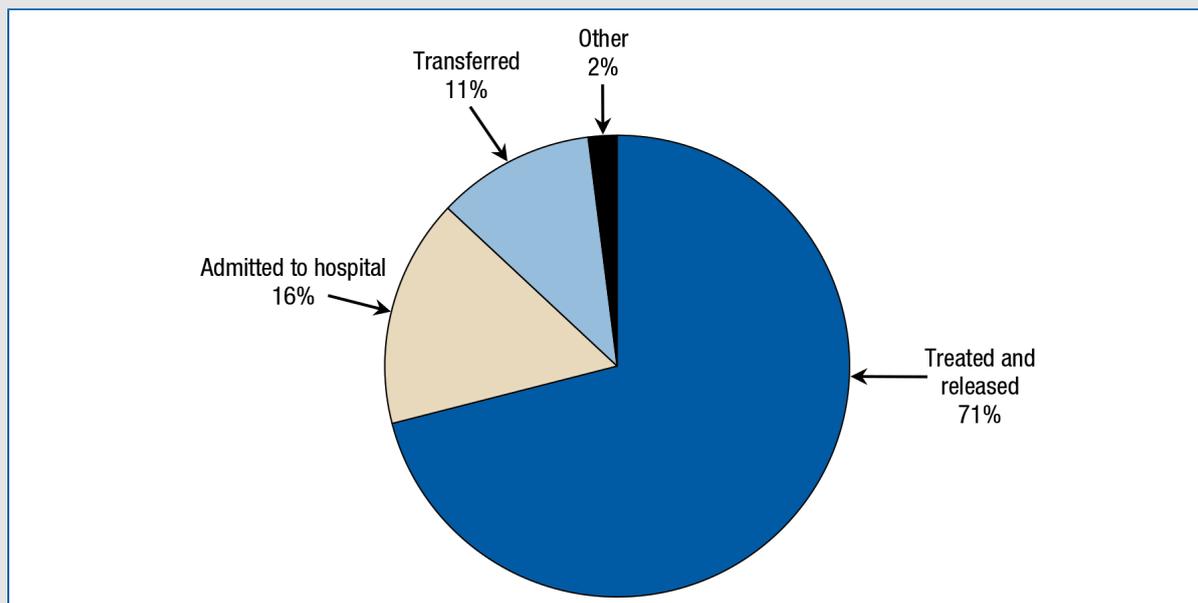
**Figure 3. Emergency department visits involving accidental ingestion of opioid pain relievers alone or in combination with other drugs by children aged 1 to 5: combined 2004 to 2011**



Source: Center for Behavioral Health Statistics and Quality, SAMHSA, Drug Abuse Warning Network (DAWN), 2004 to 2011.

**Outcome of ED visits.** For children aged 1 to 5 taken to the ED for accidental ingestion of opioid pain relievers, 71 percent were treated and released, 16 percent were admitted to the hospital for inpatient care, and 11 percent were transferred to another health care facility (Figure 4). The remaining 2 percent of visits were categorized as other, which includes patients who left against medical advice, died in the ED, or had some other disposition or an unknown disposition.<sup>8</sup>

**Figure 4: Disposition of Emergency department visits involving accidental ingestion of opioid pain relievers by children aged 1 to 5: combined 2004 to 2011**



Source: Center for Behavioral Health Statistics and Quality, SAMHSA, Drug Abuse Warning Network (DAWN), 2004 to 2011.

---

## DISCUSSION

---

The effects of the increased availability of opioid pain relievers (e.g., increased rates of misuse and rates of treatment admissions) are widely known and well-publicized.<sup>6,7</sup> More recently, however, this and other studies<sup>3,4,5</sup> are beginning to shed light on its effects on the youngest members of society. According to DAWN, the number of ED visits involving accidental ingestion of opioid pain relievers among children aged 1 to 5 tripled between 2004 and 2011. About one quarter of these ED visits were serious enough to have ended with hospitalization or transfer to another health facility.

These findings show a critical need for increased education and awareness among parents, family members (e.g., grandparents), and caregivers about the danger of accidental ingestion of opioid pain relievers and other medications. Ways to safe-guard children include (1) asking pharmacies for child-resistant packaging; (2) storing medications in secure/locked locations rather than keeping them on bedside tables, bathroom countertops/drawers, or purses; (3) properly closing medication containers; (4) always turning on the light when giving children medication; (5) taking extra care to pick up dropped medications; and (6) properly disposing of leftover or expired drugs.<sup>9,10</sup> Parents and caregivers should also put the Poison Help Line number, 1-800-222-1222, on or near every home telephone and save it on their cell phones.

---

## END NOTES

---

1. Ma, D. (2009). Keep curious kids safe by poison proofing your home. *AAP News*, 30(2). DOI: 10.1542/aapnews.20093011-2c. Retrieved from <http://www.aappublications.org/content/aapnews/30/11/2.4.full.pdf>
2. Centers for Disease Control and Prevention. (2016). *Poisoning prevention*. Retrieved from <https://www.cdc.gov/safechild/poisoning/index.html>
3. Lovegrove, M. C., Mathew, J., Hampp, C., Governale, L., Wysowski, D. K., & Budnitz, D. S. (2014). Emergency hospitalizations for unsupervised prescription medication ingestions by young children. *Pediatrics*, 134(4), e1009–e1016.
4. Bar-Oz, B., Levichek, Z., & Koren, G. (2004). Medications that can be fatal for a toddler with one tablet or teaspoonful: A 2004 update. *Paediatric Drugs*, 6(2), 123–126.
5. National Capital Poison Center (n.d.). *Poison statistics: National data 2015*. Retrieved from <http://www.poison.org/poison-statistics-national>
6. Guy, G. P., Jr., Zhang, K., Bohm, M. K., et al. (2017). Vital signs: Changes in opioid prescribing in the United States, 2006–2015. *Morbidity and Mortality Weekly Report*, 66, 697–704.
7. Pezalla, E. J., Rosen, D., Erensen, J. E., Haddox, J. D., & Mayne, T. J. (2017). Secular trends in opioid prescribing in the USA. *Journal of Pain Research*, 10, 383–387.
8. In this analysis, no deaths were reported.
9. Centers for Disease Control and Prevention. (2015). *Tips to prevent Poisoning*. Retrieved from <https://www.cdc.gov/homeandrecreationalafety/poisoning/preventiontips.htm>
10. American Academy of Pediatrics. (2003). *Protect your child from poison*. Retrieved from <https://www.healthychildren.org/English/safety-prevention/all-around/Pages/Keep-Your-Home-Safe-From-Poisons.aspx>

---

## SUGGESTED CITATION

---

Crane, E.H. *Emergency Department Visits Involving the Accidental Ingestion of Opioid Pain Relievers by Children Aged 1 to 5*. The CBHSQ Report: November 30, 2017. Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Rockville, MD.

---

## SUMMARY

---

**Background:** The ingestion of opioid pain relievers is dangerous for children. This report analyzes emergency department (ED) visits for children aged 1 to 5 that involved opioid pain relievers that occurred in 2011, and also examines combined data from 2004 to 2011 to identify characteristics of the ED visits. **Method:** Estimates on ED visits involving opioid pain relievers where the patient was a child ages 1 to 5 were examined for trends, and combined 2004 to 2011 DAWN data were analyzed to identify which specific opioid pain relievers were involved in the ED visits, to assess whether the visits involved a single drug or multiple drugs, and to learn the outcome of the ED visits. **Results:** In 2011, an estimated 4,321 ED visits involved accidental ingestion of opioid pain relievers by children aged 1 to 5, an increase of 200.7 percent from 2004. The combined 2004 to 2011 data showed that 85 percent of the ED visits involved opioids only, nearly 6,000 visits involved hydrocodone, and over 5,000 visits involved buprenorphine. Most patients (71percent) were treated and released; 16 percent were admitted to the hospital. **Conclusion:** The number of ED visits involving accidental ingestion of opioid pain relievers more than doubled between 2004 and 2011. Nearly one-third of these ED visits were serious enough to have ended with hospitalization or transfer to another health facility. These findings show a critical need for increased education and awareness among parents, family members, and caregivers about the danger of accidental ingestion of opioid pain relievers and other medications.

**Keywords:** child poisonings, unintentional poisoning, opioid pain relievers, prescription pain medications, emergency department

---

## AUTHOR INFORMATION

---

CBHSQrequest@samhsa.hhs.gov

---

## KEYWORDS

---

Age Group, Short Report, Emergency Department Data, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, Parents and Caregivers, People with Substance Use or Abuse Problems as Audience, Prevention Professionals, Public Health Professionals, Regulators, Poisoning, Children as Population Group, Continuous Quality Improvement, Costs of Treatment Services or Programs, Opiate or Opioid, Child Care, Medication-Assisted Treatment, Prevention, All US States Only

The Substance Abuse and Mental Health Services Administration (SAMHSA) is the agency within the U.S. Department of Health and Human Services that leads public health efforts to advance the behavioral health of the nation. SAMHSA's mission is to reduce the impact of substance abuse and mental illness on America's communities.

The Drug Abuse Warning Network (DAWN) was a public health surveillance system that monitored drug-related morbidity and mortality. DAWN used 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 produced 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 was included in DAWN. All types of drugs - licit and illicit - were covered. Alcohol involvement was documented for patients of all ages if it occurred with another drug. Alcohol was considered an illicit drug for minors and was documented even if no other drug was involved. The classification of drugs used in DAWN was derived from the Multum Lexicon, copyright 2012 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/emergency-department-data-dawn>.

DAWN was one of three major surveys conducted by SAMHSA's Center for Behavioral Health Statistics and Quality (CBHSQ). For more information on other CBHSQ surveys, go to <http://www.samhsa.gov/data/>. SAMHSA had 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/emergency-department-data-dawn>.



U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES  
Substance Abuse & Mental Health Services Administration  
Center for Behavioral Health Statistics and Quality  
[www.samhsa.gov/data](http://www.samhsa.gov/data)