

THE  
MISSISSIPPI  
OPIOID  
EPIDEMIC  
PROJECT

# Prescriptions for Opioid Analgesics in Mississippi: Numbers, Rates and Trend Analysis, 2011-2014



MISSISSIPPI STATE DEPARTMENT OF HEALTH

Epidemiological  
Report  
5/22/2017

## KEY FINDINGS

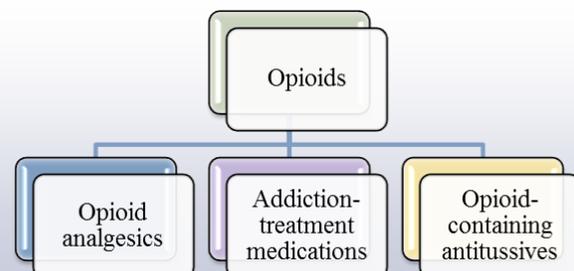
- The number and rate of prescriptions for opioids and other controlled substances was alarmingly high during 2014 in Mississippi.
- Although the overall trend in prescribing opioids showed a slight downward movement during 2013 and 2014, the number of prescriptions for stronger opioids such as oxycodone, morphine, and fentanyl increased considerably since 2011.
- The number of prescriptions for opioids used as addiction-treatment medications rose significantly since 2011.

**Background:** Between 2000 and 2014, the death rate from drug overdose in the United States increased by 137% and the death rates associated with opioid substance abuse rose by 200%.<sup>1</sup> Compared to 2005, the estimated national rates of opioid-related hospitalizations increased by 64.1% and the estimated national rate of emergency room visits associated with opioids increased by 99.4% during 2014.<sup>2</sup> As an escalating public health crisis, the opioid epidemic requires statewide efforts to track prescription practices and establish evidence-based preventive measures. A comprehensive and population-level source, the prescription monitoring program (PMP) data is emerging as the most-effective tool for monitoring the epidemic of opioid misuse.

**Objectives:** To illustrate this point, we used Mississippi PMP data to determine the statewide number and rate of prescriptions for opioid analgesics and other opioids during 2014. In addition, we evaluated trends in the prescription of major opioid categories and individual opioid analgesics between 2011 and 2014. Data analyses included only Mississippi residents.

**Opioids:** Opioids are natural or synthetic substances with morphine-like properties that can cause analgesia (relief of pain) and a sense of euphoria. These substances are mainly prescribed for their pain-relieving effect but other clinical uses include maintenance during opioid-addiction treatment, cough and diarrhea suppression, management of acute pulmonary edema, and adjunctive therapy in anesthesia. All opioids have a potential for abuse and could lead to tolerance (the need of increasingly higher doses to achieve analgesia or pleasurable effects), physical dependence (withdrawal symptoms after the abrupt discontinuation of drug use), and psychological dependence (addiction). Different opioid substances exhibit variations in their analgesic efficacy and potential for abuse.

**Major Drug Categories:** All controlled substances within the PMP database were identified and categorized. Opioids were further subdivided into opioid analgesics, addiction-treatment medications, and opioid-containing antitussive formulations to evaluate whether distribution and other trends varied across major opioid categories or according to clinical usage.

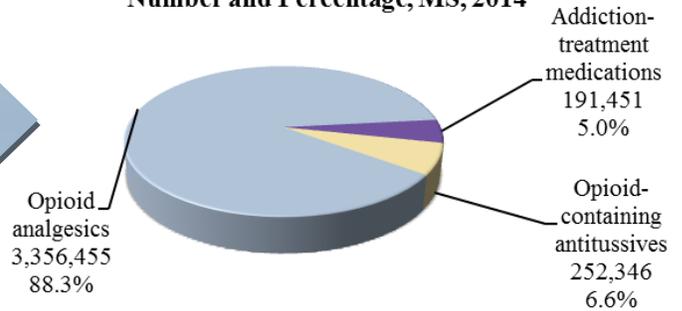


## Major Opioid Categories

**Numbers and Rates:** During 2014, opioid analgesics were the most prescribed opioid category in Mississippi, accounting for 88.3% of all opioid prescriptions (Figure 1). On average, for every Mississippi resident in 2014, there were 1.1 prescriptions for opioid analgesics. Addiction-treatment medications accounted for 5.0% and cough suppressants containing hydrocodone or codeine accounted for 6.6% of all opioid prescriptions during the same year.

Opioid addiction treatment includes detoxification and maintenance therapy. Methadone and buprenorphine are two opioids approved for such treatment. Methadone used as an addiction treatment can only be dispensed by certified addiction medicine specialists to patients treated in specially designated methadone treatment facilities. Methadone used as an analgesic, however, can be prescribed by any medical provider. Since methadone treatment facilities are excluded from PMP reporting requirements, all prescriptions for methadone in the database were excluded from the category of addiction-treatment medications but were included in the group of opioid analgesics.

**Figure 1. Prescriptions for Major Opioid Categories: Number and Percentage, MS, 2014**



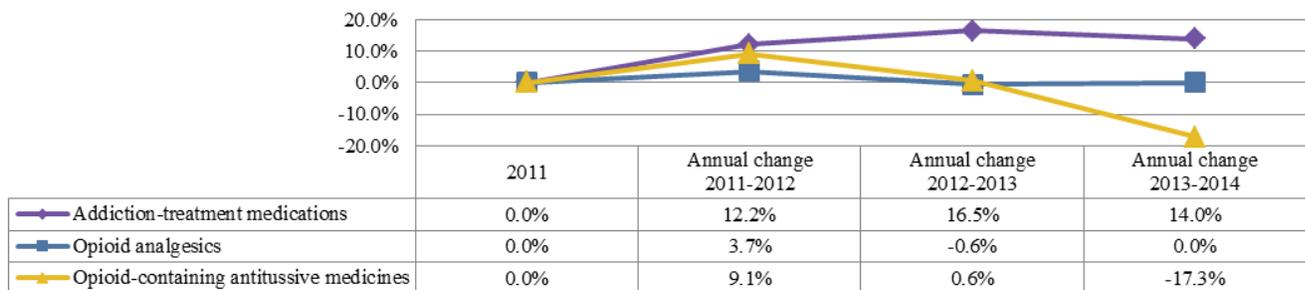
**Trend Analysis:** The overall number of prescriptions for opioid substances increased since 2011. There were, however, considerable fluctuations from year to year. Additionally, the major opioid categories demonstrated different trends (Table 1 and Figure 2).

- During the first two years of the time series, the number of prescriptions for opioid analgesics in Mississippi jumped sharply, increasing 3.7% between 2011 and 2012. After this initial increase, the number of prescriptions for opioid analgesics in the state exhibited a slight downward movement by 0.6% between 2012 and 2013, but the number of these prescriptions was almost identical during 2013 and 2014.
- The number of prescriptions for opioid-containing cough medicines demonstrated an upward trend from 2011 through 2013, but this number decreased abruptly by 17.3% during the last two years of the time series.
- The number of prescriptions for addiction-treatment medications steadily increased during the study period. While further research is needed, the significant upward trend in the number of prescriptions for addiction-treatment medications may signify an increase in the prevalence of opioid use disorders in our state.

**Table 1. Major Opioid Categories: Number of Prescriptions, MS, from 2011 through 2014**

Major Opioid Categories	2011	2012	2013	2014
Opioid analgesics	3,253,380	3,375,323	3,356,430	3,356,455
Addiction-treatment medications	128,398	144,047	167,885	191,451
Opioid-containing antitussives	278,015	303,312	305,151	252,346
All opioids	3,659,793	3,822,682	3,829,466	3,800,252

**Figure 2. Prescriptions for Major Opioid Categories, Annual Change, MS, from 2011 through 2014**



### Top Prescribed Analgesics: Numbers and Percentage Change, 2011-2014

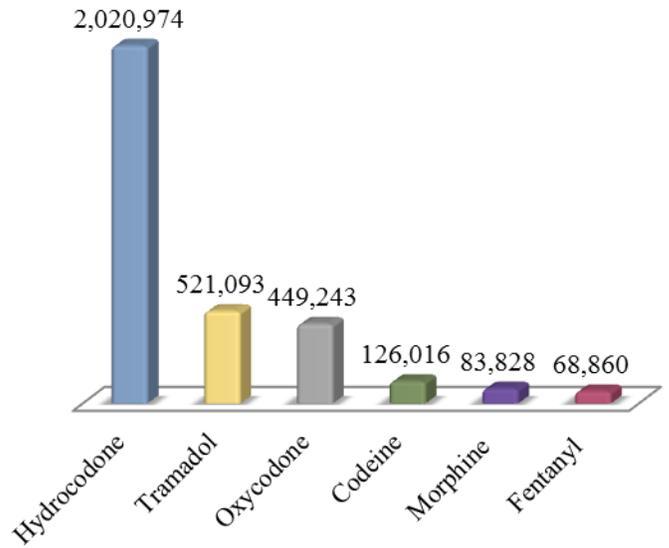
**Numbers and Percentage Distribution:** During 2014, hydrocodone was the leading prescribed opioid analgesic with 2,020,974 prescriptions, followed by tramadol (521,093) and oxycodone (449,243) (Figure 3). Hydrocodone was widely prescribed in 2014 and accounted for 60.2% of all dispensed opioid analgesics, while tramadol accounted for 15.5%, oxycodone for 13.4%, codeine for 3.8%, morphine for 2.5 %, and fentanyl for 2.1% of all dispensed opioid analgesics. All other opioids accounted for 2.5% of prescribed opioid analgesics in 2014.

**Analgesic Potency and Addiction Liability:** Opioids vary in their analgesic potency (the power of the medication to achieve the desired effect) and potential for addiction. Morphine milligram equivalents (MMEs) are used to estimate the analgesic potency of opioids, while the potential for addiction is evaluated by drug schedule classes.

The morphine milligram equivalent for hydrocodone and morphine equals one. The value is higher than one for oxycodone (1.5 MME). The equivalent value for fentanyl, however, is significantly higher (7.2 MME), reflecting the tremendous strength and danger of this opioid. In contrast, tramadol and codeine are less potent analgesics with MME of less than one.<sup>3</sup>

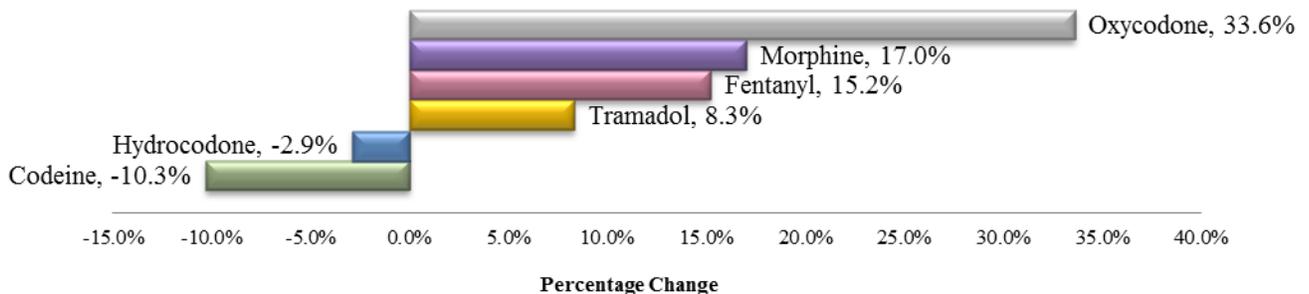
The Drug Enforcement Agency classifies controlled substances into five different schedules based on their addiction potential: no medical use (I), high addiction potential (II), moderate addiction potential (III), and low abuse potential (IV and V). Hydrocodone, oxycodone, morphine, and fentanyl are schedule II with high abuse potential. Tramadol is schedule IV and the different codeine formulations vary in their schedules from II to V.

**Figure 3. Major Opioid Analgesics, Number of Prescriptions, MS, 2014**



**Trends of Major Opioid Analgesics:** When analyzed individually, not all opioid analgesics followed the same positive trend of the group as a whole. In fact, the slight recent decrease in the total number of opioid analgesics prescribed may be masking or hiding a considerable increase in the prescription of several strong opioids such as oxycodone, fentanyl, and morphine (Figure 4). Compared to 2011, in 2014 the number of prescriptions for hydrocodone declined by 2.9 %, while the number of prescriptions for tramadol increased by 8.3% and the number of prescriptions for oxycodone, a strong opioid analgesic, climbed by 33.6%.

**Figure 4. Major Opioid Analgesics: Percentage Change, MS, 2011- 2014**



## Opioid Analgesics: Numbers of Prescriptions and Annual Change from 2011 through 2014

### HYDROCODONE

	2011	2012	2013	2014
Number of prescriptions	2,082,368	2,165,807	2,131,681	2,020,974
Annual change	0.0%	4.0%	-1.6%	-5.2%

The number of prescriptions for hydrocodone, the most prescribed opioid nationwide, steadily decreased from 2011 to 2014. The morphine milligram equivalent of hydrocodone equals 1.

### TRAMADOL

	2011	2012	2013	2014
Number of prescriptions	481,156	486,440	484,118	521,093
Annual change	0.0%	1.1%	-0.5%	7.6%

The number of prescriptions for tramadol, a less addictive opioid, showed some variations over the four-year period, but increased by 7.6% between 2013 and 2014.

### OXYCODONE

	2011	2012	2013	2014
Number of prescriptions	336,237	370,355	392,206	449,243
Annual change	0.0%	10.1%	5.9%	14.5%

Oxycodone, a more potent opioid than morphine, showed the greatest increase among all opioids. Compared to 2013, the number of oxycodone prescriptions jumped by 14.5% in 2014.

### CODEINE

	2011	2012	2013	2014
Number of prescriptions	140,410	132,504	127,066	126,016
Annual change	0.0%	-5.6%	-4.1%	-0.8%

The number of prescriptions for codeine, a less potent analgesic than morphine, declined from 2011 through 2014. This positive trend, however, was less pronounced between 2013 and 2014.

### MORPHINE

	2011	2012	2013	2014
Number of prescriptions	71,621	75,599	76,593	83,828
Annual change	0.0%	5.6%	1.3%	9.4%

The number of prescriptions for morphine showed an upward trend, especially during the last two years of the study period, climbing by 9.4% between 2013 and 2014.

### FENTANYL

	2011	2012	2013	2014
Number of prescriptions	59,757	62,535	64,106	68,860
Annual change	0.0%	4.6%	2.5%	7.4%

Fentanyl, an opioid causing a growing concern, followed a similar trend to morphine, increasing by 7.4% during the last two years of the time series.

### METHADONE

	2011	2012	2013	2014
Number of prescriptions	19,180	20,024	20,886	22,183
Annual change	0.0%	4.4%	4.3%	6.2%

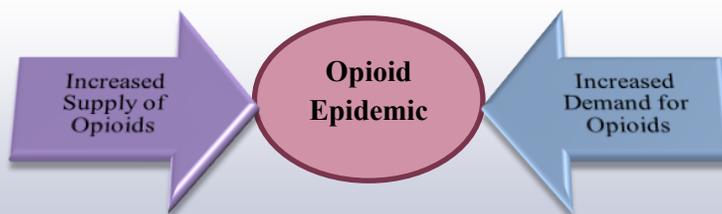
While methadone is not commonly used as a pain reliever, the number of prescriptions for this opioid in the state PMP database demonstrated a steady upward trend since 2011.

## PUBLIC HEALTH PREVENTION STRATEGIES

1. Building and maintaining a comprehensive data surveillance system incorporating such sources as the prescription monitoring program as well as mortality and hospital discharge data.
2. Guiding statewide preventive policies addressing prescribing practices, educational strategies, and chronic pain treatment.
3. Engaging the Mississippi medical professionals: Mississippi physicians and other health care providers should lead the statewide efforts for combating this escalating public health crisis by following three main tracks of prevention:
  - ⇒ Non-medical use of opioids: Limiting the non-medical use of opioid analgesics by identifying patients at risk for opioid drug misuse through systematic utilization of the state web-based PMP data system.
  - ⇒ Iatrogenic opioid addiction: Preventing the development of addiction among patients with chronic pain conditions by minimizing opioid prescriptions and considering alternative forms of chronic pain management.
  - ⇒ Mental health and drug abuse: Actively screening patients with chronic pain conditions for underlying mental health and substance use disorders and exploring mental health treatment options for such patients.
4. Establishing achievable goals and performance measures such as a reduction in the number of opioid prescriptions and an increased utilization of Mississippi PMP data by healthcare providers.
5. Mobilizing communities to build supportive networks for people with substance use disorders and their families.
6. Expanding addiction treatment programs and access to mental health care for those in need.

### The Vicious Cycle of the Opioid Epidemic:

Successful prevention strategies are based on understanding the underlying causes and driving factors of the opioid epidemic. The skyrocketing use of opioid analgesics has two sides interlocked in a vicious cycle: increased demand and increased supply. The two sides of the problem should be targeted simultaneously.



**The Mississippi Opioid Epidemic Project** is a collaborative effort between the Public Health Pharmacy, Office of Epidemiology, and Office of Preventive Health at the Mississippi State Department of Health. The project's mission is to use evidence-based research methods to evaluate the scope of the opioid epidemic in Mississippi and build statewide surveillance systems utilizing different data sources.

For additional information on opioid drug abuse statistics as well as state and national initiatives targeting this epidemic, please visit the Mississippi State Department of Health's website at: <http://msdh.ms.gov> and search Prescription Drug Abuse.

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