A Multiple Indicator Analysis of Heroin and Opiate Use in Missouri: 2001 to 2011

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MISSOURI RECOVERY NETWORK

Our Mission

The Missouri Recovery Network mobilizes those in recovery, their families and allies to help end discrimination, broaden social understanding about addiction and recovery, reduce barriers to and support recovery, and achieve an improved public response to alcohol and other drug use disorders as a public health crisis.

Our Vision

All Missourians with alcohol and/or other drug use disorders are assured prompt, equal access to treatment & recovery support services allowing them to achieve and sustain recovery and be accepted as valued members of their communities.

ROOSEVELT UNIVERSITY'S ILLINOIS CONSORTIUM ON DRUG POLICY

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We promote socially just and economically viable drug policies by providing sound research to policymakers, advocates, impacted individuals and the general public.

Our Vision

The Consortium looks to a time when substance use is viewed as a public health issue rather than a criminal justice problem. We envision a future when substance use declines due to decreased demand achieved through advancements in drug and alcohol treatment, mental health services and prevention and outreach programs.

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EXECUTIVE SUMMARY

It has been well documented that heroin use is rising in the Midwest, and Missouri is no exception. According to DEA reports, Midwest heroin availability indicators increased by 50% from 2008 to 2010 and the Midwest has the second highest rate of the four regions of the US. Only the Eastern states rank higher. Demand from oxycodone users who substitute heroin for prescription opiates has increased the use of heroin throughout the Midwest, including certain portions of the state of Missouri.

- Twenty-four percent of law enforcement agencies in Missouri indicate that heroin is the greatest drug threat, while only 13% of law enforcement agencies indicate that cocaine is the major drug threat in their Missouri community;
- In the St. Louis area, including, St. Louis City and St. Louis County, St. Charles, St. Francis, Jefferson, Franklin, Lincoln, Warren and Washington Counties, **heroin was the second most common illicit drug seized after marijuana**, accounting for nearly 17% of seizures;
- Kansas City's heroin problem is worsening and the availability of the heroin has greatly increased in the Kansas City metropolitan area since 2007.

Prescription opiate use has increased in general over the past 20 years, rising from approximately 76 million prescriptions in 1991 to 210 million prescriptions in 2010. In Missouri, opiate use is not confined to one part of the state. Opiate medications, also known as prescription painkillers, are highly available in Missouri.

- **Missouri's rate of prescription opiate pills sold is ranked <u>first</u> in the census region**, higher than Kansas, Iowa, North and South Dakota, Minnesota, Nebraska and Illinois;
- Oxycodone and hydrocodone are the most commonly abused controlled prescription drugs in Kansas City. Law enforcement have disbanded multi-million dollar drug trafficking rings;
- In the St. Louis region and surrounding counties, prescription opiate seizures by police were nearly as common as methamphetamine seizures (4.6% versus 5.2% of all drug seizures).

Hospitalizations for Opiates/Heroin

From 2006 to 2010, the percentage of heroin or opiate abuse diagnoses in Missouri emergency rooms rose 63.1%. In 2010, a total of 28,498 Missouri residents were admitted to local hospitals seeking medical assistance for concerns associated with illicit drug use.

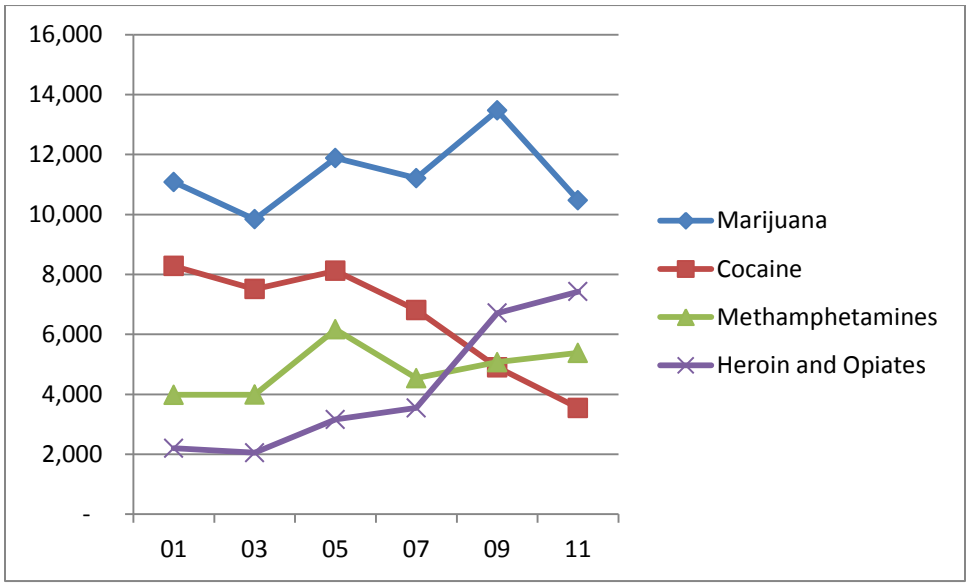
- More than 13,000 drug hospitalizations involved the use of heroin and opiates;
- Nearly half (45.8%) of all hospital admissions for drugs were due to heroin and other opiates;
- Patients admitted to hospitals in St. Louis were most likely to mention heroin or opiate use (52.8%), followed by patients in Springfield (48.1%), patients in Non-Metropolitan Statistical Areas (47.1%), Columbia (39.8%), Joplin (39.5%), Kansas City (33.7%), and St. Joseph counties (28.3%).

Public Treatment Admissions over Time

From 2001 to 2011, public treatment admissions in Missouri for heroin and other opiates have increased dramatically and significantly, surpassing cocaine and other drugs of abuse. While the focus in Missouri has been primarily on methamphetamine, cocaine and marijuana, the drug threat from heroin and other opiates is significant.

- In 2011, opiates and heroin combined made up 26% of all drug treatment admissions (excluding alcohol)and were **the second most common reason to enter treatment** behind marijuana in 2011;
- Methamphetamine comprised just 19% and cocaine just 13% of treatment admissions;
- Opiate treatment admissions **increased more than sevenfold (645% increase)** between 2001 and 2011;
- Heroin treatment admissions **more than doubled** (increasing 150%) between 2001 and 2011
- Heroin treatment admissions made up just 7% of all drug admissions in 2001.By 2011, heroin was involved in 16% of all drug treatment admissions;
- Opiate treatment admissions accounted for just 1% of all treatment admissions in 2001, but in 2011 the number had risen to 10%;

Public Treatment Admissions by Drug 2001 to 2011



Demographic Changes in Heroin Users

Individuals most likely to use public treatment are younger than they were in the past. Additionally, the increasing numbers of females in public treatment systems and the increase of white users indicate, that like much of the country, demographics of Missouri heroin users have shifted into a new cohort. The

rise of younger white users has been documented across the country. In Missouri, the patterns are the same: more whites entering treatment, more accounts of suburban use, and fewer gender differences:

- **Today the majority of those entering treatment for heroin are aged 30 or younger (55%),** while in 2001 those under 30 represented the minority of treatment admissions (43%);
- **Today, more than 41% of those entering treatment are female**, but 10 years ago, two thirds of those entering public treatment for heroin were male, while just one third were female;
- **Today, whites comprise the majority (60%) of publicly funded treatment admissions while African Americans make up just 30% of treatment admissions for heroin**. This is in stark contrast to ten years ago when African Americans comprised the majority of heroin treatment admissions.

Demographic Changes in Opiate Use

There is an assumption that opiate users are from predominantly rural areas, but as evidenced by multiple Missouri data indicators, this is not the case. It is important to recognize the relationship between heroin and opiate users. Many heroin users begin their use with opiate pills and transition to heroin as pills become too difficult or expensive to obtain. When thinking about opiate users, it is essential to understand that today's opiate user may very likely become tomorrow's heroin user.

Today, the majority of those entering treatment for opiates other than heroin are white (92%), indicating no significant change since 2001. The opiate treatment population is comprised of both females and males equally (52% v 48%).The percentage of younger people who are admitted to Missouri's public treatment systems for opiates other than heroin has increased significantly.

- **The majority of those admitted to public treatment were aged 30 or younger in 2011** while in 2001, users aged 30 or younger represented the minority of those admitted to treatment (56.5% in 2011 versus 38.4% in 2001);

Mortality

Nationally, accidental drug overdoses nearly tie motor vehicle accidents as the number one cause of accidental death. Missouri has been impacted greatly by drug deaths:

- **Deaths due to heroin more than tripled in just 4 years** (increasing 254% from 69 deaths in 2007 to 244 in 2011);
- **Missouri's drug overdose rate is significantly higher than the US rate** at 13.1 per 100,000 individuals, while the US rate is 11.9 per 100,000;
- **Missouri's drug overdose rate ranked first in the region**, surpassing Illinois, Kansas, North and South Dakota, Minnesota, Iowa and Nebraska.
- **Missouri's drug overdose rate was more than double that of Nebraska and nearly twice as high as Iowa.**

METHODOLOGY

This report is a multiple indicator analysis of heroin and opiate use in the state of Missouri. A multiple indicator analysis is a type of research method used in the examination of drug use trends because it links together data from different sources to provide a more comprehensive overview. Each piece of data is a piece of the overall picture, which when fit together, provides the pattern of heroin and opiate use. The report will examine emergency department and hospital admissions, public treatment and mortality counts information gathered from the following sources:

- **National Drug Intelligence Center (NDIC)** – The National Drug Threat Assessment (2011) was used for this report to provide data on heroin production overseas and market availability in the United States.

- **National Household Survey on Drug Use and Health (NSDUH)** - The 2011 data set was used for this report to provide information on heroin initiates and use patterns in the United States.

- **Treatment Episode Data Set (TEDS)** – The 1999, 2001, 2009 and 2011 tables were used to examine public treatment admissions nationally and in Missouri.

- **Drug Abuse Warning Network (DAWN)** - The 2010 data set was used for this report to provide details on the number and rates of individuals receiving emergency medical services for heroin problems throughout the United States.

- **Midwest High Intensity Drug Trafficking Area (Midwest HIDTA)** - Midwest HIDTA reports were used for this report to provide data on heroin and opiates market availability in Missouri.

- **Community Epidemiological Work Group (CEWG) -** Local CEWG data was used to provide data on heroin and opiates market availability and use patterns in Missouri.

- **Online Analysis from MO Department of Health and Family Services -** MO HFS data was used to examine heroin and opiate-related hospitalizations and deaths in Missouri.

- **CDC and other government reports** - CDC, ONDCP and other government reports were used to present information on prescription opiate misuse and overdose deaths nationally and in Missouri.

<u>A note on "opiates" in the report:</u>
This report refers to the word "opiates" throughout the text. For ease of reading, the word opiates is meant to refer to all types of opioid medication classifications, which includes medications classified as naturally occurring (such as morphine), semi-synthetic (such as oxycodone or hydrocodone) or fully synthetic (such as fentanyl). The report also assumes that the opiate medication can come in pill, patch, topical or suppository forms, unless specifically noted in the text as an opiate pill.

NATIONAL OVERVIEW

To understand patterns of opioid use among Missourians, it is necessary to understand the patterns of use across the United States. Opioids include both *prescription opiate medications* and *heroin*. Nationally, rates of heroin and other opiates use have been increasing steadily over the past decade. Therefore, the use patterns seen in Missouri are part of a broader national trend of growing opioid use.

Increases in heroin use among young people have also been the focus of researchers and media attention in recent years.[1,2] Most major metropolitan areas, as well as increasing numbers of smaller metro and rural areas, have reported an unexpected and unprecedented growth in heroin use.[3] Prescription opiates use has increased in general over the past 20 years, rising from approximately 76 million prescriptions in 1991 to 210 million prescriptions in 2010.[4] Additionally, an estimated 20% of the population aged 12 and older (approximately 52 million Americans) have used prescription opiates for nonmedical reasons at least once during their lifetime.[5] *Nonmedical opiate use* occurs when a person takes an opiate in ways or amounts not intended by their doctor or is taken by someone other than the patient.

Heroin and Opiate Pill Availability in the United States

Both heroin and opiate pills are more available in the United States. Heroin has become more available, notably among communities that have not historically dealt with heroin use problems. Heroin production has grown rapidly over the past decade, creating a purer and less expensive supply that has helped to fuel demand in existing markets and has created new markets across the United States.[6,7] Increases in the number of legally obtained prescriptions for opiate pills have led to an increase in the number of opiate pills circulating in communities. Opiate pill availability differs by state as the result of differing prescribing and sales practices. Some states have a considerably greater numbers of opiate pills prescribed and sold, which results in a pill market and a pill using profile unique to that state.[8] In approximately 70% of nonmedical opiate pain pill acquisitions, the opiate pills were acquired from a friend or family member's current, unused, or leftover prescription.[9]

Heroin and Opiate Initiations across the Nation

According to the National Household Survey on Drug Use and Health, initiations to heroin have increased nearly 100% since 2006, from around 90,000 per year in 2006 to 178,000 in 2011.[10] Initiations to nonmedical opiate use decreased during the same time period, from 2,155,000 in 2006 to 1,888,000 in 2011.[11] One strong hypothesis regarding the decline of opiate initiations in the five-year period is the increase in heroin initiations during this time. As a larger number of Americans began to use heroin in a given year, a smaller number of Americans began using opiates in nonmedical ways during this same time period. The surge in heroin use among young people is likely fueling this pattern, as the majority of lifetime and past year opiate users are aged 26-34 and aged 45-54, and age of initiation to heroin is younger than that of opiates (22 years old versus 24 years old).[12, 13]

Emergency Department Mentions for Heroin and Opiates

The number of admissions to emergency departments in which heroin was the cause or contributing cause for the visit has increased over the past several years. In 2005, approximately 187,000 individuals were seen in the emergency department for heroin-related concerns. This number increased to approximately 225,000 in 2010, a 20% increase over just five years. [14] The profile of heroin users seeking emergency services changed during this period as well. Although most demographic groups saw an increase in visits, some groups experienced a more significant increase than others. Visits increased 16% from 2005 to 2010 among persons aged 21 and older (n= 176,907 to 206,118), but increased 76% among those under age 21 during this same period (n= 10,516 to 18,751). However, the majority of users are older than age 21. Heroin emergency room visits are largely an issue among white users. Visits among white users increased 66% during the five-year period (n= 80,522 to 133,811) and 14% among Latinos (n= 26,719 to 30,473), but decreased almost 20% for African American users (n= 47,537 to 38,761).[15]

Emergency visits for nonmedical use of opiate pain relievers increased even more dramatically during the five-year period. In 2005, approximately 218,000 individuals visited the emergency room for opiate-related problems, compared to approximately 475,000 people in 2010.[16] This represents an almost 120% increase in visits in a five-year period. Among people using opiates in non-medically indicated ways, the majority of users presenting in the emergency department are aged 21 years and older and white. Visits increased 120% among persons aged 21 and older (n= 199,094 to 438,093), and increased nearly as much for younger users (94%), though they represent a smaller number of cases (n= 18,443 to 35,715). White opiate users comprised the largest group of emergency department visitors and saw a large percent increase over the five year period (135% increase, from n= 158, 896 to 372,097). The largest percent increase in emergency visits was actually among Latinos, though they represented the smallest number of cases of all three groups (212% increase, n= 7,770 to 24,258). African Americans also saw a sizable increase the in the number of emergency visits for opiate use (168% increase, n= 18,874 to 50,601).[17]

Public Treatment Admissions for Heroin and Opiate Use

Over the past decade, there has been a significant increase in the number public treatment admissions for heroin and opiate-related use issues. In 1999, approximately 258,000 treatment episodes listed heroin as the primary drug of concern. By 2009, this number increased to approximately 287,000 public treatment admissions for heroin, an 11% increase over the ten-year period.[18] The profile of individuals seeking treatment for heroin has become increasingly younger and comprised of fewer African Americans over the years. In 1999, 31% of public treatment admissions involved individuals aged 30 and younger, but by 2009, this age cohort comprised 58% of the public treatment episodes for heroin-related issues.[19, 20] During this same period, the racial profile changed to include a greater number of white people, from 50% of admissions in 1999 to 61% of admissions in 2009.[21, 22]

Public treatment admissions for opiate use were even more dramatic, increasing a staggering 507%, from approximately 23,000 admissions in 1999 to approximately 144,000 admissions in 2009.[23] The

racial profile of opiate users is predominately white, and this remained the case over the ten-year period. In 1999, white individuals comprised 85% of the public treatment admissions for opiates and this inched up to 88% by 2009.[24,25] Significant age cohort shifts occurred during this period, however. The opiate public treatment population was largely aged 31 and older in 1999 (75%), but by 2009, individuals aged 30 and younger comprised the bulk of public treatment admissions for opiate use (58%).[26, 27]

Increasing Mortality as a Result of Heroin and Opiate Use

Deaths related to heroin and opiate use are a significant and growing problem in the United States. At this time, accidental drug overdoses nearly tie motor vehicle accidents as the number one cause of accidental death.[28] Every day, approximately 87 Americans die as the result of an accidental overdose of any drug and in 2009, this resulted in roughly 32,000 lives lost.[29]

According to the Centers for Disease Control (CDC), deaths attributable to heroin have remained somewhat stable since 1999, with approximately 2,000 deaths per year due specifically to heroin use.[30] It is possible, however, that the number of heroin-related deaths is much greater than currently reported. Heroin metabolizes (breaks down) into morphine in the body, and it is the morphine that is detected through postmortem (after death) toxicology screenings. There is a very brief period of time when heroin can be identified through the presence of *6-monoacetylmorphine*, but many medical examiners lack the resources to do these very specific tests.[31] As a result, the death is coded as an opiate death.

The exponential growth of prescription opiate misuse has fueled a large percentage of the increase in accidental overdose deaths. Opiate-related deaths tripled during the period from 1999 to 2007, from less than 3,000 deaths per year to more than 12,000 deaths per year.[32] In 2010, the most recent year mortality data was available through the CDC's National Vital Statistics System, opiate pain medications resulted in approximately 17,000 accidental overdose deaths (75% of all pharmaceutical-related deaths).[33] Some of these 17,000 deaths were the result of using opiates alone (approximately 5,000 cases), but the vast majority of cases involved the use of opiates in combination with other medications, such as benzodiazepines.[34]

HEROIN AND OPIATES AVAILABILITY IN MISSOURI

Heroin Availability

It has been well documented that heroin use is rising in the Midwest, and Missouri is no exception. According to DEA reports, Midwest heroin availability indicators increased by 50% from 2008-2010 and had the second highest rates of the four regions-which include the South, West, Midwest and East. [35] Only the Eastern states rank higher. Demand from oxycodone users who substitute heroin for prescription opiates has increased the use of heroin throughout the Midwest, including certain portions of the state of Missouri.[36]

Paying for opiates is very costly for dependent users. Often heroin is used as a substitute for opiates when those drugs become unavailable or too expensive.[37] Heroin use has grown in tandem with opiate use in suburban and rural areas, as well as smaller markets in Missouri previously untouched by heroin use.[38]

Heroin is very available in the St. Louis Metropolitan Statistical Area, including St. Louis City and St. Louis County, St. Charles, St. Francis, Jefferson, Franklin, Lincoln, Warren and Washington Counties. In these counties, heroin was the second most common illicit drug seized, accounting for nearly 17% of seizures (Table 1).[39] The frequency with which heroin is recovered during drug seizures is not surprising given recent findings by law enforcement personnel. Analysis of drug trends by Midwest law enforcement agencies revealed heroin to be the second greatest drug threat in Missouri, following methamphetamines. In fact, heroin was reported by law enforcement officials to be almost double the perceived drug threat compared to cocaine (24.0% v 13.8%, respectively).[40]

Over the past few years the heroin market in St. Louis has spread and intensified. Increased demand from opiate users substituting heroin for prescription opiates, combined with increased heroin availability throughout the Midwest, has led to increased market competition. As a result of this competition, the purity of white heroin has increased, along with the risk of overdose. Although the number of heroin deaths remains stable within city and county limits, rural areas have witnessed a surge of young heroin and opiate fatalities.[41]

According to several sources including, the Missouri Department of Mental Health and local epidemiological workgroups, the majority of heroin use is confined to the Eastern Part of the state[42, 43]. From early 2008 to the first half of 2011, heroin treatment admissions in the St. Louis Metropolitan Statistical Area exceeded the total admissions for marijuana abuse.[44] While the heroin problem in Kansas City is not comparable to St. Louis, there are indications that the heroin problem is worsening, with black tar and brown heroin found most frequently.[45] According to the Department of Justice, the availability of heroin has greatly increased in the Kansas City metropolitan area since 2007.[46]

Because of the link between opiates and heroin use, which has been well established in research studies, heroin use is likely to increase in Missouri as a whole. More users will transition from opiates to heroin as pills become too expensive or difficult to obtain. As such, smaller heroin markets may emerge across the state to meet this growing demand for heroin.

Table 1: Top 8 Most Frequently Identified Drugs of Total Analyzed Drugs Items,

St. Louis Metropolitan Statistical Area 2011[i]

Substance[ii]	Number	Percent
Marijuana	3,007	39.6
Heroin	1,252	16.5
Cocaine	968	12.7
Methamphetamine	397	5.2
Prescription Opiates	350	4.6
Alprazolam	149	2.0
Pseudoephedrine	124	1.6
Amphetamine	46	0.6
Other[iii]	1,302	17.1
Total	7,595	100

Opiate Availability

Opiate availability, as measured in kilograms of prescription opiates sold per 10,000 residents, is very high in Missouri. When compared to other states in the central Midwest region, Missouri ranked first with a rate of 7.2 kilograms per 10,000 residents. [47] This amounts to 7,200 grams of opiates sold per 10,000 individuals. Put another way, nearly ¾ of a gram of prescription opiates are sold each year for every single man, woman and child in the state of Missouri. Comparatively, Missouri's rate of prescription opiates sold is nearly double the rate of Illinois, and ranks well above Kansas, Iowa and Nebraska as well as every other state in the census region. Missouri also ranks higher than the national rate of opiates sold per 10,000 residents (Table 2).[48]

Opiate use is not confined to one part of the state. For example, oxycodone and hydrocodone are the most commonly abused controlled prescription drugs in Kansas City. Law enforcement officials report prescription opiate use has increased, particularly among young white users.[49] According to the Community Epidemiological Work Group, there has been an increase in the abuse of opiates in the St. Louis Metropolitan Area, as well as the rest of the state. Researchers have noted the presence of fentanyl (an opioid pain medication) in death data from St. Louis County, Jefferson, St. Charles, and Franklin Counties. Community informants also reported an increase in prescription drug use and

[i] January-June 2011. Data are for the St. Louis MO/IL MSA, which includes St. Louis City and 16 Counties: St. Louis, St. Charles, St. Francis, Jefferson, Franklin, Lincoln, Warren and Washington Counties in MO; and Madison, St. Clair, Macoupin, Clinton, Monroe, Jersey, Bond, and Calhoun counties in Illinois.
[ii] Percentages may not total 100 due to rounding.
[iii] All other analyzed items, includes 685 negative case results.

increased availability of prescription opiates, particularly in the more rural areas of the St. Louis Metropolitan Statistical Area. Researchers urge concern, recommending additional research regarding the prevalence of prescription opiate abuse in St. Louis and surrounding counties to more thoroughly understand these emerging use patterns.[50] In terms of drug seizures in the St. Louis MSA, prescription drug seizures by police were nearly as common as methamphetamine seizures (4.6% v. 5.2% of all drug seizures) (Table 1). Considering that prescription opiate use continues to rise, opiate seizures are expected to rise as well.

Table 2: Prescription Opiate Data by Census Region, KG of Prescription Opiates by Rate

Census Region 4[iv]	Kilograms of prescription opiates sold, rates per 10,000 people in 2010	Rank
Missouri	**7.2**	**1**
Kansas	6.8	2
South Dakota	5.5	3
North Dakota	5.0	4
Iowa	4.6	5
Minnesota	4.2	6
Nebraska	4.2	7
Illinois[v]	3.7	8

[iv] West North Central of the MIDWEST division

[v] While Illinois is not part of the North West Central Census Region, it shares a large border with Missouri, so it is included here for comparison.

EMERGENCY DEPARTMENT AND HOSPITAL TRENDS

A 2012 analysis of drug use trends by the Missouri Statistical Analysis Center found a steady increase in hospital admissions involving heroin or opiate use. Heroin and opiates were the most frequently mentioned illicit drugs in Missouri hospitals statewide. From 2006 to 2010, the percentage of heroin or opiate abuse diagnoses in Missouri emergency rooms rose 63.1%.[51]

Hospital admissions clearly illustrate how common heroin and opiate use has become in the state of Missouri. In 2010, a total of 28,498 Missouri residents were admitted to local hospitals seeking medical assistance for concerns associated with illicit drug use. Of these cases, almost half involved the use of heroin and opiates.[52] Certain regions of Missouri experienced a greater number of heroin and opiate admissions. Patients admitted to hospitals in St. Louis were most likely to mention heroin or opiate use (52.8%), followed by patients in Springfield (48.1%), patients in Non-Metropolitan Statistical Areas (47.1%) (e.g. rural areas), and patients in Columbia (39.8%), Joplin (39.5%), Kansas City (33.7%), and St. Joseph counties (28.3%).[53]

These hospital admissions suggest that the problem is not isolated to those seeking treatment through public systems, but is evident in other health care systems as well.

Table 3: Percentage of Hospital Admissions Due to Heroin and Opiates by Area: 2010[54]

Region[vi]	2010% (n-28,498)
St. Louis MSA	52.8%
Springfield MSA	48.1%
Non Metro Areas	47.1%
Columbia MSA	39.8%
Joplin MSA	39.5%
Kansas City MSA	33.7%
St. Joseph MSA	28.3%
Total State	45.8%

[vi] Percentages may not total 100 due to rounding.

MISSOURI TREATMENT ADMISSIONS FOR HEROIN AND OPIATES COMPARED TO OTHER SUBSTANCES OVER TIME: 2001 TO 2011

From 2001 to 2011, admissions to public treatment for alcohol and marijuana have remained stable. Alcohol and marijuana remain the first and second most commonly reported substances for people entering publicly funded drug treatment in Missouri today and one decade ago (Table 4).

Heroin and opiate treatment admissions in Missouri have risen significantly over the past decade. These patterns are also seen nationally through increasing heroin and opiate treatment admissions. Heroin and other opiates ranked as the fifth most common reason for Missourians to enter public treatment in 2000, with just over 2,000 admissions). However by 2011, the number of treatment admissions for heroin and opiates had increased to nearly 7,500 admissions, making these drugs the third most common substances for which individuals entered treatment (Table 4). In 2001, opiates made up just 1% of Missouri publicly funded treatment admissions, but by 2011, opiates represented 10% of all drug treatment admissions (excluding alcohol). Heroin made up 7% of treatment admissions in 2001, but by 2011, heroin represented 16 % of treatment admissions. In 2011, heroin and opiates combined made up more than one quarter of drug treatment admissions (26%). In comparison, cocaine made up just 13% of admissions and methamphetamines a smaller 19% of all admissions (Table 6).

While heroin and other opiate treatment admissions have risen exponentially, cocaine treatment admissions have declined significantly. In 2001, cocaine was the third most common reason for entering treatment but today it is the fifth. Cocaine admissions decreased by nearly 60% over the last decade. Treatment admissions for methamphetamines and amphetamines increased significantly until 2005. Since 2005, the number of treatment admissions for methamphetamines and amphetamines has remained elevated but stable (Table 4-5, Graph 1). Methamphetamine treatment admissions have remained the fourth most common reason to enter treatment during the years 2001 to 2011 (Table 4-5, Graph 1. National data suggests that stimulant use, including both methamphetamine and cocaine use, has peaked and these drugs are declining as a cause of treatment admissions. [55] Missouri treatment data mirrors this pattern as well.

Table 4: Missouri Number and Rank of Top 5 Substances Admitted to Public Treatment - 2001 and 2011 (TEDS)[56]

Substance	2001	2001 Rank	2011 Rank	2011 Number
Alcohol[vii]	19,321	1	1	17,525
Marijuana	11,079	2	2	10,474
Cocaine[viii]	8,280	3	5	3,542
Methamphetamines[ix]	3,983	4	4	5,378
Heroin and Other Opiates	2,199	**5**	**3**	7,427

[vii] Includes alcohol and alcohol in combination with other drugs
[viii] Includes crack and powder cocaine
[ix] Includes all amphetamines

Graph 1: Public Treatment Admissions (TEDS) by Substance 2001-2011 in Missouri with Overall Trend[57]:

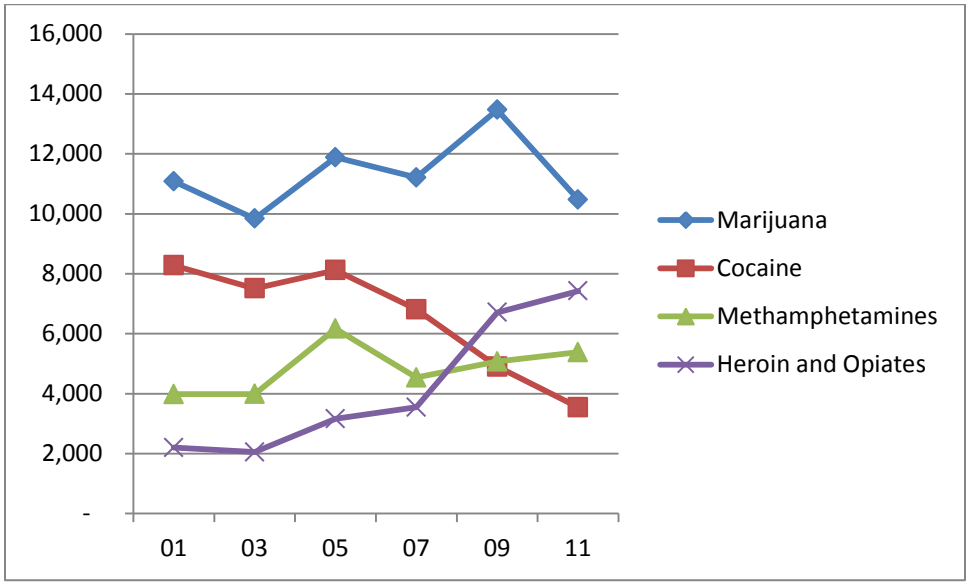


Table 5: Percentage of Total Treatment Admissions (TEDS) by Substance - 2001 and 2011[58]

Drugs (not including alcohol)[x]	2001	2011
Marijuana	42%	37%
Cocaine[xi]	31%	13%
Methamphetamines[xii]	15%	19%
Heroin	7%	16%
Other Opiates	1%	10%
All Other Drugs	3%	4%
Total	100%	100%
Total	26,417	28,028

[x] Percentages may not total 100 due to rounding
[xi] Includes crack and powder cocaine
[xii] Includes all amphetamines

Public Treatment Indicators for Heroin and Other Opiates

As noted above, admissions to publicly funded treatment for heroin and other opiates has increased significantly over the past ten years. The number of heroin and opiate admissions combined more than tripled in 10 years (increasing by 238%). Heroin treatment admissions have more than doubled from 2001 to 2011 (150% increase), while the increase for treatment admissions for opiates other than heroin increased seven-fold (645%) during the same period (Table 6). As shown in Graph 2, the rise in heroin treatment rates is growing exponentially, with no stabilization period in sight. Health researchers cite concern about 'J shaped' changes, as this pattern is indicative of growth that tends to increase very rapidly. Opiate treatment admissions are rising exponentially as well, but have remained steady for the last two years.

Graph 2: Heroin and Opiate Treatment Admissions with Percent Change, 2001 to 2011 (TEDS)[59]

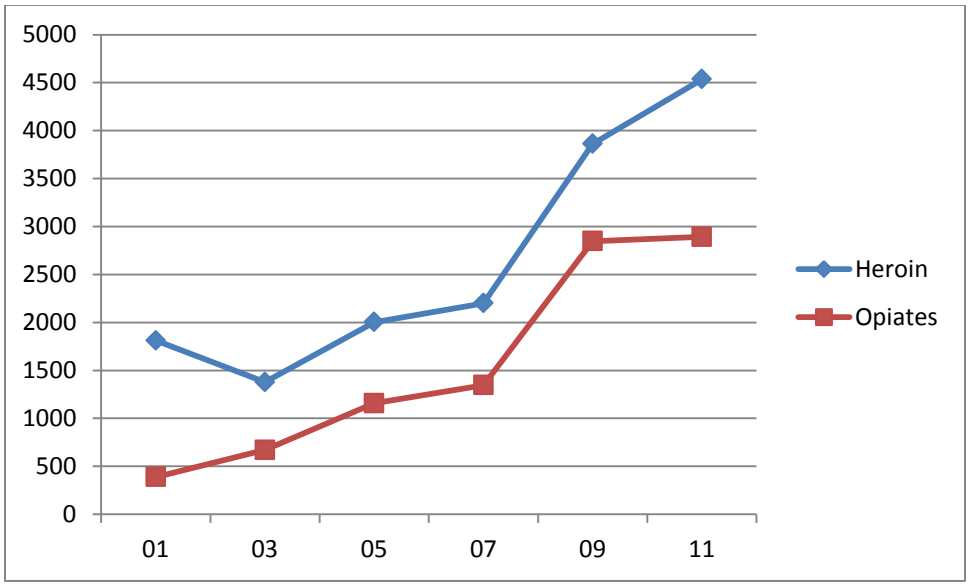


Table 6: Heroin and Opiate Treatment Admissions with Percent Change, 2001 to 2011 (TEDS)[60]

Drug	2001	2011	Percent Change
Heroin	1,811	4,535	150%
Other Opiates	388	2,892	645%
Combined	2,199	7,427	238%

DEMOGRAPHIC CHANGES IN HEROIN AND OPIATE USERS

Age

National data indicators have charted the rise of heroin use and opiate misuse among young people and Missouri public treatment admissions demonstrate these increases as well. In just 10 years, the majority of those entering treatment were aged 30 or younger (55%), while in 2001 those under 30 represented the minority of treatment admissions (43%) (Table 7). The percentage of younger people who are admitted to Missouri's public treatment systems for opiates other than heroin has increased significantly. When compared to 2001, the majority of public treatment admissions in 2011 were aged 30 or younger - 56.5% in 2011 versus 38.4% in 2001 (Table 8).

This pattern of increasing younger users and decreasing older users for both opiates and heroin are cause for concern. A heroin or opiate "using career" can last for 30 years or longer. If individuals are initiating to heroin or opiate use in their teens and twenties, the long-term health, educational, employment, treatment and social costs to the individual and society are monumental. Young users lack knowledge of the course and long-term consequences of heroin and opiate use, so targeted education and prevention efforts are crucial to reverse this trend.

Table 7: Heroin Treatment Admissions Grouped by Younger and Older Cohorts in Percent, 2001-2011 (TEDS)[61]

Age Group %	2001 (n=1,811)	2011 (n=4,535)
30 and younger	43.8	54.4
Over 30	56.3	45.7

Table 8: Opiate Treatment Admissions Grouped by Younger and Older Cohorts in Percent, 2001-2011 (TEDS)[62]

Age Group %	2001 (n=388)	2011 (n=2,892)	Change
30 and younger	38.4	56.5	18.1
Over 30	61.7	43.4	-18.3

Gender

There has been some change in the gender profile of individuals entering treatment for heroin and opiates. More females entered treatment for both heroin and opiates in 2011 than in 2001. In 2001, two thirds of those entering public treatment for heroin were males, while just one third were females. In 2011, more than 41% of those entering treatment were females and almost 59% were males (Table 9). This pattern follows national patterns for heroin admissions to publicly funded treatment.

There has been little gender change among individuals entering treatment for opiates in public treatment systems. In Missouri, women comprise nearly half of all opiate treatment admissions. While U.S. treatment admissions comprise slightly more males than females (53.5% versus 46.5%), the inverse is true of Missouri (48% males versus 53% females). Unlike other drugs, where there is a distinct male gender bias, this is not the case with opiates (Table 10).

It is important to note female parity in heroin and opiate treatment admissions. Prevention, intervention, and treatment programming should be tailored to meet the specific needs of women, which may include child care options and trauma-focused care.

Table 9: Heroin Treatments by Gender, 2001 to 2011 (TEDS)[63]

Gender%	2001 (n=1,811)	2011 (n=4,535)	Change
Male %	66.3	58.8	-7.5
Female %	33.7	41.2	7.5

Table 10: Opiate Treatments by Gender, 2001 to 2011 (TEDS)[64]

Gender	2001 (n=388)	2011 (n=2,892)	Change
Male%	45.4	48	2.6
Female%	54.6	52	-2.6

Race

The majority of people entering public treatment for heroin in 2001 were African American (55%) while whites comprised fewer than 44% of treatment admissions for heroin during that year. In 2011, this pattern had dramatically changed, with whites comprising over 60% of public funded treatment admissions and African Americans comprising less than 30% (Table 11). These racial changes are also apparent across the country.

The majority of people admitted to public treatment for opiates today are white, indicating no significant change since 2001. In 2001, more than 90% of those entering treatment were white, and in 2011 whites comprised nearly 93% of treatment admissions for opiates (Table 12). It should be noted, however, that the rise total treatment admissions across all races means that more people of every race and ethnicity are using opiates than in past years.

Table 11: Heroin Treatment Admissions by Race 2001 to 2011 (TEDS)[65]

Race%[xiii]	2001 (n=1,811)	2011 (n=4,535)	Change
White	43.9	66.4	22.5
Black	54.9	28.1	-26.8
All Others	0.9	5.6	4.7

Table 12: Opiate Treatment Admissions by Race 2001 to 2011 (TEDS)[66]

Race %	2001 (n=388)	2011 (n=2,892)	Change
White	91.2	92.8	1.6
Black	7.5	4.4	-3.1
All other Races	1.3	1.1	-0.2
Unknown	0	1.7	1.7

[xiii] Percentages may not total 100 due to rounding.

DISCUSSION: DEMOGRAPHIC CHANGES IN HEROIN AND OPIATE USERS

The changes discussed above are significant trends and should be given attention for a number of reasons. Individuals most likely to use public treatment are younger than they were in the past. Additionally, the increasing numbers of females in public treatment systems and the increase of white users indicate, that like much of the country, demographics of Missouri heroin users have shifted into a new cohort.

These changes are important for developing policy and program responses because it is important to develop, redirect or expand prevention and treatment initiatives toward this new emerging cohort. Assuming that heroin is an inner city drug consumed largely by African Americans is simply not true. In Missouri, suburban and rural youth are fueling the heroin use trend. And there are misconceptions about opiate users as well. There is an assumption that opiate users are older adults from predominantly rural areas, but as evidenced by multiple Missouri data indicators, this is not the case. Opiate users tend to be overwhelmingly white, young (under age 30) and diffused throughout both rural and urban areas. Opiate users are just as likely to be male or female.

It is also important to recognize the relationship between heroin and opiate users. Many heroin users begin their use with opiate pills and transition to heroin as pills become too difficult or expensive to obtain. When thinking about opiate users, it is essential to understand that today's opiate user may likely become tomorrow's heroin user.

The growth in younger white users, and the growth of heroin use and prescription opiate misuse across the state, means that efforts to slow, reduce or stop this trend must be a comprehensive, statewide effort targeted to those most likely to use it living in all areas where use is occurring. Overdose prevention initiatives should likewise be expanded because of the significant risk of overdose among heroin and opiate-using populations.

MORTALITY FROM HEROIN AND OTHER OPIATES

Deaths due to heroin more than tripled in just 4 years, increasing 254% from 69 deaths in 2007 to 244 in 2011 (Table 13). Missouri's drug overdose rate, 13.1 per 100,000 individuals (2008), is significantly higher than the US rate (11.9 per 100,000) (Table 14). Missouri's drug overdose rate per 100,000 persons ranked first in the region, surpassing Illinois, Kansas, North and South Dakota, Minnesota, Iowa and Nebraska. As noted in Table 14 below, Missouri's drug overdose rate was more than double that of Nebraska, and nearly twice as high as Iowa.

Table 13: Heroin Deaths in Missouri 2007 to 2011 with Percent Change[67]

2007	2011	Percent Change
69	244	254%

Table 14: Drug overdose age-adjusted deaths per 100,000 by Missouri Census Region, and Rank 2008[68]

Census Region 4[xiv]	Drug overdose age-adjusted death rate per 100,000 people in 2008	Rank
US Rate	**11.9**	
Missouri	**13.1**	**1**
Illinois[xv]	10.5	2
Kansas	8.0	3
North Dakota	7.6	4
South Dakota	7.3	5
Minnesota	7.2	6
Iowa	7.1	7
Nebraska	5.5	8

[xiv] West North Central of the MIDWEST division

[xv] While Illinois is not part of the North West Central Census Region, it shares a large border with Missouri, so it is included here for comparison.

POLICY RECOMMENDATIONS: Towards a Comprehensive Opioid Strategy

To address the issue of increasing heroin and prescription opiates use and rising rates of dependence and mortality, Missouri will have to implement a comprehensive opioid strategy that incorporates education, monitoring programs, overdose prevention and treatment. These strategies exist on a continuum: from preventing use, to preventing dependence, to preventing morbidity and mortality. Each strategy is essential to protecting the health and wellbeing of Missourians.

1. Statewide Comprehensive Drug Education and Prevention Initiatives

Several innovative heroin education and awareness campaigns currently exist in the St. Louis metropolitan area. Further, Missouri is home to a large number of community-based heroin awareness rallies throughout the major metro area and other parts of the state. These efforts have helped to bring needed attention to the opioid issue in Missouri, but the scope of the problem requires a committed and coordinated statewide response.

A number of options exist for drug education efforts, including school-based and community-based programming. It is essential that education and prevention programs at the school and community levels are provided information and organizational supports to incorporate comprehensive educational materials on heroin and opiates. The targeted program audience should not just focus solely on youth, but should also engage parents, children of elderly adult parents, community members, medical professionals (including general practitioners, family doctors, pediatricians, and dentists), pharmacists and public health educators. The goal of these educational efforts will be to provide individuals with information to enhance their knowledge of the benefits, risks and harms of opioids.

The content of these education and prevention initiatives should, at minimum, provide answers to the following questions:

- What are opioids? Are heroin and opiates different?
- If I need an opiate prescription, how do I take this medicine safely?
- If someone I know is taking opiates, are there signs that this person is not using their opiates safely or as intended?
- What are the signs of heroin use? How is it different from opiate use?
- What do I do with my unused or unwanted prescribed opiates?
- Why do we talk about “dependency” and “tolerance” when we are talking about opioids?
- What is opioid withdrawal? What does that look like and feel like?
- What is an opioid overdose? What happens in the body? What are the signs and symptoms?
- What can be done for a person in the event of an opioid overdose?
- If someone has a problem with opioids (heroin or prescription opiates), what kinds of treatment options are available?

2. Prescription Drug Monitoring Program

Prescription drug monitoring programs (PDMPs) are designed to gather information regarding the type and number of prescribed controlled substances being dispensed by pharmacies. These programs collect data on the patient, the prescribing physician or licensed prescriber, the pharmacy and the dispensed medication, including the dose, quantity and number of refills. The purpose of the PDMPs is twofold: (1) to improve medical care and provide oversight over patients that might be misusing prescription medications and (2) to prevent dependence and drug diversion through careful monitoring of individual drug seeking or provider/pharmacy drug distribution activities.[69] Further, evaluation research has shown PDMPs to be effective in modifying prescribing practices and reducing dependence on controlled substances, and can be an efficient means of tracking emerging patterns of pharmaceutical use in a community.[70] These programs are a key strategy set forth by the U.S. White House and most states to track and monitor prescribed controlled substances. Currently, 49 states have PDMPs, but only 42 states have fully operational programs.[71]

States with PDMPs can take either a reactive or proactive approach with their monitoring. In the reactive approach, the PDMP will only generate reports when requested by an authorized entity. In contrast, states taking a proactive approach frequently monitor the data and search for patterns of drug seeking or drug diversion/distribution behaviors.[72] Initial evidence suggests that states taking a more proactive approach see greater reductions in the supply of controlled pharmaceutical substances in the community and may be more effective in curbing dependence.[73]

Research regarding best practices for PDMPs is limited at this time. Evaluation research is pointing to some positive benefits from some PDMP model programs, but additional studies are required to clarify what works and what does not work. Researchers from the Prescription Drug Monitoring Program Center of Excellence at Brandeis University have identified some best practices for PDMPs, but note that not all of the recommendations have been supported by additional research.[74] Those best practices and recommendations that have some degree of research or expert opinion support are as follows:

- Collect data on all scheduled controlled substances
- Develop and mandate serialized prescription forms that include watermarks or anti-copying features and a serial number or bar code assigned by the state
- Conducting analysis on collected data to proactively monitor emerging trends
- Provide continuous, online access to automated reports
- Generate and distribute reports of drug seeking or drug diversion/distribution activities to providers, pharmacies, and government agencies
- Promote the use of the PDMP with providers, pharmacies, etc.
- Improve access to data
- Conduct user education sessions so that authorized users may generate reports and assist in monitoring activities

3. Medication Takeback Programs

Medication takeback programs are those that collect unused or unwanted medications and securely dispose of the items. These programs are not consistent across states and municipalities, resulting in varying degrees of effectiveness.[75] A number of pharmacies offer takeback programs. However, only a limited number of programs accept controlled substances, as these substances can only be accepted by law enforcement personnel.[76] As a result, controlled substance takebacks are generally event-based and occur sporadically throughout the year. One possible way to overcome this limitation would be to house collection bins in police departments to facilitate year round controlled substance collection, which may reduce the number of controlled substance medications remaining in the home awaiting disposal.

4. Comprehensive Overdose Prevention Legislation

Opioid overdose deaths are heartbreaking, but they are also preventable with the right tools. Advocates, community organizations, impacted families and friends and treatment providers living and working in Missouri have expressed very strong interest in developing policies and practices that prevent unnecessary opioid overdose deaths.

Recommendations for preventing a fatal opioid overdose involve two key strategies to reduce the likelihood of accidental death: (1) accessing emergency medical assistance and (2) administering naloxone (Narcan®) to reverse the opioid overdose.[77] A set of complimentary pieces of legislation can provide a crucial foundation in reducing the risk of opioid overdose deaths in Missouri: "Good Samaritan" legislation and Naloxone Access legislation. In combination, a Good Sam/Naloxone Access law promotes the two behaviors known to save lives during an overdose event by encouraging an overdose witness to seek help and empowering the witness to administer naloxone.

Good Samaritan Law

The goal of a Good Samaritan law is to encourage witnesses to seek emergency medical assistance for an overdosing person during an overdose event. Witnesses have expressed reluctance to call for emergency help during an overdose, fearing that they or the overdosing person will be arrested or punished for using or possessing an illicit drug.[78,79] The Good Samaritan laws are written to provide limited protection against possible criminal penalties that may occur as the result of interactions with law enforcement officials during an overdose event. In many states, the witness and the overdosing person are protected from drug paraphernalia or drug possession charges for very small amounts of a drug.

Initial findings from an evaluation study of the impact of the Good Samaritan law in Washington State suggest that the law does appear to influence individuals to call 911 in the event of an overdose emergency.[80] In the evaluation study, individuals currently using heroin, 88% reported that they would be more likely to call for help in the event of an overdose now that the law was in place. Further, approximately 15% of surveyed law enforcement officers reported that they would be less likely to make an arrest for possession following the passage of the Good Samaritan law.

Interest in Good Samaritan laws has grown considerably in recent years as states struggle with increasing numbers of accidental drug-related deaths. New Mexico was the first state to enact Good Samaritan legislation in 2007, but has since been joined by Washington in 2010, Connecticut and New York in 2011, and Illinois, Massachusetts, Rhode Island, California, Colorado and Florida in 2012. Currently, nine additional states are considering Good Samaritan legislation for 2013, including Mississippi and North Carolina. Missouri is also one of the nine states considering Good Samaritan legislation at this time.

Naloxone Access Law

Naloxone, also known by the trade name Narcan®, is a prescription medication that reverses an opioid overdose. Naloxone is more commonly known as "the opioid antidote." Opioids affect a part of the brain that controls breathing. When a person is overdosing on an opioid, such as heroin or opiate pain pills, they experience a medical condition called respiratory distress. During respiratory distress, the person's breathing will slow down. This can lead to respiratory failure and the person can stop breathing completely. Naloxone does one thing very well – it blocks the effects of the opioid on the brain and reverses the opioid overdose. Naloxone cannot be used in any other way. It cannot be used to get a person high. If someone does not have an opioid in their body, it will have no effect on the person. It is a very specific tool used in a very specific scenario.

The purpose of the Naloxone Access law is to increase the availability of naloxone among lay persons that may one day be witness to an overdose event through a number of essential provisions:

- Providing legal protection that allows lay persons to possess naloxone and syringes for administration
- Providing legal protection to any person administering naloxone in good faith during an overdose event
- Protecting providers that prescribe and distribute naloxone to lay persons
- Providing a standing order from a physician that allows a designated program or facility to distribute naloxone to individuals wanting to carry the medicine

Naloxone can be prescribed by a physician, but in most cases, individuals receive their naloxone through a program authorized to distribute the medicine. In the United States, approximately 180 naloxone programs are currently in operation in 15 states and Washington, D.C.[81] These programs, known as overdose education and naloxone distribution (OEND) programs, train individuals in overdose management techniques, which includes recognizing the signs of overdose, calling for emergency assistance, performing rescue breathing and administering naloxone prior to distributing medicine.[82]

Evaluation studies have shown very positive outcomes to date, suggesting that naloxone distribution saves lives and is a very good use of financial resources. In one study comparing communities with no, low and high enrollment in OEND programs, there was a significant dose effect in terms of preventing overdose death.[83] In communities with high enrollment, the opioid overdose death rates were much lower than the death rates in low enrollment communities. The death rates were highest in no

enrollment communities. These findings lend support to the hypothesis that the presence of OEND programming in a community positively impacts opioid-related mortality. Researchers conducting a recent cost-effectiveness analysis examined the cost of naloxone when taking into account the quality adjusted-life years (QALY) gained and determined that naloxone distribution resulted in a cost of $2,429 for every QALY gained.[84] For clarification, a QALY is a measure that assesses the value received by an individual for money spent on a medical intervention. Most cost-effectiveness studies set a range of QALY ratios between $20,000 and $50,000 as desirable expenditure thresholds.[85] Naloxone distribution, when compared against the expenditure thresholds for medical interventions, seems a relative bargain.

As with the Good Samaritan laws, the number of states with naloxone access laws has increased over the past few years to address the drug overdose epidemic. New Mexico was the first state to enact naloxone access legislation in 2001, and was followed by New York, Illinois, Washington, California, Rhode Island, Massachusetts, Connecticut and Virginia. The following states are considering naloxone access legislation in 2013: Maryland, Oklahoma, Colorado, Kentucky, Ohio and West Virginia.

Naloxone distribution programs are supported by the Office of National Drug Control Policy (ONDCP), the National Institute on Drug Abuse (NIDA), the U.S. Conference of Mayors, and the American Medical Association.

5. Medication Assisted Treatment for Opioid Addiction

Medication assisted treatment (MAT) involves the combined use of opioid substitution medications and counseling/clinical therapy to treat an opioid use disorder. Medications commonly used for this purpose include methadone, buprenorphine (known by the brand name Suboxone) and naltrexone (known by the brand name Vivitrol). Numerous research studies have shown MAT to result in a number of very positive outcomes, including: increased treatment retention, decreases in opioid use and relapses during the course of treatment, decreases in infectious disease transmission (especially hepatitis B, hepatitis C and HIV), improved health, improved survival and quality of life, reduction in overdose risk and improved birth outcomes for pregnant women.[86]

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