**Analysis of Disparities and Factors that Elevate Overdose Fatality Risk among Women: Implications for RSAT Programs and Re-entry Planning**

Niki Miller, Senior Research Associate 10/23/17

Historically, adult women’s rates of abuse and addiction to nearly all substances have been lower than men’s. There are few exceptions to this long-standing trend. One exception has been women’s use of prescription tranquilizers (mainly benzodiazepines); the only substance for which females’ rates of abuse has consistently exceeded men’s.[[1]](#footnote-1) This has been true for decades and is consistent across the U.S., Europe and many other countries. The only other notable exception is that women’s use of legally sold or prescribed medicines that contained opium derivatives at the turn of the 19th century was higher than men’s.[[2]](#footnote-2)

But, new research on women’s opioid use suggests some important departures from these traditional use patterns that are relevant to RSAT programs that serve women:

* Women may be more likely than men to overdose on prescription opioids;
* Women may be less likely to receive naloxone in the case of an opioid overdose emergency; and
* Women recently released from jail or prison face an even greater risk of drug overdose fatality than re-entering men.

RSAT programs that treat women are well aware of some of complicating factors that are either unique or more severe and prevalent among females with substance use disorders than among their male counter parts. New research examines some of these factors in light of the epidemic of opioid prescribing, opioid overdose, illicit opioid use and opioid addiction.

**Opioid use among Women and Gender-specific Considerations**

Women who use opioids tend to experience higher levels of stigma. There are also differences in the clinical profiles of opioid-dependent men and women. In studies, women who are dependent on opioids have been shown to have higher levels of substance use severity and craving and experience more severe withdrawal symptoms. They also progress from misuse to addiction faster. Physiological differences in the way women metabolize drugs have other profound effects on women who use opioids. New opioid prescribing guidelines have been criticized for failing to address safe dosages and durations of prescribed opioid medications for women with chronic or acute pain.[[3]](#footnote-3) Women’s higher rates of co-occurring mental health disorders and medical conditions, as well as greater impairment in associated areas of functioning have all been cited in research studies specific to opioid use.[[4]](#footnote-4)

There are also well-documented, gender-based differences in prescribing practices.[[5]](#footnote-5) Women are more likely to be prescribed opioids for chronic pain and other conditions at higher doses and in combination with other sedative drugs than men. Women who are covered by Medicaid are at higher risk for opioid overdose and for being prescribed opioid medications at higher doses for longer periods than women covered by private insurance. Women are also more likely than men to ‘doctor shop,’ and receive prescriptions from multiple prescribers, and tend receive diverted prescribed opioid medications from friends, family and intimate partners.[[6]](#footnote-6)

There are a number of other risk factors for overdose that may intersect with gender to elevate overdose risks for women that are particularly relevant to justice-involved women in RSAT programs and to re-entry planning. Some examples are listed below:

* homelessness[[7]](#footnote-7)
* requiring help injecting opioids[[8]](#footnote-8)
* having a mental health disorder, depression, history of trauma or suicidality[[9]](#footnote-9)
* being a female over the age of 50[[10]](#footnote-10)
* having chronic pain [[11]](#footnote-11)
* living in poor rural areas and having low levels of education[[12]](#footnote-12)
* being a Native American or Alaska Native woman[[13]](#footnote-13)
* having little or no social support[[14]](#footnote-14)

**Recent Trends and Changes in Women’s Opioid Use Patterns**

The number of prescription painkiller overdose deaths increased fivefold among women between 1999 and 2010, and increased at a much faster rate among women than among men 400% rate of increase in women compared to 265% for men). However, up until recently, men were still more likely to die of a prescription painkiller overdose.[[15]](#footnote-15)

New data suggests this may be changing. Studies show that women are now as likely as men to be admitted to a hospital for inpatient treatment for opioid-related problems. In 2005, there was still a significant gap between men and women, with men more likely to be admitted for such treatment. That gap closed entirely by 2014, even though the hospitalization rate rose for both sexes.[[16]](#footnote-16)

Additionally, analyses of recent overdose deaths in some states are showing prescription opioid overdose fatality rates are higher among women than men (a largely unprecedented finding). For example, recent reports from Massachusetts indicate more women than men died from overdoses of prescription opioid analgesics.[[17]](#footnote-17) More men died from overdoses of illicit opioids and from all opioid overdoses in general. Men were also more likely to be seen in hospital emergency departments, treated and released. It is apparent that preventing and reducing these rising fatality rates among women will require a gendered analysis of current data and more information on the reasons for the increasing momentum.

**Implications for RSAT Programs and Release Planning for Women**

It is crucially important that all RSAT programs remain aware of the extremely high proportion of overdose fatalities that occur among both males and females recently released from jail or prison. A recent study found almost 15% of all former U.S. prisoner deaths between 1999 and 2009 were related to opioids.[[18]](#footnote-18)Another study attributed 85% of fatalities occurring during the immediate post-release period to drug overdose.[[19]](#footnote-19) The increased risk of drug overdose fatality during this period ranges from 40 to 129 times higher than the risk for the general population across studies.[[20]](#footnote-20)

***However,******findings of******every study – and research from every country indicate the risk is EVEN HIGHER for women leaving custody and re-entering the community****.*[[21]](#footnote-21) This document includes an annotated research section with summaries and links for several recent studies that specifically highlight this finding.[[22]](#footnote-22) RSAT programs that serve women can benefit from integrating overdose prevention education and in-reach from community harm reduction and public health partners, overdose prevention planning for re-entering women with opioid use histories and immediate post-release linkages to harm reduction resources, recovery support, treatment and aftercare. It is also important to ensure re-entering women have access to medication-assisted treatments and providers experienced with gender responsive treatment for women and justice-involved clients.

**Disparities in Access to Naloxone for Reversal of an Opioid Overdose**

One study conducted in Rhode Island suggests that men are three times more likely to be administered naloxone to prevent a fatal opioid overdose.[[23]](#footnote-23) Although the study indicates these disparities exist, it does not analyze the reasons for this or tell us how widespread such disparities may be, which leaves us with more questions than answers. The following discussion suggests some possible reasons based on a comprehensive review of studies highlighting gender differences with regard to opioid overdose, opioid use patterns and other risk factors that intersect with gender. However, more research is required to determine the extent of these disparities and definitive information on the circumstances that contribute to them.

There are several different ways people can access naloxone administration in the eventuality of an opioid overdose emergency.

* Emergency responders may be called to the scene during an overdose emergency to administer naloxone.
* Individuals may receive naloxone when they present at a hospital emergency room with signs of opioid overdose.
* A friend or family member who knows how to administer naloxone during an opioid overdose emergency and who has it on hand may provide it.
* People who overdose in institutional settings, such as a correctional institution or treatment center may be given naloxone if overdose symptoms are recognized.

Most of the time, this occurs within 1-3 hours of ingesting the drug, if the individual is with other person(s).

But most of these options are eliminated if women use opioids in isolation. Women are more likely to use and overdose on prescription opioid analgesics, and likely to combine them with other medications, especially benzodiazepines, which elevates overdose risk. It is certain that single women over age 50 are at higher risk for overdose.[[24]](#footnote-24) Some women may be in the habit of using prescribed or illicitly obtained opioid analgesics and along with other medications when they are alone. Cautioning women who are at-risk for returning to opioid use upon release about the dangers of using under such circumstances and making sure they have a plan to check in with someone in case a relapse is imminent can decrease fatality risks.

Other factors can increase overdose fatality risk among women who use with male using partners. Women do not metabolize and eliminate substances as efficiently as men. Therefore, they can overdose when taking the same type and amount of opioids in the same way as a male using partner who has no problem tolerating the dose.[[25]](#footnote-25) This may lead male companions to assume they are both going to be fine and make them less likely to notice signs of overdose and obtain help.

Physiological differences in the way women’s systems respond to opioids also make them more susceptible to the fatal consequences of combining drugs. Since they require a longer period to metabolize the initial substance they ingest, a longer period of time must pass before they can consume alcohol or another substance without the risk of potentiation (defined as the stronger combined effect of two substances). This risk is particularly high when longer acting opioids such as methadone or OxyContin are involved.[[26]](#footnote-26)

There is some speculation among researchers about the proportion of overdose deaths that are intentional or de facto suicides. In reality, there is probably a fine line between suicides by intentional overdose and reaching a point when depression, addictive disease and other factors conspire to make it unlikely individuals will take precautions to reduce the risk of death.[[27]](#footnote-27) It may be that women are less likely to receive naloxone because they are more likely to reach such levels of despair. It is important that women in RSAT programs are monitored for signs of co-occurring mental health disorders and/or worsening symptoms of depression. Release planning can include linkages to mental health treatment and seamless continuation of medications for depression and bipolar disorders for those who are benefiting from taking them while in custody.

Another way many individuals receive naloxone during an opioid overdose emergency is when it is administered by a friend or family member. In states such as Maryland and Massachusetts ‘bystander’ training in naloxone administration, rescue breathing and other lifesaving measures is heavily supported by public health efforts and policies. Studies of the demographics of individuals participating in overdose prevention training programs across eight Massachusetts sites show the cohorts are overwhelmingly female.[[28]](#footnote-28) More women who are close to men or boys who use opioids may be accessing overdose prevention training and are able to administer naloxone, while the opposite is less likely to be the case. Informing re-entering women with histories of opioid use and informing their families and partners about available programs that train lay persons to administer naloxone can help increase women’s access to in case of an overdose emergency.

Researchers suggest first responders and others who may be in a position to intervene with at-risk women have been slow to recognize the changing demographics among opioid users and may benefit from additional training on the prevalence of women’s opioid use and increased susceptibility to drug overdose,[[29]](#footnote-29) Also, according to SAMHSA’s Overdose Prevention Toolkit, pregnant women experiencing an opioid overdose can be administered naloxone safely, but should be administered the minimum amount to reverse respiratory depression without precipitating withdrawal symptoms that can cause fetal distress.[[30]](#footnote-30) Some people who are in a potion to administer naloxone may be reluctant or unsure about the right course of action when faced with pregnant women who has overdosed. More training and information may increase confidence levels and access for emergency overdose interventions with pregnant women.

Finally, ‘Good Samaritan’ laws are designed to encourage people to call for emergency naloxone administration in case of overdose without fear of criminal sanctions. However, in some states these laws offer protection from arrest for drug possession, but permit arrest for possession of drug paraphernalia. Only nine states have ‘Good Samaritan’ laws that exempt people who call for emergency overdose assistance from arrest on charges for possession of drugs and/or paraphernalia as well as probation or parole violations. Even in the handful of states that have comprehensive protections, people may not be aware of them. RSAT programs can provide good information to re-entering women about the laws in their state to encourage them to take advantage of whatever protections are afforded when they call for help in case of an overdose emergency. Note: see the Policy Surveillance Program LawAtlas Project for state by state information [<http://lawatlas.org/query?dataset=good-samaritan-overdose-laws>].

The information that follows includes additional research that RSAT programs may find useful.

 **Annotated Research Highlights**

♦**Deaths from Prescription Painkiller Overdoses Rise Sharply among Women:** CDC Vital Signs, July 2013: [https://www.cdc.gov/media/releases/2013/p0702-drug-overdose.html](https://www.cdc.gov/media/releases/2013/p0702-drug-overdose.html%20)

According to the report :The number of prescription painkiller overdose deaths increased fivefold among women between 1999 and 2010. While men were more likely to die of a prescription painkiller overdose, since 1999 the percentage of increase in deaths was greater among women (400 percent in women compared to 265 percent in men). Prescription painkiller overdoses killed nearly 48,000 women between 1999 and 2010.

Emergency department visits are also on the rise among women. The report includes information on emergency department visits and deaths related to drug misuse/abuse and overdose, as well as analyses specific to prescription painkillers. It estimated about 42 women die every day from a drug overdose.

The key findings:

* + Since 2007, more women have died from drug overdoses than from motor vehicle crashes.
	+ **Drug overdose suicide deaths accounted for 34 percent of all suicides among women compared with 8 percent among men in 2010.**
	+ More than 940,000 women were seen in emergency departments for drug misuse or abuse in 2010.

**♦Final Report: Opioid Use, Misuse, and Overdose in Women**

OWH - Revised July 2017: <https://www.womenshealth.gov/files/documents/final-report-opioid-508.pdf>

Women may not be benefiting as much as they could from the expanding availability of naloxone. A 2016 study found that men were nearly three times more likely than women to receive naloxone in Emergency Medical Services (EMS) opioid overdose resuscitation efforts. Reasons for this lower use among women are not well understood. In 2014 and late 2015, the Food and Drug Administration (FDA) approved an auto-injector version and a nasal spray version of naloxone, respectively. With multiple formulations now available, increased availability and usage will hopefully increase naloxone administration by lay people.

♦**Top Mental Health Researcher Suggests Link between Opioid Overdoses and Suicides**

By Jason Cherkis, 10/5/2017

As fatal [opioid overdoses continue to rise](https://www.nytimes.com/interactive/2017/06/05/upshot/opioid-epidemic-drug-overdose-deaths-are-rising-faster-than-ever.html), the causes of death have become all too familiar. They usually involve a lethal cocktail of heroin, painkillers, and increasingly, the powerful synthetic opioid, fentanyl. But often left out of these tragic stories is the inner turmoil going on inside each victim, and researchers have started examining trauma and depression as well as social connectedness as possible factors in the rise of overdoses.  Joshua Gordon, director of the National Institute of Mental Health, believes more work must be done on connections between suicidal thoughts and overdoses.

In addition to the spread of painkillers and cheap heroin, some fatal overdoses may in fact be suicides.  Dr. Joshua Gordon, the director of the [National Institute of Mental Health](https://www.nimh.nih.gov/about/director/index.shtml), believes that there may be a stronger link between the opioid epidemic and suicide than previously realized.

“There are, of course, links between addictions in general and opioid addictions in particular and suicide,” Gordon told Huffington Post. “There is a lot of concern that many of the overdose deaths could be suicides. We need to learn more about the prevalence of suicidality amongst opioid addicted individuals.”

Many of the same drivers behind suicidal thinking can be found in those addicted to opioids, from feelings of isolation and despair to economic anxieties and histories of trauma. A recent *Scientific American* piece written by journalist Maia Szalavitz [noted](https://www.scientificamerican.com/article/the-social-life-of-opioids/) the connections between the rise in unemployment and overdose deaths, while a [recent study](https://www.ncbi.nlm.nih.gov/pubmed/28182980) her article highlighted showed how counties with low social connectedness suffered the highest fatal overdose rates.

Even before the opioid epidemic made national headlines, research warned about the connection between suicidal urges and drug use. A [study](https://www.researchgate.net/profile/Kenneth_Conner/publication/8171133_Association_of_alcohol_and_drug_use_disorders_and_completed_suicide_An_empirical_review_of_cohort_studies/links/576a943b08ae5b9a62b37869.pdf) published in 2004 found an elevated risk for suicide among intravenous drug users. The researchers noted also that the suicide risk was greater than that found among alcoholics.

In [past interviews with those addicted to opioids](http://projects.huffingtonpost.com/dying-to-be-free-heroin-treatment), it was not uncommon to find sufferers who talked about intentionally overdosing or engaging in risky behavior, knowing that it might lead to an overdose. Depression and suicidal thinking were common and failure to sustain a lasting recovery could compound those feelings.  Gordon said he would like to see more data collected that examines the connection between suicidal behavior and overdoses.

“One thing is the geographic distributions of overdoses and suicides in terms of rates in the general population, they look kind of similar I have to say,” Gordon said. “It’s sort of shocking – the degree of overlap. One begins to wonder, ‘well, what are the causes of the increases in suicide rates, the increases in overdose rates? And what are the societal causes that might be contributing to those.’”

Along with isolation and anxiety, Gordon said there were other commonalities between people that are suicidal and those addicted to opioids. These might include issues dealing with chronic pain management and unemployment, he said, adding that the addiction itself could contribute to a person’s suicidal urges. “There could be direct causal links between the two,” he said.

♦ **In just one year, nearly 1.3 million needed hospital care for opioid-related issues**  Joel Achenbach and Dan Keating, Washington Post: [https://www.washingtonpost.com/news/to-your-health/wp/2017/06/20/in-just-one-year-nearly-1-3-million-americans-needed-hospital-care-for-opioid-related-issues/?](https://www.washingtonpost.com/news/to-your-health/wp/2017/06/20/in-just-one-year-nearly-1-3-million-americans-needed-hospital-care-for-opioid-related-issues/)

A new report released by AHRQ shows Maryland leads the states for opioid-related hospitalizations, followed by Massachusetts and the District of Columbia. The AHRQ's data-driven report does not reveal how many patients have been treated multiple times in a given calendar year. It also does not speculate on why some states have such high rates of hospital admissions. It suggests that people in the most urban places are more likely to be treated in a hospital than those in rural areas — which would indicate that lack of access to medical care is a factor in the uptick in death rates seen in less-urban parts of the country in recent years. The new report shows that women are now as likely as men to be admitted to a hospital for inpatient treatment for opioid-related problems. In 2005, there was a significant gap between men and women, with men more likely to be admitted for such treatment. That gap closed entirely by 2014 even as the hospitalization rate rose for both sexes. Men are still more likely than women to be treated at and released from hospital emergency departments. The report identifies big increases in hospitalizations among people older than 65, predominantly resulting from reactions to prescription medications, rather than from overdoses or the use of heroin or other illegal drugs.

## ♦**Women bear greater burden of opioid epidemic**

Andis Robeznieks, Jun 27, 2017 AMA Wire: [https://wire.ama-assn.org/delivering-care/women-bear-greater-burden-opioid-epidemic](file:///C%3A%5CUsers%5CNiki%5CAppData%5CLocal%5CMicrosoft%5CWindows%5CTemporary%20Internet%20Files%5CContent.Outlook%5C1RB3O90D%5C%3A%20https%3A%5Cwire.ama-assn.org%5Cdelivering-care%5Cwomen-bear-greater-burden-opioid-epidemic)

The face of the U.S. opioid epidemic is becoming increasingly white and increasingly female, just as it was some 135 years ago. While the science and thinking behind addiction medicine has evolved since the 1880s when upper-class women became dependent on the laudanum tinctures prescribed by their physicians, opioid-use disorder treatment still remains mostly gender neutral—even though the impact and effects of the disease clearly are not.

The impact of the epidemic has been severe for both males and females, but statistics show greater harm occurring among women and girls. Chief among these are overdose deaths from prescription pain killers. Between 1990 and 2010, these deaths increased among men by 265 percent, while the number grew by 400 percent among women, according to the Centers for Disease Control and Prevention (CDC).

Yet when the CDC issued its [guideline](https://www.cdc.gov/mmwr/volumes/65/rr/rr6501e1.htm) on opioid-prescribing for chronic pain last year, the recommendations didn’t distinguish between males and females. “The prescribing guidelines are gender-blind,” said Mishka Terplan, MD. “That’s unfortunate.”

First responders have also been slow to recognize the demographics of the opioid epidemic, Dr. Campopiano said, and she cited a [2016 study](http://www.tandfonline.com/doi/full/10.3109/10903127.2015.1076096) from the journal *Prehospital Emergency Care* which found that women were nearly three times less likely than men to be administered naloxone by emergency medical services personnel.

“These treatment patterns are consistent with the historically higher rates of heroin overdose among younger males who injected heroin,” wrote researchers who studied records of opioid-related overdose deaths in Rhode Island between 2012 and 2014. “Because of the growing diversity of individuals who are victims of opioid overdose, there exists a need for a high level of clinical awareness of the possibility of opioid overdose among first responders.”

*Opioid-use disorder and pregnancy:* Other research findings cited by Dr. Campopiano stated that:

* From 2002 to 2013, heroin use rose 100 percent among women, compared with 50 percent among men.
* From 2000 to 2009, prenatal opioid use increased from 1.19 to 5.63 per 1,000 hospital births.
* From 2009 to 2012, the number of infants born with NAS increased from 3.4 to 5.8 per 1,000 hospital births with more than 20,000 infants born with signs of withdrawal in 2012.

“Pregnancy is a key opportunity to address opioid-use disorder,” Dr. Campopiano said

She warned that “tough love” approaches can be counterproductive and added that pregnant or parenting women with opioid-use disorder are often subject to “additional layers of shame” which can create a barrier against them seeking treatment. Mary Anne McCaffree, MD, an AMA trustee from 2008–16 and now chair-elect of the National Health Collaborative on Violence and Abuse ([HCVA](http://nhcva.org/)) and a professor of pediatrics at the University of Oklahoma, College of Medicine, agreed. Dr. McCaffree cited statistics included in the March 2017 American Academy of Pediatrics (AAP) [policy statement](http://pediatrics.aappublications.org/content/139/3/e20164070.long) responding to opioid use in pregnancy. These included how, on average in 2012, one infant was born every 25 minutes experiencing signs of withdrawal. Such births accounted for $1.5 billion in hospital charges. She said the issue “merits a huge public health response.”

♦**Use of Naloxone by Emergency Medical Services during Opioid Drug Overdose Resuscitation Efforts:** <http://www.tandfonline.com/toc/ipec20/current>

Steven Allan Sumner , MD, Melissa C. Mercado-Crespo , PhD, M. Bridget Spelke, Leonard Paulozzi , MD, David E. Sugerman , MD, Susan D. Hillis , PhD

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As part of a public health response to an outbreak of opioid overdoses in Rhode Island, we examined missed opportunities for naloxone administration and factors potentially influencing EMS providers’ decisions to administer naloxone. We reviewed medical examiner files on all individuals who died of an opioid-related drug overdose in Rhode Island from January 1, 2012 through March 31, 2014, underwent attempted resuscitation by EMS providers, and had records available to assess for naloxone administration. We evaluated whether these individuals received naloxone as part of their resuscitation efforts and compared patient and scene characteristics of those who received naloxone to those who did not receive naloxone via chi-square, t-test, and logistic regression analyses. One hundred and twenty-four individuals who underwent attempted EMS resuscitation died due to opioid overdose.

Females were nearly three-fold as likely not to receive naloxone as males (OR 2.9; 95% CI 1.2–7.0; *p*-value 0.02). Additionally, patients without signs of potential drug abuse also had a greater than three-fold odds of not receiving naloxone (OR 3.3; 95% CI 1.2–9.2; *p*-value 0.02). Older individuals, particularly those over age 50, were more likely not to receive naloxone than victims younger than age 30 (OR 4.8; 95% CI 1.3–17.4; *p*-value 0.02). Women, older individuals, and those patients without clear signs of illicit drug abuse, were less likely to receive naloxone in EMS resuscitation attempts. Heightened clinical suspicion for opioid overdose is important given the recent increase in overdoses among patients due to prescription opioids.

♦**Comparative Profiles of Men and Women with Opioid Dependence: Results from a National Multisite Effectiveness Trial:** [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3164783/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3164783/%20)

Sudie E. Back, Rebecca L. Payne, Amy Herrin Wahlquist, Rickey E. Carter, Zachary Stroud, M.D,1 Louise Haynes, M.S.W,1 Maureen Hillhouse, Ph.D,4 Kathleen T. Brady, M.D., Ph.D,1 and Walter Ling, M.D4 *Am J Drug Alcohol Abuse.* 2011 Sep; 37(5): 313–323.

Participants were 892 adults screened for the National Institute on Drug Abuse’s (NIDA) Clinical Trials Network (CTN) investigation of the effectiveness of two buprenorphine tapering schedules. **Results:** The majority of men and women tested positive for oxycodone (68% and 65%, respectively) and morphine (89% each). More women than men tested positive for amphetamines (4% vs. 1%, p<0.01), methamphetamine (11% vs. 4%, p<0.01) and phencyclidine (8% vs. 4%, p=0.02). More men than women tested positive for methadone (11% vs. 6%, p=0.05) and marijuana (22% vs. 15%, p=0.03). Craving for opioids was significantly higher among women (p<0.01). Men evidenced higher alcohol (p<0.01) and legal (p=0.04) ASI composite scores, whereas women had higher drug (p<0.01), employment (p<0.01), family (p<0.01), medical (p<0.01), and psychiatric (p<0.01) ASI composite scores. Women endorsed significantly more current and past medical problems.

**Conclusions:** Important gender differences in the clinical profiles of opioid-dependent individuals were observed with regard to substance use severity, craving, medical conditions, and impairment in associated areas of functioning. The findings enhance understanding of the characteristics of treatment-seeking men and women with opioid dependence, and may be useful in improving identification, prevention, and treatment efforts for this challenging and growing population.

♦**Vital Signs: Overdoses of Prescription Opioid Pain Relievers and Other Drugs Among Women — United States, 1999–2010,** CDC MMWR, July 5, 2013 / 62(26);537-542: <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6226a3.htm> Differences between men and women related to prescription drug use outcomes are complicated. The death rate for OPR overdose is higher among men than women, but since 1993, hospitalizations for OPR overdoses have been more frequent among women than men (*4*). During 2004–2008, women and men had similar emergency department (ED) visit rates related to nonmedical use of OPR and benzodiazepines ([*5*](https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5923a1.htm)). OPR prescribing and use patterns also differ by gender. Women are more likely than men to be prescribed OPR, to use them chronically, and to receive prescriptions for higher doses of OPR (*6,7*). This might be because the most common forms of pain are more prevalent among women, and pain is more intense and of longer duration in women than men (*8,9*). Women also might be more likely than men to engage in "doctor shopping" (receiving a prescription for a controlled substance from multiple providers), and more likely to be prescribed OPR combined with sedatives (*10,11*). Sex-specific health risks associated with long-term OPR use among women include amenorrhea and infertility (*12,13*). Finally, the progression to dependence on OPR might be accelerated in women, and women with substance use disorders are more likely than men to face barriers in access to substance abuse treatment (*14,15*). Taken together, these health concerns indicate a need to examine drug overdose deaths and ED visits among women to guide development of targeted prevention strategies.

**See also:** Centers for Disease Control and Prevention. Overdose deaths involving prescription opioids among Medicaid

Enrollees—Washington, 2004-2007. MMWR . 2009; 58 (42):1171---1175. …and,

Centers for Disease Control and Prevention. Vital signs: overdoses of prescription opioid pain relievers—United

States, 1999-2008. 2011; 60(43): 1487---1492.

♦**SAMHSA Overdose Prevention Toolkit:** <https://store.samhsa.gov/product/Opioid-Overdose-Prevention-Toolkit/SMA16-4742>

“Naloxone can safely be used to manage opioid overdose in pregnant women. The lowest dose to maintain spontaneous respiratory drive should be used to avoid triggering acute opioid withdrawal, which may cause fetal distress [7].”

♦ **SAMHSA’s Center for the Application of Prevention Technologies:** [https://captconnect.edc.org/sites/captconnect.edc.org/files/HO7\_DemogrRiskFactors\_Opioid%20Overdose.pdf](https://captconnect.edc.org/sites/captconnect.edc.org/files/HO7_DemogrRiskFactors_Opioid%20Overdose.pdf%20)

**Demographic Risk Factors for Opioid Overdose**

Certain demographic characteristics may place an individual at increased risk for opioid overdose and related substance misuse. This resource summarizes findings from research literature on demographic risk factors including gender:

• **Male.** Being male is associated with increased overdose risk and risk of opioid abuse or dependence.

• **Female.** Overdose rates for women are increasing faster than male rates. Women receiving Medicaid and women after prison release are at increased risk for overdose. Other risk factors may intersect with gender to lead to higher overdose risks among women. For example, being single, being homeless or having someone else administer an injected opioid drug are some factors that can elevate overdose risks. From ages 25-29 to ages 55-59, white non-Hispanic men and women with a high school education or less experienced rising mortality rates from 1998-2015, a tragedy largely linked to the opioid crisis.

♦[**Drug Toxicity Deaths after Release from Incarceration in Ontario, 2006-2013: Review of Coroner’s Cases**](http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0157512)**:** <https://doi.org/10.1371/journal.pone.0157512>

Emily Groot, Fiona G. Kouyoumdjian, Lori Kiefer, Parvaz Madadi, Jeremy Gross, Brittany Prevost, Reuven Jhirad, Dirk Huyer, Victoria Snowdon, Navindra Persaud

Research Article | published 06 Jul 2016, *PLOS ONE*

**Overdose Rates Among Recently Release Prisoners**: Fatal drug overdose rates among adults who were recently released from an Ontario prison are much higher than those in the general population, which points to a glaring need for more education and treatment, the physician who led the first Canadian study of its kind says. One in 10 fatal drug toxicities among adults in the province occurred among those within one year of their release from provincial incarceration, an average of 88 deaths per year, researchers found. For the study published in Wednesday's issue of the journal PLOS One, the investigators analyzed coroner reports with details on circumstances of death from 2006 to 2013 and matched the names to individuals released from provincial corrections facilities. About three-quarters of those who died of an overdose were under the age of 45. While young men accounted for the bulk of deaths, in percentages, women were more susceptible to overdose death.

♦**MASS Dept of Public Health Analysis of Opioid OD Deaths: 2013-2014: Women are More Likely than Men to Experience a Fatal Overdose Due to Prescription Opioid Use.**

<http://www.mass.gov/eohhs/docs/dph/stop-addiction/chapter-55-opioid-overdose-study-data-brief-9-15-2016.pdf>

While men were found to be significantly more likely to die from any opioid-related overdose, women are more likely than men to die of a prescription opioid-related overdose. Women are more likely than men to both obtain Schedule III opioids and to have Schedule II-III opioids present in post-mortem toxicology following an opioid-related overdose death. Additionally, females were more likely than males to have opioid prescriptions filled by multiple providers and/or at multiple pharmacies. These findings highlight that prescribers and pharmacists should be educated about personal biases.

While legally- and illegally-obtained opioids pose a risk for men and women alike, prescribers and pharmacists should be educated to utilize the Prescription Drug Monitoring Database (PDMP) through the Massachusetts Prescription Awareness Tool (MassPAT) in order to identify any active or past prescriptions for their patients, and to provide coordinated care and overdose risk reduction.



♦**"I know if I drink I won't feel anything": Substance use relapse among depressed women leaving prison.** Johnson, Jennifer & Schonbrun, Yael & Nargiso, Jessica & C Kuo, Caroline & Shefner, Ruth & Williams, Collette & Zlotnick, Caron. (2013). *International Journal of Prisoner Health.* 9. 10.1108/IJPH-02-2013-0009. <https://www.researchgate.net/profile/Jennifer_Johnson3/publication/263453715_I_know_if_I_drink_I_won%27t_feel_anything_Substance_use_relapse_among_depressed_women_leaving_prison/links/0046353b57a851df6c000000/I-know-if-I-drink-I-wont-feel-anything-Substance-use-relapse-among-depressed-women-leaving-prison.pdf>

Co-occurring depression and other serious problems such as relationship problems, problems securing housing and employment, mental health problems and lack of treatment and recovery support were cited as contributors to relapse into drug and alcohol use among woman recently released from prison, especially occurring in the initial days post-release. Out of the 39 women included in the study, 28 reported serious post-release alcohol and drug use; for half of the 28 women this occurred in the first eight days following release.

♦**Mortality After Prison Release: Opioid Overdose and Other Causes of Death, Risk Factors, and Time Trends From 1999 to 2009:** [http://annals.org/aim/article/1763230/mortality-after-prison-release-opioid-overdose-other-causes-death-risk#article-top](http://annals.org/aim/article/1763230/mortality-after-prison-release-opioid-overdose-other-causes-death-risk%23article-top)

Ingrid A. Binswanger, MD, MPH; Patrick J. Blatchford, PhD; Shane R. Mueller, MSW; Marc F. Stern, MD *Annals of Internal Medicine* Nov. 2013. Ingrid A. Binswanger, MD, MPH, Patrick J. Blatchford, PhD, Shane R. Mueller, MSW, Marc F. Stern, MD

* Link to: [Figures](http://annals.org/aim/article/1763230/mortality-after-prison-release-opioid-overdose-other-causes-death-risk#article-top)
* Link to: [Tables](http://annals.org/aim/article/1763230/mortality-after-prison-release-opioid-overdose-other-causes-death-risk#article-top)

Results: The all-cause mortality rate was 737 per 100 000 person-years (95% CI, 708 to 766) (*n* = 2462 deaths). Opioids were involved in 14.8% of all deaths. Overdose was the leading cause of death (167 per 100 000 person-years [CI, 153 to 181]), and overdose deaths in former prisoners accounted for 8.3% of the overdose deaths among persons aged 15 to 84 years in Washington from 2000 to 2009. Women were at increased risk for overdose (HR, 1.38 [CI, 1.12 to 1.69]) and opioid-related deaths (HR, 1.39 [CI]

♦**Overdose Education and Naloxone Rescue Kits for Family Members of Individuals Who Use Opioids: Characteristics, Motivations, and Naloxone Use:** <https://www.ncbi.nlm.nih.gov/pubmed/25564892>

Bagley SM1, Peterson J, Cheng DM, Jose C, Quinn E, O'Connor PG, Walley AY.

*Subst Abus.* 2015;36(2):149-54.

Training of Bystander and Family Members: One strategy to reduce opioid-related deaths has been community distribution of overdose education and naloxone rescue kits that programs that equip individuals who are using drugs or bystanders to recognize and respond to an overdose. Between 1996–2010, more than 50,000 lay people in the United States were trained to recognize an overdose and had received a naloxone kit. This study looked at the characteristics of family members trained to administer naloxone in MA at 8 sites.

**RESULTS:** Of 126 attendees who completed surveys at 8 sites, most attendees were white (95%), female (78%), married or partnered (74%), parents of an individual using opioids (85%), and providing financial support for the individual using opioids (52%). The OEN trainees (79%) were more likely than attendees not trained (21%) to be parents of an individual using opioids (91% vs. 65%, P < .05), to provide financial support to an individual using opioids (58% vs. 30%, P < .05), and to have witnessed an overdose (35% vs. 12%, P = .07). The major motivations to receive training were wanting a kit in their home (72%), education provided at the meeting (60%), and hearing about benefits from others (57%). Sixteen parents reported witnessing their child overdose, and 5 attendees had used naloxone successfully during an overdose rescue.

♦**Opioid education and nasal naloxone rescue kits in the emergency department:** [https://www.ncbi.nlm.nih.gov/pubmed/25987910](https://www.ncbi.nlm.nih.gov/pubmed/25987910%20)

Dwyer K1, Walley AY2, Langlois BK1, Mitchell PM1, Nelson KP3, Cromwell J1, Bernstein E4. *Western Journal of Emergency Medicine*, 2015 May;16(3):381-4.

A total of 415 ED patients received naloxone kits between January 1, 2011 and February 28, 2012. Participants were surveyed by telephone after their ED visit about their substance use, overdose risk knowledge, history of witnessed and personal overdoses, and actions in a witnessed overdose including use of naloxone. Participants were offered nasal naloxone kits and training; 73% of whom were males.

♦**Multiple Naloxone Administrations among Emergency Medical Service Providers is Increasing**

Mark Faul, Peter Lurie, Jeremiah M. Kinsman, Michael W. Dailey, Charmaine Crabaugh & Scott M. Sasser

*Prehospital Emergency C*are Vol. 21 , Iss. 4,2017 [http://tandfonline.com/doi/full/10.1080/10903127.2017.1315203](http://tandfonline.com/doi/full/10.1080/10903127.2017.1315203%20)

In this large scale study of data on naloxone administration for opioid overdose emergencies, approximately 41% of naloxone recipients were female.

♦**Worldwide Prevalence and Trends in Unintentional Drug Overdose: A Systematic Review of the Literature:** <http://ajph.aphapublications.org/doi/10.2105/AJPH.2015.302843>

Silvia S. Martins, MD, PhD, Laura Sampson, BA, Magdalena Cerdá, MPH, DrPH, and Sandro Galea, MD, MPH, DrPH *Am J Public Health.* 2015 November; 105(11): e29–e49.

This is an extensive worldwide review of literature published between 1980 and 2013 on drug overdose that includes an in-depth analysis of mortality, prevalence, or trends across 114 publications, with 55 additional articles drawn upon for discussion, correlate results, or references.

* Lifetime prevalence of witnessed overdose among drug users (n = 17 samples) ranged from 50% to 96%, with a mean of 73.3%, a median of 70%
* Lifetime prevalence of drug users personally experiencing a nonfatal overdose ranged from 16.6% to 68.0%
* In England and Wales, between 2007 and 2008, there was an 8% increase in heroin or morphine deaths among women, and a 20% increase in cocaine deaths among women.
* Several studies reported on overdose mortality rates stratified by gender. Female-specific population based overdose mortality rates reported included 9.8 in the United States, 0.94 in England and Wales, 0.7 in Italy, and 590 among recently released female prisoners.
* Male rates were 3.7 in England and Wales, 6.6 in Italy, and 520 among recently released male prisoners.
* Generally, death rates were higher among men than women, with the exception of recently released prisoners.
* Men are more likely to self-report nonmedical use of prescription drugs, yet more women are more often prescribed drugs prone to abuse.
* The US Centers for Disease Control and Prevention reported that the proportion of drug overdose deaths caused by prescription opioids was highest among women aged 45 to 54 years and among American Indian or Alaska Natives and non-Hispanic White women. 153
* A study in Australia showed a 70-to-30 male-to-female ratio of nonfatal heroin overdose. 142
* **Overdose is also significantly associated with psychiatric disorders, suicidal ideation, and**

**attempted suicide.**

Also see: Simoni-Wastila L, Ritter G, Strickler,G. (2004) Gender and other factors associated

with the nonmedical use of abusable prescription drugs. *Subst Use Misuse*. 2004;39(1):1---23.

♦**Medical and Psychological Risks and Consequences of Long-Term Opioid Therapy in Women**

[https://academic.oup.com/painmedicine/article-lookup/doi/10.1111/j.1526-4637.2012.01467.x](https://academic.oup.com/painmedicine/article-lookup/doi/10.1111/j.1526-4637.2012.01467.x%20)

Beth D. Darnall, PhD,\* Brett R. Stacey, MD,\* and Roger Chou, MD†

*Pain Med.* 2012 Sep; 13(9): 1181–1211.

Long-term opioid use exposes women to unique risks, including endocrinopathy, reduced fertility, neonatal risks, as well as greater risk for polypharmacy, cardiac risks, poisoning and unintentional overdose, among other risks. Sex-specific differences have been found in opioid receptors, leading to a slower onset and offset of morphine among women than men and the need for greater doses to achieve similar effects [[11](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4904621/#B11)]. Risks for women appear to vary by age and psychosocial factors may be bi-directionally related to opioid use. Gaps in understanding and priorities for future research are highlighted. The charts below highlight studies that analyzed sex-specific opioid use and risks:

| **Author Year;Citation #** | **Design** | **Summary of Findings/Author Conclusions** |
| --- | --- | --- |
| Thielke et al.(2010; [[82](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R82)]) | Analysis of administrative pharmacy data to calculate changes in prevalence of long-term opioid prescription (≥90 dayswithin a calendar year). Data for private(N = 2,716,163) and Medicaid(N = 115,914) insured patients werecompared and analyzed by sex and age. | 35–50% increase in long-term opioid prescription between 2000–2005. Doses did not increase. Equal risk for both sexes. |
| Younger women on Medicaid may be more at risk for long-term use and associated iatrogenic consequences. |
| 40–53% increase in long-term use for Medicaid, with the steepest increase in women 18–44 (53.5%; CI = 43.2–63.9%). For privately insured, greatest increase in women 65 and older (both long & short-acting opioids. |
| Jamison et al.(2010; [[285](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R285)]) | Sex differences in risk factors for aberrant prescription opioid use were examined. M = 275, F = 335 prescribed opioids completed SOAPP-R screener then interviewed 5 months later with PDUQ screener, urine analysis, and physicianbehavior checklist for substance misuse (POTQ). | Women scored higher on items relating topsychological distress (men reported more legal andbehavioral issues). At 5-month follow-up, womenhad higher PDUQ scores (prescription drug usequestionnaire). |
| Darnall and Li(2011; [[81](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R81)]) | Study examined surgical and psychologicalfactors associated with opioid prescription.Retrospective cross-sectional chart reviewof women aged 18–45 seeking treatmentat a chronic pain clinic (N = 323). | Hysterectomy and pain-related dysfunction weresignificantly and independently associated withopioid prescription after adjusting for age andpain intensity. More than 85% of women withhysterectomy and pain-related dysfunction hadopioid prescription. |
| Daniell (2008;[[68](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R68)]) | Prospective study examined associationbetween endocrinopathy and opioid use.Observational opioid cohort (N = 31) withnon-opioid control comparison (N = 42);sample age range 30–75. | Endocrinopathy was observed in pre- andpostmenopausal women taking opioids (inhibitedovarian sex hormone and adrenal androgenproduction, *P* < 0.05). Related consequences forpremenopausal women were altered menstrual flowand probable associated reduced fertility. |
| Handal et al.(2011; [[117](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R117)]) | Study examined opioid risks in pregnantwomen. Population-based cohort studylinking two national registries in Norwaybefore, during, and after singletonpregnancy (N = 194,937). | Increased use of postpartum opioids may pose risk.Tramadol the second most frequently prescribedopioid to pregnant women despite lack of safetydata. Women taking opioids more likely to beconcurrently prescribed benzodiazepines. |
| Campbell et al.(2010; [[18](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R18)]) | Incident and prevalent opioid useretrospectively estimated using health caredata from two large health plans(F = 10,508; M = 6,933). | Women had higher opioid use than men; older women had the highest prevalence of long-term opioid use (8–9% in 2005). Women more likely to have concurrent use of sedative-hypnotic medications. |
| VanDenKerkhofet al. (2012;[[217](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R217)]) | Prospective cohort study (N = 433) examinedimpact of opioid use on chronic painfollowing gynecologic surgery. | Women taking preoperative opioids were twice aslikely to report chronic postsurgical pain than thosenot taking opioids. Among patients with preoperativepelvic pain, those taking long-term opioids were30% more likely to report chronic postsurgical painthan those not taking opioids. |
| Hanson et al.(2009; [[231](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R231)]) | Case-controlled cohort study of IBD patients -(N = 361) identified 100 IBD patientsreceiving narcotics (cases); 100 IBDcontrols were matched to cases. | Women were more likely to be prescribed opioids forIBD pain than were men (64% cases vs 45%controls). Other significant associations includedanxiety, depression, history of sexual abuse, andsubstance abuse. |
| Drug : drug interactions; Polypharmacy |  |  |  |
| Unintentional overdose | Dunn et al. (2010; [[221](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R221)]) | Direct | Numeric increase NA |
|  | Hall et al. (2008; [[227](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R227)]) | Direct | NA |
|  | Bohnert et al. (2011; [[220](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R220)]) | Direct | NA (VA sample 93% male) |
|  | Coben et al. (2010; [[225](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R225)]) | Direct | Yes |
|  | Gomes et al. (2011; [[222](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R222)]) | Direct | NA |
| Higher dose | Williams et al. (2008; [[32](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R32)]) | Direct | Yes |
|  | Campbell et al. (2010; [[18](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R18)]) | Direct | No (risk greater for men) |
| Depression | Breckenridge and Clark (2003; [[240](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R240)]) | Direct | No |
|  | Jensen et al. (2006; [[236](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R236)]) | Direct | No |
|  | Braden et al. (2009; [[21](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R21)]) | Direct | NA (data adjusted for gender) |
|  | Sullivan et al. (2006; [[232](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R232)]) | Direct | Inferred |
|  | Sullivan et al. (2005; [[230](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R230)]) | Direct | No |
| Abuse/aberrantbehaviors | Manchikanti (2007)Turk et al. (2008; [[276](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R276)]), review | DirectDirect | NoNo or NA |
|  | Edlund et al. (2010; [[22](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R22)]) | Direct | NA |
|  | Sullivan et al. (2010; [[23](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R23)]) | Direct | Yes |
|  | Liebschutz et al. (2010; [[275](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R275)]) | Direct | No |
|  | Martell et al. (2007; [[13](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R13)]), review | Direct | NA |
|  | Ives et al. (2006; [[287](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R287)]) | Direct | No |
| Doctor shopping[\*](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/table/T2/#TFN4) withfatal consequences | Hall et al. (2008; [[227](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4801003/#R227)]) |  |  |

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Worldwide Prevalence and Trends in Unintentional Drug Overdose: A Systematic Review of the Literature. Silvia S. Martins, MD, PhD, Laura Sampson, BA, Magdalena Cerdá, MPH, DrPH, and Sandro Galea, MD, MPH, DrPH *Am J Public Health.* 2015 November; 105(11): e29–e49.: <http://ajph.aphapublications.org/doi/10.2105/AJPH.2015.302843> [↑](#footnote-ref-22)
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