

Heroin versus Prescription Opioid Misuse and Overdose



New Mexico Statewide Epidemiological Outcomes Workgroup White Paper Series

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*Produced by Coop Consulting, Inc. on behalf of the
New Mexico Statewide Epidemiological Outcomes Workgroup*

Mission New Mexico’s Statewide Epidemiological and Outcomes Workgroup (SEOW) reviews and disseminates data about substance abuse and misuse and their consequences. It also identifies best practice information about evidence-based prevention strategies, policies and practices that can lead to successful outcomes for New Mexicans. The purpose of this two-fold work is to inform communities so that they can better target behaviors and risk factors that can be positively impacted by the implementation of well-chosen, evidence-based prevention approaches that are appropriate for the population. The important work of the SEOW is directed by the Office of Substance Abuse Prevention (Behavioral Health Services Division, Human Services Department) and supported by federal funding from the Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration.

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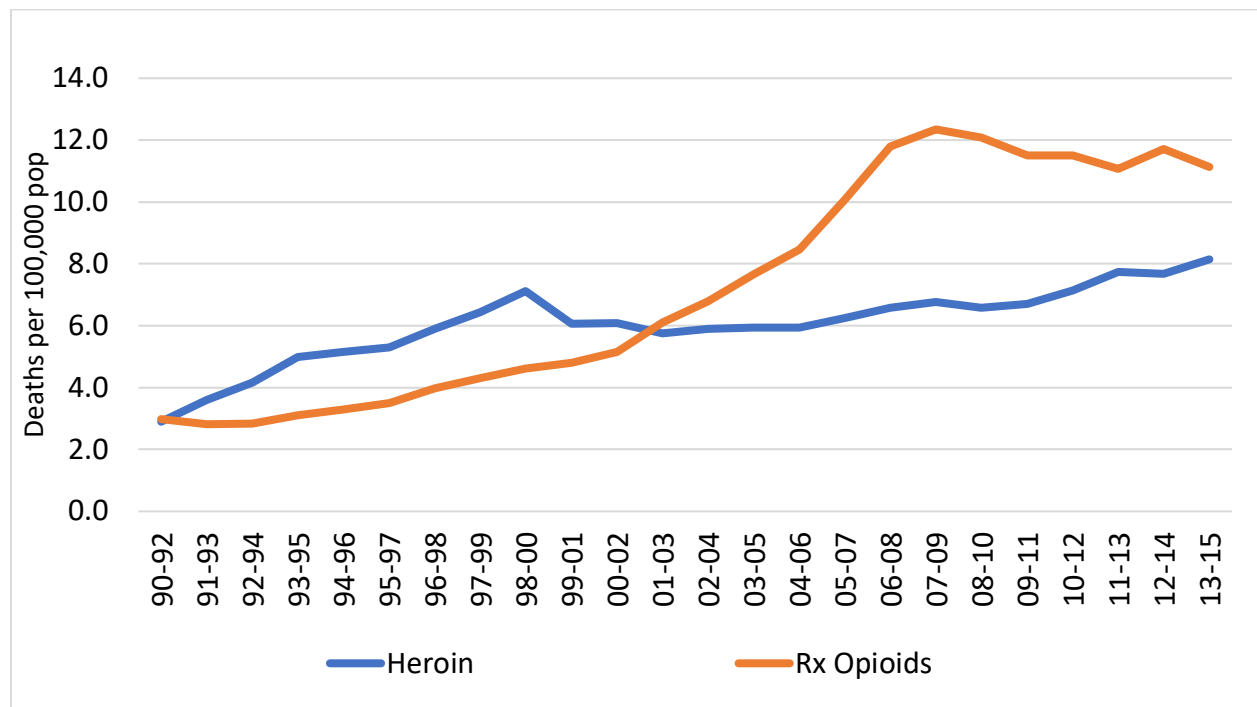
Introduction

As the opioid epidemic in the United States and in New Mexico continues to grow, it is important to get a better understanding of the similarities and differences between users of prescription opioids and users of heroin in order to better inform public health efforts. In this brief, we discuss trends in their use, as well as differences in routes of administration, demographics of the users, and rates of overdose. The two populations of focus in this paper are defined as “prescription opioid only” (PO-only) users and heroin-only users or opioid users that use both prescription opioids and heroin (H/H&PO).

Trends

Since around the turn of the century, prescription opioids have succeeded heroin as the leading cause of fatal opioid overdoses. After a marked surge in prescription opioid overdoses between 2000 and 2009, they have leveled off in New Mexico and have slowly declined since then. As PO-only overdoses decline, there has been a noticeable uptick in the rate of heroin-related overdoses since 2009, although prescription opioids remain the leading cause of overdose death (see Figure 1). This is concerning in that it suggests that as doctors become less willing to prescribe opioids, current users are switching to a more dangerous and deadly form of opiates, heroin.

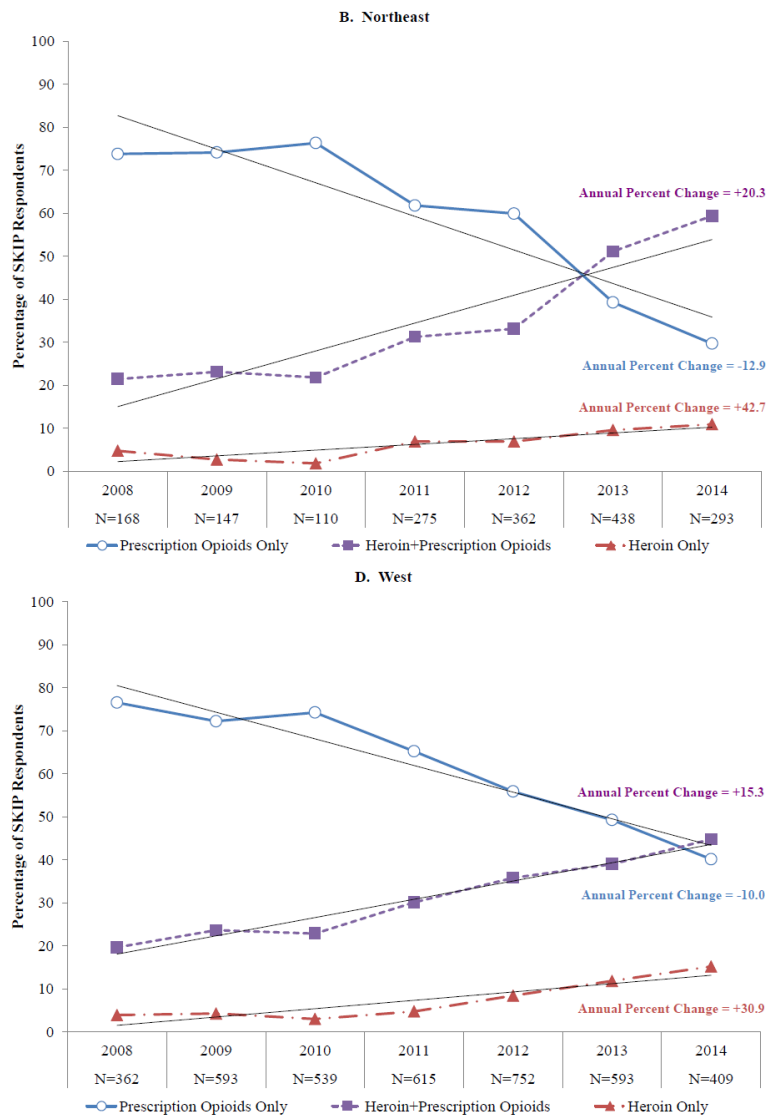
Figure 1. Drug overdose death rates for opioids, NM 1990-2015 (3-year moving average)



Source: New Mexico Department of Health, Epidemiology and Response Division

A recent study published in the New England Journal of Medicine illustrates this point more clearly (Cicero et al. 2015). Using data from the Survey of Key Informants' Patients (SKIP) Program, a survey of individuals entering a substance abuse treatment program with a primary diagnosis of opioid misuse, the authors found that between 2008 and 2014, PO-only abuse had an annual percent change of -6%, while H/H&PO misuse had an annual percentage change of +12%, indicating that heroin use is increasing at approximately twice the rate of prescription opioid misuse is declining. To this end, the authors divided the survey respondents into 4 Census regions (Northeast, Midwest, South, West), and found that H/H&PO use overtook PO-only use in the Northeast in 2013 and in the West (which includes New Mexico) in 2014. See the Figure 2 below.

Figure 2. Percentage of SKIP respondents reporting prescription opioids or heroin as primary drug of choice, Northwest and Midwest census regions 2008-2014



Source: Cicero, Theodore J., Matthew S. Ellis, and Jessie Harney. "Shifting patterns of prescription opioid and heroin abuse in the United States." *New England Journal of Medicine* 373.18 (2015): 1789-1790

Administration

A 2010 study found that ingestion was the most common route of administration for prescription opioids, followed by snorting and then injecting, but this varied widely by type of prescription opioid and whether or not it was abused with the intent of “getting high” (Young et al. 2010). This in contrast to heroin, in which the primary route of administration is injection, followed by smoking, snorting, or anal insertion, which all increase the bioavailability of opioids in the body as compared to ingestion and therefore increase the likelihood of an overdose event (SAMHSA 2015). However, a recently released report indicates the percent of prescription opioid abusers simply ingesting the pills decreased from 73% to 59% between 2004 and 2013, while the number of abusers injecting prescription opioids increased from 12% to 18% over the same time period, indicating a trend towards more risky forms of administration among prescription opioid abusers (Jones et al. 2017).

Due to a greater prevalence of injection, heroin users are at a higher risk for blood-borne pathogens such as hepatitis C and HIV/AIDs. Among heroin users, the type of heroin injected is strongly related to secondary causes of injury and death. Traditionally, heroin users in the west of the Mississippi River abuse black tar heroin, while users to the east use white powder heroin. Due to black tar heroin having a very viscous consistency, injection use of black tar heroin is associated with a greater risk of skin and soft tissue infections such as botulism, tetanus and other bodily infections such as endocarditis (Ciccarone et al. 2001).

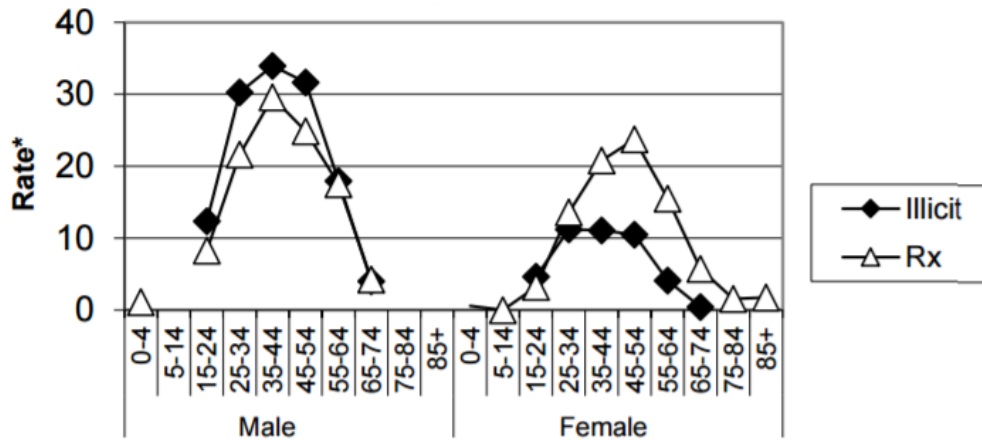
Demographics

Characterizing the general demographics of H/H&PO versus PO-only users is difficult in that such information can only be surveilled through hospital admissions data or through small surveys of current opioid users, a notoriously difficult target population for research. However, some information currently available does give us a picture of what each population generally looks like.

First, hospital admissions data gives a general sense of the gender and age distribution of both populations. Data from the New Mexico Substance Abuse Epidemiology Profile 2017 (NM-SAEP 2017) indicates that H/H&PO users who present in the emergency room are more likely to be male and between the ages of 25 and 54, while PO-only users are more likely to be female and between the ages 35 and 64 (see Figure 3). This is consistent with data from a recent study of hospital admissions data in Kentucky, that found patients presenting with an H/H&PO overdose to have a median age of 31 and were 63% male, compared to a median age of 40 and 50% male among PO-only overdose patients (Morizio et al. 2017). According to the 2017 NM-SAEP, any opioid overdose is most common among Whites, followed by Hispanics, and were lowest among the American Indian population.

The data from Morizio et al. (2017) highlight a number of significant health differences between these populations. Patients presenting with an H/H&PO overdose were more likely to have hepatitis C and to have experienced a previous overdose. Interestingly, PO-only users were much more likely to have a history of depression, suicidal ideation, schizophrenia, and a history of benzodiazepine use, suggesting a possible greater likelihood of co-occurring mental health disorders among PO-only users.

Figure 3. Opioid overdose death rates by age, sex, and type of overdose



Source: New Mexico Department of Health, Epidemiology and Response Division.
New Mexico Substance Abuse State Epidemiology Profile 2017.

Finally, data from the National Epidemiologic Survey on Alcohol and Related Conditions, a large-scale household survey of drug use conducted nationally in 2002 corroborates some of these findings and provides a little more insight into this topic (Wu et al. 2011). Compared to heroin-only users, PO-only users were much more likely to have ever used a sedative or tranquilizer in their lifetime (43% versus 16% and 45% versus 14%, respectively). However, heroin-only users were much more likely to have ever used marijuana, cocaine, or hallucinogens, and were more likely to have ever been admitted to a substance abuse treatment program. Data from this study also suggests that PO-only users have slightly higher incomes and are slightly more likely to be college educated.

Rate of overdose

H/H&PO users tend to have a higher rate of overdose compared to PO-only users, although data suggests that the PO-only population is currently larger than the H/H&PO population (see Trends above). In New Mexico between 2011 and 2015, H/H&PO overdoses occurred at a rate of 11.7 per 100,000 population, versus 9.3 per 100,000 population among PO-only users (NM-SAEP 2017).

Morizio et al. (2017) found that patients presenting at a hospital with a H/H&PO overdose were more likely to have received naloxone before arriving in the emergency room and were less likely to have it administered after being admitted. Patients presenting with a PO-only overdose were more likely to require repeated doses of naloxone and were more likely to be admitted to the intensive care unit, suggesting that while overdoses among PO-only users may be less frequent than H/H&PO overdoses, they may be more dangerous when they occur.

The higher rates of overdose among H/H&PO users can primarily be attributed to routes of administration and sources of opioids. Prescription opioids users have primarily been prescribed opioids by their doctor or misuse opioids diverted from the licit market, and therefore are more likely to accurately know the dosage they are taking. However, in recent years fake prescription pills containing heroin and fentanyl have become more common on the illicit market, increasing the likelihood of overdose among illicit PO-only users. Because injection is the most common route of administration for heroin, and is the route of administration that causes blood concentrations of opioids to rise the quickest, this contributes to a greater overall likelihood of overdose among heroin users.

H/H&PO users obtain heroin from the illicit market, in which structural factors of a given market contribute to the risk of overdose. An ethnography by Mars et al. (2015) found that higher levels of law enforcement are linked to increases in overdose deaths, as witnesses of an overdose event are less likely to seek professional assistance. Furthermore, they found that decreases in the price and increases in the potency of heroin available on the illicit market are associated with increases in the likelihood of an opioid overdose, as can be seen in the correlation between the growing prevalence of fentanyl-laced heroin and increases in fentanyl-related overdose deaths in recent years (Rose et al. 2016).

Conclusion

With the increase in heroin abuse in the United States and in New Mexico happening concurrently with a decrease in prescription opioid abuse, it is critical for public health efforts concerning opioids to be properly informed about differences in the populations of users, routes of administration, and rates of overdose. Such efforts may need to include broader public education campaigns about the risks of injection drug use, the higher rates of overdose from heroin (especially heroin laced with fentanyl), and the unintended physical health effects of injecting black tar heroin.

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