

Drug Abuse and Overdose

Definition: Drug abuse (also called substance use disorder) involves at least 2 of the following in a 12-month period: use of a drug or substance in larger amounts or over a longer period than intended; repeated attempts to quit or control use; high amounts of time spent using; craving; failure to fulfill major role obligations at work, school or home; social or interpersonal problems related to use; giving up activities because of use; use in hazardous situations; physical or psychological problems related to use; tolerance; or withdrawal.^{1,2} Rates of substance use disorders in Washington are not available. Drug overdose is measured by drug-induced deaths (see [Technical Notes](#)). This chapter defines prescription-type drugs as drugs available through prescriptions that are obtained legally or illegally without a prescription.

Summary

In Washington State in 2011, there were 1,033 drug-induced deaths involving prescription-type opioids, heroin, cocaine, tranquilizers, methamphetamine and other substances. Of these, 141 were suicides. Between 2000 and 2005 the [age-adjusted rate of drug-induced deaths in Washington](#) increased by about 42%, primarily due to overdoses of prescription opioids such as methadone and oxycodone used to treat chronic pain. Between 2005 and 2011 the rate stayed relatively stable. Prescription opioids include those obtained legally with a prescription or illegally without a prescription.

Research indicates that school-based prevention programs, which mostly serve middle school students, generally reduce drug use. Interventions to enhance motivation to stop or reduce drug use and cognitive behavioral therapies have also shown effectiveness in reducing drug use for up to a year. Distributing take-home naloxone to those at high risk for overdose helps reduce overdose deaths. Most people who enter and remain in drug abuse treatment programs stop using drugs, but 40% to 60% relapse after treatment ends.³

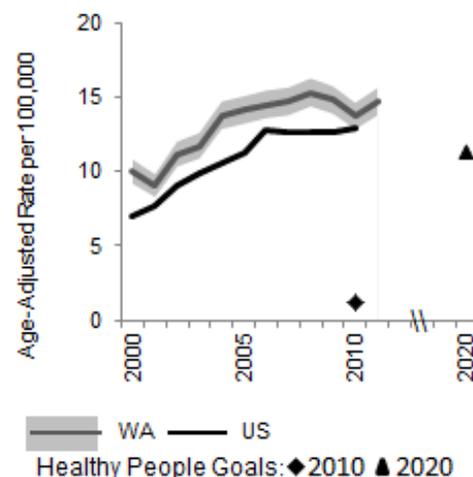
Time Trends

In Washington, the rate of drug-induced deaths—intentional and unintentional poisonings involving prescription-type and nonprescription opioids and other painkillers, heroin, cocaine, tranquilizers and other substances—increased from an age-adjusted rate of 10 per 100,000 people in 2000 to 14 per 100,000 in 2005, and then held steady at 14 to 15 per 100,000 per year through 2011. The increase in drug-induced deaths from 2000 to 2005 was primarily

due to unintentional overdoses of prescription-type opioids including methadone, oxycodone and hydrocodone. The rate of drug-induced deaths by suicide (2 per 100,000 people) accounted for about 14% of drug-induced deaths in 2009–2011 and did not increase from 2000 to 2011. Prescription-type opioid-involved overdose deaths increased from 0.4 per 100,000 in 1995 to 7 per 100,000 in 2008, and have declined to 5 per 100,000 in 2012. Heroin-involved overdose deaths declined from 3 per 100,000 in 1995 to 2 per 100,000 in 2008 and increased back to 3 per 100,000 in 2012.

During 2000–2011, Washington had higher rates of drug-induced deaths than the United States as a whole. However, time trends were similar. The age-adjusted rate of drug-induced deaths in the United States increased from 7 per 100,000 people in 2000 to 13 per 100,000 in 2006 and then held steady at 13 per 100,000 through 2010.⁴

Drug-Induced Death Rates
Washington State and US
Death Certificates, 2000–2011

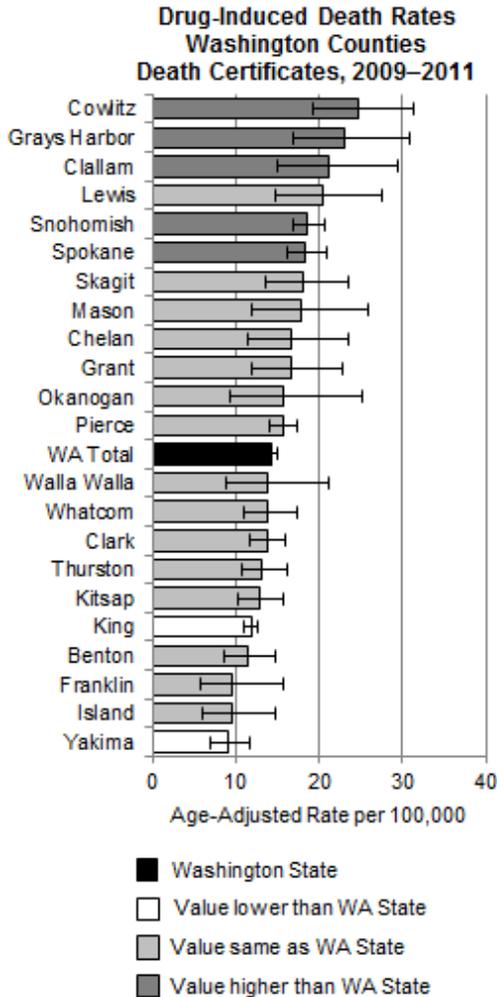


2010 and 2020 Goals

National *Healthy People 2010* goals include reducing drug-induced deaths to 1.2 per 100,000 people; the *Healthy People 2020* goal is 11.3 per 100,000 (age-adjusted). Washington did not meet the 2010 goal and will not meet the 2020 goal if present trends continue. Drug-induced deaths in Washington were about 15 per 100,000 in 2011, increased from 2000–2005 and have not changed since 2005.

Geographic Variation

During 2009–2011 combined, 17 counties had [fewer than 20](#) drug-induced deaths; these counties are not reported below. In the remaining counties, age-adjusted drug-induced death rates varied widely from 9 (± 2) per 100,000 in Yakima County to 25 (± 6) per 100,000 people in Cowlitz County.

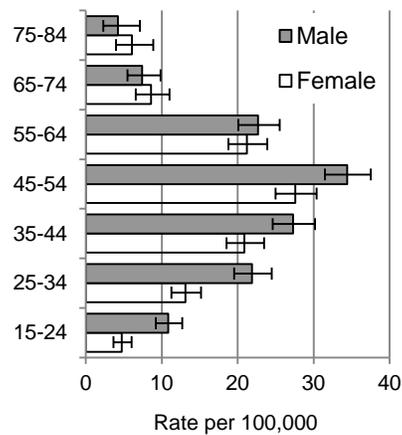


Age and Gender

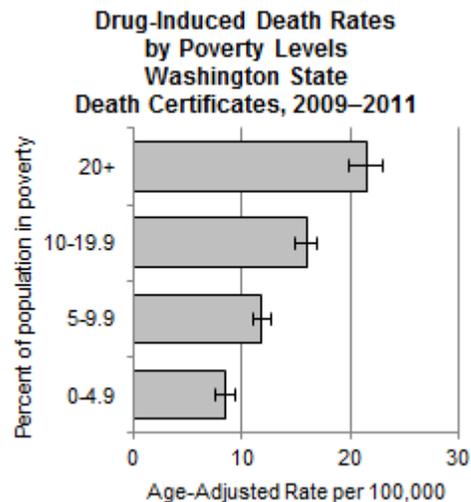
In Washington, the rate of drug-induced deaths was higher for males than females in almost all age groups. With age-adjusted death rates for drug-induced deaths at 16 per 100,000 males and 12 per 100,000 females, in 2009–2011 Washington males were 1.3 times more likely than females to die from drug abuse. Nationally in 2010, the age-adjusted death rate for males was 1.6 times that of females (16 per 100,000 for males and 10 per 100,000 for females).⁴

For both genders, the highest rates of death were among those 45–54 years old. There were fewer than 20 deaths during 2009–2011 for children under 15 and adults older than 84; these age and gender categories are not reported in the table below.

**Drug-Induced Death Rates
Age and Gender
Washington State
Death Certificates, 2009–2011**

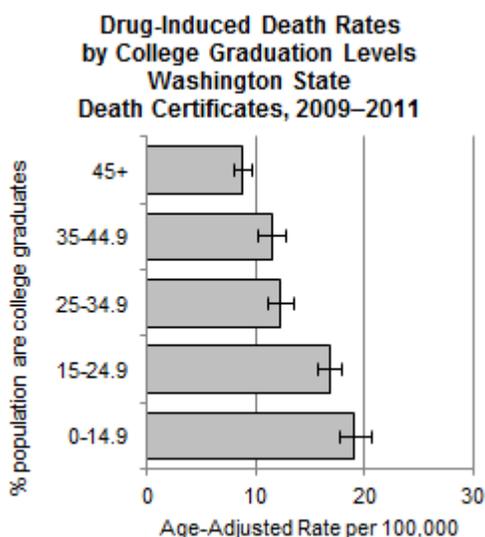


Economic Factors and Education



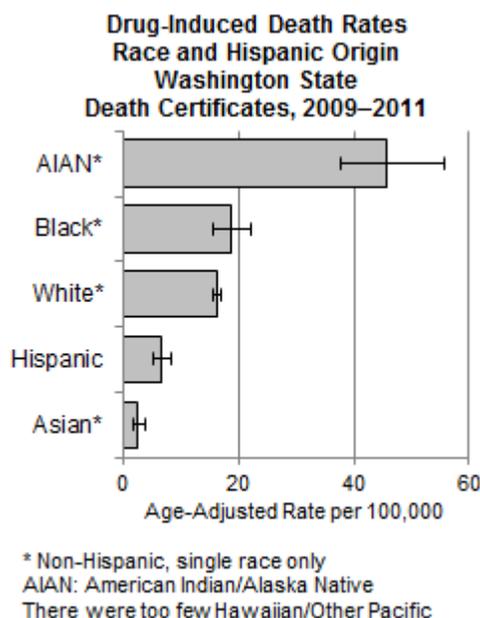
Washington data to assess the relationship between individual socioeconomic factors and drug-induced deaths are not readily available. In Washington during 2009–2011, age-adjusted drug-induced death rates were 2.5 times higher among people living in areas where 20% or more of the population lived below the federal poverty level compared to areas where less than 5% of the population lived in poverty.

Similarly, rates were 2.2 times higher among people living in neighborhoods where less than 15% of adults ages 25 and older graduated from college compared to neighborhoods where at least 45% graduated from college. Washington data are consistent with national data showing that unemployment and lower levels of education are related to higher rates of drug abuse.⁵



Race and Hispanic Origin

In Washington for 2009–2011 combined, the rates of drug-induced deaths were highest among American Indian and Alaska Native residents, followed by black and white residents whose rates were similar. Rates were lowest among Asian and Hispanic groups. There were fewer than 20 deaths among Native Hawaiians and other Pacific Islanders, so this rate is not reported.



Nationally in 2010, age-adjusted rates of drug-induced deaths were highest for whites, followed by American Indians and Alaska Natives and then blacks, and rates were lowest among Asians and Pacific Islanders combined and Hispanics.⁶ In contrast to death data, national self-reported data show about twice the rate of drug abuse among American Indians and Alaska Natives compared to people of other races.⁷ Underreporting of American Indian or Alaska Native on death certificates may contribute to the different patterns for drug-induced deaths and self-reported drug abuse.⁶ Research, not specific to Washington, suggests that the reasons for racial and ethnic differences may include differences in education and income, access to healthcare, access to drugs, and cultural factors such as religious beliefs. The relevance of these factors varies by specific drug and ethnic subgroup.^{8,9}

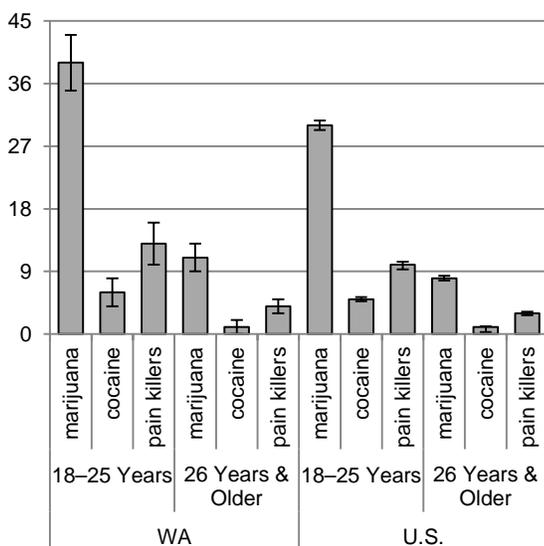
Other Measures of Impact and Burden

Adult drug use. State-level estimates from the 2010–2011 National Survey on Drug Use and Health¹⁰ suggest that about 39% ($\pm 4\%$) of Washington adults ages 18–25 and 11% ($\pm 2\%$) of Washington adults ages 26 and older reported marijuana use in the past year, higher than the national averages of 30% ($\pm 1\%$) and 8% ($\pm <1\%$) respectively.

About 13% ($\pm 3\%$) of Washington adults ages 18–25 reported nonmedical use of pain relievers in the past year, higher than the national average of 10% ($\pm <1\%$). About 6% ($\pm 2\%$) of Washington adults ages

18–25 reported cocaine use in the past year, similar to the national average of 5% ($\pm < 1\%$). Close to 4% ($\pm 1\%$) of Washington adults ages 26 and older reported nonmedical use of pain relievers and 1% ($\pm 1\%$) reported cocaine use in the past year, similar to the national averages of 3% ($\pm < 1\%$) and 1% ($\pm < 1\%$) respectively. These surveys exclude people in controlled environments such as prison and hospitals and so may underestimate the true prevalence.

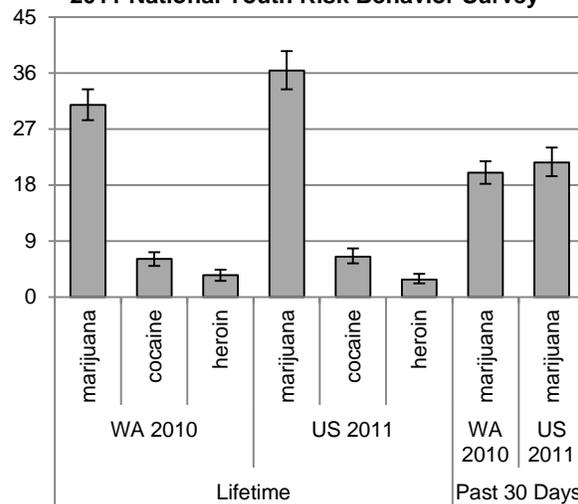
Percent of Adults Reporting Drug Use in the Past Year National Survey on Drug Use and Health, 2010–2011



Youth drug use. On the 2012 [Healthy Youth Survey](#) (HYS), 19% ($\pm 2\%$) of youth in grade 10 reported using marijuana in the past month and 6% ($\pm 1\%$) reported using a painkiller to get high. Almost one-third (29% $\pm 2\%$) of youth reported ever using marijuana, 6% ($\pm 1\%$) reported ever using cocaine, and 4% ($\pm 1\%$) reported ever using heroin. These percentages are similar to those reported on the 2010 HYS except that in 2010, more youth reported using painkillers to get high (8% $\pm 1\%$).

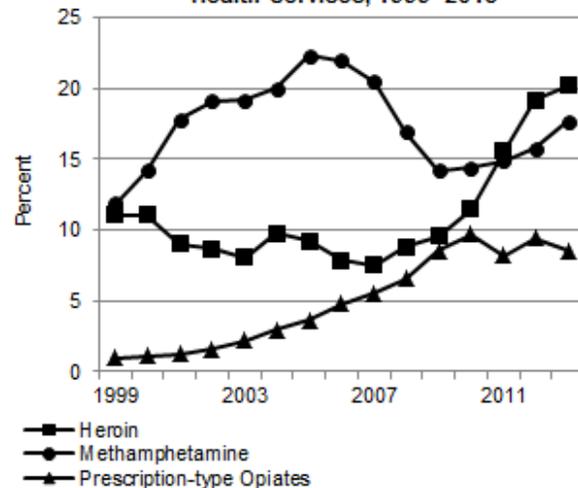
The percentage of Washington youth reporting ever using marijuana on the 2010 HYS (31% $\pm 3\%$) was lower than the national average on the 2011 Youth Risk Behavior Survey which was given in the same academic year (36% $\pm 3\%$).¹¹ The percentages of Washington youth reporting ever using cocaine or heroin or currently using marijuana were similar to national rates.

Percent of 10th Grade Youth Reporting Drug Use 2010 Washington Healthy Youth Survey & 2011 National Youth Risk Behavior Survey



Drug treatment. Records of admissions to publicly funded drug-free and opiate substitution treatment programs in Washington show that adult admissions for prescription-type opiate use increased from 1% of admissions in 1999 to 9% in 2009, and then remained constant through 2013.

Percent of Adult Admissions for Substance Abuse Treatment Washington State Department of Social and Health Services, 1999–2013



As adult admissions for prescription-type opiates increased, admissions for heroin use decreased from 11% in 1999 to 7% in 2007. Adult admissions for heroin use then increased steadily to 20% in 2013. The percentage of adult admissions for methamphetamine use increased from about 12% in 1999 to 22% in 2006, and then remained between

14% and 20%. The percentage of adult admissions for marijuana increased slightly from 10% in 1999 to 13% in 2011 and then stayed constant through 2013.

Among youth under age 18, most admissions were for marijuana use. These admissions decreased from 65% to 59% during 1999–2007, increased to 71% in 2011 and then stayed constant at 72% in 2013. The percentage of youth admissions for prescription-type opiates rose from 0.1% to 3% during 1999–2008, and then dropped to 1% in 2013. Youth admissions for heroin remained constant at about 1% of admissions from 1999–2006, increased to 3% in 2011 and remained at 3% in 2013. Youth admissions for methamphetamine use increased from 4% in 1999 to 14% in 2005, decreased to a low of 3% in 2009, and then increased again to 9% in 2013.

Health Effects

Drug abuse can occur with a variety of substances including marijuana, cocaine, stimulants (such as amphetamines and methamphetamine), hallucinogens, opioids (such as heroin) and sedatives.

HIV and hepatitis. Sharing syringes and other drug injection equipment contributes to the spread of bloodborne diseases such as HIV and hepatitis B and C. Misuse of substances is also associated with risky sexual and other behaviors that increase risk of bloodborne diseases.^{12,13} Drug users are at increased risk for sexually transmitted infections.¹⁴

Reproductive health. Use of opiates, cocaine or methamphetamine during pregnancy interferes with fetal growth and impacts infant behavior such as sleep and crying. In addition, use of opiates during pregnancy can cause a newborn to experience drug withdrawal requiring prolonged hospitalization and treatment.¹⁵ In a 2012 Washington study, newborns exposed to a variety of drugs—including sedatives, tranquilizers, opioids and cocaine—and newborns experiencing withdrawal had lower birth weights, longer hospitalizations at birth, and were more likely to be born preterm, experience feeding problems, and have respiratory conditions compared to other newborns.¹⁶

Motor vehicle crashes. Driving under the influence of alcohol and drugs increases the risk of motor vehicle crashes and fatalities.¹⁷ Two

reviews focused on marijuana found a doubled to tripled risk of any motor vehicle crash associated with driving under the influence of marijuana.^{18,19} A nationwide study comparing drivers in fatal motor vehicle crashes to a roadside survey estimated that risk for a fatal crash was almost doubled for drivers testing positive for marijuana, tripled for narcotics, and more than tripled for stimulants or depressants.²⁰

Health effects of specific drugs. Short- and long-term effects of drug use vary depending on the type of drug. Short-term effects can include changes in mood, thinking and energy level. Long-term effects can include toxic effects to the heart, lungs, liver, kidneys, brain and immune system. The National Institute of Drug Abuse provides information about the health effects of a variety of drugs including acid/LSD, club drugs, cocaine, ecstasy/MDMA, heroin, inhalants, marijuana, methamphetamine, PCP/phencyclidine, prescription drugs and steroids.²¹ For example, stimulants can cause heart failure, inhalants can cause convulsions, and opioids can cause depressed breathing, increasing risk of death.

Risk and Protective Factors

Gender. Men are more likely than women to use and to become dependent on drugs.²² Nationally, men are more likely to report using marijuana, cocaine and hallucinogens, and to report non-medical use of prescription drugs.^{22,23} However, women are as likely as men to develop substance use disorders once they begin use.²⁴

Family factors. Childhood adversities such as being physically or sexually abused or having parents who were mentally ill, criminal or violent are associated with substance abuse and other psychiatric diagnoses in adolescence and adulthood.^{25,26,27,28} Women who experience domestic violence are more likely than other women to abuse drugs, and their drug use also increases risk for future violence.²⁹ There appears to be a genetic vulnerability to drug dependence,³⁰ although this is not well understood at this time.

Poor mental health. For adults, depression, anxiety and antisocial personality are strongly linked with drug abuse.^{5,30,31} For children and adolescents, depression, conduct disorder and attention deficit hyperactivity disorder, but not anxiety, are consistently linked to drug abuse.³⁰ People with drug disorders generally have lower levels of self-control, conscientiousness and agreeableness and higher levels of distress than others.³²

Trauma. Post-traumatic stress disorder, which is caused by experiencing or witnessing physical harm, is a risk factor for drug abuse.^{33,34} Although most veterans return from military deployment without suffering long-term consequences, several studies have found increased risk of drug use and abuse in returning veterans.^{35,36} A small number of studies have found increases in drug use after terrorist attacks, such as the attacks of September 11, 2001, among people whose residences were geographically close to the attacks.³⁷

Prescription drug and heroin use. Recent increases in overdose deaths are primarily due to misuse of prescription opioids. Risk factors for these deaths include poverty, receiving prescriptions from multiple providers and pharmacies, high daily doses, and history of substance abuse or mental illness.³⁸ Situational risk factors for heroin overdose include changes in tolerance or dose, mixing with alcohol or other drugs, and chronic health conditions.³⁹

Intervention Strategies

The associations of drug abuse with family factors and mental health suggest that reducing adverse childhood experiences such as child abuse might prevent drug abuse, but research has not determined the effectiveness of this approach.

School-based programs. School-based programs provide training in how to resist peer pressure, improve decision-making skills, and provide information about what other teens think about drug use. A large body of research has shown that school-based programs can decrease drug use.⁴⁰ In a 2008 review, skill-based interventions reduced hard drug use by about half and marijuana use by about one-fifth in mostly 6th and 7th grade students.⁴¹ Although most studies do not measure long-term effects, a few studies have found reductions in drug use that lasted as long as 2–5 years.⁴¹ A 2012 review identified three cost-effective school-based programs for reducing substance abuse: Life Skills Training, Project Towards No Drug Abuse, and Project STAR.⁴²

Motivational enhancement. Motivational enhancement can be used as a brief intervention in which counselors spend an average of two hours discussing reasons for changing substance use with adults or adolescents. It can also be incorporated into

drug abuse treatment. Motivational enhancement was found to be cost-effective in reducing marijuana and other drug use in a review of 23 studies.^{42,43}

Drug abuse and dependence treatment. A broad range of psychosocial, medical and self-help approaches are used in treating drug abuse. Treatment approaches include inpatient and outpatient individual and group therapy and medication. Self-help approaches include 12-step groups such as Narcotics Anonymous. According to the National Institute on Drug Abuse, most people who get into and remain in treatment stop using drugs, but 40% to 60% relapse after treatment ends.³

A relatively effective approach is cognitive behavioral therapy, which teaches people how to anticipate likely problems and develop coping strategies. A review of 52 high-quality studies of cognitive behavioral therapy found that substance abusers (including alcohol, marijuana, cocaine, stimulants, opiates and polydrug abusers) who received cognitive behavioral therapy reduced their drug use more than the comparison groups for up to a year.⁴⁴ The effects were strongest for marijuana users. There have been too few high-quality studies to establish treatment effects on pregnant drug addicts.^{45,46}

For adolescents, the most effective treatment appears to be family therapy.⁴⁷ An example is Multisystemic Family Therapy, which teaches parenting skills and fosters improvement in relationships among family members.⁴⁸

Drug courts and drug laws. Drug courts emphasize rehabilitation and combine intensive court supervision with drug treatment and legal sanctions. It is not known whether drug courts are effective in reducing drug use or re-arrest rates after accounting for factors that differ between drug court participants and other offenders, such as reasons for testing for drug use (which is routine for drug courts but done only when there is suspicion of drug use for other offenders) and history of violent crime.⁴⁹

Medication assisted treatment. Maintenance programs provide people who are dependent on opiates (such as heroin or oxycodone) with methadone, buprenorphine or other replacement substances. These programs generally reduce opiate use and may reduce other drug use, criminal activity and the chances of death but require long-term treatment.^{50,51,52}

Programs for injection drug users. Programs for exchanging sterile needles and syringes for used ones help reduce needle sharing and may reduce

HIV and hepatitis transmission among injection drug users.⁵³ Other programs for injection drug users include screening and vaccination for hepatitis and providing HIV/AIDS education.⁵⁴ Additional research on programs for injection drug users is needed.

Prescription drug overdose deaths. A Prescription Monitoring Program (PMP) is a database used to track controlled substance prescribing and dispensing to patients. The available evidence suggests that PMPs are effective in reducing the time required for drug diversion investigations, reducing “doctor shopping,”⁵⁵ prescription opioid substance abuse treatment admissions, and intentional exposures identified by the Poison Center.⁵⁶ There is no evidence that PMPs reduce prescription drug overdose;⁵⁷ however, the only mortality analysis to date has been done using data through 2005. Since that time significant enhancements have been made to PMPs including having the data available through a Web-based system, some interstate data sharing, and more proactive reporting.⁵⁸

Heroin and prescription-type overdose deaths. One study found that providing take-home naloxone—which can reverse the effects of opioid overdose—to heroin and prescription opioid users, their families and emergency responders reduced opioid related deaths.⁵⁹ Another study estimated that distributing take-home naloxone to heroin users would prevent about 6% of overdose deaths and is a cost-effective way to save lives.⁶⁰

Other legal approaches such as increased regulation of pain management clinics⁶¹ might also have the potential to reduce prescription drug abuse and overdose. Although Florida noted a decrease in oxycodone deaths after a crackdown on pain clinics,⁶² research to date hasn’t studied the effectiveness of this approach.

Other recommendations for reducing prescription-drug overdose, which vary in the extent of the evidence base, are available from a variety of sources.⁶³

See Related Chapters: [Alcohol Abuse and Dependence](#), [Sexual Health](#) and sections in [Maternal and Child Health](#), [Injury and Violence](#), [Chronic Disease](#), and [Infectious Disease](#).

Data Sources

Washington State Death Certificate Data: Washington State Department of Health, Vital Registration System Annual Statistical Files, Deaths 2000–2011, released October 2012, data prepared by Washington State Department of Health Center for Health Statistics.

For More Information

A variety of information is available online from the National Institute on Drug Abuse at <http://www.drugabuse.gov> (accessed August 15, 2013) and the U.S. Substance Abuse and Mental Health Services Administration at www.samhsa.gov (accessed August 15, 2013).

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Technical Notes

Drug-induced deaths are ICD-10 codes D52.1, D59.0, D59.2, D61.1, D64.2, E06.4, E16.0, E23.1, E24.2, E27.3, E66.1, F11.1-F11.5, F11.7-F11.9, F12.1-F12.5, F12.7-F12.9, F13.1-F13.5, F13.7-F13.9, F14.1-F14.5, F14.7-F14.9, F15.1-F15.5, F15.7-F15.9, F16.1-F16.5, F16.7-F16.9, F17.3-F17.5, F17.7-F17.9, F18.1-F18.5, F18.7-F18.9, F19.1-F19.5, F19.7-F19.9, G21.1, G24.0, G25.1, G25.4, G25.6, G44.4, G62.0, G72.0, I95.2, J70.2-J70.4, K85.3, L10.5, L27.0-L27.1, M10.2, M32.0, M80.4, M81.4, M83.5, M87.1, R50.2, R78.1-R78.5, X40-X44, X60-X64, X85, and Y10-Y14. Years prior to 2000 are not reported because a comparability ratio for ICD-9 and ICD-10 using current codes is unavailable.

Drug treatment admission data were obtained from the Washington State Department of Social and Health Services Division of Behavioral Health and Recovery and include all modalities of treatment (inpatient, outpatient, and opiate treatment programs). They do not include detox admissions. Data are for all publicly funded treatment admissions as well as privately funded admissions to opiate treatment programs. These are admissions so they are duplicated for people entering treatment multiple times in the same year and across years. Many factors affect treatment admission trends including substance use patterns, treatment demand, policy and legal changes, and funding availability.

Acknowledgments

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Endnotes

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<http://www.sa4docs.org/wp-content/uploads/2013/07/What-States-Can-Do-to-Reverse-the-PDO-Epidemic.pdf>;
<http://www.cdc.gov/homeandrecreationalafety/rxbrief/>;
<http://healthyamericans.org/reports/drugabuse2013/>.
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