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Drugs and Their Illicit Effects on Society

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ABSTRACT: The negative consequences of drug abuse affect not only individuals who abuse drugs but also their families and friends, various businesses, and government resources. Although many of these effects cannot be quantified, ONDCP recently reported that in 2002, the economic cost of drug abuse to the United States was \$180.9 billion.

The most obvious effects of drug abuse--which are manifested in the individuals who abuse drugs--include ill health, sickness and, ultimately, death. Particularly devastating to an abuser's health is the contraction of needle borne illnesses including hepatitis and HIV/AIDS through injection drug use. NSDUH data indicate that in 2004 over 3.5 million individuals aged 18 and older admitted to having injected an illicit drug during their lifetime. Of these individuals, 14 percent (498,000) were under the age of 25. Centers for Disease Control and Prevention (CDC) reports that 123,235 adults living with AIDS in the United States in 2003 contracted the disease from injection drug use, and the survival rate for those persons is less than that for persons who contract AIDS from any other mode of transmission. CDC further reports that more than 25,000 people died in 2003 from drug-induced effects.

Children of individuals who abuse drugs often are abused or neglected as a result of the individuals' preoccupation with drugs. National-level studies have shown that parents who abuse drugs often put their need to obtain and abuse drugs before the health and welfare of their children. NSDUH data collected during 2002 and 2003 indicate that 4.3 percent of pregnant women aged 15 to 44 report having used illicit drugs in the past month. Moreover, that same data show that 8.5 percent of new mothers report having used illicit drugs in the past month. Children whose parents and other family members abuse drugs often are physically or emotionally abused and often lack proper immunizations, medical care, dental care, and necessities such as food, water, and shelter.

The risk to children is even greater when their parents or guardians manufacture illicit drugs such as methamphetamine. Methamphetamine abusers often produce the drug in their own homes and apartments, using hazardous chemicals such as hydriodic acid, iodine, and anhydrous ammonia. Children who inhabit such homes often inhale dangerous chemical fumes and gases or ingest toxic chemicals or illicit drugs. These children commonly test positive for methamphetamine and suffer from both short- and long-term health consequences. Moreover, because many methamphetamine producers also abuse the drug, children commonly suffer from neglect that leads to psychological and developmental problems. NCLSS data show that U.S. law enforcement agencies report having seized 9,895 illicit methamphetamine laboratories in 2004. These agencies report that 2,474 children were affected by these laboratories (i.e., they were exposed to chemicals, they resided at laboratory sites, or they were displaced from their homes), while 12 children were injured and 3 children were killed.

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I. INTRODUCTION

The economic impact of drug abuse on businesses whose employees abuse drugs can be significant. While many drug abusers are unable to attain or hold full-time employment, those who do work put others at risk, particularly when employed in positions where even a minor degree of impairment could be catastrophic; airline pilots, air traffic controllers, train operators, and bus drivers are just a few examples. Quest Diagnostics, a nationwide firm that conducts employee drug tests for employers, reports that 5.7 percent of the drug tests they conducted on individuals involved in an employment-related accident in 2004 were positive. Economically, businesses often are affected because employees who abuse drugs sometimes steal cash or supplies, equipment, and products that can be sold to get money to buy drugs. Moreover, absenteeism, lost productivity, and increased use of medical and insurance benefits by employees who abuse drugs affect a business financially.

The economic consequences of drug abuse severely burden federal, state, and local government resources and, ultimately, the taxpayer. This effect is most evident with methamphetamine. Clandestine methamphetamine laboratories jeopardize the safety of citizens and adversely affect the environment. Children, law enforcement personnel, emergency responders, and those who live at or near methamphetamine production sites have been seriously injured or killed as a result of methamphetamine production. Methamphetamine users often require extensive medical treatment; some abuse, neglect, and abandon their children, adding to social services costs; some also commit a host of other crimes including domestic violence, assault, burglary, and identity theft. Methamphetamine producers tax strained law enforcement resources and budgets as a result of the staggering costs associated with the remediation of laboratory sites. According to DEA, the average cost to clean up a methamphetamine production laboratory is \$1,900. Given that an average of 9,777 methamphetamine laboratory seizures were reported to NCLSS each year between 2002 and 2004, the economic impact is obvious. DEA absorbs a significant portion of such costs through a Hazardous Waste Cleanup Program and in 2004 administered over 10,061 state and local clandestine laboratory cleanups and dumpsites at a cost of over \$18.6 million. Nonetheless, resources of state and local agencies also are significantly affected. For example, 69 percent of the county officials responding to a 2005 survey by the National Association of Counties report that they had to develop additional training and special protocols for county welfare workers who work with children exposed to methamphetamine. Moreover, the time and manpower involved in investigating and cleaning up clandestine laboratories increase the workload of an already overburdened law enforcement system.

Since late 2007, cocaine has increasingly contained levamisole, a pharmaceutical agent that typically is used for livestock deworming. According to Drug Enforcement Administration (DEA) Cocaine Signature Program data, before 2008, less than 10 percent of the tested wholesale-level cocaine samples contained levamisole. By 2009, approximately 71 percent of the tested cocaine samples contained levamisole. Because levamisole is being found in kilogram quantities of cocaine, investigators are confident that Colombian traffickers are adding it as part of the production process, possibly to enhance the effects of the cocaine. However, levamisole can be hazardous to humans, especially those with weakened immune systems. Ingesting levamisole can cause a person to develop agranulocytosis, a serious, sometimes fatal, blood disorder. At least 20 confirmed and probable cases of agranulocytosis, including two deaths, have been associated with cocaine adulterated with levamisole. The consequences of abusing levamisole are serious enough that in September 2009, the Substance Abuse and Mental Health Services Administration (SAMHSA) issued a nationwide public alert on its effects. Drug use and abuse may

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lead to specialized treatment, ED visits (sometimes involving death), contraction of illnesses, and prolonged hospital stays.

In 2008, NSDUH estimated that 7 million individuals aged 12 and older were dependent on or had abused illicit drugs in the past year, compared with 6.9 million in 2007. The drugs with the highest dependence or abuse levels were marijuana, prescription pain relievers, and cocaine. The number of individuals reporting past year marijuana abuse or dependence was 4.2 million in 2008, compared with 3.9 million in 2007; the number of individuals reporting past year prescription pain reliever abuse or dependence was 1.7 million in both 2007 and 2008; and the number of individuals reporting past year cocaine abuse or dependence was 1.4 million in 2008, compared with 1.6 million in 2007.

Many individuals who become dependent on illicit drugs eventually seek treatment. The Treatment Episode Data Set (TEDS) provides information regarding the demographics and substance abuse patterns of treatment admissions to state-licensed treatment facilities for drug dependence. In 2007, there were approximately 1.8 million admissions to state-licensed treatment facilities for illicit drug dependence or abuse. The highest percentage of admissions reported opiates as the primary drug of choice (31%, primarily heroin) followed by marijuana/hashish (27%), cocaine (22%), and stimulants (13%). Although approaches to treatment vary by drug, more than half of the admissions were to ambulatory (outpatient, intensive outpatient, and detox) facilities rather than residential facilities. (See Table B2 in Appendix B for data on admissions for specific drugs.)

Individuals often experience adverse reactions to drugs--including nonfatal overdoses--that require them to go to the hospital. In 2006, the Drug Abuse Warning Network (DAWN) reported that of 113 million hospital ED visits--1,742,887 (1.5%)--were related to drug misuse or drug abuse. An estimated 31 percent of these visits involved illicit drugs only, 28 percent involved CPDs, and 13 percent involved illicit drugs in combination with alcohol. When drug misuse or abuse plays a role in these ED visits, the most commonly reported substances are cocaine, marijuana, heroin, and stimulants (typically amphetamines or methamphetamine).

A 2007 DAWN survey of 63 metropolitan areas found an average of 12.1 deaths per 100,000 persons related to drug use.⁵ Rates of drug-related deaths range from 1.1 per 100,000 in Sioux Falls, South Dakota, to 26.1 per 100,000 in the New Orleans area. DAWN also records the number of drug-related suicide deaths. In 2007, the number of drug-related suicides per 100,000 persons ranged from less than one in several jurisdictions (including Chicago, Dallas-Fort Worth, and Minneapolis) to 6.2 per 100,000 in Fargo, North Dakota. To put these statistics in perspective, the Centers for Disease Control and Prevention (CDC) reports other nonnatural death rates as follows: Motor vehicle accidents, 15.1 per 100,000; nontransport accidents (e.g., falls, accidental drownings), 24.4 per 100,000; suicide, 11.1 per 100,000; and homicides, 6.2 per 100,000.

The consequences of drug use usually are not limited to the user and often extend to the user's family and the greater community. According to SAMHSA, combined data from 2002 to 2007 indicate that during the prior year, an estimated 2.1 million American children (3%) lived with at least one parent who was dependent on or abused illicit drugs, and 1 in 10 children under 18 lived with a substance-addicted or substance-abusing parent.⁶ Moreover, the U.S. Department of Health and Human Services estimated in 1999 that substance abuse was a factor in two-thirds of all foster care placements.

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Many states have enacted drug-endangered children laws to protect children from the consequences of drug production, trafficking, and abuse. Typically associated with methamphetamine production, drug-endangered children are exposed not only to abuse and neglect but also to fires, explosions, and physical health hazards such as toxic chemicals. In 2009, 980 children were reported to the El Paso Intelligence Center (EPIC) as present at or affected by methamphetamine laboratories, including 8 who were injured and 2 who were killed at the laboratories. These statistics do not include children killed by random gunfire associated with drug activity or who were physically or sexually abused by a "caretaker" involved in drug trafficking or under the influence of drugs.

II. DISCUSSION

To alleviate the burden that drug use and abuse have caused to the nation's criminal justice system, most jurisdictions have developed drug courts or other diversion programs aimed at breaking the drug addiction and crime cycle. In these nonadversarial, coordinated approaches to processing drug cases, participants receive a full continuum of treatment services, are subject to frequent urinalyses, and experience strict judicial monitoring in lieu of traditional incarceration. Once the offender successfully completes treatment, charges may be dropped. Since the first drug court became operational in Miami in 1989, the number of drug courts has grown each year, and such courts now exist in all 50 states as well as the District of Columbia, Northern Mariana Islands, Puerto Rico, and Indian Country. As of July 2009, there were 2,038 active drug court programs and 226 in the planning stages. Research has shown that drug courts are associated with reduced recidivism by participants and result in cost savings. For instance, a 2006 study of nine California drug courts showed that drug court graduates had recidivism rates of 17 percent, while a comparison group who did not participate in drug court had recidivism rates of 41 percent. A study of the drug court in Portland, Oregon, found that the program reduced crime by 30 percent over 5 years and saved the county more than \$79 million over 10 years. With success stories abundant, drug courts have gained approval at the local, state, and federal levels.

The most recent annual data from the Federal Bureau of Investigation (FBI) show that 12.2 percent of more than 14 million arrests in 2008 were for drug violations, the most common arrest crime category. The proportion of total drug arrests has increased over the past 20 years: in 1987, only 7.4 percent of all arrests were for drug violations. Approximately 4 percent of all homicides in 2008 were drug-related, a percentage that has not changed significantly over the same 20-year period.

The characteristics of populations under correctional supervision reflect these arrest patterns. According to the Bureau of Justice Statistics (BJS), 20 percent of state prisoners and 53 percent of federal prisoners are incarcerated because of a drug offense. Moreover, 27 percent of individuals on probation and 37 percent of individuals on parole at the end of 2007 had committed a drug offense.

The drug-crime link is also reflected in arrestee data. In 2008, the Arrestee Drug Abuse Monitoring (ADAM) II program found that the median percentage of male arrestees who tested positive in the 10 ADAM II cities for any of 10 drugs, including cocaine, marijuana, methamphetamine, opioids, and phencyclidine (PCP), was 67.6 percent, down slightly from 69.2 percent in 2007. Other data reflect the link as well. In 2002, a BJS survey found that 68 percent of jail inmates were dependent on or abusing drugs and alcohol and that 55 percent had used illicit drugs during the month before their offense. In 2004, a similar BJS self-report survey identified the drug-crime link more precisely: 17 percent of state prisoners and 18 percent of federal

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prisoners had committed their most recent offense to acquire money to buy drugs. Property and drug offenders were more likely than violent and public-order offenders to commit crimes for drug money.

Premature mortality, illness, injury leading to incapacitation, and imprisonment all serve to directly reduce national productivity. Public financial resources expended in the areas of health care and criminal justice as a result of illegal drug trafficking and use are resources that would otherwise be available for other policy initiatives.

There is a great loss of productivity associated with drug-related premature mortality. In 2005, 26,858 deaths were unintentional or undetermined-intent poisonings; in 2004, 95 percent of these poisonings were caused by drugs. Although it is difficult to place a dollar value on a human life, a rough calculation of lost productivity can be made based on the present discounted value of a person's lifetime earnings.

There are also health-related productivity losses. An individual who enters a residential drug treatment program or is admitted to a hospital for drug treatment becomes incapacitated and is removed from the labor force. According to TEDS data, there were approximately 1.8 million admissions to state-licensed treatment facilities for illicit drug dependence or abuse in 2007. Productivity losses in this area alone are enormous. Health-related productivity losses are higher still when lost productivity associated with drug-related hospital admissions (including victims of drug-related crimes) is included.

The approximately one-quarter of offenders in state and local correctional facilities and the more than half of offenders in federal facilities incarcerated on drug-related charges represent an estimated 620,000 individuals who are not in the workforce. The cost of their incarceration therefore has two components: keeping them behind bars and the results of their nonproductivity while they are there.

Finally, there is productivity lost to drug-related unemployment and drug-related absenteeism. According to the 2008 NSDUH, 19.6 percent of unemployed adults may be defined as current users of illicit drugs. Based on population estimates from the same study, this translates into approximately 1.8 million unemployed individuals who were current drug abusers. Further, approximately 8 percent of individuals employed full time and 10.2 percent of individuals employed part-time were current users of illicit drugs. Individuals who are employed but have chronic absenteeism resulting from illicit drug use also accrue substantial lost productivity.

III. RESULTS

The environmental impact of illicit drugs is largely the result of outdoor cannabis cultivation and methamphetamine production. Many of the chemicals used to produce methamphetamine are flammable, and the improper storage, use, and disposal of such chemicals that are typical among methamphetamine producers often lead to fires and explosions at clandestine laboratories. Additionally, the process used to produce methamphetamine results in toxic chemicals--between 5 and 7 pounds of waste per pound of methamphetamine--that are typically discarded improperly in fields, streams, forests, and sewer systems, causing extensive environmental damage.

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Currently, there are no conclusive estimates regarding the nationwide cost of methamphetamine production site remediation because many of the methamphetamine laboratories and dumpsites in the United States are undiscovered due to their clandestine locations. However, in California alone, from January through December 10, 2009, the California Department of Toxic Substance Control responded to and cleaned up 232 laboratories and dumpsites at a cost of \$776,889, or approximately \$3,349 per site.

Outdoor cannabis cultivation, particularly on public lands, is causing increasing environmental damage. Grow site operators often contaminate and alter watersheds, clear-cut native vegetation, discard garbage and nonbiodegradable materials at deserted sites, create wildfire hazards, and divert natural water courses. For example, cultivators often dam streams and redirect the water through plastic gravity-fed irrigation tubing to supply water to individual plants. The high demand for water often strains small streams and damages downstream vegetation that depend on consistent water flow. In addition, law enforcement officials are increasingly encountering dumpsites of highly toxic insecticides, chemical repellants, and poisons that are produced in Mexico, purchased by Mexican criminal groups, and transported into the country for use at their cannabis grow sites. These toxic chemicals enter and contaminate ground water, pollute watersheds, kill fish and other wildlife, and eventually enter residential water supplies. Moreover, the National Parks Conservation Association (NPCA) reports that while preparing land for cannabis cultivation, growers commonly clear the forest understory, which allows nonnative plants to supplant native ones, adversely affecting the ecosystem. They also terrace the land--especially in mountainous areas--which results in rapid erosion.

Limited research on the environmental impact of the improper disposal of pharmaceuticals⁷ indicates that contamination from dissolved pharmaceutical drugs is present in extremely low levels in most of the nation's water supply. The harm to aquatic life and the environment has not been determined, and according to the Environmental Protection Agency, scientists have found no evidence of adverse human health effects from the minute residue found in water supplies. Nonetheless, as a precaution based on environmental research to date, the ONDCP and the Food and Drug Administration suggest that consumers use take-back programs to dispose of unused prescription drugs

Too often, people struggling with addiction are looked down upon and shunned by society — the assumption is that their drug abuse is their own problem and they are just hurting themselves. But that is a narrow view of what is a large-scale societal issue.

Drug addiction is not just a compulsion but an actual disease that requires treatment and compassion, just like any other chronic health condition. And addiction affects many more people than just the addicts themselves. Drug abuse touches many corners of society — and most likely even your life, though you may not realize it. An addiction to drugs comes at a great cost, on both an individual and community-wide scale.

IV. CONCLUSIONS

Drugs have a powerful effect on the human brain, and the roots of addiction take shape there. In essence, drugs have the capability to impact how the brain receives signals and messages via its system of neurons and neurotransmitters. Neurons are cells in the brain that communicate information, and they do so by sending and receiving the neurotransmitter molecules.

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The impact on the brain is determined by the type of drug being abused. According to the National Institute on Drug Abuse, marijuana, heroin and drugs with an opiate effect can act like a neurotransmitter, which the neurons send to each other to conduct signals and messages. Because of that, these drugs activate neurons—but because they aren't real neurotransmitters, drugs send abnormal signals. Conversely, stimulants such as cocaine and methamphetamine trigger an overload release of neurotransmitters, which disrupts the brain's chemistry.

Drugs impact many parts of the brain, which means substance abuse affects many normal bodily functions. The brain stem, basal ganglia, extended amygdala and the prefrontal cortex are just some of the parts of the brain that can be negatively affected by drug use. Because these areas control everything from stress response to decision making to heart and breathing rates, drug use can take a terrible toll on the human body and mind.

Even knowing this, it's very difficult for people to just stop abusing drugs cold turkey. That is because drugs create a pleasurable effect that is activated in the brain's reward center, located in the basal ganglia. Typically, this area receives the neurotransmitter called dopamine, which is released when we are experiencing a situation or a sensation we find enjoyable. This dopamine trains our brain's reward center to recognize this pleasurable activity, which reinforces our desire to repeat it. This is all well and good when, say, someone is eating chocolate cake. But when someone is taking drugs, it creates an overwhelming tide of dopamine, much larger than normal. Thus the cue between pleasure and drug use is formed and reinforced—the brain is training itself to crave that drug, and to use it over and over again. Regular dopamine surges connected with normal, non-drug-related activities, can't compare, and soon these everyday pleasures of life are not sought out anymore. The focus is on using the drug for the incredible euphoria it can produce.

The problem, however, is that the more often a drug is used, a greater tolerance level develops. That means that if a person typically takes cocaine once a day to get high, eventually they won't get the same kind of high as when they first started using. So they might increase their frequency of use to two times a day, and perhaps take a greater quantity of the drug each time. This ever-increasing cycle of tolerance and frequency continues to snowball until a dependency develops, one in which the drug overtakes most of the person's waking hours. Without intervention and treatment, this drug abuse can spiral into addiction, and carry with it an increased risk for overdose and even death.

Communities also suffer from the effects of drug addiction. Overall, substance abuse costs the United States more than \$740 billion a year in terms of health care, work productivity and crime; of that figure, illicit drug abuse costs \$193 billion and prescription opioid abuse costs another \$78.5 billion.

The impact is wide-ranging and staggering. For instance, a greater amount of substance abuse-related crimes means a community has to fund more police officers, and jails have to increase personnel staffing because of an increase in the number of inmates. Courts can become overburdened with too many drug cases, and the victims (for instance, a business that was robbed or burglarized) may also incur costs. If a community experiences a rash of drug-related crimes, it could gain a reputation for its "bad" neighborhoods and experience a loss of property values and sales tax revenue as people move out or avoid visiting or living there.

The societal cost of drug abuse is also a generational issue. The science-based nonprofit organization Center on Addiction states that 70% of children who are neglected or abused come from homes where a parent has a drug or alcohol problem. To fund social service child welfare programs for these families costs an estimated \$23 billion each year. In addition, children of addicts may have a higher risk for substance abuse problems of their own, as well as behavioral, emotional or social issues.

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