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Historical trends in the production and consumption of illicit drugs in Mexico: Implications for the prevention of blood borne infections

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Abstract

Mexico has cultivated opium poppy since before the 1900's and has been an important transit route for South American cocaine for decades. However, only recently has drug use, particularly injection drug use, been documented as an important problem. Heroin is the most common drug used by Mexican injection drug users (IDUs). Increased cultivation of opium poppy in some Mexican states, lower prices for black tar heroin and increased security at U.S.-Mexican border crossings may be contributing factors to heroin use, especially in border cities. Risky practices among IDUs, including needle sharing and shooting gallery attendance are common, whereas perceived risk for acquiring blood borne infections is low. Although reported AIDS cases attributed to IDU in Mexico have been low, data from sentinel populations, such as pregnant women in the Mexican-U.S. border city of Tijuana, suggest an increase in HIV prevalence associated with drug use. Given widespread risk behaviors and rising numbers of blood borne infections among IDUs in Mexican-U.S. border cities, there is an urgent need for increased disease surveillance and culturally appropriate interventions to prevent potential epidemics of blood borne infections. We review available literature on the history of opium production in Mexico, recent trends in drug use and its implications, and the Mexican response, with special emphasis on the border cities of Ciudad Juarez and Tijuana.

Keywords

Injection drug use; Opium; Heroin; Drug treatment; Needle exchange programs; Harm reduction; Interdiction; Mexico

1. Introduction

With over 100 million people, Mexico is the third most populous country in the Americas, and one third of its population is under 15 years of age. Mexico has made impressive economic

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gains in the past decade; however, rapid industrialization and in-migration have led to poor sanitation and living conditions, especially in the 2000 mile long border region with the United States. A melding of political, cultural, and identity factors have made this area particularly vulnerable to substance abuse.

Illicit drug use appears to have increased in Mexico over the past 10 years. Although the northern border was once considered primarily a passage way, drugs are increasingly being distributed and used in the northern region of Mexico (Cravioto et al., 2003; Magis-Rodriguez et al., 2002a; Medina-Mora et al., 2003). Parameters monitored by the National Council on Drug Addiction (Consejo Nacional de las Adicciones) such as history of lifetime use, exposure to drugs, age at first use, prevalence of current use, injection drug use, treatment admissions and drug-related deaths have shown a worsening trend over the past 15 years. Although the increase has been most dramatic in the northwestern region, this phenomenon is also seen in Northeastern Mexico, as has been documented in the 1988, 1993 and 1998 National Drug Use Surveys, particularly in large urban centers such as Nuevo Laredo and Monterrey (CONADIC, 1999).

Of significance is the increase in injection drug use. Injection drug use is becoming a major public health problem, especially in the northwestern region from Chihuahua to Baja California (Magis-Rodriguez et al., 2002a; SSA, 1998). As described below, trends in opium cultivation and heroin production in some Mexican states may in part explain these observations; however, other factors such as recent increased enforcement along the U.S.-Mexico border, low street prices of black tar heroin, and the poor economy may be contributing factors.

Although there is some evidence to suggest that health risks related to injection drug use in Mexico, such as HIV, have increased over the last decade, a sizeable body of empirical studies is lacking to describe the scope of the problem and inform the development of culturally appropriate interventions. Public health authorities have instituted a national addiction surveillance system [SISVEA, Sistema de Vigilancia de las Adicciones] (SSA, 1990) and have pilot-tested harm reduction activities, such as bleach distribution (Ramos, 2000), syringe exchange programs (Magis-Rodríguez, 2000), and methadone clinics, once considered unacceptable in this country.

The purpose of this paper is to describe the historical context of opium cultivation and heroin production in Mexico and to document the Mexican response to growing problems associated with addiction, injection drug use and its associated harms. This paper focuses primarily on describing the response of the national government as opposed to that of local and regional governments and non-governmental agencies (NGOs); thus we do not provide a complete view of the Mexican situation. Our report also includes special emphasis on the northern border cities of Tijuana (adjacent to the U.S. city of San Diego, CA) and Ciudad Juarez (bordering the U.S. city of El Paso, TX), which are considered hot spots for heroin use in Mexico (DEA, 2003a). We initially performed a broad search of standard medical and social science databases (i.e., PubMed) using keywords such as injection drug use, heroin, drug abuse treatment, narcotics trafficking, needle exchange, HIV, Tijuana, Juarez, and Mexico. We then expanded our search to non-indexed major databases (i.e., LILACS), health and policy related websites maintained by the governments of Mexico and the United States, and abstract books of conferences (i.e., International Conference on AIDS). Officials from the Mexican Register of AIDS Investigations and Interventions were also consulted (CONASIDA). Finally, data was obtained from personal contacts with members of nongovernmental organizations, treatment centers, and pharmacies. Although we attempted a comprehensive review of the evolution of the current drug epidemic in Mexico by consulting multiple sources, we did not have access to the complete historical and bibliographic record. Many government and non-governmental agencies and organizations do not make their reports public or concentrate them in personal

and private libraries. Despite these limitations, we attempt to lay the ground-work for describing the growing problem of opiate addiction in Mexico and call for a multidisciplinary approach to developing an appropriate response.

2. Historical context of opium cultivation and drug trafficking in Mexico

Mexico has long been recognized as a major source of marijuana (Toro, 1995), but its role in poppy cultivation is less widely known. Poppy cultivation has existed in the northwestern Mexican state of Sinaloa since before the 1900's. However, it was perceived that opium smoking was not commonly used among Mexican nationals and was instead used by "Chinese immigrants, artists and bourgeois degenerates" (Astorga, 1996).

Historically, the drug situation in Mexico has been strongly influenced by external pressure and events, especially from the United States. For example, when the U.S. Congress passed the Harrison Narcotics Act in 1914, which tightly monitored and regulated the distribution and sale of narcotic drugs (Musto, 1998), the Mexican Civil Revolutionary War was taking place (Revolución de 1910). The Mexican government was preoccupied with maintaining control over the country and thus curtailing opium trafficking was not a priority (Astorga, 1999). Prohibition policies drove up drug prices in the U.S., making opium production and trafficking more lucrative in Mexico. Entrepreneurial individuals became involved in small-scale trafficking. With time, intensive drug enforcement practices drove many of these entrepreneurial traffickers out of business, benefiting larger, more organized gangs and cartels that continue to control the majority of narcotics trafficking in Mexico (Bellis, 2003).

From 1916–1920, most drug trafficking in Mexico was taking place through the northwest border cities of Mexicali and Tijuana. Cultivation and commerce associated with poppy was legal in Mexico until 1926. In the 1930's, opium smugglers expanded their routes to pass through the more central border cities of Nogales and Ciudad Juarez, making use of routes used to transport agricultural products exported via the U.S. southern Pacific railroad (Astorga, 1999). Drug policy and prosecution was transferred to the Procuraduría General de la República, P.G.R. [Attorney General's Office] during the Lázaro Cárdenas Administration from 1934 to 1940 (PGR, 2003). The drug trade boomed during the years post-World War II, during which time the Mexican state of Sinaloa was reportedly the only opium producing region in Latin America (Astorga, 1999). Since opium production was marketed for export (i.e., the United States), and there still was little evidence of a drug problem within Mexico, the drug trade appeared to be tolerated.

During World War II, the mobilization of men by the United States to army bases on the border coincided with the development of local heroin distribution networks. In Ciudad (Cd.) Juarez, a well-known distribution network that lasted several generations began in the 1940's. This network continued to be the main "transborder" supply of heroin for local consumers in the Cd. Juarez/El Paso area until the rise of "regional or national cartels" (Ramos, 1990).

In the 1960's, Mexico became a major supplier of drugs to the U.S., in particular heroin and marijuana, and to a lesser extent barbiturates and amphetamines. With the dismantling of some large Near East/French heroin smuggling rings in the early 1970's, for a time Mexico was the leading supplier of heroin to the U.S. Remarkably, in 1974 Mexican drug dealers controlled at least 75% of the U.S. heroin market (DEA, 2004; Toro, 1995).

In 1969, the U.S. government administration under President Nixon had officially singled out Mexico as the primary supplier of dangerous drugs to the U.S., including heroin, and implemented "Operation Intercept." This consisted of meticulous car inspections for drugs at U.S.-Mexico border crossings, which caused a major disruption of transit across border crossings and signaled the beginning of a new era in U.S.-Mexico drug politics (Doyle,

2003). This intense interdiction had a significant local impact on the economy and drug scene in Tijuana and Ciudad Juarez. Historical reports suggest that the Juarez local consumption market continued to prosper during this period (Dr. M.E. Ramos, personal communication). Anecdotal reports suggested that heroin destined for the U.S. was also diverted to Tijuana, where a local consumption market was created in the 1970's.

In 1989, a study by the Centros de Integración Juvenil (a federally-funded adolescent and young adult drug treatment system) claimed a 700% increase in the number of new heroin injectors in Mexico between 1976 and 1982, with up to a third of inmates having used the drug (Suárez, 1989). This situation bears some similarities to a report from South East Asia, where intense interdiction against opium trafficking and use, instigated primarily by European and U.S. pressure, occurred during the 1950's and 1960's. While opium production continued in rural mountainous areas, increased price of opium and prosecution of users in urban areas was associated with transition from opium smoking to injection of heroin in Hong Kong and Thailand (Westermeyer, 1976).

In the mid-1970s, the political climate changed as Mexico-U.S. relationships were influenced by the oil interests discovered in southeastern Mexico in 1972. The Mexican government began a military operation against illicit crop production and trafficking of opium and marijuana with full cooperation of the U.S. government. This operation included the spraying of poppy and marijuana fields with paraquat, a defoliant herbicide that destroyed the plants (Anderson, 1981). Officials involved in this campaign noticed that fields would be harvested as soon as they were sprayed. This complicated matters, as the herbicide-drenched plants and drugs made their way to the U.S. drug market (Landrigan et al., 1983). Despite the massive scope of this campaign, it had limited success. Public and political pressure in the U.S. arising from reports of the contaminated drugs forced the interruption of this campaign and influenced the resignation of the top drug advisor to the U.S. government administration under President Carter (Anderson, 1981). An unintended response to this campaign was that Mexican opium poppy farmers moved their operations to tropical regions within the country and changed crop planting strategies, planting on steep mountainsides and narrow gorges and using the jungle canopy to hide crops (Stevenson, 2003). Opium poppy flourishes at elevations above 1000 m, making fields more difficult to detect. U.S. Drug Enforcement Agency (DEA) officials also report that farmers over-plant by as much as 50% in order to compensate for eradication losses (DEA, 2000).

In the 1980's, the torture and murder of Enrique Camarena, a U.S. DEA agent stationed in Guadalajara, Mexico, signaled the start of the current chapter in the story of the drug trade in northern Mexico. This event underscored the fact that the political and social elite was no longer "untouchables" in Mexico (Astorga, 1999). Drug traffickers became richer, more powerful, and bolder. Their application of technological advances, finance, communications, and transportation in the pursuit of their illegal trade created an entrepreneurial style of drug trade intermingled with extreme levels of violence (DEA, 2002).

In recent years, Mexico has had an important role in the production of high-quality, low-priced methamphetamine (DEA, 2003a). Additionally, Mexico is the largest supplier of marijuana to the U.S. and an estimated 70% of all South American derived cocaine passes through the Central America-Mexico corridor (DEA, 2003a). Furthermore, as described in more detail below, Mexico remains a major producer of opium and a major supplier of heroin to the U.S. and its own consumer markets.

3. Recent trends in opium cultivation, heroin production and trafficking

With the fall of coffee and corn prices and limited government assistance to farmers, poppy farming has surged in the southwestern Mexican state of Guerrero in the past decade. Opium

gum sells for \$700 to \$1200 U.S. dollars per pound in contrast to coffee, which yields 15 cents a pound (Lloyd, 2003). It is therefore not surprising that increasing numbers of poor mountain farmers have changed their crops from coffee, which was once called “brown gold,” to opium. The Mexican government estimates that Guerrero state accounts for 51% of opium poppy grown in Mexico (Lloyd, 2003). Additionally, genetically-modified poppy plants in the northern States of Durango and Sinaloa can be over 5 feet tall with large bulbs that measure up to 2 inches in diameter (DEA, 2000). A single field can potentially yield three crops a year. Overall, Mexico has an annual net cultivation of opium poppy averaging between 3600 and 5000 hectares (DEA, 2003a). The growing association between Mexico’s economy and opium cultivation now overshadows revenues from the oil business (Bellis, 2003).

Since opium is bulky and more inconvenient to conceal, it is most often refined into various forms of heroin. In 2002, the last year for which national estimates are available, Mexico produced an estimated 5.6 metric tons of pure heroin, slightly down from its average yearly output of 7.2 metric tons over the preceding 5 years (DEA, 2003a). According to the DEA, Mexican heroin accounted for 30% of the heroin sold in the U.S. in 2001 and approximately 98% of the heroin available west of the approximately midcontinental Mississippi River (DEA, 2003a), which is striking considering that the world leaders in heroin production are Burma, Afghanistan and Laos (UNODC, 2003). Most recently, there was a 78% increase in opium poppy cultivation, from 2700 hectares in 2002 to 4800 in 2003 (Green, 2004).

The main form of heroin that Mexican drug labs traditionally produce is “black tar”, which is a poorly refined product that is typically injected. However, when Mexico became a transit point for purer white-powder Colombian heroin in the 1990s—a product that is more potent and can be snorted, some Mexican gangs began to apply similar techniques to refine the drug (DEA, 2003b). Since 1998, the price of Mexican black tar heroin in U.S. markets has almost halved, and there are reports that the powder form of Mexican heroin is on the rise (DEA, 2003b).

These changes in heroin production, purity and price could potentially affect drug users’ behaviors and the subsequent risks of blood borne infection and overdose in Mexico and the United States. Black tar heroin has typically been the most common form of the drug in Mexico and in the western United States, whereas heroin powder has accounted for the vast majority of heroin used East of the Mississippi River in the U.S. (DEA, 2003a; Stevenson, 2003). Since black tar heroin is a solid, preparing it for injection requires heating the drug in a cooker, which depending on temperature achieved, can inactivate HIV and other blood borne viruses (Ciccarone and Bourgois, 2003; Clatts et al., 1999). In contrast, preparing heroin powder for injection does not require a heating step, and thus syringes and contaminated injection equipment may transmit blood borne viruses more readily.

Differences in the preparation of heroin have been proposed as a possible explanation for the observed higher HIV incidence rates among injection drug users (IDUs) in the Eastern versus Western United States (Ciccarone and Bourgois, 2003). Although speculative, an increasing trend towards the production of heroin powder over less pure forms of black tar could be accompanied by increases in the number of heroin-dependent persons, higher overdose morbidity and mortality, and potentially increased incidence of HIV and other blood borne infections in both Mexico and the U.S. These trends should be monitored closely so that timely interventions can be implemented in both countries.

4. Drug use trends in Mexico

In response to perceived increases in drug abuse, the Mexican government implemented a national drug addiction epidemiologic surveillance system called Sistema de Vigilancia Epidemiologica de las Adicciones (SISVEA). Having started in 1991 with only eight sites in

six states primarily located on the U.S./Mexican border, it now covers 53 cities in all 31 Mexican states and the Federal District, which constitutes Mexico City, the capital of Mexico (SSA, 2002). By compiling data from drug treatment centers, medical forensic services, emergency rooms and other sources, this system provides wide-ranging, periodic information on the problem of drug use in Mexico. It attempts to identify changes in patterns of consumption, risk groups, new drugs, and factors associated with the use and abuse of tobacco, alcohol, and illegal and prescription drugs. In addition, since 1988 the Mexican National Institute of Psychiatry has conducted a periodic National Survey on Addictions [Encuesta Nacional de las Adicciones], which also provides valuable information on the growing drug use problem in Mexico (SSA, 1998).

In the 10-year period between the first National Survey of Addictions in 1988 and the most recently published in 1998, the percentage of Mexicans reporting ever using an illegal drug in their lifetime increased from 3.3 to 5.3% among the urban population 12–65 years of age in Mexico (SSA, 1998). Nationwide, the most popular drugs used were marijuana, which had been used by 4.7% of the population, cocaine by 1.5%, and inhalants by nearly 1% (SSA, 1998). Among the Mexicans surveyed who reported injecting drugs, heroin was the drug of choice for 73%, and 19% of IDUs disclosed that they had injected with a used needle (SSA, 2001).

Estimates of heroin use in regions of Mexico where opium poppy is cultivated are lacking; however, it has generally been assumed that there is little local consumption (Magis-Rodriguez et al., 2002a). In a 1991 study of nine rural regions in Mexico, lower levels of drug use were apparent in communities where there were more signs of social cohesion, cultural identity and more capacity for integrating change (Wagner et al., 2002). However, distribution of heroin within Mexico predominantly occurs through overland routes, in contrast to Colombia where illicit drugs tend to be trafficked via air (DEA, 2003a). Since the process of refining heroin is time consuming, “spill-over” of the drug often occurs in communities along heroin trafficking routes. This phenomenon has been documented in Brazil along major highways used for drug trafficking (Bastos et al., 1999), in overland heroin routes in Southeast (Beyrer et al., 2000) and Central Asia (Parfitt, 2003), and in parts of Nigeria which have become transit points for heroin trafficked by air (Adelekan and Stimson, 1997; Stimson et al., 1998). Behavioral surveillance of drug use trends is therefore recommended in such regions of Mexico.

4.1. Drug use in Ciudad Juarez

Ciudad Juarez is part of a metroplex with the U.S. cities of El Paso, Texas and Las Cruces, New Mexico. This metroplex is at the approximate mid-point of the 2000 mile long border between Mexico and the United States. The Metroplex has a combined population of over 2 million people, with Ciudad Juarez alone comprising more than half of the inhabitants (INEGI, 2000). By 1998, SISVEA reported that Ciudad (Cd.) Juarez had the second highest drug use rate in the country at 9.2%, second only to Tijuana (SSA, 1998). Among adolescent drug users enrolled in drug treatment in Cd. Juarez, one fifth reported that their onset of initiation of injection was <15 years (Dr. J. Ferreira-Pinto, personal communication, 1998).

In a community-based survey in 2001, it was estimated that there were approximately 6000 IDUs in Cd. Juarez (Dr. C. Magis-Rodríguez, personal communication). A capture-recapture study by Cravioto in 2002 (Cravioto, 2003) estimated that there were 3000–3500 “heavy” heroin users (defined as having used heroin 2–3 times a day in the previous 6 months) and as many as 186 shooting galleries [picaderos] in Cd. Juarez.

Since 1989, with the support of the United States Mexico Border Health Association, studies began to systematically document injection drug use and associated sexual risks in Cd. Juarez. In a formative research study conducted from 1989 to 1991 among 312 female sex workers

and 435 female sex partners of male IDUs, the prevalence of injection drug use was 3 and 2%, respectively. Nevertheless, both groups of women were at very high risk for HIV and STDs based on a very low prevalence of condom use (Hammet et al., 1992). In a 1992 randomized controlled trial among female sex partners of male IDUs in Cd. Juarez, the prevalence of unprotected sex decreased from 92 to 78%, although this change was not statistically significant (Women Helping Empower and Enhance Lives Project (WHEEL) Project, 1993). Data from a study conducted in 2001, although using a different sampling method from the 1992 Hammet study, found the percentage of sex workers having injected drugs to be over 10% (Valdez et al., 2002). More recently, a large, ongoing study of female sex workers in Cd. Juarez suggests that as many as half may be injecting drugs, primarily heroin (Dr. T.L. Patterson, personal communication, January 2005).

4.2. Drug use in Tijuana

Tijuana is the northwestern-most city in Mexico and has over 1.2 million inhabitants. Tijuana and San Diego together form the world's largest binational metropolis, and the San Ysidro border station between these cities is the busiest point of entry along the U.S.-Mexico border (INEGI, 2000; U.S. Customs Service, 2004). In a survey of homosexuals/bisexuals, prostitutes, and prisoners in Tijuana, only 22, 5, and 21%, respectively, originated in the Baja California region (Güereña-Burgueño et al., 1992). Yet migration operates in both directions. Of IDUs in the Tijuana prison, 14% reported having injected drugs in the U.S. at some point (Magis-Rodriguez et al., 2000b). These north-south interaction reflect a drug scene that is particularly unique (U.S. Customs Service, 2004), and provides a kaleidoscope view of Mexico's drug problem and response.

Whereas Tijuana has been a point of transit in the smuggling of cocaine and heroin from South America towards the U.S. for decades (Bellis, 2003), it now has a robust consumer drug market (Medina-Mora et al., 2003; SSA, 1998) and is thought to have one of the fastest growing IDU populations in Mexico (Magis-Rodriguez et al., 2002a; SSA, 1998). The 1998 National Survey of Addictions data for Tijuana showed that the percentage of the general population 12-65 years of age reporting having ever used an illegal drug was almost three times (14.7%) that of the national average (5.3%); in fact, Tijuana is the city with the highest consumption of illicit drugs in the country, with the next highest being Cd. Juarez at 9.2% (SSA, 1998).

Whereas in Mexico overall, men were 13 times more likely to use an illicit drug in their lifetime than women, in Tijuana this ratio was lower at 6:1, suggesting that women are over-represented among the general population of drug users in Tijuana compared to other Mexican cities (SSA, 1998). In the late 1990's, heroin had been used by approximately 0.5% of the Tijuana population in the past 12 months (SSA, 1998). Five percent of new drug users reported injecting heroin as their first illicit drug.

According to the 2002 addiction surveillance system report for Tijuana, drug users are initiating at a young age. Over 45% of drug users reported that their onset of illicit drug use was between the ages of 10 and 14 years, whereas 35 and 40% (depending on type of treatment center surveyed) reported initiating drug use between the ages of 15 and 19 years (SSA, 2002).

By 2002, heroin was the primary reason for seeking treatment for almost a third of drug users at treatment facilities in Tijuana (ISESALUD, 2002; SSA, 2002). The regional drug treatment network RUTA [Red de Unidad de Tratamiento de Adicciones] reported that there were at least 21,000 active drug users in Tijuana, although the mode of administration and type of drugs used were not specified (Trillo, 2002). A CENSIDA survey in December of 2003 conducted among 35 shooting galleries [picaderos] and other drug scenes in Tijuana estimated that there were more than 6000 active IDUs attending such establishments (Morales et al., 2004), but the total number of IDUs in the city is likely to be much larger. Of concern are

reports that risky behaviors such as shooting gallery attendance are common in Tijuana. The number of picaderos is unknown, but in a recent address by Mexican President Vicente Fox, the government had reportedly closed 1400 picaderos in Tijuana in the first half of 2002 (Oficina de la presidencia de la republica, 2002). A cross-sectional study of 402 IDUs in Tijuana conducted in 2003 found that 53% had ever used a shooting gallery (Dr. C. Magis-Rodríguez, personal communication).

Anecdotal reports also suggest that heroin use is on the rise in Tijuana and other Mexican communities bordering the United States, where a heroin fix can cost as low as \$2 U.S. (DEA, 2000). In the past, increases in the consumption of cocaine and marijuana in the U.S. have been followed by parallel increases in such consumption in Mexico, generally with a 5- to 7-year lag. Given the current heroin epidemic in the U.S., low prices, ready availability, and increasing purity in Mexico, Mexican officials project that local consumption of heroin will continue to increase, especially in border regions (DEA, 2000).

4.3. Impact of changes in border security since September 11, 2001

Efforts to crack down on drug trafficking across the Mexico-U.S. border following the terrorist attacks on the U.S. on September 11, 2001 led to reported increases in heroin availability in Mexican border towns (Medina-Mora and Rojas Guiot, 2003). Border crossings between Mexico and the U.S. were interrupted for approximately 3 weeks after the terrorist attacks. As a consequence, the price of heroin dropped to around \$25 U.S. a gram in Ciudad Juarez and \$40 in Tijuana, but remained as high as \$60–\$80 a gram in San Diego (Chavira, 2003; Medina-Mora and Rojas Guiot, 2003).

Fluctuations in drug prices on the street in these settings may be temporary in nature, but should not be dismissed in terms of their potential importance. Changes in drug trafficking routes, in this case arising from more stringent border control measures, could further facilitate a local consumption market for heroin and cocaine in new locations in Mexico, as has been documented elsewhere in Latin America and Asia (Bastos et al., 1999; Beyrer et al., 2000; Parfitt, 2003; Strathdee et al., 2003). The challenge is to identify these new drug trafficking patterns and the conditions that create them in an effort to predict potential drug use trends and to implement appropriate interventions before epidemics begin.

In a historical context, these recent conditions resemble those that occurred about 30 years ago when the northern border region experienced an increase in drug use in a previous era of intensified enforcement during “Operation Intercept” (Doyle, 2003; Cravioto et al., 2003). Current security conditions and an increase in the number and percentage of people reporting heroin as their main reason for attending drug abuse treatment suggests that vigilance is needed to avoid a repeat of this experience (SSA, 2002).

5. HIV/AIDS risks associated with injection drug use in Mexico

The cumulative number of reported AIDS cases in Mexico almost doubled between 1995 and 2001, from 25,746 to 51,914 (CONASIDA, 2002). Currently, Mexico places fifth in the number of reported AIDS cases in the Americas, after the U.S., Brazil, Haiti, and Colombia (UNAIDS, 2004). However, Mexico is near the bottom of the list in regards to the rate of HIV prevalence in persons 15 to 49-year-old, with only Nicaragua, Bolivia, and Cuba having lower rates in the Americas (UNAIDS, 2004). The vast majority of new AIDS cases reported to the national AIDS registry in 2002 were attributed to heterosexual or homosexual activity (57.5 and 42.4%, respectively) (CONASIDA, 2002), with only 1% being IDU-associated (Magis-Rodríguez et al., 2002a). Early efforts to safeguard the blood supply through mandatory HIV antibody screening are thought to have curtailed a more widespread epidemic (del Rio and Sepulveda, 2002).

HIV prevalence among IDUs and other high-risk groups in Mexico has thus far remained low (Bastos et al., 1999; Güereña-Burgueño et al., 1991; Magis-Rodriguez et al., 2002a). Of the estimated 160,000 people living with HIV, approximately 2–6% are believed to be IDUs (Magis-Rodriguez et al., 2002b; Noriega-Minichiello et al., 2002; UNAIDS, 2004). In comparison, injection drug use accounts for 39% of reported AIDS cases in Argentina and 25% of reported AIDS cases in Brazil but accounts for very low proportions of AIDS cases in other Latin American countries such as Bolivia (Khalsa et al., 2003). Likewise, the IDU-associated HIV epidemic in the U.S. shows similar heterogeneity. HIV prevalence among IDUs in Western U.S. cities has remained under 5%, but is much higher in North Eastern U.S. states (e.g., 20–30%) (Garfein et al., 2004). These observations suggest that factors such as IDUs' social networks or environments may be influential in determining the risk of HIV infection in Mexico and elsewhere. Stigma surrounding injection drug use may have led to some degree of under-reporting injection drug use as a risk factor for HIV/AIDS in Mexico but the extent to which this has occurred is unknown.

There is growing concern that there are “pockets” of HIV infection among subgroups of IDUs in Mexico, since national statistics may not account for heterogeneity in dynamic HIV sub-epidemics. Injection drug use, particularly along the U.S.-Mexico border, is thought to contribute directly or indirectly to new HIV infections, through needle sharing or sexual transmission with non-IDU partners (Ortíz-Mondragón et al., 1998). For example, in 2003 a rapid HIV testing program among 947 pregnant women attending the Tijuana General Hospital showed HIV prevalence to be 1.26% at delivery, a disturbingly high prevalence for this population (Viani et al., 2004). Earlier reports found HIV prevalence in pregnant women to be 0.09% (Magis-Rodriguez et al., 2000a) and 0.3% in the general adult population (Magis-Rodriguez et al., 2000a; UNAIDS, 2004). It is noteworthy that all of these HIV cases were directly or indirectly linked to drug use among these women or their sexual partners (Viani et al., 2004). While caution should be exercised in generalizing these recent findings to all women of child-bearing age in Tijuana, these results may serve as a warning sign of a larger HIV epidemic among drug users in the city.

There is a dearth of reliable, published estimates of HIV prevalence among IDUs in Tijuana, Cd. Juarez or other Mexican border cities, where injection drug use and associated risk behaviors are increasingly reported. In a recent cross-sectional study of 402 street-recruited IDUs in Tijuana, HIV prevalence was 5% (Dr. C. Magis-Rodríguez, personal communication); similar data are lacking for Cd. Juarez and elsewhere. Qualitative data from in-depth interviews among IDUs in Tijuana and Cd. Juarez recently conducted by our group suggest that IDUs in Tijuana are less aware of HIV risks and are less likely to report syringe disinfection practices compared to IDUs in Cd. Juarez (Strathdee et al., submitted). However, sharing of contaminated injection paraphernalia remains an ongoing problem in both cities (Strathdee et al., submitted; Valdez et al., 2002).

Assessments of knowledge of and attitudes towards health risks have revealed low self-perceived HIV risks among IDUs in Tijuana (Badillo et al., 1998; Cravioto et al., 2003) and misconceptions about the viability of the virus (e.g., belief that HIV is killed by air) (Strathdee et al., submitted), which is likely to exacerbate the risk of acquiring blood borne infections. Similar misconceptions have also been reported among IDUs in Puerto Rico (Dr. H. Colon, Center for Addiction Studies, Universidad Central del Caribe, Bayamon, Puerto Rico, personal communication).

The Mexican prison population may also be at high risk of blood borne infections in association with needle sharing. A 2000 survey found that the prevalence of injection drug use was 37 and 24% among prisoners in Tijuana and Cd. Juarez, respectively; with 92% injecting heroin and 46% injecting cocaine simultaneously with heroin in the form of speedball (Magis-Rodriguez

et al., 2000b). In this same study, in Tijuana 60% of heroin injectors shared syringes and 2.5% were HIV-infected; while in Cd. Juarez 40% of the heroin injectors shared syringes and 1.3% were HIV infected (Magis-Rodriguez et al., 2000b). Recent surveys of these same two prison populations in Tijuana and Cd. Juarez found 100% hepatitis C prevalence among IDUs (Magis-Rodriguez et al., 2002a).

The extent of drug use among sex workers in Mexico is also understudied. In Mexican border cities, prostitution is common and is legally tolerated. Cities such as Tijuana and Cd. Juarez are common destination sites for sexual tourism. In a 1992 study, 9% of female sex workers had a history of having a sexual partner who injected drugs (Güereña-Burgueño et al., 1992). In 1997, a small ethnographic study of Mexican female prostitutes in El Paso, Texas, reported that one third had injected heroin or cocaine (Deren et al., 1997). A later study conducted in Ciudad Juarez in 2002 with 75 female sex workers found that 59% currently used drugs and 36% of these had initiated illicit drug use prior to entry into sex work (Valdez et al., 2002). The most common drugs injected were cocaine (31%), heroin (31%) and speedball (38%) (Valdez et al., 2002). One quarter of IDUs reported using a used syringe.

6. Response to the drug problem

6.1. Drug laws and enforcement

Like other countries in Latin America, there is low tolerance for illicit drug use in Mexico, and the response to the drug problem has emphasized legal sanctions (Magis-Rodriguez et al., 2002a). Since Mexican President Vicente Fox was elected in 2000, a national crusade against narcotics trafficking has been launched whereby police have stepped up drug enforcement (Oficina de la presidencia de la republica, 2002). Yet Mexican anti-drug trafficking policies could inadvertently lead to an increased risk of acquiring HIV and other blood borne infections among IDUs. For instance, a recent law-enforcement campaign taking place in Tijuana called “Ponle Dedo al Picadero” [“Target the Shooting Galleries”] has led to closure of 1400 “picaderos” (Fudacion Azteca, 2002). In various contexts, fear of police detainment or arrest can discourage IDUs from carrying needles, leading them to share needles at the point of sale or inject with rented needles in shooting galleries (Harvey et al., 1998; Koester, 1994; Rhodes et al., 2003; Strathdee et al., 2003). This practice can promote disassortative mixing, which in turn can increase the risk of blood borne infections. A series of 20 in-depth interviews from a qualitative study conducted recently among IDUs in Tijuana indicated almost all participants regularly attended shooting galleries due to difficulties obtaining syringes and police oppression (Strathdee et al., submitted).

On the other hand, in Cd. Juarez there is a long history of collaboration between non-governmental organizations (primarily Programa Compañeros) and the criminal justice system. One key long-term collaboration has been the continued presence of Programa Compañeros in delivering education and harm reduction services within the prisons. Their experience has been that prison guards for the most part have a “laissez faire” attitude to the discreet distribution of prevention supplies.

Similar cooperation had prevailed with the police, with Compañeros offering HIV prevention education within the Police Academy. However, during the past administration (2002–2004) the relationship with police became tense, with some outreach workers being harassed. In the past the Juarez police had respected Programa Compañeros employee identification cards; when a policeman encountered a well-identified outreach worker in possession of bleach, condoms and other prevention supplies, they did nothing to hinder the prevention effort. Such experiences indicate the need for continued efforts to educate police at every level to ensure that important gains in education and awareness are not lost. More detailed studies are needed

to determine the extent of the direct and indirect effects of police pressure and other social and environmental influences on needle sharing behaviors.

6.2. Legality of purchasing drugs and syringes

Possession of narcotics is illegal in Mexico and enforced actively by the police. In limited circumstances (e.g., the late stages of certain terminal diseases), the use of heroin, morphine, or marijuana is permitted by order of a judge under skillful interpretation of public health law and the federal penal code (Carlos Reyna, Lawyer, Universidad Autónoma de Baja California (UABC), personal communication).

Sale of needles and syringes is legal in Mexico and does not require a prescription (C. Reyna, Lawyer, UABC, personal communication). In fact, injection of antibiotics, pain killers, and vitamins is a relatively common occurrence in Mexican culture (Deren et al., 1997; McVea, 1997; Simonsen et al., 1999). Medicines are rarely self-injected but rather are administered by nurses aides, medical paraprofessionals, or non-professionals such as pharmacy attendants, neighborhood women who have taken first aid courses, and family members (McVea, 1997).

However, in areas of high drug activity some pharmacists limit sales of needles and syringes to those who appear to be drug users, by either saying that they have “run out” of the type of needles popular with drug users or by artificially raising prices. In Ciudad Juarez, two attempts have been made to set up a training program for pharmacists, one in the early 1990’s and one within the past 2 years. In the first instance pharmacist assistants who actually operate the pharmacies in Juarez were trained on HIV, risk factors of HIV associated with drug use, and the importance of access to clean syringes and works in HIV prevention. Similar training was provided to prison guards to permit access to clean syringes within the jail. After 12 months, follow-up showed that few pharmacies were being manned by the staff that had received prior training.

To combat the trend among pharmacists to impede access to sterile syringes, Tijuana officials held a meeting in 2003 to inform pharmacists on how this practice can lead to increased needle sharing and increased transmission of HIV (Ignacio Romo, President Asociación de Farmacias y Boticas, personal communication). The extent to which this has changed the practices of individual pharmacists is unknown; however, in-depth interviews conducted with 20 IDUs in Tijuana in 2004 suggested that few pharmacies in Tijuana sold syringes to persons they suspected to be IDUs, and those who did so often sold them syringes at a higher price (Strathdee et al., submitted). Clearly, long-term efforts are needed to educate pharmacists and clerks about the need to make sterile syringes available to IDUs as part of a comprehensive policy to reduce the spread of blood borne pathogens.

6.3. Needle exchange programs

The concept of harm reduction is a relatively new concept in Mexico. Like most countries in Latin America, few nongovernmental organizations in Mexico appear to be involved in prevention activities aimed at drug users (Magis-Rodriguez et al., 2002a). Harm reduction programs; especially needle exchange programs (NEPs) have often been met with controversy within the Mexican government. Some politicians and public servants and clinic staff look disparagingly on IDUs and reject harm reduction practices based on moral grounds. For this reason, those in the National Center for the Prevention and Control of HIV/AIDS (CENSIDA) recently developed a position paper to educate and sensitize policy makers and those who work with IDUs to the benefits of harm reduction (CENSIDA, 2003).

To our knowledge, there currently is only one documented NEP in all of Mexico, which is operated by Programa Compañeros (Ramos, 2000). Through their community-based approach

to HIV/AIDS prevention, Compañeros has succeeded in establishing the trust of drug users, community members and local and state politicians. Most activities are directed towards providing IDUs with education on health risks and the importance of adequately cleaning needles and syringes, while NEP activities are currently on a very small-scale due to fiscal restraints. While not officially sanctioned, the state government in Chihuahua tolerates the NEP.

In rare situations within some Mexican prisons, inmates have been provided with Hepatitis B Virus vaccinations, access to bleach for syringe disinfection and, in a few instances, syringe exchange, albeit on a quasi-official basis (Magis-Rodríguez, 2000; Magis-Rodríguez et al., 2002a; Dr. R. Ramos, personal communication, May 2004).

On the whole, harm reduction activities in Mexico appear to be tolerated but seldom promoted. Elsewhere in Latin America, NEP was introduced in Brazil as early as 1994, and 33 programs were operating by 2000 (Bastos and Strathdee, 2000). In Argentina, IDUs had no free access to sterile needles until the end of the 1990s, but since this time, a syringe distribution program has been introduced by the Argentinean Harm Reduction Association (Inchaurreaga, 2003). Efforts are needed to assess the social acceptability and efficacy of NEPs and other methods of expanding access to sterile syringes among IDUs in Mexican border cities.

6.4. Drug abuse treatment

Little data exists which describes the extent of drug abuse treatment in Mexico overall. According to the United Nations Office on Drugs and Crime, 48,500 people were treated for substance abuse in Mexico in 1999 (UNODC, 2001), but a breakdown of the drugs of abuse was not provided. A report from SISVEA indicated that among NGOs providing substance abuse treatment, the main substances of abuse for treatment admissions in 2002 were heroin (26.3%), alcohol (16.3%), methamphetamine (16.1%) and cocaine (15.3%) (SSA, 2002). In contrast, among government-operated treatment programs during the same year, the main substances of abuse were cocaine (28.5%), marijuana (18.2%) and alcohol (14.7%). NGOs reported treating 31,819 persons throughout the country, with the exception of no reports from the state of Guerrero. Government run treatment centers reported treating 18,070 persons in 28 of the 32 federal entities. The differences in admissions are likely due in part to under-reporting, self-selection due to cost of treatment and availability of services, and the fact that NGOs may try to cater to specific clients. Both agencies reported that the vast majority of their clients were male, although the age and education level of those treated at NGOs were somewhat higher than at government-run centers (SSA, 2002).

In Tijuana, only one drug treatment program existed in 1988, with a capacity of 20 beds. This was generally believed to adequately serve the needs of the city. In support of this assertion, an HIV seroprevalence study conducted at the time found that only 13 of 371 patients with history of injection drug use were Tijuana residents (Güereña-Burgueño, 1990). The remaining individuals resided in different cities in the U.S. and had traveled to Tijuana in search of inexpensive, anonymous drug abuse treatment.

Today in Tijuana, there are close to 20 residential drug treatment programs that form the Unity Network for Treatment of Addictions [RUTA] with a capacity to treat 3500 persons per year (Trillo, 2002). While this represents a considerable increase in drug treatment services, taking into account estimates of the number of drug users in the city, the coverage of these programs is believed to be less than 20%. Until recently, these programs were not officially sanctioned by the Health Ministry, which has now enacted laws to regulate drug treatment programs and has created the Municipal Office for Control and Treatment of Addictions. Still, most residential and governmental programs are abstinence-based (Magis-Rodríguez, 2000) and few offer methadone maintenance.

In fact, only two private clinics in Tijuana provide methadone maintenance and treat up to 1800 patients in a given month. One of these clinics is run by Profesionales Contra la Adiccion, A.C., which operates several methadone clinics throughout Northern Mexico. The Tijuana clinic has been in existence in Baja California for over 10 years with about 400 clients receiving services per week. At about \$7 U.S. per visit, the fee for services is comparable to the price of many drugs, but this remains prohibitive for many clients. Unfortunately, no ancillary services, such as counseling, are available (Dr. J.J. Curiel, Medical Director of Profesionales Contra la Adiccion, A.C., personal communication). Other alternatives include more comprehensive private clinics, where detoxification and rehabilitation cost \$5,000–\$20,000 U.S. (Dr. Isaac Alba, Director, Clinica Ser, private Tijuana drug rehabilitation clinic, personal communication, January 2004).

The official Mexican government's drug addiction treatment institution, Centros de Integracion Juvenil, began to pilot a comprehensive intervention and rehabilitation program for injection drug users in Ciudad Juarez in 2001. As part of this program, the first government run clinic to provide methadone treatment in Mexico opened in October 2001 in Ciudad Juarez (Guisa Cruz, 2002). To our knowledge, this is still the only government-operated clinic providing such services. This program combines psychological and social services with methadone treatment for those who have been heroin dependent for more than 2 years, suffer severe withdrawal symptoms, use heroin while pregnant, or are IDUs. Within the first 5 months of opening the program provided methadone to approximately 100 patients a day, yet demand continues to outpace delivery (Guisa Cruz, 2002). Patients have remained abstinent from drugs and returned to work in places such as local maquiladora factories. Among government health officials there exists the intention to open more such clinics after evaluation of the results from Ciudad Juarez (Dr. C. Magis-Rodríguez, personal communication).

Also in Ciudad Juarez, since the early 1990's Programa Compañeros piloted several interventions targeting IDUs, such as narcotics anonymous groups, family and peer led support groups, and a detoxification and maintenance program provided to 75 drug users consisting of acupuncture treatments supplemented by Chinese herbal medicinal preparations. The latter intervention showed promising reductions in frequency of heroin use and needle sharing (Dr. J. Ferreira-Pinto, personal communication, 1998).

Interestingly, a federal program in Mexico offers drug users small doses of heroin as a form of substitution therapy. Beginning at the end of the 1970's, this program still exists and was treating approximately 20 people at the end of 2003 (Uriarte, 1988; Dr. C. Magis-Rodríguez, personal communication, December 2003). Since heroin maintenance therapy is being evaluated as a form of drug treatment in several countries with promising results (e.g., Switzerland, Germany) (Fischer et al., 2002), this represents another treatment option worth consideration elsewhere in Mexico.

Beyond price and availability, lack of treatment seeking remains a problem among drug users in Mexico. In a recent survey, 14% of illicit drug users with three or more symptoms of addiction sought treatment (SSA, 2001). Several reports suggest that drug users in Mexico often avoid seeking medical attention for addiction and chronic or infectious diseases until health problems become severe and, consequently, less amenable to treatment (Cravioto et al., 2003; Ortiz et al., 1997). A study of heavy heroin users in the Ciudad Juarez Penitentiary showed that longer length of exposure to heroin, never having a withdrawal period from use, never overdosing, and not having experienced a chronic illness were predictors of failing to seek treatment (Cravioto et al., 2003). Despite the fact that over 80% of participants were using heroin intravenously, few had worries in regards to risks to their health (Cravioto et al., 2003).

Faith-based residential centers, particularly in Ciudad Juarez have offered drug treatment services to injectors since the 1990's. Most of the treatment had focused on faith healing. However more recently, with the onset of training from non-governmental groups like Programa Compañeros, faith-based centers have begun to use intervention models derived from behavioral science and have also participated as active centers for referral to other forms of drug treatment, including self-help groups like those operated at Programa Compañeros or the methadone-based program operated by Centros de Integración Juvenil.

Beliefs as well as cultural factors may affect utilization of drug abuse treatment. Significant differences in rates of treatment entry have been documented among African Americans and Latinos compared to Whites in the United States (Lundgren et al., 2001; Shah et al., 2000). In a study of ethnic minorities in Los Angeles, Latino drug users were less likely than Anglo or African Americans to have sought drug treatment and were more likely than these groups to report a low perceived need for drug abuse treatment (Longshore et al., 1992). The extent to which cultural factors represent barriers to drug treatment does not appear to have been systematically studied in Mexico; however, stigmatization and alienation have been major barriers to seeking treatment (Ortiz et al., 1997).

Migration presents another challenge to drug prevention and treatment efforts, both in terms of rapid turnover and how to best target education and services to those of diverse backgrounds. Mexican migrants who have tried unsuccessfully to cross the border into the U.S. often feel of a lack of identity or attachment; many harbor a distrust of local officials, thus discouraging treatment seeking (Montiel-Hernandez et al., 1996). Some drug users report traveling to the U.S. to seek drug treatment that is considered unavailable in Mexico (Ferreira-Pinto and Ramos, 1997; Ramos, 1990). Maintaining drug treatment regimens in a highly mobile population and problems with compiling accurate statistics on those who may present at clinics in both Mexico and the U.S. also pose challenges to officials on both sides of the border and underscore the need to develop coordinated prevention and treatment.

7. Conclusion

Mexico's role in the production and/or distribution of illicit drugs has long been recognized, but only relatively recently have signs of problem drug use begun to accumulate, especially in border cities such as Ciudad Juarez and Tijuana. Efforts to monitor trends in drug use through the national drug addiction epidemiologic surveillance system and survey on addictions will help to inform program planning and policy, but efforts at the state and local levels are also needed since national data likely mask heterogeneity in drug use patterns. Although the proportion of AIDS cases attributed to injection drug use has remained low in Mexico, 'pockets' of HIV infection may nevertheless occur and there is growing evidence of high-risk behaviors that could lead to widespread epidemics of HIV and other blood borne infections. Prospective studies are needed both to monitor trends in drug use and the incidence of blood borne infections, but also to evaluate the impact of existing and future interventions.

In terms of program planning to reduce drug-related harm, a multifaceted approach is needed. Although methadone treatment has been available for over a decade in Mexico, it is not widely accessible. Efforts to expand methadone maintenance should be scaled up immediately, since this proven treatment is generally considered socially, politically, and legally acceptable in Mexico and elsewhere across the world. Since it is legal for IDUs to purchase syringes without a prescription in Mexico, efforts to identify IDUs' barriers to the purchase of sterile syringes should be undertaken among IDUs, pharmacists and pharmacy clerks to ensure that IDUs need not resort to needle sharing.

The acceptability and feasibility of harm reduction programs that may be considered controversial in Mexico should be further explored, which could include physician prescription of sterile syringes to IDUs, expansion of NEPs, and implementation of syringe vending machines and safe injection facilities. In past experiences in Mexico, interventions such as mass-media social marketing of condom use received strong opposition from conservative and religious groups in both the public and legal arenas (Rico et al., 1995). However, by working with conservative and religious groups, local human rights organizations, non-governmental agencies, and influential citizens, the development and implementation of successful prevention strategies can occur. Indeed, despite low coverage, the range of innovative prevention programs in Mexican border cities like Cd. Juarez is encouraging. Since 60% of the Latino population in the U.S. includes Mexicans and Mexican-Americans; many of whom cross the 2000 mile porous Mexican-U.S. border on a regular basis, there is a growing need for both countries to claim ownership over Mexico's growing drug problem and intervene with culturally-appropriate interventions.

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