

# Combating the Twin Epidemics of HIV/AIDS and Drug Addiction

Opportunities for Progress and Gaps in Scale

A Report of the CSIS Task Force on HIV/AIDS

Executive Director  
J. Stephen Morrison

Authors  
David A. Fiellin  
Traci C. Green  
Robert Heimer

January 2008



# Combating the Twin Epidemics of HIV/AIDS and Drug Addiction

Opportunities for Progress and Gaps in Scale

A Report of the CSIS Task Force on HIV/AIDS

Executive Director  
J. Stephen Morrison

Authors  
David A. Fiellin  
Traci C. Green  
Robert Heimer

January 2008

## About CSIS

In an era of ever-changing global opportunities and challenges, the Center for Strategic and International Studies (CSIS) provides strategic insights and practical policy solutions to decisionmakers. CSIS conducts research and analysis and develops policy initiatives that look into the future and anticipate change.

Founded by David M. Abshire and Admiral Arleigh Burke at the height of the Cold War, CSIS was dedicated to the simple but urgent goal of finding ways for America to survive as a nation and prosper as a people. Since 1962, CSIS has grown to become one of the world's preeminent public policy institutions.

Today, CSIS is a bipartisan, nonprofit organization headquartered in Washington, D.C. More than 220 full-time staff and a large network of affiliated scholars focus their expertise on defense and security; on the world's regions and the unique challenges inherent to them; and on the issues that know no boundary in an increasingly connected world.

Former U.S. senator Sam Nunn became chairman of the CSIS Board of Trustees in 1999, and John J. Hamre has led CSIS as its president and chief executive officer since 2000.

CSIS does not take specific policy positions; accordingly, all views expressed in this publication should be understood to be solely those of the authors.

© 2008 by the Center for Strategic and International Studies. All rights reserved.

### **The CSIS Press**

Center for Strategic and International Studies

1800 K Street, NW, Washington, DC 20006

Tel: (202) 775-3119

Fax: (202) 775-3199

Web: [www.csis.org](http://www.csis.org)

# Contents

Acknowledgments	v
Notes on Methodology	vi
Executive Summary	ix
1. Nexus between Drug Treatment and HIV Prevention	1
2. Opioid Addiction and Its Treatment	4
3. Efficacy of Addiction Treatment as HIV Prevention	12
4. Availability in Developing Countries	16
5. Policy and Implementation Considerations	21
6. Recommendations	32
Country Reports	
China	37
Vietnam	40
Malaysia	43
Indonesia	45
Kazakhstan	47
Kyrgyzstan	49
Tajikistan	51
Georgia	52
Russian Federation	55
Ukraine	58
Kenya	62
Nigeria	63
Country Tables	67
About the Authors	76
About the CSIS Task Force on HIV/AIDS	77



# Acknowledgments

This CSIS HIV/AIDS Task Force report is authored by David A. Fiellin, associate professor of medicine, Department of Internal Medicine, Yale University School of Medicine; Traci C. Green, National Institute on Drug Abuse predoctoral fellow, Yale University School of Public Health; and Robert Heimer, professor, Division of Epidemiology of Microbial Diseases, Yale University School of Public Health. All three are affiliated scientists of the Yale Center for Interdisciplinary Research on AIDS.

Data presented were compiled between November 2006 and June 2007. Sources included papers in the peer-reviewed medical and social science literature, reports from national agencies and international organizations, and direct communication with contacts either in the country of interest or at the agencies and organizations responsible for managing or funding treatment programs and HIV relief efforts. This report focuses on 12 developing countries: 10 with injection-driven HIV epidemics (China, Georgia, Indonesia, Kazakhstan, Kyrgyzstan, Malaysia, Russia, Tajikistan, Ukraine, and Vietnam) and 2 with emerging epidemics among injection drug users (Kenya and Nigeria). We are indebted to our colleagues who have conducted the many studies we cite and, as well, those we fail to cite because we have come to take their efforts for granted.

We are indebted to the Open Society Institute (OSI) for funding this synthesis and to Zoe Hudson and Daniel Wolfe at OSI for their critical editing and encouragement. We also wish to thank the Yale Center for Interdisciplinary Research on AIDS for promoting an approach to HIV/AIDS prevention that appreciates the need to respond to global problems by looking at the large picture. We would like to thank the following individuals for making comments on an earlier draft of this document: Joseph Amon, Human Rights Watch; Billy Pick, U.S. Agency for International Development; Richard Needle, Centers for Disease Control and Prevention; and Robert Newman, the Baron Edmond de Rothschild Chemical Dependency Institute.

A shorter version of this report was published in October 2007.

# Notes on Methodology

The data presented in this report were compiled between November 2006 and June 2007. Sources included papers in peer-reviewed medical and social science literature, reports from national agencies and international organizations, and direct communication with contacts either in the country of interest or at the agencies and organizations responsible for managing or funding treatment programs and HIV relief efforts. Most of these articles and reports were in English, but some foreign language materials were reviewed, especially when information was not available in English. Data for each of the countries covered in this report were analyzed to identify the extent of the opioid addiction problem and the extent to which maintenance therapy programs meet this need. In cases of conflicting data, conclusions were based on the preponderance of evidence, but if alternatives were credible, these were reported as well.

In this report, we focus our attention on 12 countries in Asia, Africa, and eastern Europe that have experienced significant increases in reports of injection drug use, injection-related HIV, or both during the past decade. These countries also receive significant aid from the United States either directly through the President's Emergency Plan for AIDS Relief or through the Global Fund to Fight AIDS, Tuberculosis, and Malaria.

## Note about Terminology

Three common terms describe the use of opioid medications to address the medical and social problems associated with addiction to heroin and other opioid drugs. Each has its semantic problems. "Medication-assisted drug treatment" indicates the use of opioid and less effective non-opioid medications. In this report, "medication-assisted drug treatment" refers only to methadone and buprenorphine; it does not refer to naltrexone except where specified.

"Substitution therapy" is a common term that indicates that the goal of treatment is to replace the uncontrolled use of illegal drug with medically controlled legal medications. The problem with this term is that it implies that treated individuals simply substitute one drug of abuse for another; it does not take into account the structure of treatment regimens or the medical nature of treatment. In fact, many of the negative consequences that define the addictive state are sharply reduced by proper administration of medications such as methadone or buprenorphine. The use of opioid agonists in the medical setting is much more than mere substitution.

"Maintenance therapy" indicates the continued presence of opioid agonist medications to prevent withdrawal, relieve cravings, and block the effect of illicit

opioids. This approach is consistent with and addresses the medical basis of addiction. The approach is similar to insulin therapy for diabetes. The term can be somewhat misleading because it suggests permanence, but, in fact, patients vary in the amount of time they remain on medication. Some patients may require medication for a lifetime. Other patients may benefit from shorter-term treatment with medication. Those decisions are best made as a result of communication between the patient and the medical professionals supervising each patient's care.

Because there is no perfect term, we have for the sake of convenience decided to employ "medication-assisted maintenance therapy" or "maintenance treatment" as the default term throughout this report.

The report uses several different terms to identify the people at risk for syringe-borne transmission of HIV as a result of illegal use of opioid drugs. The most inclusive term is injection drug user, which refers to all those who inject illegal drugs. In most, but not all, areas of the world, the vast majority of injection drug users are injecting heroin or other opioids. This report focuses on 12 countries where it is indeed the case that the vast majority of injectors inject heroin, although they may also inject other opioids or drugs such as cocaine, methamphetamine, or other stimulants. We also employ the term "addiction," a term we use to refer to instances where physical dependence on opioids is accompanied by continued drug use despite negative medical, emotional, social, or legal consequences.<sup>1</sup> Some of the supporting materials we draw on, however, use the term "dependence" for conditions that we would call addiction, while others may call all users of illicit opiates "addicts." Arguments about which word is better used is under active debate within the field.<sup>2</sup>

## Note about Calculations

A methodological challenge arises from the analysis of the epidemiological data on HIV infections in the 12 countries under study. Reporting of HIV infection generally includes characterization of cases by risk factors that include injection drug use, men who have sex with other men, unprotected heterosexual sex, blood transfusion or blood products, and nosocomial transmission. Many of these behaviors are stigmatized and therefore underreported. Also, countries differ in how risks are attributed and in how the cases for which no risk is attributed are considered. As a result, all the figures presented here as the percentage of HIV cases that are injection drug users must be considered estimates. In determining the percentage of HIV infections or AIDS diagnoses attributable to injection drug use, two distinct calculations can be made. First, one can estimate the fraction attributable to injection drug use as a fraction of all cases; second, the denominator can be only those cases where a risk factor is identified. The second calculation reduces the denominator, either because data on risk have not been collected or a risk category has not

---

1. Charles P. O'Brien et al., "What's in a Word? Addiction versus Dependence in DSM-V," *American Journal of Psychiatry* 163 (2006): pp. 764–765.

2. Ibid.

been endorsed by those infected. Where possible, we specify whether the share of total HIV cases attributable to injection drug use is a percentage of all cases or only those cases in which attributable risk is known, although this is often unclear.

# Executive Summary

In recent years, the international community has responded to the growing HIV/AIDS epidemic with bold commitments to provide universally available treatment and prevention services. The United States has dramatically increased its spending on global HIV/AIDS and is the single largest supporter of international HIV programs, with \$4.5 billion in assistance for HIV/AIDS, tuberculosis, and malaria programs approved in FY2007.

Donor support has focused primarily on sub-Saharan Africa, where the majority of HIV infections occur, spread largely through sexual contact. But outside this region, injection drug use is often the primary driver of HIV/AIDS. Injection-related HIV has now been reported in at least 114 countries, with more than 4 million people infected as a result of contaminated injection equipment.<sup>1</sup>

Drug-driven HIV epidemics may be relatively small in size, but they are among the world's fastest growing. Russia, China, Indonesia, and Malaysia, which together account for more than a quarter of the world's population, all have significant HIV epidemics driven by injection drug use. In country after country, HIV prevalence among drug injectors has climbed, often by more than 15 percent in a single year. Countries in Africa, already struggling with advanced HIV epidemics, now face epidemics among a growing population of injectors, most notably in Nigeria and Kenya.

Drug-driven HIV epidemics often spread with high efficiency, in part because very few health and social services are available for injection drug users (IDUs). Of the estimated 13 million people worldwide who inject drugs, 80 percent live in developing countries. The secretary-general of the United Nations recently reported that 92 percent of IDUs in low- and middle-income countries have no access to HIV prevention services of any kind.<sup>2</sup>

There is strong and growing international consensus, most recently endorsed by a report by the Institute of Medicine of the National Academies on the pressing need to scale up access to three primary interventions to prevent HIV among IDUs in developing countries: treatment for drug dependence; provision of clean needles and syringes to active drug users; and creation of outreach-based efforts to link drug users with health and social services.

---

1. UNAIDS, Health Canada, Open Society Institute, Canadian International Development Agency, "The Warsaw Declaration: A Framework for Effective Action on HIV/AIDS and Injecting Drug Use" (paper presented at the Second International Policy Dialogue on HIV/AIDS, Warsaw, Poland, November 12–14, 2003), [http://data.unaids.org/Publications/External-Documents/warsaw\\_declaration\\_18nov03\\_en.pdf](http://data.unaids.org/Publications/External-Documents/warsaw_declaration_18nov03_en.pdf); see also *AIDS Epidemic Update: December 2006* (UNAIDS and World Health Organization [WHO], December 2006).

2. Ban Ki-moon, "Declaration of Commitment on HIV/AIDS and Political Declaration on HIV/AIDS: Focus on Progress over the Past 12 Months," United Nations, March 20, 2007.

This report focuses on the first of these three interventions—medication-assisted maintenance treatment for drug dependence—an area in which the United States has considerable experience and strength and that offers an opportunity to expand engagement in global HIV efforts. U.S. efforts should be coordinated with those of recipient governments and other donors in an integrated, comprehensive approach that ultimately will be the most effective strategy to curb the rapid growth of injection-driven HIV epidemics.

## Findings

This paper first reviews why medication-assisted maintenance treatment is an essential HIV prevention intervention. Second, it details the medical nature of opioid addiction, the medications best suited for treatment, and their efficacy in HIV prevention. It then assesses the availability of treatment in 12 developing countries: 10 with IDU-driven HIV epidemics, and 2 with emerging IDU-driven epidemics. Finally, it offers recommendations for U.S. policymakers to more fully integrate drug treatment services and HIV prevention efforts into the next phase of the President's Emergency Plan for AIDS Relief (PEPFAR).

Among the chief findings of this report are:

- Medication-assisted maintenance treatment—particularly with methadone and buprenorphine—while effective in reversing many of the harms associated with injection drug use, including transmission of HIV, is underused or nonexistent in the countries surveyed.
- Maintenance therapy services are nonexistent in 6 of the 12 countries surveyed. Most notably, maintenance therapy is illegal in Russia, home to more than 2 million IDUs. In 2007, 87 percent of Russia's total HIV cases were among IDUs.
- In the 10 countries surveyed with IDU-driven epidemics, 70,005 people are receiving treatment, but 3,708,870 remain in need of treatment. Across the 10 countries, China and Malaysia together account for 97 percent of all people currently in treatment. The need to scale up programs in countries of the former Soviet Union is particularly acute.
- IDU epidemics are emerging in African countries such as Nigeria and Kenya. There is no access to maintenance therapy in either country, where some 46,800 IDUs are in need.
- In those countries with maintenance therapy, almost none was meeting even 5 percent of the need. Pilot programs almost universally have failed to expand to scale, and small efforts serving fewer than 1,000 people nationwide are the norm. These programs cannot slow the HIV epidemic. Among the countries covered in this report, only China and Malaysia have begun implementing plans that may bring maintenance therapy to scale.
- There is an urgent need to introduce and scale up programs in prisons. The primary response to drug use in many developing countries has been incarceration. With few health care services available and high-risk behavior including

injection drug use common, prisons have served to accelerate the spread of HIV.

- Regulations including restricting drug treatment access to people with HIV, punishment for those who relapse to illegal opioid use, and inadequate and non-individualized dosing hamper program expansion. Potentially beneficial treatment approaches, including mobile and transitional programs for those released from incarceration, are limited by restrictions and regulations that arise from unfounded concerns about diversion of treatment medication.
- Countries trying to expand maintenance therapy have not included an analysis of optimal allocation of treatment slots to slow HIV transmission.

## Recommendations

The United States has considerable experience with maintenance treatment for opioid addiction. It is also the largest funder of research related to addiction treatment and HIV prevention. It therefore has much to offer other countries in experience, technical assistance, and resources. Methadone was first introduced in the United States more than 40 years ago, and approximately 250,000 people living in the United States currently receive methadone. Although access remains inadequate in many parts of the country, these programs have been shown to reduce HIV risk and help avert a more widespread HIV epidemic. Since 2002, buprenorphine—another medication that relieves craving for opiates—was introduced into the opiate addiction treatment system in the United States. Approximately 300,000 people have received this medication. Both methadone and buprenorphine are listed on the World Health Organization’s Model List of Essential Medicines.<sup>3</sup>

In the international arena, the U.S. government supports, in policy, the use of foreign assistance for the provision of methadone and buprenorphine treatment. In practice, however, only a handful of countries receive aid from the United States to support medication-assisted treatment for opiate addiction, and these funds have been used primarily for policy reform and technical assistance. U.S. policy guidance outlined by the Office of the Global AIDS Coordinator (OGAC) limits the scope of assistance to provision of maintenance therapy to those already infected with HIV, restricting services for those without HIV to pilot programs approved in OGAC headquarters. This may leave millions of people in need without access.

As PEPFAR enters its second phase and the U.S. Congress considers reauthorization of the program, there is an opportunity for the United States to strengthen provisions and policies that address the dangerous nexus between injecting drug use and HIV infection. It is important to note that maintenance therapy, on its own, will not avert a widespread HIV epidemic. The single most effective form of HIV prevention for injectors is needle and syringe exchange, and its impact can be increased by linking syringe exchange and maintenance-based treatment programs. However, the United States prohibits the use of federal government funding for

---

3. “Model List of Essential Medicines,” 14th ed., WHO, March 2005.

needle exchange, so it is particularly important that this work be coordinated with other donors. By expanding U.S. support for maintenance therapy and strengthening integration of drug treatment and HIV prevention services, the United States can help curb the spread of HIV in areas of the world where the pandemic is spreading most rapidly.

There is considerable room to expand the reach of drug treatment programs and an urgent need to help countries scale up programs in the near term. Key priorities for immediate attention by U.S. policymakers, national governments, and the international community should include:

- **Scale-up of pilot programs, where they exist.** Maintenance therapy programs that fail to scale up will fail to make an impact on the HIV epidemic. Among the countries surveyed in this report, four—Georgia, Indonesia, Kyrgyzstan, and Ukraine—with existing pilots could benefit from a national plan and resources to bring services to scale. Vietnam should continue to be a priority of the U.S. government in efforts to expedite pilot projects and bring these to scale once established. Malaysia and China are on the cusp of providing national coverage; these efforts should be supported.

In almost all cases, the United States should encourage partner governments to introduce and expand programs in prisons and detention centers, and to ensure that there is continuity of care as those incarcerated are released back into the community.

- **Support an integrated approach to drug treatment and HIV prevention.** Drug treatment is an essential component of any comprehensive HIV prevention scheme, but it should not be implemented in isolation. The U.S. administration has made explicit its unwillingness to fund needle and syringe exchange, but it can and should nonetheless ensure that there are adequate linkages between those programs and drug treatment. Programs in the United States and abroad have found it effective to integrate services for those actively using drugs and those trying to abstain. Ideally, the triangle clinic approach—one that integrates in primary care settings maintenance therapy, antiretroviral treatment, and services for active injectors—appears to offer the greatest chances of meeting the twin goals of controlling the epidemics of HIV and opioid addiction.

Although this report focuses on syringe-borne transmission of HIV among IDUs, sexual transmission among injectors and from injectors to the general populations does occur. When syringe-borne transmissions are controlled, sexual transmission emerges as a significant factor in new infections. Prevention programming must therefore include access to sexual-health services, and it is necessary that the programs targeting injectors include state-of-the-art, evidence-based interventions to reduce sexual risk. This is especially important where injection drug use and commercial sex work are intertwined because HIV prevalence often increases more rapidly among the injectors who are also engaging in prostitution, and from them to others who are not injectors.

- **Revise existing guidance to ensure flexibility on a country-by-country basis.** The Office of the Global AIDS Coordinator should revise existing guidance, which prioritizes maintenance therapy for HIV-positive individuals. Decisions about whom to treat should be made on a country-by-country basis. Maintenance programs may be tied to ARV treatment in some countries, but programs must take care not to require disclosure of HIV status as a condition of receiving treatment.
- **Introduce programs to countries with IDU-driven HIV epidemics where no services exist.** Where necessary, the United States should endeavor, in concert with country partners and international organizations including the WHO, UNAIDS, and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) to remove legal barriers to treatment with methadone and buprenorphine. U.S. government funding for medications, supply chain management, training of health professionals, and other direct services may be necessary for some period of time. Priority countries should be expanded to emphasize Russia, Ukraine, Kazakhstan, and Tajikistan.

Controlled clinical trials may be one option in countries where political resistance is strong, and the United States should seek to make full use of the contributions of the National Institutes of Health here. However, because maintenance therapy is clearly superior to other modalities, it is unlikely that placebo control trials would be deemed ethical; thus, great care must be taken in the design of any clinical trials. Alternatives to placebo control trials should include trials that compare different culturally acceptable methods for the delivery of maintenance therapy and different forms or intensities of support services that supplement the provision of medications.

- **Introduce programs in countries with emerging epidemics among drug injectors.** Little attention has been paid to transmission among injectors in the countries of sub-Saharan Africa where the HIV epidemic is predominantly driven by heterosexual transmission. Now that increases in injection drug use have been recognized in many parts of the region, however, a proactive response is warranted. Based on experiences from the United States, western Europe, and Australia, early expansion of methadone and buprenorphine can help prevent widespread HIV infection among injectors, their partners, and their families.

Data on drug use and HIV infection rates are particularly weak in sub-Saharan Africa. Only South Africa has a surveillance system to monitor drug use over time. Where countries have attempted to improve data collection on HIV/AIDS, it tends to focus on antenatal clinics and likely misses growing infection rates among injectors, who tend to be overwhelmingly male at the start of such epidemics. Large population studies also tend to miss vulnerable populations, especially because people take extra efforts to hide their drug use from authorities. Additional rapid assessments can be useful. U.S. government support could also help to implement much-needed sentinel surveillance systems to inform an evolving response.



# Nexus between Drug Treatment and HIV Prevention

Injection of illegal drugs has been identified in 136 countries<sup>1</sup> and the number of injection drug users (IDUs) worldwide has been estimated to exceed 13 million.<sup>2</sup> In many regions of the world, especially those covered in this report, the drug most often illegally injected is heroin.

IDUs who share injecting equipment are exposed to HIV, hepatitis C, and a variety of other health problems, and such sharing is an efficient mode of spreading HIV.<sup>3</sup> Because drug users often have extremely limited access to sterile syringes, drug-driven HIV epidemics are known to spread rapidly. The first documented example occurred among IDUs in New York City, where prevalence among injectors peaked at nearly 60 percent almost simultaneously with the first reports of AIDS in the early 1980s.<sup>4</sup> Since then, similar epidemics have been reported throughout the world. In almost every case, the growth in HIV infection rates reached epidemic proportions before public health and medical professionals were able to institute a meaningful response. The few examples of early and effective response have generally included expanded provision of opioid maintenance therapy.<sup>5</sup>

Injection-related HIV has now been reported in at least 114 countries, with more than 4 million people infected as a result of contaminated injection equipment.<sup>6</sup> Injection drug use is a significant contributor to HIV epidemics in eastern

---

1. UNAIDS, Health Canada, Open Society Institute, Canadian International Development Agency, "The Warsaw Declaration: A Framework for Effective Action on HIV/AIDS and Injecting Drug Use" (paper presented at the Second International Policy Dialogue on HIV/AIDS, Warsaw, Poland, November 12–14, 2003), [http://data.unaids.org/Publications/External-Documents/warsaw\\_declaration\\_18nov03\\_en.pdf](http://data.unaids.org/Publications/External-Documents/warsaw_declaration_18nov03_en.pdf).

2. Carmen Aceijas et al., "Global Overview of Injecting Drug Use and HIV Infection among Injecting Drug Users," *AIDS* 18 (2004): pp. 2295–2303.

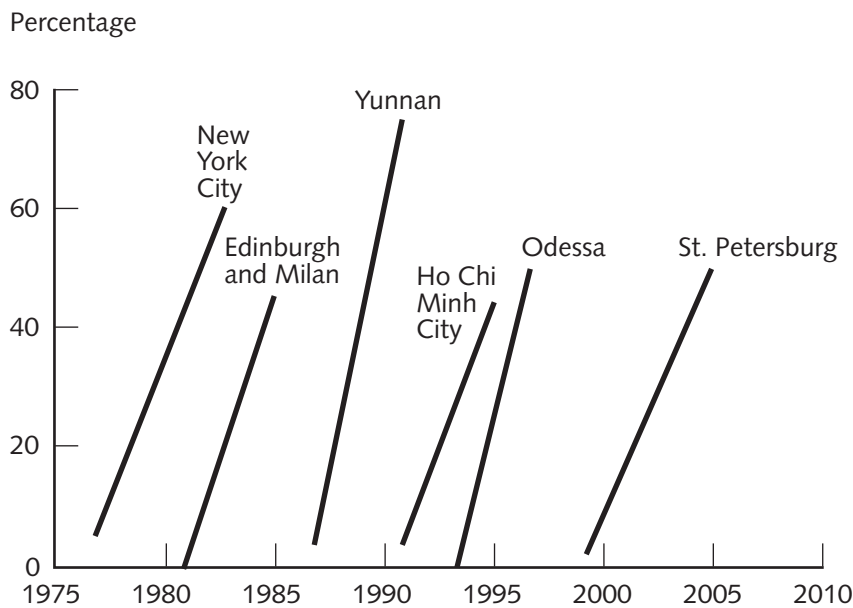
3. Michael G. Hudgens et al., "Estimating the Transmission Probability of Human Immunodeficiency Virus in Injecting Drug Users in Thailand," *Journal of the Royal Statistical Society, Applied Statistics* 50, part 1 (2001): pp. 1–14; see also Edward H. Kaplan et al., "A Model-Based Estimate of HIV Infectivity via Needle Sharing," *Journal of Acquired Immune Deficiency Syndrome* 5 (1992): pp. 1116–1118.

4. Don C. Des Jarlais et al., "HIV-1 Infection among Intravenous Drug Users in Manhattan, New York City from 1977 through 1987," *JAMA* 261 (1989): pp. 1008–1012.

5. Don C. Des Jarlais et al., "Maintaining Low HIV Seroprevalence in Populations of Injecting Drug Users," *JAMA* 274 (1995): pp. 1226–1231.

6. *AIDS Epidemic Update: December 2006* (UNAIDS and World Health Organization [WHO], December 2006); "The Warsaw Declaration."

Figure 1.1. HIV Prevalence among Drug Injectors, 1977–2007, Percentage



## Sources:

- New York City: Don C. Des Jarlais et al., "HIV-1 Infection among Intravenous Drug Users in Manhattan, New York City, from 1977 through 1987," *JAMA* 261 (1989): pp. 1008–1012.
- Edinburgh: J. Roy Robertson et al., "Epidemic of AIDS Related Virus (HTLV-III/LAV) Infection among Intravenous Drug Abusers," *British Medical Journal* 292 (1986): pp. 527–529.
- Milan: Hartmut Sasse et al., "Risk Behaviors for HIV-1 Infection in Italian Drug Users: Report from a Multicenter Study; First Drug User Multicenter Study Group," *Journal of Acquired Immune Deficiency Syndromes* 2 (1989): pp. 486–496.
- Yunnan: Minsheng Xia et al., "Risk Factors for HIV Infection among Drug Users in Yunnan Province, China: Association with Intravenous Drug Use and Protective Effect of Boiling Reusable Needles and Syringes," *AIDS* 8 (1994): pp. 1701–1706.
- Ho Chi Minh City: Nguyen Tran Hien et al., "Monitoring in Vietnam: System, Methodology, and Results of Sentinel Surveillance," *Journal of Acquired Immune Deficiency Syndromes* 21 (1999): pp. 338–346.
- Odessa: Vladimir A. Novitsky et al., "Molecular Epidemiology of an HIV-1 Subtype A Subcluster among Injection Drug Users in the Southern Ukraine," *AIDS Research & Human Retroviruses* 14 (1998): pp. 1079–1085.
- St. Petersburg: Robert Heimer, "Increasing HIV Prevalence among Injection Drug Users in St. Petersburg, RF" (paper presented at annual meeting of the American Public Health Association, Washington, D.C., November 7, 2007).

Europe and Central Asia, Latin America, and South and Southeast Asia where 67 percent, 19 percent, and 22 percent, respectively, of all HIV cases are related to injection drug use.<sup>7</sup> In many locations, the epidemic spread of HIV has been dramatic; there are repeated instances of annual increases of 15 percent or more among injectors and consecutive years of such increases (figure 1.1).

Because injection-driven HIV is taking hold in large, populous countries, even small percentages of infected people can represent and place at risk large numbers of people. In China, there are an estimated 2 million IDUs, but IDUs represent almost 45 percent of all registered HIV cases. Unprotected sex with these individuals can represent a bridge to the broader non-IDU population. In many countries, especially outside of Africa, IDUs constitute the vast majority of HIV infections:

7. *AIDS Epidemic Update: December 2006.*

- In Russia, IDUs represent 87 percent of all registered HIV cases for which risk can be attributed.
- In Kazakhstan, IDUs are almost 77 percent of all registered HIV cases.
- In Malaysia, IDUs are an estimated 75 percent of all registered HIV cases.

Injection-related HIV infection is preventable, and HIV prevention programs can reduce IDU exposure to HIV in a number of ways. Syringe exchange works by providing sterile needles and syringes to drug users and removing contaminated ones from circulation.<sup>8</sup> HIV prevention interventions can also work by reducing or eliminating the frequency of drug injection through the provision of medications. Medication-assisted maintenance treatment for IDUs is effective HIV prevention. By reducing injection of illicit opiates, buprenorphine and methadone reduce risk of needle sharing and improve adherence to HIV medications. Maintenance treatment is also among the most effective tools for retention of IDUs in addiction treatment. The longer a person stays in treatment, the greater the chances are of abstinence from illicit opiate use.<sup>9</sup> Because drug addiction is a chronic, relapsing condition, interventions are not mutually exclusive. The World Health Organization (WHO), the Joint United Nations Program on HIV/AIDS (UNAIDS), and other bodies call for both needle exchange and drug treatment services to be offered.

The multiple benefits of maintenance treatment include reduction in HIV risk, reduced illicit drug use, improved retention in treatment, reduced criminal behavior, increased employment, and decreased mortality.<sup>10</sup> The section that follows will discuss the disease of opioid dependence and the scientific basis for methadone and buprenorphine.

---

8. Edward H. Kaplan et al., "A Circulation Theory of Needle Exchange," *AIDS* 8 (1994): pp. 567–574.

9. John C. Ball and Alan Ross, *The Effectiveness of Methadone Maintenance Treatment* (New York: Springer-Verlag, 1991).

10. Ibid.; see also Linda R. Gowing et al., "Brief Report: Methadone Treatment of Injecting Opioid Users for Prevention of HIV Infection," *Journal of General Internal Medicine* 21 (2006): pp. 193–195; Lynn E. Sullivan et al., "Decreasing International HIV Transmission: The Role of Expanding Access to Opioid Agonist Therapies for Injection Drug Users," *Addiction* 100 (2005): pp. 150–158; Michael Soyka et al., "One-Year Mortality Rates of Patients Receiving Methadone and Buprenorphine Maintenance Therapy: A Nationally Representative Cohort Study in 2694 Patients," *Journal of Clinical Psychopharmacology* 26 (2006): pp. 657–660.

# Opioid Addiction and Its Treatment

Drug addiction is a chronic relapsing medical disorder. In the case of heroin or other opioids, a person who becomes drug dependent will require ever larger amounts to experience the same effect and will experience physical withdrawal when the drug use stops. If use continues despite negative consequences, the problem is diagnosed as addiction. Recently, the Institute of Medicine concluded, “Opioid agonist maintenance treatment is the *only* consistently effective treatment for opioid [addiction].”<sup>11</sup>

This section reviews the effects of drug dependence and addiction on the brain and summarizes the major medications available for the treatment of opioid addiction. Two main sets of criteria are used to make the diagnosis of drug addiction: both the *Diagnostic and Statistical Manual* (figure 2.1) and the International Classification of Diseases system (figure 2.2) use the term drug “dependence,” but what they are describing is addiction as we have defined it—dependence in which the negative consequences of continuing drug use do not result in its cessation.

Drug addiction was once thought of as a “weakness of the will” or a “moral disorder” that affected only those who have little restraint. It is now understood to be a complex illness that, as with other medical disorders, can be effectively treated. Treatment of opioid addiction includes both medication and counseling. Medication includes the use of methadone, a long-acting medication that is an opiate agonist (that is, it acts on the same receptors in the brain as illegal opiates), and buprenorphine (a medication that is a partial agonist, that is, it binds to the brain receptors but does not fully activate them). A third medication, naltrexone, is an opioid antagonist, which has no proven efficacy in HIV prevention. It is discussed here because it is used in some of the countries covered in this report, most notably Vietnam, Malaysia, and Russia. The biology of addiction and the different mechanisms of the medications used to treat addiction are explained further below.

## Neurobiology of Opioid Addiction

Research over the past few decades has brought about a new understanding of the genetic and biologic basis of drug addiction.<sup>12</sup> In particular, research on brain

---

11. “Preventing HIV Infection among Injecting Drug Users in High Risk Countries,” Report Brief, Institute of Medicine of the National Academies, September 2006, [http://www.iom.edu/Object.File/Master/37/074/11731\\_brief.pdf](http://www.iom.edu/Object.File/Master/37/074/11731_brief.pdf). Emphasis added.

### Figure 2.1. DSM-IV Diagnostic Criteria for Substance Dependence

---

(Must meet three or more criteria in a one-year period.)

1. Tolerance, as defined by either of the following:
  - (a) The need for markedly increased amounts of the substance to achieve intoxication or desired effect.
  - (b) Markedly diminished effect with continued use of the same amount of the substance.
2. Withdrawal, as manifested by either of the following:
  - (a) The characteristic withdrawal syndrome for the substance.
  - (b) The same (or closely related) substance is taken to relieve or avoid withdrawal symptoms.
3. Taking the substance often in larger amounts or over a longer period than was intended.
4. A persistent desire or unsuccessful efforts to cut down or control substance use.
5. Spending a great deal of time in activities necessary to obtain or use the substance or to recover from its effects.
6. Giving up or reducing important social, occupational, or recreational activities because of substance use.
7. Continued substance use despite knowledge of having had a persistent or recurrent physical or psychological problem that was likely to have been caused or exacerbated by the substance.

Source: National Library of Medicine, Health Services/Technology Assessment Text, <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat5.table.37258>.

chemistry and biology has provided important insights into the path that leads from drug use to abuse, dependence, and, ultimately, addiction. Much of this research focuses on the brain's reward system.

The brain's reward system is essential for human development. It controls the pleasurable sensations that allow us to survive. It governs our response to such things as obtaining and consuming food, water, shelter, and the process of procreation.

Opioids bind to receptors in the brain and cause the release of dopamine, which is experienced as pleasure or euphoria. Some say that opioids "hijack" the brain's reward system, but a more appropriate analogy is that they recapture and amplify the effects of internal chemicals. The body grows to tolerate the drug and, inevitably, the individual is never able to achieve the same initial euphoria. Many patients state that their continued drug use is driven by a desire to avoid withdrawal symptoms, rather than an expectation of euphoria. Why is this?

In the case of opioids such as heroin, repeated exposure has a profound and lasting impact on opioid receptors and the signaling processes that occur between cells in the brain. These changes result in expression of different genes and the production of new proteins. In effect, the brain adapts to opioids through sustained alterations in the signaling system that mediate the sensations of pleasure and reward.<sup>13</sup> The clinical manifestations of opioid dependence (for example, with-

---

12. George R. Uhl, "Molecular Genetics of Addiction Vulnerability," *NeuroRx* 3 (2006): pp. 295–301.

## Figure 2.2. Diagnosis of Drug Dependence Using ICD-10 Codes

---

### Clinical Description

A cluster of physiological, behavioral, and cognitive phenomena in which the use of a substance or a class of substances takes on a much higher priority for a given individual than other behaviors that once had greater value. A central descriptive characteristic of the dependence syndrome is the desire (often strong, sometimes overpowering) to take psychoactive drugs (which may or may not have been medically prescribed), alcohol, or tobacco. There may be evidence that return to substance use after a period of abstinence leads to a more rapid reappearance of other features of the syndrome than occurs with nondependent individuals

### Diagnostic Guidelines

A definite diagnosis of dependence should usually be made only if three or more of the following have been present together at some time during the previous year:

- A strong desire or sense of compulsion to take the substance;
- Difficulties in controlling substance-taking behavior in terms of its onset, termination, or levels of use;
- A physiological withdrawal state when substance use has ceased or have been reduced, as evidenced by: the characteristic withdrawal syndrome for the substance; or use of the same (or closely related) substance with the intention of relieving or avoiding withdrawal symptoms;
- Evidence of tolerance, such that increased doses of the psychoactive substance are required in order to achieve effects originally produced by lower doses (clear examples of this are found in alcohol- and opiate-dependent individuals who may take daily doses sufficient to incapacitate or kill nontolerant users);
- Progressive neglect of alternative pleasures or interests because of psychoactive substance use, increased amount of time necessary to obtain or take the substance or to recover from its effects;
- Persisting with substance use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking, depressive mood states consequent to periods of heavy substance use, or drug-related impairment of cognitive functioning; efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm.

Source: "Dependence Syndrome," World Health Organization, [http://www.who.int/substance\\_abuse/terminology/definition1/en/index.html](http://www.who.int/substance_abuse/terminology/definition1/en/index.html)

drawal, tolerance, craving) result from changes in the brain cells and signaling systems between those cells.<sup>14</sup> Ultimately, individuals require the continued presence of opioids simply to maintain a normal state.

The fact that the brains of addicted patients have been changed underscores the importance of regarding their problems as a chronic medical condition and explains the ineffectiveness of short-term approaches such as simple detoxification. Conversely, long-acting opioid agonists such as methadone and buprenorphine

13. Fereshteh S. Nugent et al., "Opioids Block Long-Term Potentiation of Inhibitory Synapses," *Nature* 466 (2007): pp. 1086–1090; and John T. Williams et al., "Cellular and Synaptic Adaptations Mediating Opioid Dependence," *Physiological Reviews* 81 (2001): pp. 299–343.

14. Eric J. Nestler, "Basic Neurobiology of Opiate Addiction," in *New Treatments for Opiate Dependence*, ed. Susan M. Stine and Thomas R. Kosten (New York: Guilford Press, 1997).

stabilize the complex inter- and intra-cellular systems in the brain, preventing the discomfort and dissociation that results from abrupt withdrawal of opioids.

Short-acting opioids, such as heroin, bring about euphoria in part through their rapid binding to and strong reinforcing activity at central nervous system opioid receptors. Medications such as methadone and buprenorphine can help stabilize brain neurochemistry by occupying the brain's opioid receptors and therefore breaking the cycle of withdrawal and craving.

Opioid agonist maintenance therapy was developed in the 1960s with the intention of finding medication with long duration but minimal euphoric effect.<sup>15</sup> By binding to opioid receptors, these medications prevent withdrawal and craving. In addition, they block the euphoria that can result from the ingestion of illicit opioids such as heroin. While long-acting opioid replacement does not work for everyone, it is the most efficacious therapy employed to date to treat addiction.

## Methadone

Methadone hydrochloride has been used for more than 40 years and is perhaps the best known of all the medications available.<sup>16</sup> It is the most widely used and least expensive medication in the United States to treat illegal opiate use. Methadone is a synthetic long-acting agonist at the brain's primary opioid receptor. It can be administered in liquid or tablet form. Patients take methadone once a day to achieve maximum benefits.

Methadone treatment at appropriate doses is associated with improvements in physical health, social health, and retention in substance abuse treatment. Patients on methadone have consistently been shown to reduce use of illicit drugs, opioid overdose deaths, needle sharing, and HIV transmission. In addition, methadone patients report less criminal activity, improved family ties, reduction in number of sexual partners, and fewer attempts at suicide. Finally, repeated analyses have demonstrated that expanding methadone treatment so that it is available to more people is cost-effective.<sup>17</sup>

An overview of five meta-analyses and systematic reviews, which summarized the results from 52 studies and 12,075 opioid-dependent participants internationally, found that methadone maintenance treatment was more effective than (1) methadone detoxification, (2) no treatment, (3) buprenorphine maintenance

---

15. Vincent P. Dole, "A Medical Treatment for Diacetylmorphine (Heroin) Addiction," *JAMA* 193 (1965): pp. 646–650.

16. A. Thomas McLellan et al., "Evaluating the Effectiveness of Addiction Treatments: Reasonable Expectations, Appropriate Comparisons," *Milbank Quarterly* 74 (1996): pp. 51–85; Laura Amato et al., "An Overview of Systematic Reviews of the Effectiveness of Opiate Maintenance Therapies: Available Evidence to Inform Clinical Practice and Research," *Journal of Substance Abuse Treatment* 28 (2005): pp. 321–329.

17. Gregory S. Zaric, "Modeling the Costs and Effects of Maintenance Treatment for Opiate Addiction," in *Operations Research and Health Care: A Handbook of Methods and Applications*, ed. M. L. Brandeau, F. Sainfort, and W. P. Pierskalla, pp. 333–361 (New York: Springer, 2004); Gregory S. Zaric et al., "HIV Transmission and the Cost-Effectiveness of Methadone Maintenance," *American Journal of Public Health* 90 (2000): pp. 1100–1111.

treatment, or (4) L-a-acetylmethadol (LAAM) maintenance treatment across a broad measure of outcomes including retention in treatment and reduction in illicit opioid use.<sup>18</sup>

- The superiority of methadone to buprenorphine in the studies conducted to date may be a consequence of the different doses used in the studies under review. More work needs to be done to directly compare optimal doses and schedules of methadone and buprenorphine before a final conclusion can be reached. A recent controlled trial comparing high doses of buprenorphine and methadone revealed that many of the patients randomized to the buprenorphine arm had to be moved to methadone to keep them in treatment, but there was no comparable ability to switch from methadone to buprenorphine, so the issue remains unresolved.<sup>19</sup>
- Death rates from heroin overdose are higher among untreated opioid-dependent individuals compared with those receiving methadone maintenance treatment.<sup>20</sup>
- A meta-analysis revealed that opioid-dependent patients were four times less likely to die if they were receiving methadone.<sup>21</sup>

Methadone's efficacy is closely tied to its dose because the blockade effect requires that patients receive an adequate dose of the medication. Continued treatment and abstinence from illicit opioid use improves when patients are provided with doses greater than 50 milligrams, and most patients achieve stability at doses of 60–120 milligrams.<sup>22</sup> A small but significant percentage of patients rapidly metabolizes methadone and requires larger doses or split dosing to achieve stability.<sup>23</sup> Such patients may benefit from taking methadone twice a day rather than a single, large dose.

Unfortunately, there remains substantial underdosing and less favorable outcomes in many community-based methadone programs.<sup>24</sup> For example, a large

---

18. Amato et al., "An Overview of Systematic Reviews."

19. Johan Kakko et al., "A Stepped Care Strategy Using Buprenorphine and Methadone versus Conventional Methadone Maintenance in Heroin Dependence: A Randomized Controlled Trial," *American Journal of Psychiatry* 164 (2007): pp. 797–803.

20. John R. Caplehorn et al., "Retention in Methadone Maintenance and Heroin Addicts' Risk Of Death," *Addiction* 89 (1994): pp. 203–209; David A. Zanis and George E. Woody, "One-Year Mortality Rates Following Methadone Treatment Discharge," *Drug & Alcohol Dependence* 52 (1998): pp. 257–260.

21. John R. Caplehorn et al., "Methadone Maintenance and Addicts' Risk of Fatal Heroin Overdose," *Substance Use and Misuse* 31 (1996): pp. 177–196.

22. J. Thomas Payte and Elizabeth T. Khuri, "Principles of Methadone Dose Determination," in *State Methadone Treatment Guidelines* (Rockville, Md.: Center for Substance Abuse Treatment, 1993); Eric C. Strain et al., "Dose-Response Effects of Methadone in the Treatment of Opioid Dependence," *Annals of Internal Medicine* 119 (1993): pp. 23–37; Eric C. Strain et al., "Moderate- vs. High-Dose Methadone in the Treatment of Opioid Dependence: A Randomized Trial," *JAMA* 281 (1999): pp. 1000–1005; John R. Caplehorn et al., "Methadone Dose and Heroin Use during Maintenance Treatment," *Addiction* 88 (1993): pp. 119–124; and John R. Caplehorn and James Bell, "Methadone Dosage and Retention of Patients in Maintenance Treatment," *Medical Journal of Australia* 154 (1991): pp. 195–199.

observational study in the United States found recent (that is, in the past 30 days) heroin use in 45 percent of patients receiving daily methadone doses of 20 milligrams, compared with 0–5 percent in patients receiving doses of 60–100 milligrams.<sup>25</sup>

## Buprenorphine

Buprenorphine hydrochloride is a partial opiate agonist. This means that it relieves craving for opiates and, like methadone, blocks the effect of illicit opiates; but it also has a ceiling effect, meaning that if a patient takes more, it will have little if any further effect. This accounts for its superior safety profile compared with full agonists (such as methadone), and this explains why buprenorphine overdoses are rare, occurring mostly when injected buprenorphine is taken in combination with benzodiazepines.<sup>26</sup> Buprenorphine is available in both an injectable form for analgesia and a tablet that dissolves underneath the tongue that is used for treatment of opioid addiction.

A recent formulation, registered as Suboxone<sup>®</sup> in the United States, combines buprenorphine with an opioid antagonist, naloxone, the inclusion of which is intended to deter misuse through injection. Buprenorphine and buprenorphine-naloxone dissolvable tablets are administered sublingually because if administered this way absorption of the naloxone component is clinically insignificant. Only when the medication is misused (for example, crushed and injected) will the naloxone cause immediate withdrawal symptoms in the opioid-dependent user who has opioids in his or her system. Although the buprenorphine-naloxone formulation has been shown to decrease abuse liability in patients who are dependent upon opioids, it still can be abused.<sup>27</sup> In addition, naloxone is not effective in deterring abuse in nondependent individuals because there would be no prior opioids to antagonize.<sup>28</sup>

Clinical trials have demonstrated the efficacy of buprenorphine over placebo in decreasing illicit opioid use. Daily, alternate-day, and thrice-weekly buprenorphine dosing are all possible and effective.<sup>29</sup> Buprenorphine's duration of action is ideal for daily dosing, which is the preferred schedule for taking the medication.

---

23. Chin B. Eap et al., "Interindividual Variability of the Clinical Pharmacokinetics of Methadone: Implications for the Treatment of Opioid Dependence," *Clinical Pharmacokinetics* 41 (2002): pp. 1153–1193; and Anna Ferrari et al., "Methadone-Metabolism, Pharmacokinetics and Interactions," *Pharmacological Research* 50 (2004): pp. 551–559.

24. Thomas D'Aunno and Thomas Vaughn, "Variations in Methadone Treatment Practices," *JAMA* 267 (1992): pp. 253–258; and Thomas D'Aunno and Harold A. Pollack, "Changes in Methadone Treatment Practices: Results from a Panel Study, 1988–2000," *JAMA* 288 (2002): pp. 850–856.

25. Ball and Ross, *The Effectiveness of Methadone Maintenance Treatment*.

26. Michael Soyka et al., "Fatal Poisoning in Methadone and Buprenorphine Treated Patients—Are There Differences?" *Pharmacopsychiatry* 39 (2006): pp. 85–87.

27. G. M. Robinson et al., "The Misuse of Buprenorphine and a Buprenorphine-Naloxone Combination in Wellington, New Zealand," *Drug & Alcohol Dependence* 33 (1993): pp. 81–86.

28. Hannu Alho et al., "Abuse Liability of Buprenorphine-Naloxone Tablets in Untreated IV Drug Users," *Drug & Alcohol Dependence* 88 (2007): pp. 75–78.

Alternate-day and thrice-weekly dosing are occasionally preferred by patients. Less than daily dosing can be useful when patient adherence to the medication is sub-optimal. To help ensure adherence while minimizing the number of times the patients must come in for dosing, alternate-day or thrice-weekly dosing can be provided under directly observed therapy.

Clinical trials comparing buprenorphine with methadone have demonstrated similar retention in treatment and decreases in illicit opioid use compared with low doses (20–30 milligrams) of methadone.<sup>30</sup> Comparisons with more adequate doses (35–90 milligrams) of methadone have yielded inconclusive results, with one trial demonstrating improved and another demonstrating reduced efficacy of buprenorphine.<sup>31</sup> Dose-ranging studies with buprenorphine have demonstrated improved treatment outcomes with doses of 6–16 milligrams per day compared with doses of 1–4 milligrams per day.<sup>32</sup> However, a recent study with higher doses of buprenorphine (mean dose of 29 milligrams) still reported a significant rate of failure and the need to transition people to methadone to keep them in treatment.<sup>33</sup>

Buprenorphine, like methadone, has been shown to reduce the abuse of illegal opioids, decrease HIV risk behaviors, improve HIV treatment outcomes, promote retention in drug abuse treatment, and improve the health of treated patients.<sup>34</sup> In France, the provision of buprenorphine maintenance treatment along with the provision of methadone to a smaller number of people was correlated with a 75 percent decrease in fatal heroin overdoses: in 1994—just before buprenorphine maintenance therapy was introduced—there were 564 fatal overdoses, but in 1998 there were 143.<sup>35</sup>

---

29. Rolley E. Johnson et al., “A Controlled Trial of Buprenorphine Treatment for Opioid Dependence,” *JAMA* 267 (1992): pp. 2750–2755; Paul J. Fudala et al., “Use of Buprenorphine in the Treatment of Opioid Addiction. II. Physiologic and Behavioral Effects of Daily and Alternate-Day Administration and Abrupt Withdrawal,” *Clinical Pharmacology and Therapeutics* 47 (1990): pp. 525–534; Leslie Amass et al., “Alternate-Day Dosing during Buprenorphine Treatment of Opioid Dependence,” *Life Sciences* 54 (1994): pp. 1215–1228; and Leslie Amass et al., “Thrice-Weekly Supervised Dosing with the Combination Buprenorphine-Naloxone Tablet Is Preferred to Daily Supervised Dosing by Opioid-Dependent Humans,” *Drug & Alcohol Dependence* 61 (2001): pp. 173–181.

30. Johnson et al., “A Controlled Trial of Buprenorphine Treatment”; and Ling et al., “A Controlled Trial Comparing Buprenorphine And Methadone.”

31. Thomas R. Kosten et al., “Buprenorphine versus Methadone Maintenance for Opioid Dependence,” *Journal of Nervous & Mental Disorders* 181 (1993): pp. 358–364; and Eric C. Strain et al., “Buprenorphine versus Methadone in the Treatment of Opioid-Dependent Cocaine Users,” *Psychopharmacology (Berl)* 116 (1994): pp. 401–406.

32. Kosten et al., “Buprenorphine versus Methadone Maintenance”; and Walter Ling et al., “Buprenorphine Maintenance Treatment of Opiate Dependence: A Multicenter, Randomized Clinical Trial,” *Addiction* 93 (1998): pp. 475–486.

33. Kakko et al., “A Stepped Care Strategy Using Buprenorphine and Methadone.”

34. Ling et al., “Buprenorphine Maintenance Treatment of Opiate Dependence”; David A. Fiellin et al., “Counseling Plus Buprenorphine-Naloxone Maintenance Therapy for Opioid Dependence,” *New England Journal of Medicine* 355 (2006): pp. 365–374; and Lynn E. Sullivan et al., “A Trial of Integrated Buprenorphine/Naloxone and HIV Clinical Care,” *Clinical Infectious Diseases* 43 (2006): pp. S184–S190.

## Opioid Antagonist Treatments

Antagonists block opioid effects and therefore eliminate the induced euphoria. It is expected that patients will stop using heroin because they no longer can feel the euphoria. Naltrexone is the primary antagonist used for medication-assisted treatment of opioid addiction. Naltrexone is used in many of the countries covered in this report, and its use has been described in Vietnam, Malaysia, and Russia.

For patients to be treated with naltrexone, they must first be abstinent from all opioids for at least seven days prior in order to avoid a precipitated withdrawal phenomenon. The clinical utility of naltrexone has been limited because of low adherence and retention rates, most likely because it does not reduce craving for opioids, the leading cause of relapse. In one treatment program, only 15 out of nearly 300 patients chose naltrexone instead of detoxification or methadone maintenance, and of these, only 3 of the 15 remained in treatment longer than two months.<sup>36</sup> In another program, only 40 percent of 242 patients remained in treatment over a four-week period.<sup>37</sup> Randomized trials have shown low (2 percent) retention rates and no efficacy at reducing opioid use compared with placebo.<sup>38</sup> Some studies of naltrexone treatment in select populations (medical professionals who faced the loss of their medical licenses) show promise when naltrexone is used in combination with counseling. Under unique circumstances, including strong family member participation, Russian studies have resulted in 40 percent retention after seven months.<sup>39</sup>

---

35. Bénédicte Lepère et al., "Reduction in the Number of Lethal Heroin Overdoses in France since 1994: Focus on Substitution Treatments [in French]," *Annales de Médecine Interne* 152 (2001): pp. 5–12.

36. David H. Fram et al., "Naltrexone Treatment—The Problem of Patient Acceptance," *Journal of Substance Abuse Treatment* 6 (1989): pp. 119–122.

37. Richard Greenstein et al. "Naltrexone: A Clinical Perspective," *Journal of Clinical Psychiatry* 45 (1984): pp. 25–28.

38. L. San et al., "Follow-Up after a Six-Month Maintenance Period on Naltrexone versus Placebo in Heroin Addicts," *British Journal of Addiction* 86 (1991): pp. 983–990; and National Research Council Committee on Clinical Evaluation of Narcotic Antagonists, "Clinical Evaluation of Naltrexone Treatment of Opiate-Dependent Individuals," *Archives of General Psychiatry* 35 (1978): pp. 335–340.

39. Evgeny M. Krupitsky et al., "Naltrexone for Heroin Dependence Treatment in St. Petersburg, Russia," *Journal of Substance Abuse Treatment* 26 (2004): pp. 285–294.

# Efficacy of Addiction Treatment as HIV Prevention

The science is unequivocal: the best and most appropriate first line treatment for addiction to heroin and other opioids is maintenance therapy. Efforts to prevent HIV transmission among IDUs can be enhanced only if access to maintenance therapy is greatly expanded. There is no evidence that other forms of treatment for opioid addiction have any efficacy as an HIV prevention strategy. Therefore, the rest of this report will focus on maintenance therapy and its role in preventing HIV transmission and controlling injection-related HIV epidemics.

The primary HIV risk for IDUs is using a contaminated needle. Maintenance therapy is just one tactic in what must be a multifaceted approach to reducing HIV transmission. Ideally, maintenance therapy is part of a package of care that includes outreach to and education of drug users, primary prevention to limit the spread of injection drug abuse, syringe exchange, HIV counseling and testing, and antiretroviral (ARV) treatment for those already infected. There is international consensus that this package can prevent or reverse HIV epidemics among IDUs.<sup>40</sup> The role of maintenance therapy in this package is clear. Medication-assisted maintenance treatment reduces heroin use, and by reducing the number of injections, it reduces the risk of HIV.<sup>41</sup>

## The Evidence Base

Methadone has been available since the mid-1960s. The use of buprenorphine was not widespread until the mid-1990s. Therefore, the majority of research that has evaluated the role of opioid agonist treatment in HIV prevention has occurred with the use of methadone. Research demonstrates:

- Individuals who receive methadone treatment significantly reduce their injection opioid use.<sup>42</sup> A meta-analysis finds that patients receiving methadone are

---

40. See for example, “The Warsaw Declaration”; “Preventing HIV Infection among Injecting Drug Users in High Risk Countries”; “Interventions to Prevent HIV Risk Behaviors,” NIH Consensus Statement Online, February 11–13, 1997, pp. 1–41, <http://consensus.nih.gov/1997/1997PreventHIVRisk104html.htm>; and *Approaches to Injecting Drug Use* (Geneva: World Health Organization, 1998).

41. “Interventions to Prevent HIV Risk Behaviors”; and David S. Metzger et al., “Drug Abuse Treatment as AIDS Prevention,” *Public Health Reports* 113, supp. 1 (1998): pp. 97–106.

two-thirds less likely to use heroin compared with patients who were not receiving methadone.<sup>43</sup>

- Methadone treatment reduces opioid injection and needle sharing. Studies of patients receiving methadone demonstrate a 50 percent reduction in these behaviors compared with heroin users who are not in treatment.<sup>44</sup>
- Methadone treatment has been associated with lower rates of HIV prevalence and incidence. A landmark study published in 1993 examined two cohorts of HIV-negative IDUs over an 18-month follow-up period. One group received methadone while the other did not. Conversion from HIV-negative to HIV-positive status was noted in 22 percent of those who did not receive methadone and 3.5 percent of those who did receive methadone.<sup>45</sup> In studies using different designs, the incidence of new HIV infections is significantly associated with receipt of and length of methadone treatment.<sup>46</sup>
- A systematic review of 23 studies on 7,900 patients in diverse countries and settings reported significant decreases in the following HIV risk behaviors among patients receiving methadone maintenance treatment: (1) the proportion of opioid-dependent injecting drugs, (2) the reported frequency of injection, (3) levels of sharing of injecting equipment, (4) illicit opioid use, (5) reduction in the proportion reporting multiple sex partners or exchanges of sex for drugs or money, and (6) reductions in cases of HIV infection among opioid-dependent injecting drug users.<sup>47</sup>

---

42. Ball and Ross, *The Effectiveness of Methadone Maintenance Treatment*; and John C. Ball et al., "Reducing the Risk of AIDS through Methadone Maintenance Treatment," *Journal of Health and Social Behavior* 29 (1988): pp. 214–226; Robert L. Hubbard et al., "Overview of One-Year Follow-Up Outcomes in the Drug Abuse Treatment Outcome Study (DATOS)," *Psychology of Addictive Behaviors* 11 (1997): pp. 261–278; and Robert L. Hubbard et al., *Drug Abuse Treatment: A National Study of Effectiveness* (Chapel Hill: University of North Carolina Press, 1989).

43. Richard P. Mattick et al., "Methadone Maintenance Therapy versus No Opioid Replacement Therapy for Opioid Dependence," *Cochrane Database of Systematic Reviews*, <http://www.cochrane.org/> (object name CD002209; accessed January 2008).

44. Robert Hubbard et al., "Overview of One-Year Follow-Up Outcomes"; Robert E. Booth et al., "Substance Abuse Treatment Entry, Retention and Effectiveness: Out-of-Treatment Opiate Injection Drug Users," *Drug and Alcohol Dependence* 42 (1996): pp. 11–20; John R. Caplehorn and Michael W. Ross, "Methadone Maintenance and the Likelihood of Risky Needle Sharing," *International Journal of the Addictions* 30 (1995): pp. 685–698; and Carol Kwiatkowski and Robert E. Booth, "Methadone Maintenance as HIV Risk Reduction with Street Recruited Injecting Drug Users," *Journal of AIDS* 26 (2001): pp. 483–489.

45. David S. Metzger et al., "Human Immunodeficiency Virus Seroconversion among Intravenous Drug Users In- and Out-of-Treatment: An 18-Month Prospective Follow-Up," *Journal of Acquired Immune Deficiency Syndrome* 6 (1993): pp. 1049–1056.

46. David Metzger et al., "Human Immunodeficiency Virus Seroconversion"; Samuel R. Friedman et al., "Risk Factors for HIV Seroconversion among Out-of-Treatment Drug Injectors in High and Low Seroprevalence Cities," *American Journal of Epidemiology* 142 (1995): pp. 864–874; Andrew R. Moss et al., "HIV Seroconversion in Intravenous Drug Users in San Francisco, 1985–1990," *AIDS* 8 (1994): pp. 223–231; and Giovanni Serpelloni et al., "Methadone Treatment as a Determinant of HIV Risk Reduction among Injecting Drug Users: A Nested Case-Controlled Study," *AIDS Care* 6 (1994): pp. 215–220.

- Research on adult and adolescent opioid-dependent patients demonstrates a decrease in drug-related HIV risk in patients receiving buprenorphine.<sup>48</sup>
- Opioid agonist treatment is cost effective. An analysis that focused on the cost-effectiveness of methadone treatment based on its impact on the HIV epidemic considered populations in which the HIV prevalence among IDUs ranged from 5 percent to 40 percent. While typical cutoff for standard medical therapies is less than \$50,000 per quality-adjusted life year (QALY), the results of this analysis demonstrated that methadone maintenance costs \$8,200 per QALY gained in the high-prevalence communities and \$10,900 per QALY gained in the low-prevalence communities. Because of the high rate of HIV sexual transmission, the majority of benefits were gained by individuals who do not use or inject drugs based on decreased risk of acquiring HIV through sexual behavior.<sup>49</sup>

## International Support

The first evidence for the effectiveness of methadone-based maintenance therapy for HIV prevention was obtained in the early 1990s.<sup>50</sup> The addition of buprenorphine—in 2002 in the United States and in 2006 throughout Europe by the European Medicines Agency—has increased the range of proven treatment options in developed nations.

Today, there is strong international support for the use of opioid agonist treatment as HIV prevention. A short list of this support includes:

- A National Institutes of Health (NIH) Consensus Panel on HIV prevention convened in 1997 concluded that efforts to decrease the spread of HIV and its consequences must include the expansion of substance abuse treatment services for opioid-dependent IDUs.<sup>51</sup>
- A second NIH Consensus Panel on opiate addiction in 1997 declared:  
Opiate addiction is a brain-related medical disorder that can be effectively treated with significant benefits for the patient and society, and society must

---

47. Linda R. Gowing et al., “Brief Report: Methadone Treatment of Injecting Opioid Users.”

48. David C. Lott et al., “HIV Risk Behaviors during Pharmacologic Treatment for Opioid Dependence: A Comparison of Levomethadyl Acetate [corrected] Buprenorphine, and Methadone,” *Journal of Substance Abuse Treatment* 32, no. 2 (2006): pp. 187–194; Lisa A. Marsch et al., “Buprenorphine Treatment for Opioid Dependence: The Relative Efficacy of Daily, Twice and Thrice Weekly Dosing,” *Drug & Alcohol Dependence* 77, no. 2 (2005): pp. 195–204; Lisa A. Marsch et al., “Comparison of Pharmacological Treatments for Opioid-Dependent Adolescents: A Randomized Controlled Trial,” *Archives of General Psychiatry* 62, no. 10 (2005): pp. 1157–1164; Lynn E. Sullivan et al., “Buprenorphine/Naloxone Treatment in Primary Care Is Associated with Decreased HIV Risk Behaviors,” *Journal of Substance Abuse Treatment* (October 12, 2007).

49. Gregory S. Zaric et al., “HIV Transmission and the Cost-Effectiveness.”

50. David S. Metzger et al., “Human Immunodeficiency Virus Seroconversion”; Andrew R. Moss et al., “HIV Seroconversion in Intravenous Drug Users in San Francisco, 1985–1990.”

51. “Interventions to Prevent HIV Risk Behaviors”; and James R. Cooper, “Methadone Treatment and Acquired Immunodeficiency Syndrome,” *JAMA* 262 (1989): pp. 1664–1669.

make a commitment to offer effective treatment for opiate addiction to all who need it. All persons dependent on opiates should have access to methadone hydrochloride maintenance therapy under legal supervision.<sup>52</sup>

- In reports from 1998 and 2001, WHO, UNAIDS, and the UN Office on Drugs and Crime (UNODC) documented the effectiveness of opioid agonist treatment as an HIV prevention intervention among IDUs.<sup>53</sup>
- In March 2006 WHO added the two primary drugs used in maintenance therapy—methadone and buprenorphine—to its list of essential medicines.<sup>54</sup>
- In September 2006 the U.S. Institute of Medicine released a report urging high-risk transitional and developing countries to take immediate steps to make HIV prevention techniques widely available to injecting drug users; it noted that “[s]trong evidence shows that two opioid agonist medications—methadone and buprenorphine—are effective in treating dependence on opioids.”<sup>55</sup>

Efforts in the United States and western Europe to increase access to maintenance treatments have achieved some success. The United States provided methadone to more than 225,000 people in 2005.<sup>56</sup> Approximately 300,000 people between 2003 and 2006 received buprenorphine, which was introduced in the United States in 2002, and 105,000 were in treatment in 2005.<sup>57</sup> In France in 2003 there were an estimated 23,500 patients receiving methadone and an estimated 80,000 patients receiving buprenorphine.<sup>58</sup> In Germany, an estimated 65,000 patients were receiving methadone, and 9,000 were receiving buprenorphine treatment in 2003.<sup>59</sup> In the United Kingdom in 2003 there were an estimated 128,000 patients receiving methadone.<sup>60</sup> In Switzerland and the Netherlands, more than two-thirds of those in need of maintenance treatment are receiving it.<sup>61</sup> Similar efforts need to be repeated in transitional and developing countries.

---

52. “Effective Medical Treatment of Opiate Addiction,” NIH Consensus Statement Online, November 17–19, 1997, pp. 1–38, <http://consensus.nih.gov/1997/1998TreatOpiateAddiction108html.htm>.

53. *Approaches to Injecting Drug Use*; and UNAIDS and UNODC, *Drug Abuse and HIV/AIDS: Lessons Learned* (Vienna: UNAIDS, 2001).

54. “Model List of Essential Medicines,” 14th ed., WHO, March 2005.

55. Preventing HIV Infection among Injecting Drug Users in High Risk Countries.”

56. *National Survey of Substance Abuse Treatment Services (N-SSATS): 2005*, DHHS Publication no. (SMA) 06-4206 (Rockville, Md.: Substance Abuse and Mental Health Services Administration, Office of Applied Statistics, 2006), <http://www.dasis.samhsa.gov/05nssats/nssats2k5web.pdf>.

57. David A. Fiellin, “The First Three Years of Buprenorphine in the United States: Experience to Date and Future Directions,” *Journal of Addiction Medicine* 1 (2007): pp. 62–67; and Wendy Kissin et al., “Experiences of a National Sample of Qualified Addiction Specialists Who Have and Have Not Prescribed Buprenorphine for Opioid Dependence,” *Journal of Addictive Diseases* 25, no. 4 (2006): pp. 91–103.

58. *Prescrire International* 15 (2006): pp. 64–70.

59. *Statistical Bulletin 2006* (Lisbon: European Monitoring Centre for Drugs and Drug Addiction, 2006).

60. *Ibid.*

# Availability in Developing Countries

While more than 600,000 patients have access to methadone and buprenorphine in the United States and Europe, access to medication-assisted treatment in transitional and developing countries is far more restricted. This is true in countries where the majority of HIV cases are among IDUs and in countries in which HIV transmission has been predominantly through heterosexual sex but in which transmission as a result of unsafe injection of illegal drugs has recently been found to be increasing. None of the countries surveyed has brought programs to scale.

## Limited Access

In a number of countries covered in this report—Kazakhstan, Kenya, Nigeria, Russia, and Tajikistan—maintenance treatment is illegal or unavailable. Vietnam was previously in this category, but legal barriers to the use of maintenance therapy were removed in 2006; pilot programs are being developed, but none has yet begun.<sup>62</sup>

Many countries facing injection-driven HIV epidemics have explored the possibility of maintenance treatment with pilot or other small-scale programs designed to assess feasibility and appropriateness in the local setting. Ukraine, Kyrgyzstan, China, and Malaysia began providing maintenance treatment through pilot programs, while others have restricted access by limiting the number of patients receiving this treatment to fewer than a hundred.

While pilot and small-scale programs can be an important step, they can also provide the illusion of action without the kind of progress required to substantially affect HIV infection. No country that was formerly part of the Soviet Union, for example—despite years of study and evidence of decreased illicit drug injection and improved family life and employment possibilities for patients—has scaled up maintenance treatment to anything approaching the levels required to make an impact on HIV or meet the demand for drug treatment. Ukraine, the country with

---

61. Harald Klingemann, “Drug Treatment in Switzerland: Harm Reduction, Decentralization, and Community Response,” *Addiction* 91 (1996): pp. 723–736; Wim van den Brink et al., “Medical Co-Prescription of Heroin to Chronic, Treatment-Resistant Methadone Patients in the Netherlands,” *Journal of Drug Issues* 29 (1999): pp. 587–608.

62. “Vietnam Uses Methadone as Drug Substitute,” Xinhua News Agency, March 26, 2007; Steven K. Koester, personal communication with Robert Heimer, April 8, 2007: it is probable that the Xinhua press release is premature.

the greatest number in maintenance treatment in the region, treated fewer than 600 of the estimated 400,000 IDUs in the country at the close of 2006. Generally, programs that fail to scale up will also fail to make best use of one of the most effective tools to contain HIV. This represents a potential missed opportunity because countries that restrict treatment to only a few hundred patients risk having less controllable epidemics on their hands by the time they decide to expand to full-scale, national efforts.

Two countries covered in this report have scaled up maintenance therapy programs to meet a growing need and societal concern about the threat of HIV. The first is Malaysia, which began employing maintenance therapy in 2001 and currently reaches more than 30,000 patients.<sup>63</sup> This puts Malaysia just at the cusp of having sufficient maintenance therapy to help control its HIV epidemic among IDUs. The second country is China, which began the use of maintenance therapy in pilot programs in 2004 and has rapidly scaled up to have 37,000 patients in treatment by the end of 2006.<sup>64</sup> In China, however, the number of opiate users will continue to outstrip available treatment. Although the government plans to have 200,000 patients in treatment by 2010,<sup>65</sup> this expansion will still reach only 10 percent of the country's projected IDUs.<sup>66</sup> This remains below the threshold of coverage that appears to be needed to help control an HIV epidemic among IDUs.

## Available Medication

In terms of the use of methadone versus buprenorphine, some countries have employed one medication in preference to the other. Nevertheless, there is an apparent trend toward widening treatment options. Both Malaysia and Ukraine, for example, began use of maintenance therapy with only buprenorphine, Malaysia in 2001 and Ukraine in 2004.<sup>67</sup> Malaysia subsequently added methadone in 2003, and Ukraine is expected to add it this year. Conversely, China initiated maintenance therapy in 2004 using methadone and is expected to launch a trial using Suboxone (a combination of buprenorphine and naloxone) within the year.<sup>68</sup>

---

63. Mahmud Mazlan et al., "New Challenges and Opportunities in Managing Substance Abuse in Malaysia," *Drug & Alcohol Review* 25, no. 5 (2006): pp. 473–478.

64. Personal communication from Zhao P., senior professional officer, WHO, China, April 2007.

65. Yi-Lang Tang et al., "Opiate Addiction in China: Current Situation and Treatments," *Addiction* 101 (2006): pp. 657–665.

66. Carmen Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level in Developing and Transitional Countries, and Gender and Age Distribution," *Sexually Transmitted Infections* 82, supp. 3 (2006): pp. iii10–iii17.

67. Mazlan et al., "New Challenges and Opportunities in Managing Substance Abuse in Malaysia"; and R. Douglas Bruce et al., "HIV Treatment Access and Scale-Up for Delivery of Opiate Substitution Therapy with Buprenorphine for IDUs in Ukraine—Programme Description and Policy Implications," *International Journal of Drug Policy* 18 (2007): pp. 326–328.

68. "HPTN 058: Study Documents," HIV Prevention Trials Network, 2005, [http://www.hptn.org/research\\_studies/HPTN058StudyDocuments.htm#StudyProtocol](http://www.hptn.org/research_studies/HPTN058StudyDocuments.htm#StudyProtocol).

## Access in Prisons

Many of the countries surveyed employ criminal justice sanctions as their primary response to the consumption of illicit drugs. In Russia, for example, as many as half of all those incarcerated were arrested for drug-related offenses.<sup>69</sup> While injection of drugs in penal institutions is commonplace, sterile injection equipment or maintenance treatment is rarely available, making such facilities incubators for the rapid spread of HIV. As a result, prisons are filled with individuals suffering from opiate addiction, and opportunities to prevent HIV transmission are missed.<sup>70</sup> In some locations, most notably Vietnam, entire “rehabilitation” institutions have been developed to segregate addicted individuals from other members of society. As many as 50,000–80,000—most of whom are young men—have been consigned in some facilities.<sup>71</sup> China continues to pursue mandatory institutionalization of drug users although in some places there has been a shift from involuntary detoxification in penal institutions to maintenance therapy in the community.<sup>72</sup> Compulsory detoxification institutions have served as a ready-made source of patients for maintenance therapy.

Many countries in western Europe have recognized the need to treat addicted prisoners with maintenance therapy during their incarceration and to develop ways to keep individuals in treatment as they reenter the world outside of prison. Many developing and transitional countries could benefit by implementing such programs. One positive example has been the establishment in 2005 of a pilot methadone maintenance treatment program implemented in the Kerobokan prison in Indonesia.<sup>73</sup> In July of 2006, 31 patients were in treatment, and a proposed expansion within Kerobokan prison and to another prison in Djakarta is moving forward.

## Emerging Epidemics in Africa

There is evidence of increasing injection drug use in 23 sub-Saharan African countries, with IDU epidemics emerging in countries such as Nigeria and Kenya. The region is increasingly vulnerable to international drug trafficking routes, which some suspect are driving growing rates of drug use and transmission of HIV. In

69. Joanne Csete, “Lessons Not Learned: Human Rights Abuses and HIV/AIDS in the Russian Federation,” *Human Rights Watch* 16, no.5 (2004): pp. 1–62, <http://hrw.org/reports/2004/russia0404/>.

70. Evan Wood et al., “HIV Treatment, Injection Drug Use, and Illicit Drug Policies,” *Lancet* 370 (2007): pp. 8–10.

71. J. Stephen Morrison and Phillip Nieburg, “HIV/AIDS in Vietnam: Field Report of the CSIS HIV/AIDS Task Force Mission to Vietnam, January 2006” (Washington, D.C.: Center for Strategic and International Studies, June 2006), [http://www.csis.org/media/csis/pubs/hiv\\_in\\_vietnam\\_\(5-8-06\).pdf](http://www.csis.org/media/csis/pubs/hiv_in_vietnam_(5-8-06).pdf).

72. Rachel Humeniuk and Robert Ali, “The First Methadone Clinic in Beijing,” *Drug & Alcohol Review* 24 (2005): pp. 285–287.

73. Ingrid Irawati et al., “Indonesia Sets Up Prison Methadone Maintenance Treatment,” *Addiction* 100 (2006): p. 1525.

Mauritius, for example, injection drug use accounted for an estimated 7 percent of new HIV cases in 2001. In 2005 an estimated 90 percent of new infections were through injection drug use.<sup>74</sup> Kenya and Nigeria already have large numbers of HIV-infected individuals (1.4 and 4.3 million, respectively). The percentage of cases caused by injection drug use is relatively small at less than 10 percent in both countries, but drug use and HIV infection are spreading rapidly. In Kenya, anywhere between 23 and 50 percent of injectors are already HIV positive.<sup>75</sup> In Nigeria, almost 10 percent of IDUs are infected with HIV.<sup>76</sup>

Maintenance therapy is illegal and unavailable in both Kenya and Nigeria, while an estimated 45,000 IDUs need treatment. Injection drug use carries with it increased risks for sexual transmission, especially since IDUs may also trade or sell sex to support their addiction. As such, injection drug use stands to further exacerbate the already advanced sexually driven epidemics. Early interventions here are necessary to help avert a more widespread epidemic among injectors, their partners, and families.

## Estimating the Treatment Gap

Several features of the epidemic and of programs need to be taken into account in any consideration of the extent to which programs have to be expanded to meet the treatment gap. In the countries considered in this report, IDUs range from less than 5 percent to more than 80 percent of the total cases of HIV. Likewise, these countries have HIV epidemics that span the gamut from nascent (total population HIV prevalence rates less than 2 percent, with low prevalence rates in high-risk groups) through concentrated (total HIV prevalence rates less than 2 percent, with high prevalence in high-risk groups) to generalized (total population HIV prevalence rate more than 2 percent).

Maintenance therapy programs need to be tailored to different country-specific conditions. For instance, in many locations (for example, many cities in Vietnam, Ukraine, and Russia), HIV prevalence among injectors hovers around 50 percent. This maximizes the likelihood that syringe sharing will be between someone infected and someone susceptible. To respond under this condition, maintenance programs should be structured to treat everyone equally and not to focus on providing maintenance therapy only to those who are HIV infected. If, however, the HIV prevalence among injectors is low but threatening to grow (for example, in

74. Sarah Dewing et al., "Review of Injection Drug Use in Six African Countries: Egypt, Kenya, Mauritius, Nigeria, South Africa and Tanzania," *Drugs: Education, Prevention and Policy* 13 (2006): pp. 121–137.

75. Clement Deveau et al., "Heroin Use in Kenya and Findings from a Community-Based Outreach Programme to Reduce the Spread of HIV/AIDS," *African Journal of Drug and Alcohol Studies* 5 (2006): pp. 95–106; and Maurice Odek-Ogunde et al., "Seroprevalence of HIV, HBC and HCV in Injecting Drug Users in Nairobi Kenya: World Health Organization Drug Injecting Study Phase II findings" (paper presented at the 15th International AIDS Conference, Bangkok, Thailand, July 11–16, 2004).

76. Moruf L. Adelekan and Rahmaan A. Lawal, "Drug Use and HIV Infection in Nigeria: A Review of Recent Findings," *African Journal of Drug and Alcohol Studies* 5 (2006): pp. 118–129.

Georgia and sub-Saharan Africa), the maximal impact in reducing HIV injections would be achieved by giving preference to HIV-positive people, so that they are less likely to transmit infection.

Before the policy of giving preference to HIV-positive people is adopted, some ethical issues should be considered, and the approach might be rejected for a number of reasons. First, it might be medically inappropriate to reject for treatment HIV-negative individuals with serious, life-threatening addictive disorders. Second, restricting access to HIV-positive individuals might result in publicly identifying those who are HIV positive, which might have serious consequences in locations where HIV infection is more stigmatized than addiction. Third, if testing must precede entry into drug treatment, a substantial time lag might result in people changing their minds about entering treatment. The impact of these factors must be considered in making an open, evidence-based decision about creating a tiered system of placing people into treatment.

Regardless of the optimal strategy for enrolling injectors, maintenance therapy programs must maximize their impact by providing adequate dosing to decrease injection frequency by at least 75 percent and must be coupled with access to ARV therapy. To achieve optimal results, programs should be larger than planned in those countries that are initiating pilots and planning for slow expansion. Analysis of data from the United States, western Europe, and Australia suggests that if programs have the capacity to treat and retain fewer than one in four opioid injectors nationwide, they are unlikely to make much of an immediate impact on the ever-increasing number of HIV infections detected among injectors. Prior work has indicated that at least 65 percent of IDUs should be in effective treatment to have a meaningful impact on HIV transmission.<sup>77</sup> Any smaller percentage will result in continued rates of injection that open the possibility for substantial HIV transmission.

---

77. Harold A. Pollack and Robert Heimer, "The Impact and Cost-Effectiveness of Methadone Maintenance Treatment in Preventing HIV and Hepatitis C," in *Impact and Costs of Hepatitis C in Injecting Drug Users in the European Union*, ed. Lucas Weissing et al. (Lisbon: European Monitoring Centre for Drugs and Drug Addiction, 2003), <http://www.emcdda.europa.eu/?nnodeid=428>.

# Policy and Implementation Considerations

A number of high hurdles need to be overcome before opioid maintenance therapy can be expanded. Some of these hurdles are legal; most are administrative. This section reviews the most common areas that need to be addressed by donors, governments, and those providing treatment.

## Choice of Medication

As with other pharmaceuticals, patients will respond differently to medications and ideally should be offered a choice of medications. In the developing world, this is not likely to be the case in the near term. Since optimized administration of methadone and buprenorphine is likely to have similar efficacy, with methadone likely to provide an advantage in treatment retention, cost is often the driving factor in choice of medications.

Methadone varies in price but is generally significantly less costly than buprenorphine, which is often unavailable in generic form. In Ukraine, for example, the government has negotiated a price for methadone of \$8 per patient per month, with negotiations under way with other companies to further reduce that cost by half. By contrast, buprenorphine, as administered, cost \$198 per month.<sup>78</sup> While some countries have concluded less costly deals with buprenorphine suppliers, methadone remains a cheaper alternative. Some countries—including China, Iran, India, and France—manufacture generic buprenorphine, but it is generally unavailable for export.

Buprenorphine is sometimes preferred because of its ceiling effect—which makes it all but impossible for patients to overdose on the medication as a single agent—and because regulations on its prescription and administration are generally less onerous. In France, for example, where the government allows private physicians to prescribe a generic form of buprenorphine, some 80,000 patients receive medication from local pharmacies. The patented formulation of buprenorphine and naloxone, Suboxone, can precipitate withdrawal symptoms if injected; it is used in some countries, despite its increased expense, to discourage illicit sale or abuse. In the United States and many other countries, methadone remains much more tightly regulated than buprenorphine, requiring patients to attend specialized clinics daily or almost daily. Although some clinics, including those in the United

---

78. Bruce et al., “HIV Treatment Access and Scale-Up for Delivery.”

States, allow patients to gradually advance to “take home” methadone dosages, these privileges can be revoked. The requirement for constant clinic attendance, often accompanied by mandatory urine testing, increases the burden on the patient and the stigma associated with the medication, especially for those in stable recovery from their addiction.

## Laws and Regulations

Methadone and buprenorphine are effective medications for treating addiction, but they remain illegal or unavailable in many countries with injection-driven HIV epidemics. In Russia, for example, law prohibits opiate maintenance treatment.<sup>79</sup> More commonly, maintenance treatment is restricted through a system of regulations that impairs the ability of providers or patients to deliver and access treatment. The most common of these are discussed below.

Each country must submit estimates for opiate maintenance medications to the International Narcotics Control Board, whose experts evaluate requests to ensure appropriateness and reduce potential for diversion to illicit markets. Many countries, however, impose additional and multiple restrictions on importation, requiring those responsible to secure signatures and approvals from multiple ministries; to install alarm systems, safes, and ironclad rooms to store medications; and to follow strict procedures about division and distribution of medication. In multiple countries, regulations have also resulted in disruption of supply; mechanisms to ensure continuity of supply of medication are essential for treatment to be effective.

- In Ukraine, bulk methadone import has been permissible for a number of years, but division of the larger batches into smaller batches usable by individual providers was not until recently authorized by law. Effectively, this meant no methadone treatment was available.
- In Kyrgyzstan, the chief in charge of drug treatment must obtain multiple signatures to authorize importation each year. The cumulative effect is to discourage providers from medication delivery or to delay scale-up significantly.
- In Kyrgyzstan, Ukraine, and Azerbaijan, some clinics ran out or feared disruptions to supply of medications in 2006. Physicians were forced to either radically reduce doses provided to patients or cut patients from treatment altogether. A similar suspension of supply recently occurred in Moldova.<sup>80</sup> In some instances, patients returned to the streets to find opioid drugs.

---

79. William E. Butler, *HIV/AIDS and Drug Misuse in Russia: Harm Reduction Programmes and the Russian Legal System* (London: International Family Health, 2003).

80. Motylek, “Interruption in Essential Medication (Methadone) Supply in Moldova,” [http://motilek.com.ua//index.php?option=com\\_content&task=blogcategory&id=14&Itemid=42](http://motilek.com.ua//index.php?option=com_content&task=blogcategory&id=14&Itemid=42).

## Restrictions on Eligibility

If regulations about import and distribution restrict provider ability to use medication effectively, restrictions on client eligibility reduce the accessibility of medications. Some countries, such as Georgia, have chosen to restrict access to those who can document previous unsuccessful attempts to treat illicit drug use, despite shortages in other forms of drug treatment. Programs vary in terms of continuity of care, with some expelling patients who use any illicit drugs despite evidence that adjustments in doses of maintenance treatment and counseling can reduce such illicit drug use. These criteria are imposed despite the fact that, in terms of HIV prevention, reduction in the frequency of injection may represent a positive development.

A 2004 WHO/UNODC/UNAIDS position paper finds “excessive restrictive regulations regarding criteria for placement in maintenance therapy and its provision, that have no significant effect on quality of provided treatment, are counterproductive with regard to access to treatment and HIV/AIDS prevention.”<sup>81</sup> The debate has often been simplified to contrast low-threshold programs with high-threshold programs. Low-threshold programs are easy to enter, have flexible dosing policies, allow retention in the face of dropout or ongoing illicit drug use, and, although counseling may be offered, it is not required. High-threshold programs, by contrast, have more selective intake criteria and often have less flexible discharge policies (unremitting illicit drug use despite adequate medication dose and counseling services, for example, may be a grounds for expulsion) and compulsory counseling. No studies have compared the HIV prevention impact of the two kinds of programs. Currently, pragmatism may favor providing a range of low- and high-threshold options such as have been implemented in western Europe and Australia. The best-documented examples of the impact of this approach come from Amsterdam and western Australia. In both cases, the expansion of methadone with multiple levels of care was implemented with few negative consequences.<sup>82</sup>

In certain parts of the United States, patients frequently wait for weeks or months for entry into methadone programs, and in some states they must travel for hours to access treatment. Hong Kong has taken a more flexible approach, allowing patients to access methadone on the same day they request it, using an auxiliary medical force at clinics to allow for extended hours, and ensuring that the price of treatment remains low enough to be affordable to virtually all in need. Among the results has been little HIV transmission among injecting drug users and a demon-

---

81. “Position Paper: Substitution Maintenance Therapy in the Management of Opioid Dependence and HIV/AIDS Prevention” (Geneva: WHO/UNODC/UNAIDS, 2004), [http://www.who.int/substance\\_abuse/publications/en/PositionPaper\\_English.pdf](http://www.who.int/substance_abuse/publications/en/PositionPaper_English.pdf).

82. Miranda W. Langendam et al., “Differentiation in the Amsterdam Methadone Dispensing Circuit: Determinants of Methadone Dosage and Site of Methadone Prescription,” *Addiction* 93 (1998): pp. 61–72; and Elizabeth Ernst et al., “Methadone-Related Deaths in Western Australia 1993–99,” *Australian & New Zealand Journal of Public Health* 26 (2002): pp. 364–370; and Shane Darke et al., “The Australian Treatment Outcome Study (ATOS): What Have We Learnt about Treatment for Heroin Dependence?” *Drug & Alcohol Review* 26 (2007): pp. 49–54.

strable reduction in HIV risk behaviors.<sup>83</sup> China began methadone maintenance treatment with a restrictive policy that required most patients to complete at least a year in compulsory detoxification centers or forced labor camps run by the police. Recognizing that the requirement excluded thousands in need of treatment, the Chinese government has on paper removed that requirement although the association of police surveillance with maintenance treatment still limits enrollment at some of the more than 320 clinics now open in the country, and some clinics continue to require previous detoxification.<sup>84</sup>

Restrictive dosing is another impediment to effective use of treatment. Some programs, fearing that patients are “drug-seeking,” restrict doses to levels below those shown to be clinically effective, or they prohibit upward adjustment of doses even when patients report inadequate treatment effect. The result is treatment that fails to adequately reduce craving and consequently may fail.

## Diversion

Opioid agonist medications, including methadone and buprenorphine, are subject to diversion. At least two types of diversion exist: by individuals who seek a euphoric experience and by those who seek to prevent opioid withdrawal. While presumably the former behavior primarily exists among individuals who are not seeking treatment, the latter behavior—preventing opioid withdrawal—is often exhibited by those who are interested in receiving treatment. The provision of opioid agonist medications—of any variety or strength and for any indication (for example, pain treatment or addiction)—carries with it the risk of diversion and associated morbidity and mortality. This highlights the need for a balance between availability and appropriate prescribing practices.

Methadone diversion and morbidity were noted in the early days of clinic-based care in the United States and continue to a limited extent in all clinical settings.<sup>85</sup> Studies of diversion in the United States have failed to distinguish between methadone that is provided for treatment of addiction and doses of the medication that are prescribed for the treatment of pain. Results from a small study of street-recruited opioid abusers in Maine found that the majority of methadone diverted was in the formulation used to treat pain rather than the formulations used to treat addiction.<sup>86</sup> In the United States, Australia, and the United Kingdom, the prescrib-

---

83. Ka-Hing Wong et al., “Adherence to Methadone Is Associated with a Lower Level of HIV-Related Risk Behaviors in Drug Users,” *Journal of Substance Abuse Treatment* 24 (2003): pp. 233–239.

84. Sabin Russell, “China Finally Taking Steps to Fight Its HIV Problem: Methadone Clinics, Condoms in Hotels, Free Testing Offered,” *San Francisco Chronicle*, July 30, 2006.

85. Michael Agar, “Going through the Changes: Methadone in New York City,” *Human Organization* 36 (1977): pp. 291–295; H. Berger, “Prevention of the Diversion of Clinic Methadone to the Street Market” (paper presented at the Proceedings of the National Conference on Methadone Treatment, Washington, D.C., March 17–19, 1973); and *Methadone-Associated Mortality: Report of a National Assessment*, SAMHSA publication no. 04-3904 (Rockville, Md.: Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Treatment, 2004).

ing of methadone for pain is judged to be responsible for the majority of methadone-related deaths.<sup>87</sup>

In many countries, regulation of methadone treatment places restrictions on the kind of patients who can receive this treatment and the number of take-home doses that are provided. As a result, there are often waiting lists to enter methadone maintenance programs, and diverted methadone is often consumed by individuals who want treatment but have not yet obtained entry. The same Maine study noted above found that methadone was used not to induce euphoria but to ward off withdrawal and that some individuals in maintenance treatment with take-home privileges were sharing their medication.<sup>88</sup> In the UK, there is concern that lax prescribing practices, especially through general practitioners' offices, contributes to methadone diversion.<sup>89</sup> The official UK response to these problems has included programs that provide more oversight to methadone prescribing and dispensing, and this has proved useful in decreasing methadone-associated overdoses and deaths.<sup>90</sup>

Similar concerns have been raised in the United States with initiation of office-based buprenorphine prescribing.<sup>91</sup> Buprenorphine, as a partial agonist, is expected to undergo less diversion for euphoria. Diversion does occur, however, but often—as is the case with methadone—in the context of inadequate dosing.<sup>92</sup> In Georgia, buprenorphine appears to be increasing as a drug of abuse, as prices for it are higher than prices for street heroin.<sup>93</sup> In Malaysia, diversion of the buprenorphine-only compound resulted from prescribing relatively large quantities of the medication for unsupervised use from the beginning of treatment, which led to problems of poor medication adherence and injection misuse.<sup>94</sup> Some speculate that this was due to inadequate regulations concerning the number of patients treated by individual physicians, the method of dispensing by office-based physicians, and exclusive availability of the buprenorphine mono-tablet formulation in Malaysia. Resultant regulatory actions have included restricting the availability of the

---

86. Robert Heimer, "The Illicit Use of Pharmaceutical Opiates and Heroin in Cumberland County, Maine" (paper presented at the 350th annual scientific conference of the American Society for Addiction Medicine, Washington, D.C., 2004).

87. *Methadone-Associated Mortality*; and P. A. Williamson et al., "Methadone-Related Overdose Deaths in South Australia, 1984–1994: How Safe Is Methadone Prescribing?" *Medical Journal of Australia* 166 (1997): pp. 302–305.

88. Heimer, "The Illicit Use of Pharmaceutical Opiates."

89. John Strang and Janie Sheridan, "Methadone Prescribing to Opiate Addicts by Private Doctors: Comparison with NHS Practice in South East England," *Addiction* 96 (2001): pp. 567–576.

90. Alison Seymour et al., "The Role of Methadone in Drug-Related Deaths in the West of Scotland," *Addiction* 98 (2003): pp. 995–1002.

91. Theodore J. Cicero and James A. Inciardi, "Potential for Abuse of Buprenorphine in Office-Based Treatment of Opioid Dependence," *New England Journal of Medicine* 353 (2005): pp. 1863–1865.

92. Maria P. Carrieri et al., "Buprenorphine Use: The International Experience," *Clinical Infectious Diseases* 43, supp. 4 (2006): pp. S197–S215.

93. Hannah Cleaver, "Georgian Drug Misusers Switch to Western Heroin Substitute," *BMJ* 334 (2007): p. 821.

94. Mazlan et al., "New Challenges and Opportunities in Managing Substance Abuse in Malaysia."

buprenorphine mono-tablet, the introduction of the buprenorphine/naloxone combination formulation, and improved prescribing guidelines.<sup>95</sup> Similar concerns regarding injection and diversion of the buprenorphine mono-formulation have emerged in Australia and Finland.<sup>96</sup> In Finland, a survey attempting to identify the motive for those injecting buprenorphine found that more than 75 percent used the medication to self-treat addiction or withdrawal.<sup>97</sup> Of those who said they had misused the buprenorphine/naloxone combination, 80 percent indicated that they had had an unpleasant experience. This was supported by the fact that the street price was less than half that of buprenorphine alone.

Diversion might be further reduced with the combined buprenorphine/naloxone preparation because injecting the combination has been shown to precipitate withdrawal in opioid-dependent individuals.<sup>98</sup> There is nonetheless reason for caution. For instance, before the buprenorphine/naloxone combination was introduced in New Zealand, 80 percent of opioid abusers seeking treatment injected buprenorphine; afterward half of those seeking treatment were injecting the combination.<sup>99</sup> The combination formulation had a decreasing street price, which suggested lower desirability among drug abusers.

In the United States there is little evidence that buprenorphine/naloxone diversion is for abuse or euphoria. A survey of drug abuse experts noted that there was no difference in the frequency of reports of abuse of buprenorphine or an infrequently abused painkiller tramadol and that reported abuse for both was much lower than for oxycodone or methadone.<sup>100</sup> More than 33 percent of those with buprenorphine “abuse” in that survey reported that they took the medication as an attempt at self-medication. A survey of physicians in the United States with the ability to prescribe buprenorphine and buprenorphine/naloxone, conducted when they had fewer than two years of experience prescribing these medications, noted that the physicians expressed relatively few concerns about buprenorphine abuse or risk of diversion. Overall, 5 percent of all respondents reported awareness of patients “doctor shopping” or filling prescriptions at multiple pharmacies. However, those who were prescribing this medication (22 percent) were more likely than non-prescribers (14 percent) to report being “aware of anyone who has bought or sold buprenorphine illegally.”<sup>101</sup>

---

95. Ibid.

96. Alho et al., “Abuse Liability of Buprenorphine-Naloxone Tablets”; and Rebecca A. Jenkinson et al., “Buprenorphine Diversion and Injection in Melbourne, Australia: An Emerging Issue?” *Addiction* 100 (2005): pp. 197–205.

97. Alho et al., “Abuse Liability of Buprenorphine-Naloxone Tablets.”

98. John Mendelson et al., “Buprenorphine and Naloxone Interactions in Opiate-Dependent Volunteers,” *Clinical Pharmacology and Therapeutics* 60 (1996): pp. 105–114.

99. Robinson et al., “The Misuse of Buprenorphine and a Buprenorphine-Naloxone Combination in Wellington, New Zealand.”

100. Theodore J. Cicero et al., “Rates of Abuse of Tramadol Remain Unchanged with the Introduction of New Branded and Generic Products: Results of an Abuse Monitoring System, 1994–2004,” *Pharmacoepidemiology & Drug Safety* 14 (2005): pp. 851–859.

101. Kissin et al., “Experiences of a National Sample of Qualified Addiction Specialists.”

## Detoxification versus Ongoing Treatment

Medication can—and should—be used to help patients in detoxification when they are withdrawing from illicit drugs in a clinical setting. But detoxification alone should not be the standard of care for opioid-addicted patients. In some countries, methadone has been made available only for detoxification in the erroneous belief that true abstinence requires a person to stop using a prescription medication altogether. The evidence about both HIV prevention and drug treatment supports longer-term use of medications. For long-term heroin users, relapse rates without maintenance therapy are high, although they decrease the longer patients remain in treatment.<sup>102</sup> Failure rates at six months for treatment that does not include maintenance therapy routinely range between 80 percent and 90 percent. Methadone and buprenorphine have been shown to help people stay in drug treatment for longer periods of time, which significantly reduces the risk of illicit drug injection and HIV infection. Patients should have the option to continue in medication-assisted drug treatment for as long as they feel is necessary. For some patients, this will be time limited; however, studies found that a regimen tapering methadone over 180 days to abstinence was far less successful than continued maintenance.<sup>103</sup> Instead, as with an insulin-dependent diabetic or someone on ARV treatment, opiate maintenance treatment is best viewed as a long-term commitment.

It is often held that detoxification effectiveness could be improved by combining medical detoxification with psychological counseling. Studies that compared the provision of pharmacologic detoxification with and without counseling demonstrated that patients are nearly one and a half times more likely to complete the detoxification if receiving counseling. There was no difference, however, in later heroin use between those who received pharmacologic detoxification with or without complementary counseling.<sup>104</sup> Thus, counseling, while beneficial at keeping people in treatment, may not directly increase the likelihood of treatment success if success is measured by long-term abstinence from illicit drug use.

Also of concern is that patients who complete detoxification with no further medical support are at higher risk of overdose death because the initial treatment most often lowers their tolerance to drugs.<sup>105</sup>

---

102. Amato et al., “An Overview of Systematic Reviews of the Effectiveness of Opiate Maintenance Therapies”; Hubbard et al., *Drug Abuse Treatment*; Aaron R. Mann and Marvin D. Feit, “An Analysis of Federal Narcotic Detoxification Policy: Implications for Rehabilitation,” *American Journal of Drug and Alcohol Abuse* 9 (1983): pp. 289–299; and Karen L. Sees et al., “Methadone Maintenance vs 180-Day Psychosocially Enriched Detoxification for Treatment of Opioid Dependence: A Randomized Controlled Trial,” *JAMA* 283 (2000): pp. 1303–1310.

103. Sees et al., “Methadone Maintenance vs 180-Day Psychosocially Enriched Detoxification.”

104. Laura Amato et al., “Psychosocial Combined with Agonist Maintenance Treatments versus Agonist Maintenance Treatments Alone for Treatment of Opioid Dependence: Systematic Review,” *Cochrane Database of Systematic Reviews*, <http://www.cochrane.org/> (object name CD004147; accessed January 2008).

105. John Strang et al., “Loss of Tolerance and Overdose Mortality after Inpatient Opiate Detoxification: Follow Up Study,” *BMJ* 326 (2003): pp. 959–960.

## Role of Counseling in Maintenance Therapy

Methadone and buprenorphine are most effective when provided along with psychosocial counseling services, and countries initiating programs should consider whether to include these services. It needs to be emphasized, however, that providing medication-supported addiction treatment even without counseling is effective. Therefore, countries should not delay beginning or scaling up programs until counseling is in place. Willingness to receive counseling should also not be a precondition for accessing services.

The goals of psychosocial counseling can be to help the patient become abstinent from illicit drugs and to use personal medications as prescribed, to address the psychological triggers that cause relapse or contribute to continued drug use, and to encourage patients to make lifestyle changes such as increased involvement in drug-free social, vocational, and family activities. Psychosocial care can be provided by psychiatrists, psychologists, or trained substance abuse counselors.<sup>106</sup>

Two studies in the United States have demonstrated the positive benefits of counseling alongside medication-assisted treatment.

- A six-month randomized clinical trial assigned patients to three levels of services: (1) methadone alone, (2) methadone plus standard counseling services, and (3) methadone plus enhanced services (counseling, medical/psychiatric, employment, and family therapy services). Patients who received the standard or enhanced services had higher treatment retention rates than those receiving methadone alone, and those receiving services had the fewest number of patients using illicit opiates.<sup>107</sup>
- These findings have been replicated with patients receiving buprenorphine.<sup>108</sup> A recent study that compared two levels of psychosocial counseling (brief vs. enhanced) and two medication-dispensing regimens (weekly vs. thrice weekly) with buprenorphine/naloxone in a primary care setting was not able to demonstrate any difference between counseling or dispensing conditions, indicating that brief counseling and weekly medication dispensing may be a reasonable implementation strategy.<sup>109</sup>

A post hoc analysis of three levels of counseling support demonstrated that the standard, intermediate level of support—three regular counseling sessions per week, including a series of behavioral interventions—was more cost-effective than

---

106. Kathleen M. Carroll, “Manual-Guided Psychosocial Treatment: A New Virtual Requirement for Pharmacotherapy Trials?” *Archives of General Psychiatry* 54 (1997): pp. 923–928.

107. A. Thomas McLellan et al., “The Effects of Psychosocial Services in Substance Abuse Treatment,” *JAMA* 269, no. 15 (1993): pp. 1953–1959.

108. David A. Fiellin and Patrick G. O’Connor, “Office-Based Treatment of Opioid-Dependent Patients,” *New England Journal of Medicine* 347 (2002): pp. 817–823; and Ivan D. Montoya et al., “Randomized Trial of Buprenorphine for Treatment of Concurrent Opiate and Cocaine Dependence,” *Clinical Pharmacology & Therapeutics* 75, no. 1 (2004): pp. 34–48.

109. David A. Fiellin et al., “Counseling Plus Buprenorphine-Naloxone Maintenance Therapy for Opioid Dependence.”

the minimum level of one session per month or the more enhanced seven sessions per week for patients receiving 60–90 milligrams of methadone daily.<sup>110</sup>

## Relationship to HIV Antiretroviral Therapy

Illicit drug use is not a reasonable criterion for denying ARV therapy.<sup>111</sup> Studies show that with adequate support systems, drug users are as able as others to adhere to their treatment regimen.<sup>112</sup> Many countries—including Russia, Kazakhstan, Tajikistan, Kenya, and Nigeria, which are covered in this report—have little or no access to effective, humane, drug treatment services. In these cases, preconditioning ARV access on abstinence from illicit drugs would essentially condemn most HIV-infected drug users to death.

Some donors have a renewed interest in maintenance therapy because, in addition to its role in HIV prevention, methadone and buprenorphine help HIV-positive patients adhere to ARV therapy. In many countries in Asia and the former Soviet Union, including Vietnam, China, Russia, Malaysia, and Ukraine, the largest share of HIV-infected individuals has a history of injecting drug use. As donors increase resources to provide HIV treatment, they are looking to increase access to methadone and buprenorphine in concert with expansion of ARV.

Maintenance treatment should not be restricted only to those people who are HIV positive. This is of concern for both ethical and economic reasons. Such a restriction makes sense only under circumstances of both extremely limited access to maintenance medications and extremely low HIV prevalence among IDUs. And because maintenance therapy works best for those who are ready for drug treatment, denying access on the basis of HIV status may compromise the effectiveness of the therapy.

As a public health matter, confining services to HIV-positive individuals misses a critical opportunity to help avert a widespread epidemic. In many countries, HIV is not yet widely prevalent among drug users, and HIV prevention for those IDUs not yet infected remains essential. In these situations, it is important to bring maintenance therapy programs to scale in the very near term to prevent increases in prevalence, particularly among the youngest drug users, including adolescents, who often have high risks for infection but low current rates.<sup>113</sup>

Basing the decision to provide maintenance treatment on HIV status runs contrary to the consensus opinion of scientists, physicians, and public health

110. M. Katherine Kraft et al., “Are Supplementary Services Provided during Methadone Maintenance Really Cost-Effective?” *American Journal of Psychiatry* 154 (1997): pp. 1214–1219.

111. Carmen Aceijas et al., “Antiretroviral Treatment for Injecting Drug Users in Developing and Transitional Countries One Year before the End of the ‘Treating 3 Million by 2005. Making It Happen. The WHO Strategy,’” *Addiction* 101 (2006): pp. 1246–1253.

112. Gregory M. Lucas et al., “Directly Administered Antiretroviral Therapy in Methadone Clinics Is Associated with Improved HIV Treatment Outcomes, Compared Outcomes among Concurrent Comparison Groups,” *Clinical Infectious Diseases* 42 (2006): pp. 1628–1635; and Anita Palepu et al., “Antiretroviral Adherence and HIV Treatment Outcomes among HIV/HCV Co-Infected Injection Drug Users: The Role of Methadone Maintenance Therapy,” *Drug & Alcohol Dependence* 84 (2006): pp. 188–194.

practitioners who are experts in the field. For example, the 1998 NIH Consensus statement on treatment for opioid addiction stated, “Opiate dependence is a brain-related medical disorder that can be effectively treated with significant benefits for the patient and society, and society must make a commitment to offer effective treatment for opiate dependence to all who need it. All persons dependent on opiates should have access to . . . maintenance therapy under legal supervision.”<sup>114</sup>

It is important for donors to understand the centrality of linking maintenance and ARV treatments in responding to HIV infections among IDUs. Both forms of treatment assist the individual, prolonging life and assisting in the resumption of a normal, productive existence. Arguably, the combination of treatments may greatly reduce the chances of HIV spreading: maintenance therapy reduces risks, and ARV therapy can reduce infectiousness by reducing viral load. Neither strategy alone is likely to be as effective as one that combines the two treatment approaches.<sup>115</sup> Unfortunately, there is little evidence that this is happening in the countries covered in this report.

## Relationship to Other HIV Prevention Programs

Medication-assisted drug treatment will not, on its own, avert the rapid rate of HIV infections among IDUs. The single most effective form of HIV prevention for IDUs is needle and syringe exchange.<sup>116</sup> Drug treatment is an essential component to any comprehensive HIV prevention scheme, but it should not be implemented in isolation.

Many programs, including most in the United States, provide maintenance treatment services separate from syringe exchange or drug free services, and they offer maintenance treatment patients restricted access to other health care. But in locations ranging from Boston, Massachusetts, to Bishkek, Kyrgyzstan, a number of programs have found it effective to integrate services for those actively using drugs and those trying to abstain. In some locations, syringe exchange programs with an active link to treatment programs have found the exchange an active conduit to the initiation of treatment for addiction.<sup>117</sup> The methadone facility in these instances may be located near or with the needle exchange site, which in turn is near or with drug-free treatment. Doctors able to provide primary care are also integrated into

---

113. “HIV Prevention among Drug Users Guidance #1: Injection Heroin Use,” U.S. Department of State, Washington, D.C.: 2006, <http://www.state.gov/s/gac/partners/guide/prevent/64035.htm>.

114. “Effective Medical Treatment of Opiate Addiction.”

115. Ronald H. Gray et al., “Stochastic Simulation of the Impact of Antiretroviral Therapy and HIV Vaccines on HIV Transmission; Rakai, Uganda,” *AIDS* 17 (2003): 1941–1951; and Stephen Taylor et al., “Antiretroviral Therapy to Reduce the Sexual Transmission of HIV,” *Journal of HIV Therapy* 8 (2003): pp. 55–66.

116. “Preventing HIV Infection among Injecting Drug Users in High Risk Countries.”

117. Robert Heimer, “Can Syringe Exchange Serve as a Conduit to Substance Abuse Treatment?” *Journal of Substance Abuse Treatment* 15 (1998): pp. 183–191; and Robert Brooner et al., “Drug Abuse Treatment Success among Needle Exchange Participants,” *Public Health Reports* 113, supplement 1 (1998): pp. 129–139.

the service. Given that addiction is a chronic and relapsing condition and that patients enter care with a variety of needs, the advantage of the integrated approach is coordination of treatment and increased patient options. People using needle exchange services can be easily referred to drug treatment services. Patients relapsing in drug treatment can easily access clean syringes to avoid HIV infection during the relapse period.

# Recommendations

There is a relatively new and welcome interest on the part of international donors to fund work related to opioid maintenance therapy. Most of the pilots reviewed for this study enjoy at least some donor support.

The United States, which as noted in this report has a great deal of experience with maintenance treatment for opioid addiction, is also the largest funder of research related to addiction treatment and HIV prevention and supports clinical trials in a number of developing countries.

Further, there have been nascent efforts to incorporate drug maintenance therapy into U.S. global AIDS efforts. The authorizing legislation for the President's Emergency Plan for AIDS Relief (PEPFAR) explicitly allows "assistance to help avoid substance abuse and intravenous drug use that can lead to HIV infection,"<sup>118</sup> and there have been tentative steps to incorporate access to maintenance therapy in PEPFAR. The Global Fund to Fight AIDS, Tuberculosis and Malaria, to which the United States is the largest donor, provides funding for maintenance therapy in a number of countries.

In March 2006, the Office of the Global AIDS Coordinator (OGAC) issued guidance on HIV prevention among drug users, signaling its intention to address this issue by (1) tailoring HIV prevention programs to substance abusers, (2) supporting substance abuse therapy programs for HIV-infected individuals as an HIV prevention measure, and (3) offering HIV-infected drug users a comprehensive HIV/AIDS treatment program to reduce the risk of transmission.<sup>119</sup> Funding of needle and syringe exchange remains explicitly excluded. The guidance makes official OGAC's support for the provision of methadone and buprenorphine treatment as part of PEPFAR. In practice, however, only a handful of countries receive aid from the United States to support treatment for opiate addiction, and the funds provided have been used primarily for policy reform and technical assistance. The guidance limits the scope of assistance to those already infected with HIV and limits services for HIV-negative people to pilot programs approved in Washington. This may leave millions of people in need without access.

Vietnam is the only PEPFAR focus country with an IDU-driven HIV epidemic, and it illustrates some of the challenges of scaling up drug treatment and HIV prevention services. A study funded by the U.S. Agency for International Development (USAID) estimated that IDUs account for nearly 60 percent of HIV transmission and that HIV prevalence among injectors exceeds one-third in the most severely

118. *United States Leadership against HIV/AIDS, Tuberculosis, and Malaria Act of 2003*, Public Law 108-25, [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_public\\_laws&docid=f:publ025.108](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_public_laws&docid=f:publ025.108).

119. "HIV Prevention among Drug Users Guidance #1: Injection Heroin Use."

affected areas of the country.<sup>120</sup> Tens of thousands of drug users are held in detention centers (so called “06 Centers”), most of which enforce strict rules about release. Without access to maintenance treatment, most of these individuals will not be able to abstain from drug use and will continue to be held. In the meantime, HIV infection rates are high in the detention centers.

Vietnam is also the only country in which the United States approved funding for a methadone treatment pilot after methadone and buprenorphine were legalized by the Vietnamese government in 2006. Despite considerable efforts, however, the medications remain unavailable, and the USAID implementer, Family Health International, has not yet been able to receive the necessary authorizations from the government to begin treatment. Why this is the case is the subject of considerable speculation. The Vietnamese government has indicated a preference for naltrexone and is continuing widespread use of that medication. The United States has correctly declined to fund that program because there is no evidence that naltrexone has an impact on HIV infection rates.

The United States has funded interventions in other countries, most notably Russia and Ukraine. In Ukraine, where methadone treatment is due to begin after years of delay, the United States has decided to consider direct support for medication.

Among the most pressing challenges in the U.S. global AIDS response in the coming phase will be to elevate HIV prevention efforts as a strategic priority. Resources targeted early to vulnerable populations can deliver dramatic benefits.

Outside of Africa, injection drug use accounts for nearly one-third of all new infections. IDU epidemics may rapidly penetrate IDU networks and spread to the larger population. Addressing the root driver of these epidemics should be a priority for the U.S. government during the next five years in its global AIDS efforts outside of sub-Saharan Africa. There is considerable room to expand the reach of programs serving IDUs, and there is an urgent need to help countries scale up programs in the near term.

In some of these countries, U.S. assistance can and should look different from the current efforts in focus countries, where the United States bears significant financial responsibility for scale-up in HIV treatment. In most of the countries we investigated, there is the opportunity for national government funding and better use of international donors. The emphasis should be to bring evidence-based HIV prevention programs to scale and to ensure their sustainability.

While the scope of the need is daunting, it is well within the reach of the international community to provide universal treatment to those with need. Some question funding drug treatment as HIV prevention because they want to keep PEPFAR narrowly tailored. But drug use is one of the most efficient modes of HIV transmission, and injection-driven epidemics are among the fastest growing in the world. Access to methadone and buprenorphine is a critical component of this

---

120. UNESCO, “Vietnam Country Report” (presentation at OPEC Fund/UNESCO Project Regional Workshop: Sharing Lessons, Planning Future Directions, October 31–November 1, 2006), [http://www.unescobkk.org/fileadmin/user\\_upload/hiv\\_aids/Documents/Workshop\\_doc/OPEC\\_Kawyai/presentations/Vietnam\\_Opec.pdf](http://www.unescobkk.org/fileadmin/user_upload/hiv_aids/Documents/Workshop_doc/OPEC_Kawyai/presentations/Vietnam_Opec.pdf).

work, and maintenance treatment programs that aim to reduce the spread of HIV should be narrowly tailored to target injectors and those at risk of injecting. In all countries covered in our study, the most commonly injected drugs are opiates that are well suited to medication-assisted interventions.

U.S. global AIDS efforts, in partnership with international donors and national governments, should seek to:

- Scale up drug treatment pilots, where they exist. Maintenance therapy programs that fail to scale up will fail to make an impact on the HIV epidemic. Four countries with existing pilots—Georgia, Indonesia, Kyrgyzstan, and Ukraine—could benefit from a national plan and resources to bring services to scale. Vietnam should continue to be a priority of the U.S. government in efforts to expedite pilot projects and bring these to scale once established. Malaysia and China are on the cusp of providing national coverage; these efforts should be supported.

In almost all cases, the United States should make special efforts to encourage partner governments to introduce and expand programs in prisons and to ensure continuity of care as prisoners are released back into the community.

- Support an integrated approach to drug treatment and HIV prevention. Drug treatment is an essential component of any comprehensive HIV prevention scheme but should not be implemented in isolation. The U.S. administration has made explicit its unwillingness to fund needle and syringe exchange, but it can and should nonetheless ensure that there are adequate linkages between those programs and drug treatment. Programs in the United States and abroad have found it effective to integrate services for those actively using drugs and those trying to abstain. Ideally, the integrated approach—one that combines in primary care settings maintenance therapy, ARV treatment, and services for active injectors—may offer the greatest chances of meeting the twin goals of controlling the epidemics of HIV and opioid addiction. Doctors able to provide primary care can also be integrated into such service provision models. More modestly, methadone facilities in these instances can be located near or with the needle exchange site. Given that addiction is a chronic and relapsing condition and that patients enter care with a variety of needs, the advantage of the integrated approach is coordination of treatment and increased patient options. People using needle exchange services can be easily referred to drug treatment services. Patients relapsing in drug treatment can easily access clean syringes to avoid HIV infection during relapse.

While this report focuses on syringe-borne transmission of HIV among IDUs, sexual transmission among injectors and from injectors to the general population does occur. When syringe-borne transmissions are controlled, sexual transmission emerges as a significant factor in new infections.<sup>121</sup> Prevention

---

121. Alex H. Kral et al., “Sexual Transmission of HIV-1 among Injection Drug Users in San Francisco, USA: Risk-Factor Analysis,” *Lancet* 357 (2001): pp. 1397–1401; Steffanie A. Strathdee et al., “Sex Differences in Risk Factors for HIV Seroconversion among Injection Drug Users: A 10-Year Perspective,” *Archives of Internal Medicine* 161 (2001): pp. 1281–1288.

programming must therefore include access to sexual-health services, and it is necessary that the programs targeting injectors include state-of-the-art, evidence-based interventions to reduce sexual risk. This is especially important where injection drug use and commercial sex work are intertwined because HIV prevalence often increases more rapidly among the injectors who are also engaging in prostitution and from them to others who are not injectors.<sup>122</sup>

- Revise existing guidance to ensure flexibility on a country-by-country basis. The Office of the Global AIDS Coordinator should consider revisiting its existing guidance, which prioritizes maintenance therapy for HIV-positive individuals. As a public health matter, confining drug treatment services to HIV-positive individuals misses a critical opportunity to help avert a widespread epidemic, particularly in countries where HIV is not yet widely prevalent among drug users. HIV prevention for those IDUs not yet infected—often adolescents—remains essential. Decisions about whom to treat should be made on a country-by-country basis and tailored to the local epidemic and resources. Maintenance programs may be tied to ARV treatment in some countries, but programs must take care not to require disclosure of HIV status as a condition of receiving treatment.
- Introduce programs to countries with IDU-driven HIV epidemics where no services exist. Where necessary, the United States should endeavor, in concert with country partners and international organizations including the WHO, UNAIDS, and the Global Fund, to remove legal barriers to treatment with methadone and buprenorphine. Further, the United States can work with international organizations and partner governments to reaffirm and convey the accumulating evidence and continue to make the case for introduction of maintenance therapy on public health grounds. Where capacity, not legal barriers, is the principal barrier, U.S. government funding for medications, supply chain management, training of health professionals, and other direct services may be necessary for some period of time. Priority countries should be expanded to emphasize Russia, Ukraine, Kazakhstan, and Tajikistan.

Controlled clinical trials may be one option in countries where political resistance is strong, and the United States should seek to make full use of the resources of the NIH here. However, because maintenance therapy is clearly superior to other modalities, it is unlikely that placebo control trials would be deemed ethical, so great care must be taken in the design of any clinical trials. Alternatives to placebo control trials should include trials that compare different culturally acceptable methods for the delivery of maintenance therapy and different forms or intensities of support services that supplement the provision of medications.

- Introduce programs in countries with emerging epidemics among drug injectors. Little attention has been paid to transmission among injectors in the

122. Obi J. Saidel et al., “Potential Impact of HIV among IDUs on Heterosexual Transmission in Asian Settings: Scenarios from the Asian Epidemic Model,” *International Journal of Drug Policy* 14 (2003): pp. 63–74.

countries of sub-Saharan Africa where the HIV epidemic is predominantly driven by heterosexual transmission. However, now that increases in injection drug use have been recognized in many parts of the region, a proactive response is warranted. Based on experiences from the United States, western Europe, and Australia, early expansion of methadone and buprenorphine can help prevent widespread HIV infection among injectors, their partners, and their families.<sup>123</sup>

Data on drug use and HIV infection rates are particularly weak in sub-Saharan Africa. Only South Africa has a surveillance system to monitor drug use over time. Where countries have attempted to improve data collection on HIV/AIDS, it tends to focus on antenatal clinics and likely misses growing infection rates among injectors, who tend to be overwhelmingly male at the start of such epidemics. Large population studies also tend to miss vulnerable populations, especially because people take extra efforts to hide their drug use from authorities. Additional rapid assessments can be useful. U.S. government support could also help to implement much needed sentinel surveillance systems to inform an evolving response.

---

123. Des Jarlais et al., "Maintaining Low HIV Seroprevalence in Populations of Injecting Drug Users."

# Country Reports

## China

### Prevalence of Injection Opioid Use

The abuse of heroin has become a significant problem in China.<sup>1</sup> The United Nations (UN) estimates that in China injection drug users (IDUs) number 1,928,000, with a range of 356,000 to 3.5 million.<sup>2</sup> Heroin abuse on a large scale began in the largely rural provinces contiguous with the Golden Triangle region of northern Myanmar and Laos and spread eastward to larger, more urban provinces such as Guangdong and northward into Sichuan and Xinjiang. By 1993, all provinces reported drug abuse and heroin addiction.<sup>3</sup> Between 1990 and 2000, the number of officially registered drug abusers grew from 70,000 to 860,000, and at least 75 percent of these used heroin.<sup>4</sup> More recently, the Chinese National Narcotic Control Committee reported 1.6 million addicted persons but recognized that the true number is much higher.<sup>5</sup> Overall, injection is the favored route for heroin administration although the percentages injecting compared with snorting vary by region.<sup>6</sup>

### Prevalence of HIV Infection

The most recent and reliable estimates from UNAIDS place the number of adult HIV infections at 650,000 cases nationwide (a range of 390,000 to 1.1 million).<sup>7</sup> This prevalence rate represents 0.1 percent of the population, one of the lowest rates among the countries in this report. The first indigenous cases of HIV were

---

1. Yi-Lang Tang et al., "Opiate Addiction in China: Current Situation and Treatments," *Addiction* 101 (2006): pp. 657–665.

2. Carmen Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level in Developing and Transitional Countries, and Gender and Age Distribution," *Sexually Transmitted Infections* 82, supp. 3 (2006): pp. iii10–iii17.

3. ZM. Liu et al., "Drug Use and HIV/AIDS in China," *Drug & Alcohol Review* 25 (2006): pp. 173–175.

4. *Drug Use and HIV Vulnerability: Policy Research in Asia* (Bangkok: UNAIDS/UNDCP, UNAIDS Asia Pacific Inventory Team, 2000); and ZM. Liu et al., "Epidemiological Features of Drug Abusers in China [in Chinese]," *J. Drug Abuse Prevention Treatment* 8 (2002): pp. 27–30.

5. Rachel Humeniuk and Robert Ali, "The First Methadone Clinic in Beijing," *Drug & Alcohol Review* 24 (2005): pp. 285–287; and *2006 International Narcotics Control Strategy Report*, vol. 1, *Drug and Chemical Control* (Washington, D.C.: U.S. Department of State, March 2006), <http://www.state.gov/p/inl/rls/nrcrpt/2006/vol1/pdf/index.htm>.

6. Tang et al., "Opiate Addiction in China"; ZM. Liu et al., "Drug use and HIV/AIDS in China"; and *Drug Use and HIV Vulnerability: Policy Research in Asia*.

7. Zunyou Wu et al., "Evolution of China's Response to HIV/AIDS," *Lancet* 369 (2007): pp. 679–690.

identified in 1989 in the southwestern province of Yunnan among IDUs.<sup>8</sup> A second major outbreak was detected in the east-central provinces in the mid-1990s as a result of contaminated blood collection instruments.<sup>9</sup> Soon after these findings there were dire predictions of an epidemic with 10 million HIV cases by 2010.<sup>10</sup> Fortunately these predictions have proved unfounded, but the estimate of 840,000 infections remained higher than previous estimates by the Chinese government, as the epidemic among IDUs has continued to grow.<sup>11</sup> Active testing of the population began in 2004 to provide the basis for better estimation of the scope of the HIV epidemic in China.<sup>12</sup>

### Prevalence of HIV Infection in Injection Opioid Users

HIV infections in China remain concentrated among heroin injectors. According to 2005 government figures, injectors comprise 43.2 percent of reported HIV/AIDS cases.<sup>13</sup> Not only is the epidemic being driven by transmission among injectors, but the prevalence within injectors has, in many locations, reached levels on par with the highest seen elsewhere in the world. In the provinces first affected, Yunnan and Xinjiang, more than four out of five injectors are already infected.<sup>14</sup> At the China Center for Disease Control and Prevention surveillance sites in Guizhou, Guangxi, and Sichuan, prevalence rates of 34 percent, 43 percent, and 50 percent, respectively, were reported in 2004.<sup>15</sup> In 2003, HIV incidence rates among injectors were more than 8 percent per year at study sites in Guangxi and Xinjiang.<sup>16</sup>

The initial response to these findings was disbelief, but since 2002, the approach has been pragmatic, and the Chinese government has been persuaded by successful prevention programs in other countries, most notably Australia. China has been implementing syringe exchange programs, with more than 700 sites in operation by the end of 2006.<sup>17</sup> More recently, this pragmatic approach has been expanded to include maintenance treatment for opioid addiction.

---

8. Y. Ma et al., "Identification of HIV Infection among Drug Users in China [in Chinese]," *Zhonghua Liu Xing Bing Xue Za Zhi* 11 (1990): pp. 184–185.

9. Ke Zhuang et al., "High Prevalence of HIV Infection among Women and Children in Henan Province, China," *Journal of AIDS* 33 (2003): pp. 649–650.

10. State Council AIDS Working Committee Office: UN Theme Group on HIV/AIDS in China, *A Joint Assessment of HIV/AIDS Prevention, Treatment, and Care in China* (Beijing: China Ministry of Health/UNAIDS, 2004).

11. Ibid.

12. Ministry of Health of China, UNAIDS, WHO, *2005 Update on the HIV/AIDS Epidemic and Response in China* (Beijing: National Center for AIDS/STD Prevention and Control, China CDC, 2005).

13. ZM. Liu et al., "Drug Use and HIV/AIDS in China."

14. *A Joint Assessment of HIV/AIDS Prevention, Treatment, and Care in China*.

15. ZM. Liu et al., "Drug Use and HIV/AIDS in China."

16. "HPTN 058: Study Documents." HIV Prevention Trials Network, 2005, [http://www.hptn.org/research\\_studies/HPTN058StudyDocuments.htm#StudyProtocol](http://www.hptn.org/research_studies/HPTN058StudyDocuments.htm#StudyProtocol).

17. Wu et al., "Evolution of China's Response."

## Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

Until recently, compulsory detoxification for up to six months was the primary medical response to heroin dependence. There were three types of treatment sites: compulsory detoxification at institutions run by state security, detoxification at institutions run by the Ministry of Health, and longer-term rehabilitation labor units run by the Ministry of Justice.<sup>18</sup> Several detoxification treatment strategies have been used, including clonidine and Chinese herbal medicines to reduce the physical symptoms of withdrawal and methadone and buprenorphine to wean patients off heroin.<sup>19</sup> One study of nearly 1,500 patients undergoing detoxification in southwestern China found that 60 percent received methadone, 25 percent received herbal preparations, 4 percent received buprenorphine, and 3 percent received only clonidine.<sup>20</sup> By official accounts, detoxification was followed by relapse in up to 90 percent of patients within six months.<sup>21</sup> These high failure rates led to the consideration of other treatment alternatives.

Despite some initial reluctance from law enforcement sectors, consensus emerged in 2002 on the need to implement maintenance therapy. In establishing criteria for treatment, different standards were set based on HIV serostatus. For those testing negative for HIV infection, maintenance therapy was restricted to patients who had failed two six-month courses of compulsory detoxification prior to seeking maintenance treatment or one compulsory detoxification in combination with a term in a reeducation-through-labor camp.<sup>22</sup> For anyone HIV positive, the maintenance program was open to legal residents of the community in which the clinic was located.<sup>23</sup> More recently, these entry criteria, save for residency, have been lifted to pursue a more low-threshold treatment approach.

The first methadone clinics in the nation opened early in 2004 with 26 clinics operating, including in Beijing, by year's end.<sup>24</sup> The government plans to expand to 1,000 clinics serving 200,000 patients by 2010,<sup>25</sup> reaching an estimated 10 percent of those projected to be in need of treatment.

As of the end of 2006, there were 320 clinics in 22 provinces. Of the more than 37,000 patients starting treatment, more than 26,000 (70 percent) remained in treatment as of early 2007.<sup>26</sup> Maintenance treatment is more concentrated in urban areas, while syringe exchange programs have expanded more into nonurban set-

---

18. Humeniuk and Ali, "The First Methadone Clinic."

19. Tang et al., "Opiate Addiction in China."

20. Y. H. Liu et al., "A Survey of Detoxification Treatment Styles for Drug Addicts in Sichuan and Yunnan Provinces [in Chinese]," *Chinese Journal of Drug Dependence* 13 (2004): pp. 60–62.

21. Tang et al., "Opiate Addiction in China"; and Humeniuk and Ali, "The First Methadone Clinic."

22. Humeniuk and Ali, "The First Methadone Clinic."

23. Wu et al., "Evolution of China's Response."

24. Tang et al., "Opiate Addiction in China"; and Humeniuk and Ali, "The First Methadone Clinic."

25. Tang et al., "Opiate Addiction in China."

26. Zhao P., senior professional officer, WHO, China, personal communication with author, April 2007.

tings.<sup>27</sup> A more balanced geographic distribution of harm reduction and treatment services, including options such as community- and home-based drug treatment programs, will be necessary to make an impact on drug use and HIV risks across China.

At present, buprenorphine is available only for detoxification. A trial of buprenorphine, under the auspices of the HIV Prevention Trials Network (HPTN), is scheduled to begin in the near future.<sup>28</sup> Through this phase 3 trial of maintenance therapy as HIV prevention, buprenorphine will be available to HIV-negative injectors in Guangxi and Xinjiang provinces.<sup>29</sup> Buprenorphine will be offered to up to 730 injectors, with a similar number randomized to receive only detoxification. Buprenorphine will be delivered in a formulation combined with naloxone (Suboxone<sup>®</sup>) in an attempt to minimize the likelihood of buprenorphine diversion and abuse.<sup>30</sup>

### Gaps in Treatment Coverage

As noted, current plans will result in the establishment by 2010 of more than 1,000 methadone maintenance sites where 200,000 injectors will receive treatment, the majority of whom will be HIV positive. The effectiveness of this strategy to reverse the epidemic will depend on the extent to which treatment programs retain their patients and reduce their injection frequency.<sup>31</sup>

## Vietnam

### Prevalence of Injection Opioid Use

The most recent estimates reported by the UN place the number of injectors in Vietnam at 113,000, with a range from 73,000 to 160,000.<sup>32</sup> Although heroin has been readily available in Vietnam since the late 1960s, the extent of addiction as a widespread problem was not recognized until the early 1990s. Individuals abusing heroin, especially injectors, are registered if they come to the notice of government officials, but this system appears to consistently undercount injectors. Initial esti-

27. Theodore Hammett, "Winning High-Level Government Support for Harm Reduction: The Cases of China and Vietnam" (paper presented at 18th International Conference on the Reduction of Drug Related Harm, Warsaw, Poland, May 13–15, 2007).

28. "HPTN 058: Study Documents."

29. Ibid.

30. Paul J. Fudala et al., "Office-Based Treatment of Opiate Addiction with a Sublingual-Tablet Formulation of Buprenorphine and Naloxone," *New England Journal of Medicine* 349 (2003): pp. 949–958; Paul J. Fudala et al., "Effects of Buprenorphine and Naloxone in Morphine-Stabilized Opioid Addicts," *Drug & Alcohol Dependence* 50 (1998): pp. 1–8; and Debra S. Harris et al., "Buprenorphine and Naloxone Co-Administration in Opiate-Dependent Patients Stabilized on Sublingual Buprenorphine," *Drug & Alcohol Dependence* 61 (2000): pp. 85–94.

31. Harold A. Pollack and Robert Heimer, "The Impact and Cost-Effectiveness of Methadone Maintenance Treatment in Preventing HIV and Hepatitis C," in *Impact and Costs of Hepatitis C in Injecting Drug Users in the European Union*, ed. Lucas Weissing et al. (Lisbon: European Monitoring Centre for Drugs and Drug Addiction, 2003), <http://www.emcdda.europa.eu/?nnodeid=428>.

32. Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level."

mates in the 1990s held that there were 100,000 injectors in the country, with 30,000 concentrated in Ho Chi Minh City.<sup>33</sup> More recent estimates suggest that the scope of the problem has remained constant.

### Prevalence of HIV Infection

As of the end of 2005, Vietnamese official statistics reported 111,148 registered cases of HIV.<sup>34</sup> UNAIDS estimated 250,000 people living with HIV/AIDS, with a range from 150,000 to 420,000.<sup>35</sup> The first case of HIV in Vietnam was detected in Ho Chi Minh City in 1990.<sup>36</sup> National reporting revealed an expanding epidemic beginning with 1,100 cases in 1993 and annual increases in the number of new cases. Sentinel surveillance was established in 1994 and expanded to 20 (of 61) provinces in 1996.<sup>37</sup> Although this surveillance system is not consistently applied throughout the targeted provinces, it has reliably demonstrated large increases in HIV prevalence in the major cities.

### HIV Infection in Injection Opioid Users

National HIV prevalence among IDUs is approximately 34 percent,<sup>38</sup> but the epidemic is highly concentrated in Vietnam's major cities: Ho Chi Minh City in the South and Hanoi and Haiphong in the North.<sup>39</sup> Much of the increase in HIV prevalence in urban areas is associated with injection drug use.<sup>40</sup> For urban areas, the best data come from Ho Chi Minh City, where sentinel surveillance has been attempted on an ongoing basis since the mid-1990s.<sup>41</sup> HIV prevalence in excess of 20 percent has been observed in IDUs in many of the cities in the southern part of the country. Estimates of prevalence from sentinel and targeted surveillance has found high prevalence rates in Ho Chi Minh City (76 percent), Haiphong (59 percent), and Hai Duong (61 percent).<sup>42</sup> For nonurban injectors, the most reliable estimate comes from a study that sampled nearly 1,400 injectors in provinces

---

33. Tran Hien Nguyen and Ivan Wolffers, "HIV Infection in Vietnam," *Lancet* 343 (1994): pp. 410–411.

34. UNESCO, "Vietnam Country Report" (presentation at OPEC Fund/UNESCO Project Regional Workshop: Sharing Lessons, Planning Future Directions, October 31–November 1, 2006), [http://www.unescobkk.org/fileadmin/user\\_upload/hiv\\_aids/Documents/Workshop\\_doc/OPEC\\_Kawyai/presentations/Vietnam\\_Opec.pdf](http://www.unescobkk.org/fileadmin/user_upload/hiv_aids/Documents/Workshop_doc/OPEC_Kawyai/presentations/Vietnam_Opec.pdf).

35. *AIDS Epidemic Update: December 2006* (UNAIDS and World Health Organization [WHO], December 2006).

36. L. Phan, *Assessing HIV Risk Behaviors among Injecting Drug Users at Hope Cafe in Ho Chi Minh City, Vietnam* (New Haven: Yale School of Public Health, Epidemiology and Public Health, 2001).

37. Tran Hien Nguyen et al., "HIV Monitoring in Vietnam: System, Methodology, and Results of Sentinel Surveillance," *Journal of Acquired Immune Deficiency Syndrome* 21 (1999): pp. 338–346.

38. *AIDS Epidemic Update: December 2006*.

39. "HIV/AIDS Estimates and Projections 2005–2010" (Hanoi: Ministry of Health, 2005).

40. Tran Hien Nguyen et al., "HIV Monitoring in Vietnam"; and Tran Hien Nguyen et al., "HIV/AIDS Epidemics in Vietnam: Evolution and Response," *AIDS Education and Prevention* 16, supp. A (2004): pp. 137–154.

41. Tran Hien Nguyen et al., "HIV Monitoring in Vietnam."

42. Tran Hien Nguyen et al., "HIV/AIDS Epidemics in Vietnam."

outside the major cities using a strategy that recruited both registered and unregistered injectors.<sup>43</sup> HIV prevalence among the injectors in the northernmost province was higher (16.1 percent) than among injectors in the three more southern provinces (4.0 to 23.5 percent).

Concerted efforts at HIV prevention for injectors have included the institution of needle exchange programs in multiple sites in Ho Chi Minh City,<sup>44</sup> and through a project situated in the far north of Vietnam, at the Chinese border.<sup>45</sup> These efforts appear to have limited HIV transmission and reduced needle sharing. However, there are no reliable estimates for the annual incidence of HIV among injectors in Vietnam either in the absence of or as a result of participating in these prevention programs.

### Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

In 2006, the National Assembly revised the laws on opioid dependence and treatment. Responsibility for treatment was transferred from Ministry of Social Evils Prevention (MOLISA) to the Ministry of Health. Maintenance therapy with methadone was legalized, although no program was operating as of late 2007. Prior to 2006, MOLISA was the ministry with primary responsibility for opioid dependence and addiction.<sup>46</sup> MOLISA still collects data on those registered as opioid dependent and has established and operates the rehabilitation centers for drug users. The effectiveness of these centers appears to be low because failure rates for those leaving the rehabilitation centers exceed 70 percent. Results on this order are not surprising because 65 percent of the individuals in “rehabilitation” were compelled to be there, for an average of two years, and only 30 percent of the centers met existing standards of care established by MOLISA.<sup>47</sup>

A pilot program to provide methadone to 700 people in Haiphong will be funded jointly by the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) and the UK Department for International Development.<sup>48</sup> This program is scheduled to run from the summer of 2007 through the end of 2008, but it may be delayed owing to evidence of high relapse rates among opioid-dependent patients in the expanding Chinese methadone programs.<sup>49</sup>

43. N. A. Tuan et al., “Human Immunodeficiency Virus (HIV) Infection Patterns and Risk Behaviours in Different Population Groups and Provinces in Viet Nam,” *Bulletin of the World Health Organization* 85 (2007): pp. 35–41.

44. Le Thuy Lan Thao et al., “Changes in High-Risk Behaviors over Time among Young Drug Users in South Vietnam: A Three-Province Study,” *AIDS & Behavior* 10, supp. 4 (2006): pp. S47–S56; and L. Phan, *Assessing HIV Risk Behaviors*.

45. Don C. Des Jarlais et al., “Patterns of HIV Prevalence among Injecting Drug Users in the Cross-Border Area of Lang Son Province, Vietnam, and Ning Ming County, Guangxi Province, China,” *BMC Public Health* 5 (2005): p. 89; and Theodore M. Hammett et al., “Correlates of HIV Status among Injection Drug Users in a Border Region of Southern China and Northern Vietnam,” *Journal of Acquired Immune Deficiency Syndrome* 38 (2005): pp. 228–235.

46. Narumi Yamada et al., *Viet Nam: Country Profile 2005* (Hanoi: United Nations Office on Drug Control, 2005), [http://www.unodc.org/pdf/vietnam/country\\_profile\\_vietnam.pdf](http://www.unodc.org/pdf/vietnam/country_profile_vietnam.pdf).

47. Ibid.

48. “Vietnam Uses Methadone as Drug Substitute,” Xinhua News Agency, March 26, 2007.

In principle, it is anticipated that there will be further expansion of methadone programs in the near future. The vice prime minister and the vice minister of health have agreed to open six sites providing methadone in Haiphong and Ho Chi Minh City. Some proponents of maintenance therapy in Vietnam are supportive of this approach because they are concerned that massive scaling up in a country that has no experience and expertise may result in a negative result and undermine the whole effort. Methadone treatment guidelines are being developed at this time. As a result, no data on anticipated dosing regimens are available.

Buprenorphine is not currently available, so no injectors are receiving this medication for maintenance treatment.

### Gaps in Treatment Coverage

Precise estimates of the size of the treatment programs needed to reverse the epidemic are not currently available. Given HIV prevalence rates among injectors that range up to 73 percent, depending on location, and an estimated 113,000 injectors, programs will be most effective if located in communities with high prevalence and high concentrations of injectors. Preliminary information about the location of clinics in Haiphong, Ho Chi Minh City, and other locations suggests that Vietnam is moving forward in an appropriate fashion. The major coverage concerns include the speed and eventual size of the methadone maintenance programs and their effectiveness in retaining patients.

## Malaysia

### Prevalence of Injection Opioid Use

The best estimates reported by the UN place the number of IDUs in Malaysia at 195,000, with a range from 150,000 to 240,000.<sup>50</sup> There has clearly been an increase in opioid use and injection over the past decade. In the mid-1990s there were an estimated 20,000–50,000 IDUs, but by the end of the 1990s this figure had increased to an estimated 200,000.<sup>51</sup> Since then UN estimates and those of outside experts have varied widely and have been complicated by a failure to distinguish between heroin users and those who inject.<sup>52</sup> It is estimated that 60 percent of drug users are injectors.

---

49. Steven K. Koester, personal communication with Robert Heimer, April 8, 2007: it is probable that the Xinhua press release is premature.

50. Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level."

51. *Estimation of Drug Users and Injecting Drug Users in Malaysia* (Kuala Lumpur: WHO, Ministry of Health, and Universiti Utara Malaysia, 2003), <http://www.dph.gov.my/aids/idu/idu.pdf>.

52. *Estimation of Drug Users and Injecting Drug Users in Malaysia; Consensus Report on HIV and AIDS: Epidemiology in 2004: Malaysia* (Kuala Lumpur: Ministry of Health and WHO, 2004), [http://www.wpro.who.int/NR/rdonlyres/47E92EB0-3F10-45D9-BF7A-AEDCBF4A5E22/0/Consensus\\_Report\\_MAA\\_2004.pdf](http://www.wpro.who.int/NR/rdonlyres/47E92EB0-3F10-45D9-BF7A-AEDCBF4A5E22/0/Consensus_Report_MAA_2004.pdf); and Mahmud Mazlan et al., "New Challenges and Opportunities in Managing Substance Abuse in Malaysia," *Drug & Alcohol Review* 25, no. 5 (2006): pp. 473–478.

## Prevalence of HIV Infection

In 2004 the Malaysian Ministry of Health reported 57,244 registered HIV-seropositive adult cases.<sup>53</sup> UNAIDS currently estimates 67,000 (with a range of 33,000–220,000) HIV-infected adults.<sup>54</sup>

## Prevalence of HIV Infection in Injection Opioid Users

As of 2003, 76.3 percent of all reported HIV infections were attributable to injecting drug use.<sup>55</sup> This percentage increased from 60 percent in 1990.<sup>56</sup>

One report on current HIV seroprevalence indicated that between 10 and 20 percent of all drug users were HIV positive.<sup>57</sup> A site-specific study of treatment-seeking opioid dependent patients in Muar found an HIV prevalence among IDUs of 19.2 percent.<sup>58</sup>

Unsafe injection appears to be common: an estimated 72 percent of Malaysian IDUs share injection equipment.<sup>59</sup>

## Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

There is a range of treatment options in Malaysia, including drug rehabilitation centers; noninstitutional aftercare rehabilitation in the prison system; and maintenance treatment at clinics, hospitals, and private treatment centers.<sup>60</sup> Naltrexone was introduced in 1999, buprenorphine in 2001, methadone in 2003, and buprenorphine/naloxone in 2006.<sup>61</sup>

Treatment is available in both government-run rehabilitation centers and privately. In 2004 there were a reported 28 government-run rehabilitation centers treating up to 18,000 interned individuals.<sup>62</sup> An additional 30,000-plus opiate-dependent patients are treated with agonist maintenance treatments by more than 500 medical practitioners in Malaysia.<sup>63</sup> In total this represents 25 percent of those estimated to be in need of treatment.

Buprenorphine is used more commonly than methadone to treat opioid addiction, partly because it was introduced earlier, and partly because of the high cost of

---

53. *Consensus Report on HIV and AIDS: Epidemiology in 2004: Malaysia.*

54. "Malaysia," UNAIDS, 2007, <http://www.unaids.org/en/CountryResponses/Countries/malaysia.asp>.

55. *Estimation of Drug Users and Injecting Drug Users in Malaysia; and Manual for Reducing Drug-Related Harm in Asia* (Melbourne: The Centre for Harm Reduction, McFarlane Burnet Centre for Medical Research, and Asian Harm Reduction Network, 2003), <http://www.hivpolicy.org/Library/HPP000683.pdf>.

56. "Malaysia."

57. *Consensus Report on HIV and AIDS: Epidemiology in 2004: Malaysia.*

58. Marek C. Chawarski et al., "Heroin Dependence and HIV Infection in Malaysia," *Drug & Alcohol Dependence* 82, supp. 1 (2006): pp. S39–S42.

59. *Consensus Report on HIV and AIDS: Epidemiology in 2004: Malaysia.*

60. *Estimation of Drug Users and Injecting Drug Users in Malaysia.*

61. Mahmud Mazlan et al., "New Challenges and Opportunities."

62. *Ibid.*

63. *Ibid.*

methadone (\$10 for 40 milligrams). Nevertheless, limits in the supply of buprenorphine in late 2004 led to expansion of methadone maintenance treatments.<sup>64</sup> In October 2005, 1,200 patients were receiving methadone at 17 centers.<sup>65</sup>

### Gaps in Treatment Coverage

Precise estimates of the size of the treatment programs needed to reverse the epidemic are not currently available. Given the intermediate HIV prevalence among injectors and the large number of injectors not currently in treatment, substantial increases in the number and size of maintenance treatment programs are required.

## Indonesia

### Prevalence of Injection Opioid Use

The most recent and reliable estimate of the number of IDUs in Indonesia reported by the UN is 561,925, with a range of range 123,849 to 1 million. Estimates of prevalence have increased over the past decade with an estimated 30,000–40,000 IDUs in 1997, and 130,000 in 2001. More recent estimates of IDUs range from 160,000 in 2006 from the Ministry of Health to 2 million from UNAIDS.<sup>66</sup> Local estimates of the number of IDUs are available only for Jakarta (38,000), but these figures date from 2000 and may not reflect the current situation.<sup>67</sup> Other locations with concentrations of IDUs include Bali and urban regions of Java beyond Jakarta. A workshop held by the Indonesian Health Department in 2001 concluded that 70 percent of IDUs were sharing needles.<sup>68</sup> Injecting drug use is clustered mostly on the islands of Java and Bali.

### Prevalence of HIV Infection

UNAIDS estimates that in 2005 there were 170,000 (range of 100,000–290,000) adults living with HIV in Indonesia.<sup>69</sup> The first AIDS case was reported in 1987, and seroprevalence remained low until 1999.<sup>70</sup> Some estimates suggest that Indonesia had between 80,000 to 120,000 cases of HIV/AIDS by 2001.<sup>71</sup> In 1997 there were

---

64. Ibid.

65. Adeeba Kamarulzaman, "Country Perspective—Malaysia," University of Malaya Medical Centre, Kuala Lumpur, Malaysia, <http://www.iom.edu/Object.File/Master/31/763/Adeeba%20Kamarulzaman%20-%20Malaysia.pdf>.

66. *AIDS Epidemic Update: December 2006*; "Indonesia," UNAIDS, 2007, [http://www.unaids.org/en/Regions\\_Countries/Countries/indonesia.asp](http://www.unaids.org/en/Regions_Countries/Countries/indonesia.asp).

67. *National Estimates of Adult HIV Infection, Indonesia 2002* (Jakarta: Ministry of Health of the Republic of Indonesia, Directorate General of Communicable Disease Control and Environmental Health, 2003).

68. *Manual for Reducing Drug-Related Harm in Asia*.

69. "Indonesia."

70. Gary Reid and Genevieve Costigan, *Revisiting "The Hidden Epidemic": A Situation Assessment of Drug Use in Asia in the Context of HIV/AIDS* (Fairfield, Victoria, Australia: Centre for Harm Reduction, Burnet Institute, 2002), [http://www.ahrn.net/library\\_upload/uploadfile/Rapidassessment.pdf](http://www.ahrn.net/library_upload/uploadfile/Rapidassessment.pdf).

558 official HIV cases, only 6 of which were in IDUs. By 2001, there were 2,313 official cases of HIV, with 449 in IDUs.

### Prevalence of HIV Infection in Injection Opioid Users

Before 2000, injecting drug use was considered to be responsible for HIV infection in less than 1 percent of registered cases. In 2001, this figure increased to 19 percent of HIV cases. A Health Department workshop reported an estimate that 15 percent of IDUs were HIV positive.<sup>72</sup> In 2002 the Ministry of Health put the estimate at 19–34 percent among IDUs nationwide, with an estimated 42,749 HIV-infected IDUs.<sup>73</sup> Current estimates are that 50 percent of HIV infections are due to injecting drug use.<sup>74</sup> Recent studies show that 35 to 53 percent of injectors in treatment in Jakarta are HIV infected.<sup>75</sup> At one drug treatment center in Jakarta, HIV prevalence rose from 15.4 percent in 2000 to more than 40 percent by 2001.<sup>76</sup> In a prison in Bali the rate of HIV infection was reported to be 56 percent among IDUs.<sup>77</sup>

### Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

A wide range of treatment modalities are offered, including maintenance therapy, detoxification, therapeutic communities, and counseling and behavior modification. Religious institutes provide rehabilitation for drug users.<sup>78</sup> In 1999 it was estimated that there were 3,465 IDUs receiving nonsubstitution treatment in Jakarta.<sup>79</sup>

The first methadone clinics opened in Jakarta and Bali in January and February 2003. Training has been provided to 312 physicians—mostly in private practice. Only 2 percent of the costs of methadone treatment are paid by the government.<sup>80</sup> In 2006 an estimated 330 patients were receiving methadone in Jakarta, and 330 in Bali, with roughly 50 receiving this treatment elsewhere in the country.

During 2006 there was a substantial expansion of methadone maintenance to seven clinics serving approximately 1,000 clients.<sup>81</sup> This represents just 0.2 percent of those estimated to need treatment. Up to 60 percent of patients receiving meth-

---

71. Ibid.

72. *National Estimates of Adult HIV Infection, Indonesia 2002*.

73. “Indonesia.”

74. “Cases of HIV/AIDS in Indonesia Reported thru September 2007,” Ministry of Health of Indonesia, 2007, <http://www.spiritia.or.id/Stats/StatCurr.php>.

75. Madonna L. Devaney et al., “Prevalence of Illicit Drug Use in Asia and the Pacific,” *Drug and Alcohol Review* 26 (2006): pp. 97–102; *AIDS Epidemic Update: December 2006*.

76. Devaney et al., “Prevalence of Illicit Drug Use.”

77. “A Look at Substitution Treatment (Poland, Lithuania, Iran, Indonesia, Hong Kong, China),” International Center for Advancement of Addiction Treatment, New York, 2006, <http://www.opiateaddictionrx.info/news/ReadNews.aspx?ID=39>.

78. Reid and Costigan, *Revisiting “The Hidden Epidemic.”*

79. *National Estimates of Adult HIV Infection, Indonesia 2002*.

80. “A Look at Substitution Treatment.”

81. Fabio Mesquita et al., “Public Health the Leading Force of the Indonesian Response to the HIV/AIDS Crisis among People Who Inject Drugs,” *Harm Reduction Journal* 4 (2007): p. 9.

adone were reported to be HIV positive.<sup>82</sup> Additional treatment slots were to be created as an estimated 30 community health centers were expected to begin offering methadone.<sup>83</sup>

Two government-sponsored methadone maintenance treatment programs in Balinese prisons were set up in 2005. Based on the success of these programs, there are plans to expand care to 20 prisons by 2010.<sup>84</sup>

Buprenorphine is expensive and not widely available. Approximately 300 doctors (mostly private) across Indonesia are certified to prescribe buprenorphine.<sup>85</sup> The number of patients receiving buprenorphine through these doctors is not known.

### Gaps in Treatment Coverage

Precise estimates of the size of the treatment programs needed to reverse the epidemic are not currently available. Given the intermediate HIV prevalence among injectors and the large number of injectors not currently in treatment, substantial increases in the number and size of maintenance treatment programs are required. Given that the HIV epidemic in Indonesia may still be in its early, exponential phase in which incidence is high and prevalence rises rapidly, the best approach to preventing HIV through maintenance therapy may be to expedite the provision of treatment preferentially to individuals who test HIV positive. While efforts appear to be under way to expand access to substitution therapy, if the prevalence of injection drug use and the incidence of HIV among injectors continue to increase, programs will have to be expanded by more than what is now envisioned.<sup>86</sup>

## Kazakhstan

### Prevalence of Injection Opioid Use

The most recent estimates reported by the UN place the number of injectors in Kazakhstan at 173,669, with a range from 97,338 to 250,000.<sup>87</sup> The UN Office on Drugs and Crime (UNODC) reported that 65 percent (35,360) of the estimated 54,400 drug users use heroin on a regular basis, and among these, 77 percent (27,277) were IDUs.<sup>88</sup> UNODC reported that in 2002 there were 45,000 officially registered IDUs.<sup>89</sup>

---

82. "A Look at Substitution Treatment."

83. Ibid.

84. Mesquita et al., "Public Health the Leading Force of the Indonesian Response."

85. Ibid.

86. Pollack and Heimer, "The Impact and Cost-Effectiveness of Methadone Maintenance Treatment in Preventing HIV and Hepatitis C."

87. Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level."

88. "Country Fact Sheet: Kazakhstan 2006," UNODC, 2007, [http://www.unodc.org/uzbekistan/en/fact\\_kaz.html](http://www.unodc.org/uzbekistan/en/fact_kaz.html).

## Prevalence of HIV Infection

According to UNAIDS, an estimated 12,000 (range of 11,000–76,000) adults are living with HIV/AIDS, with a national adult prevalence rate of 0.1 percent (range of 0.1–3.2).<sup>90</sup> HIV prevalence varies geographically, with city estimates ranging from 5 percent of the population in Karaganda, 2 percent in Uralsk, and 0.3 percent in Almaty. Injection drug use is the primary driver of the HIV epidemic in Kazakhstan; 75 percent of all HIV cases through 2006 were attributed to injection drug use.<sup>91</sup>

## Prevalence of HIV Infection in Injection Opioid Users

Lack of sentinel surveillance or targeted studies makes it difficult to assess the prevalence of HIV among injectors in any location or in the country as a whole. The total appears to be approximately 10,800. Nevertheless, in 2005 the Centers for Disease Control and Prevention's Central Asia offices reported an HIV prevalence of 10.4 percent among IDUs, but the location of this sentinel surveillance effort was not disclosed.<sup>92</sup>

## Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

Detoxification, counseling, and rehabilitation are available, but all are very limited and generally not accessible for most who need the services.<sup>93</sup> Neither methadone nor buprenorphine is available.

## Gaps in Treatment Coverage

Precise estimates of the size of treatment programs needed to avert an epidemic are not currently available. Efforts to model the need are hampered by the lack of details about the size of the drug-injecting population and the prevalence and incidence of HIV in this population. While it may be too early in the epidemic to know exactly how to allocate maintenance treatment should it become available, it is important to remember that those locations that have responded early to epidemics of heroin injection have seen lower HIV prevalence as a result.<sup>94</sup>

89. Anjelika Mamytova and Aydin Özgü, "Country Factsheets, Eurasian Narcotics, Kazakhstan 2004" (Uppsala, Sweden: Uppsala Universitet, Silk Road Studies Program; Washington, D.C.: Johns Hopkins University–SAIS, Central Asia–Caucasus Institute, 2004), [http://www.silkroadstudies.org/new/inside/research/narcotics\\_crime/FactSheet/2004/Kazakhstan.pdf](http://www.silkroadstudies.org/new/inside/research/narcotics_crime/FactSheet/2004/Kazakhstan.pdf).

90. *AIDS Epidemic Update: December 2006*.

91. "Kazakhstan," UNAIDS, 2006, <http://www.unaids.org/en/CountryResponses/Countries/kazakhstan.asp>; Gulzhan Muratbayeva et al., "Implementation of HIV Sentinel Surveillance in Four Central Asian Republics" (paper presented at the 16th International AIDS Conference, Toronto, Canada, August 13–18, 2006); and "Country Fact Sheet: Kazakhstan 2006."

92. Gulzhan Muratbayeva et al., "Implementation of HIV Sentinel Surveillance in Four Central Asian Republics."

93. "Drug Policy and Health in Kazakhstan," Drug Law and Health Policy Resource Network, January 24, 2002, <http://www.drugpolicy.org/docUploads/kazakhstanpolicy.pdf>.

94. Don C. Des Jarlais et al., "Maintaining Low HIV Seroprevalence in Populations of Injecting Drug Users," *JAMA* 274 (1995): pp. 1226–1231.

## Kyrgyzstan

### Prevalence of Injection Opioid Use

The most recent estimates reported by the UN place the number of injectors at 44,398 with a range from 18,796 to 70,000.<sup>95</sup> The NODC reported 7,290 officially registered drug users in Kyrgyzstan in 2005; 5,305 (73 percent) of these were IDUs.<sup>96</sup> Earlier estimates from a UNODC rapid assessment found that “the number of drug users is 15 times more than the official statistics figure of the narcology service” and put the prevalence of injection opioid use in the population at 0.7–0.9 percent, with the highest prevalences seen in Bishkek city and Osh and Chui oblasts.<sup>97</sup>

Heroin appears to be the primary drug abused and injected.<sup>98</sup> The Kyrgyzstan Ministry of Health, according to recent report by Adrian Renton et al., estimates that 63 percent of registered drug users were using heroin, and 69 percent of registered drug users were injectors.<sup>99</sup>

### Prevalence of HIV Infection

UNAIDS has estimated that there are 4,000 (range of 1,900–13,000) adults with HIV infection in Kyrgyzstan. This puts the prevalence of HIV infection at 0.1 percent (range of 0.1–1.7).<sup>100</sup> Cases are concentrated in Osh and environs, which is located on the border with Uzbekistan, and in Chui Oblast, which contains the capital Bishkek and is near the border with Kazakhstan in the north of Kyrgyzstan.<sup>101</sup> However, the Ministry of Health has reported only 100–250 newly identified cases per year since 2001, with a cumulative total of 970 cases and 822 adults living with HIV/AIDS as of the end of 2006.<sup>102</sup>

Injecting drug use accounts for 80 percent of the cumulative HIV cases in Kyrgyzstan as of 2005.<sup>103</sup>

---

95. Aceijas et al., “Estimates of Injecting Drug Users at the National and Local Level.”

96. “Country Fact Sheet: Kyrgyzstan 2006,” UNODC, 2007, [http://www.unodc.org/uzbekistan/en/fact\\_kyr.html](http://www.unodc.org/uzbekistan/en/fact_kyr.html).

97. “Brief Review of Drug Situation for 2001,” Government of Kyrgyzstan, State Commission on Drug Control, 2002; and “Kyrgyzstan,” UNAIDS, 2006, <http://www.unaids.org/en/CountryResponses/Countries/Kyrgyzstan.asp>. An oblast is a political subdivision.

98. “Country Fact Sheet: Kyrgyzstan 2006”; and Adrian Renton et al., “Epidemics of HIV and Sexually Transmitted Infections in Central Asia: Trends, Drivers and Priorities for Control,” *International Journal of Drug Policy* (2006): pp. 494–503.

99. Renton et al., “Epidemics of HIV and Sexually Transmitted Infections in Central Asia.”

100. “Kyrgyzstan.”

101. See Web site for the Unit for Coordination and Monitoring in HIV/AIDS Area, Government of Kyrgyzstan, Office of the Prime Minister, accessed November 2007, <http://www.aids.gov.kg/eng/>.

102. “Officially Registered HIV Cases in the Kyrgyz Republic,” AIDS Foundation East-West, 2006, <http://www.afew.org/english/statistics/HIVdata-Kyr.htm>.

103. *AIDS Epidemic Update: December 2006*.

## Prevalence of HIV Infection in Injection Opioid Users

Official HIV surveillance conducted in Kyrgyzstan has tested 2,000 IDUs annually with an HIV prevalence of 4.3 percent in 2003.<sup>104</sup> Surveillance data reported to the Global Fund to Fight AIDS, Tuberculosis, and Malaria in 2007 indicate that HIV prevalence among IDUs is less than 5 percent.<sup>105</sup> Earlier reports of extremely high prevalence in Bishkek and Osh appear to have been the result of inappropriate testing methodologies and are widely discounted.<sup>106</sup>

## Availability and Number of Injection Opioid Users Who Are Receiving Substitution Therapy

Available treatments include medical-psychological and social rehabilitation, detoxification therapy, and methadone maintenance. Pilot maintenance programs have been established in Bishkek and Osh since 2002.<sup>107</sup> Between 2002 and March 2007, 425 patients have received maintenance treatment with methadone.<sup>108</sup> Retention has been low, owing in part to threats of supply disruption, which leads to reductions in patient dosages and to patient dismissal: in November 2006 a total of 145 patients were receiving methadone, 29 of whom were HIV infected.<sup>109</sup> This represents only 0.3 percent of those estimated to need treatment. Buprenorphine is not currently available.

## Gaps in Treatment Coverage

Given that the true extent of HIV prevalence among IDUs in Kyrgyzstan remains uncertain, it is unclear whether to model a program to avert or to reverse an epidemic that nevertheless appears to be concentrated in IDUs. Averting an epidemic requires promoting admission into treatment of individuals who are HIV positive, whereas once an epidemic is well established, reversing it requires treating all in need regardless of HIV status.

Given the low retention in methadone treatment, however, the impact of Kyrgyzstan's program to date must be viewed as minimal.<sup>110</sup> Programmatic improvements to methadone delivery and service expansions are being considered.

---

104. Renton et al., "Epidemics of HIV and Sexually Transmitted Infections in Central Asia."

105. "Grant Performance Report—KGZ-202-G01-H-00," The Global Fund, Geneva, May 15, 2007, [http://www1.theglobalfund.org/search/docs/2KGZH\\_94\\_178\\_gpr.pdf](http://www1.theglobalfund.org/search/docs/2KGZH_94_178_gpr.pdf).

106. Renton et al., "Epidemics of HIV and Sexually Transmitted Infections in Central Asia."

107. Emilis Subata and G. Pkhakadze, *Evaluation of Pilot Methadone Maintenance Treatment in the Kyrgyz Republic* (Bishkek: Unit for Coordination and Monitoring in HIV/AIDS, Kyrgyz Republic, 2006).

108. "Grant Performance Report—KGZ-202-G01-H-00."

109. Subata and Pkhakadze, *Evaluation of Pilot Methadone Maintenance Treatment in the Kyrgyz Republic*.

110. Pollack and Heimer, "The Impact and Cost-Effectiveness of Methadone Maintenance Treatment in Preventing HIV and Hepatitis C."

## Tajikistan

### Prevalence of Injection Opioid Use

The best recent estimates reported by the UN place the number of injectors at 52,598 people, with a range from 43,316 to 61,880.<sup>111</sup> In 2002–2006 there were an estimated 40,000 to 50,000 drug users in Tajikistan, 90 percent of whom were using heroin.<sup>112</sup> It has been estimated that one-third of Tajikistan's heroin users inject.<sup>113</sup> In 2002 the overall prevalence of injecting drug use was reported to be 0.6–0.7 percent with the largest concentration in Dushanbe city, Sogd, and Khatlon.<sup>114</sup> The government's officially registered count of IDUs was 5,341 in 2005.<sup>115</sup>

### Prevalence of HIV Infection

UNAIDS estimates the number of adults living with HIV/AIDS in Tajikistan at 4,900.<sup>116</sup> As of 2006, there were 710 registered cases of HIV infection and one case of AIDS; a cumulative number of 655 adults were living with HIV/AIDS at the end of 2006.<sup>117</sup> However, Tajikistan's National AIDS Program has estimated that at least 10,000 people were infected as of the end of 2005.<sup>118</sup>

Official data indicate that injecting drugs accounted for 65.7 percent of the cumulative HIV cases in Tajikistan.<sup>119</sup> Among the HIV cases with a known route of transmission, approximately 86 percent had been infected through injecting drug use, according to UNAIDS estimates.<sup>120</sup>

### Prevalence of HIV Infection in Injection Opioid Users

In 2001, the prevalence of HIV in the capital city of Dushanbe among IDUs was approximately 4 percent; three years later it was 12 percent.<sup>121</sup> In the later study,

---

111. Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level."

112. Renton et al., "Epidemics of HIV and Sexually Transmitted Infections in Central Asia."

113. "Country Fact Sheet: Tajikistan 2006," UNODC, 2006. [http://www.unodc.org/uzbekistan/en/fact\\_taj.html](http://www.unodc.org/uzbekistan/en/fact_taj.html).

114. "Preparatory Assistance on Demand Reduction: Rapid Situation Assessment on Drug Abuse in the Central Asia Countries," document no. AD/RER/01/E93 (Tashkent: UNODC, 2003).

115. UNODC, "Country Fact Sheet: Tajikistan."

116. *AIDS Epidemic Update: December 2006*.

117. "HIV/AIDS in Tajikistan," AIDS Foundation East-West, 2007, <http://www.afew.org/english/countries/tajikistan.php>; and "Tajikistan—HIV/AIDS Country Profile," in *HIV/AIDS in Europe: Moving from Death Sentence to Chronic Disease Management*, ed. Srdan Matic et al. (Denmark: WHO, 2005), [http://www.euro.who.int/InformationSources/Publications/Catalogue/20051123\\_2](http://www.euro.who.int/InformationSources/Publications/Catalogue/20051123_2).

118. Lee-Nah Hsu et al., "Outcome Evaluation of HIV Programme of UNDP Tajikistan," (March 2007).

119. "HIV/AIDS in Tajikistan."

120. "Tajikistan—HIV/AIDS Country Profile"; and "Tajikistan," UNAIDS, 2007, <http://www.unaids.org/en/CountryResponses/Countries/tajikistan.asp>.

121. "Tajikistan"; and Julie A. Stachowiak et al., "Marked Ethnic Differences in HIV Prevalence and Risk Behaviors among Injection Drug Users in Dushanbe, Tajikistan, 2004," *Drug & Alcohol Dependence* 82, supp. 1 (2006): pp. S7–S14.

prevalence varied significantly by ethnicity: it was highest among ethnic Tajiks (19.2 percent) and lowest among Russians and Uzbeks (3.4 percent).<sup>122</sup>

The prevalence of syringe sharing, as reported in 2003, was lower than in other Central Asian republics covered in a rapid situation,<sup>123</sup> but it is not possible to know whether these rates have remained low.

### Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

Detoxification is the primary treatment modality in Tajikistan. Detoxification may be combined with counseling and drug-free treatment and treatment readiness programs (such as motivational interviewing). Neither methadone nor buprenorphine is available.

### Gaps in Treatment Coverage

Precise estimates of the size of the treatment programs needed to avert an epidemic are not currently available. Efforts to model the need are hampered by the lack of details about the size of the drug-injecting population and the prevalence and incidence of HIV in this population. Although it is early in the epidemic, the situation in Tajikistan is complicated by the high rates of migration from Tajikistan to Russia.<sup>124</sup> This migration might place injectors in Tajikistan in contact with Russian IDUs who, with higher prevalences of HIV, might serve as a conduit to high incidence. Those who return to Tajikistan may in turn increase rates of HIV transmission to others. Sentinel surveillance in 2005 found that 2.2 percent of HIV cases were among migrants.<sup>125</sup>

## Georgia

### Prevalence of Injection Opioid Use

There are an estimated 12,420 injectors, with a range from 9,936 to 14,984 in Georgia, mostly in the major cities.<sup>126</sup> They are primarily heroin users although recent anecdotal reports describe the illegal injection of buprenorphine.<sup>127</sup>

### Prevalence of HIV Infection

UNAIDS estimates that 5,600 people in Georgia are living with HIV/AIDS, with a range from 2,700 to 18,000 adults living with HIV/AIDS in 2005.<sup>128</sup> Government

---

122. Stachowiak et al., "Marked Ethnic Differences in HIV Prevalence and Risk Behaviors."

123. "Preparatory Assistance on Demand Reduction: Rapid Situation Assessment on Drug Abuse in the Central Asia Countries."

124. Renton et al., "Epidemics of HIV and Sexually Transmitted Infections in Central Asia."

125. Hsu et al., "Outcome Evaluation of HIV Programme of UNDP Tajikistan."

126. "HIV/AIDS in Georgia," AIDS Foundation East-West, 2007, <http://www.afew.org/english/countries/georgia.php>.

127. Daria Vaisman, "Detox Drug is Georgia's New Habit," *International Herald Tribune*, June 13, 2006.

data indicate 880 as the cumulative number of HIV/AIDS cases, with 648 adults living with HIV/AIDS at the end of 2005.<sup>129</sup> Overall, 66 percent of the cumulative HIV cases in Georgia are attributable to injecting drug use.<sup>130</sup>

The first case of HIV was detected in Georgia in 1989, and in the years since it has spread slowly, a situation that has distinguished Georgia from neighboring Russia. Through 2002, fewer than 400 cases had been reported nationwide.<sup>131</sup> A population-based HIV sero-survey conducted in Tbilisi, the capital city, in 2001–2002 found a prevalence of 0.15 percent.<sup>132</sup> The country may be experiencing an upsurge, however, with 242 cases newly reported in 2005.<sup>133</sup>

### Prevalence of HIV Infection in Injection Opioid Users

There are no current data on the prevalence of HIV infection among drug injectors. A population-based survey conducted from 2001 to 2002 encountered 162 injectors, of whom 3 were HIV positive (1.9 percent),<sup>134</sup> and 2006 data reported by UNAIDS reflected a similarly low HIV prevalence among IDUs of 1.1 percent.<sup>135</sup> The most recent sentinel surveillance in populations of injectors was undertaken in 1998–1999. This sample of more than 900 injectors detected only 5 cases (a prevalence of 0.54 percent), with 10 new cases detected over the course of one year (an annual incidence rate of 1.5 percent).<sup>136</sup>

Although the HIV incidence rate was low in 1999, the threat of rapid spread of HIV among injectors was high because 75 percent of injectors reported sharing syringes.<sup>137</sup> Syringe exchange programs in Batumi and Tbilisi could be characterized as small in 2003, but the number of injectors reached through these programs has nearly tripled in the past three years.<sup>138</sup>

---

128. *AIDS Epidemic Update: December 2006.*

129. "HIV/AIDS in Georgia."

130. *AIDS Epidemic Update: December 2006.*

131. Alexander Tkeshelashvili-Kessler et al., "The Emerging HIV/AIDS Epidemic in Georgia," *International Journal of STD & AIDS* 16 (2005): pp. 61–67.

132. Ketevan Stvilia et al., "Prevalence of Hepatitis C, HIV, and Risk Behaviors for Blood-Borne Infections: A Population-Based Survey of the Adult Population of Tbilisi, Republic of Georgia," *Journal of Urban Health* 83 (2006): pp. 289–298.

133. *AIDS Epidemic Update: December 2006.*

134. Stvilia et al., "Prevalence of Hepatitis C, HIV, and Risk Behaviors for Blood-Borne Infections."

135. *AIDS Epidemic Update: December 2006.*

136. Tkeshelashvili-Kessler et al., "The Emerging HIV/AIDS Epidemic in Georgia."

137. *Ibid.*; and Stvilia et al., "Prevalence of Hepatitis C, HIV, and Risk Behaviors for Blood-Borne Infections."

138. "Database of Needle and Syringe Exchange Project in Central and Eastern Europe and the Newly Independent States," Central and Eastern Europe Harm Reduction Network, August 2005, <http://www.ceehrn.org/EasyCEE/sys/files/Georgia2003.pdf>; and "Grant Performance Report—GEO-202-G01-H-00," The Global Fund, Geneva, June 4, 2007, [http://theglobalfund.org/search/docs/2GEOH\\_86\\_163\\_gpr.pdf](http://theglobalfund.org/search/docs/2GEOH_86_163_gpr.pdf).

## Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

Pilot methadone maintenance projects began in 2005 through funding from the Global Fund to Fight AIDS, Tuberculosis, and Malaria. Three small programs are operating. Two are in Tbilisi, serving up to 70 patients each. The third program started in March 2007 in Batumi. By mid-March, 15 patients had entered this program, and full enrollment of 70 patients was expected by the end of April. An additional center in the Gori region is planned. The Global Fund is expected to support a project in prisons as well, but it will take a minimum of one year before this project starts. Methadone supply will have to be imported; pricing in neighboring Azerbaijan has been reported at \$1.29 per day for an 80-milligram dose.<sup>139</sup>

At present, the number receiving maintenance therapy is 155, and there are some openings in the Tbilisi programs. This will be increased to 210 in the immediate future.<sup>140</sup> The goal by the end of 2008 is 3,000, 2.4 percent of those estimated to be in need of treatment.

Although buprenorphine is not legally available, anecdotal reports suggest that buprenorphine is widely available on the black market and may have replaced heroin as the primary opioid of abuse.<sup>141</sup> These reports have not been supported by field-based research and may be something of an exaggeration. Among the less than believable items in these reports is the statement that 1 in 20 Georgians is an addict; that 70 percent of drug users have the wherewithal to spend \$120 to buy a single buprenorphine tablet, this in a country with a per capita gross domestic product of less than \$4,000 per year and with 50 percent of the population below the poverty line; and that one-sixth of a maintenance dose will support a heroin dependence.

Regardless of the validity of these reports, the abuse of a primary medical treatment modality reduces the possibility that buprenorphine will be introduced for maintenance and threatens existing maintenance programs by raising the issue of drug diversion. If these unsubstantiated reports that lack credibility gain credence with the government, they may raise fear of drug diversion, thereby reducing the possibility that buprenorphine will be introduced for maintenance and possibly threatening existing maintenance programs.

## Gaps in Treatment Coverage

Precise estimates of the size of the treatment programs needed to avert an epidemic are not currently available. Although it may be too early in the epidemic to know exactly how to allocate substitution therapy medications should they become available, it is important to remember that those locations that have responded early to epidemics of heroin injection have seen lower HIV prevalence as a result.<sup>142</sup>

---

139. Holly Catania, "Substitution Treatment of Opiate Addiction: Opportunities and Barriers for Enhancement and Expansion—Questionnaire Results" (paper presented at the Salzburg Medical Seminar, Salzburg, Austria, October 22–28, 2006).

140. "Grant Performance Report—GEO-202-G01-H-00."

141. Hannah Cleaver, "Georgian Drug Misusers Switch to Western Heroin Substitute," *BMG* 334 (2007): p. 821.

## Russian Federation

### Prevalence of Injection Opioid Use

The most recent UN estimates place the number of injectors in Russia at 2,250,000, with a range from 1,500,000 to 3,000,000.<sup>143</sup> The number of officially registered IDUs is 500,000. In some cities with serious drug abuse problems, the prevalence of injection drug use has been estimated to exceed 5 percent of the adult population.<sup>144</sup> Recent findings from St. Petersburg (from data collected in 2006) and 10 other Russian cities (data collected in 2003–2005) reveal that more than 95 percent of those abusing illicit drugs were injecting the drugs, and more than 90 percent of those individuals were injecting heroin in some form.<sup>145</sup> Although the government maintains an official registry of addicted persons, there is no accurate count of individuals with addiction problems and no consensus on the number of opioid injectors. Estimates from the National Scientific Center on Addictions in 2001, when the number of newly registered persons with addiction reached a first peak, put the number at 2 million.<sup>146</sup> The Russian Ministry of the Interior reported that the number could be between three and 4 million.<sup>147</sup> Anecdotal evidence from St. Petersburg, Moscow, and other cities suggests a new wave of young injectors may be developing.

The form of heroin injected has undergone a transition in many Russian cities. Heroin from homemade preparations that begin with poppies or opium gum has been replaced by commercial preparations similar to those found in western Europe.<sup>148</sup>

---

142. Don C. Des Jarlais et al., “Maintaining Low HIV Seroprevalence in Populations of Injecting Drug Users.”

143. Aceijas et al., “Estimates of Injecting Drug Users at the National and Local Level.”

144. Lucy Platt et al., “The Prevalence of Injecting Drug Use in a Russian City: Implications for Harm Reduction and Coverage,” *Addiction* 99 (2004): pp. 1430–1438; Dave Burrows, *Harm Reduction Programs in the Civilian and Prison Sectors of the Russian Federation: Assessment of Best Practices* (Moscow: Open Health Institute, 2006), [http://siteresources.worldbank.org/INTECAREG-TOPHIVAIDS/Resources/HRBP\\_final.pdf](http://siteresources.worldbank.org/INTECAREG-TOPHIVAIDS/Resources/HRBP_final.pdf).

145. Olga I. Borodkina et al., “The Correlation between the Type of Drug Use and HIV Status of IDUs in Different Russian Cities,” *Russian Journal of AIDS, Cancer, and Public Health* 9 (2005): pp. 72–75; and Olga V. Toussova, “Organization, Implementation, and Results of the Sexual Acquisition and Transmission of HIV Cooperative Agreement Program in St. Petersburg” (paper presented at the 16th International Conference on AIDS, Cancer, and Public Health, St. Petersburg, Russia, May 28–June 1, 2007).

146. Eugenia Koshkina, “Prevalence of Drug Addiction Diseases in the Russian Federation in 2000 According to Official Statistics,” *Voprosy Narkologii* [Addiction Issues] 3 (2001): pp. 61–71.

147. Burrows, *Harm Reduction Programs in the Civilian and Prison Sectors*.

148. Kevin Irwin, “Opiate Type and Risk for HIV in the Russian Federation” (paper presented at the 17th International Conference on the Reduction of Drug-Related Harms, Vancouver, B.C., Canada, April 30–May 4, 2006); and Borodkina et al., “The Correlation between the Type of Drug Use and HIV Status of IDUs in Different Russian Cities.”

## Prevalence of HIV Infection

Estimates range from 750,000 to 1.5 million people living with HIV infection, with a range from 560,000 to 1,600,000.<sup>149</sup> Injecting drug use accounts for 87 percent of the HIV cases with an attributable risk diagnosed through 2005.<sup>150</sup> The Federal AIDS Center reported 370,000 registered HIV infections at the end of 2006, with between 30,000 and 40,000 new cases added annually between 2003 and 2006.<sup>151</sup> It is widely agreed that these figures underestimate the true number of HIV-infected individuals.<sup>152</sup> The epidemic is fairly young; to date, fewer than 15,000 people have been reported to have died from AIDS.<sup>153</sup>

## Prevalence of HIV Infection in Injection Opioid Users

The prevalence of HIV among injectors varies widely among cities. A 2003 study reported HIV prevalence among IDUs in Moscow of 14 percent, in Volgograd of 3 percent, and in Barnaul of 9 percent; whereas a 2001 study found that IDUs in Togliatti City had an HIV prevalence of 56 percent.<sup>154</sup> HIV prevalence in St. Petersburg by 2003 had climbed to nearly 50 percent among commercial sex workers who also inject drugs, and by 2006 was at 50 percent among all IDUs.<sup>155</sup>

In those cities in which the HIV prevalence rates among injectors have reached or exceeded 30 percent, the injection of the homemade preparations has become uncommon.<sup>156</sup> Lower rates are found in cities where homemade preparations have remained the predominant form of heroin<sup>157</sup> and in cities that began targeted HIV prevention programs earlier.<sup>158</sup>

---

149. *AIDS Epidemic Update: December 2006*; "Russian Federation," AIDS Foundation East-West, 2007, <http://www.afew.org/english/countries/russia.php>; and Burrows, *Harm Reduction Programs in the Civilian and Prison Sectors*.

150. *AIDS Epidemic Update: December 2006*.

151. "Russian Federation."

152. Murray Feshbach and Cristina M. Galvin, *HIV/AIDS in Russia—An Analysis of Statistics* (Washington, D.C.: Woodrow Wilson International Center, 2005).

153. "Russian Federation."

154. Tim Rhodes et al., "Explosive Spread and High Prevalence of HIV Infection among Injecting Drug Users in Togliatti City, Russia," *AIDS* 16 (2002): pp. F25–F31; and Tim Rhodes et al., "Prevalence of HIV, Hepatitis C and Syphilis among Injecting Drug Users in Russia: A Multi-City Study," *Addiction* 101 (2006): pp. 252–266.

155. Robert Heimer et al., "Patterns of HIV Testing and HIV Incidence among Drug Injectors in St. Petersburg—2006" (paper presented at the 16th International Conference on AIDS, Cancer, and Public Health, St. Petersburg, Russia, May 28–June 1, 2007); and Simone Kozuharov, "Half of St. Pete Prostitutes Have HIV," *Moscow Times*, April 22, 2004.

156. Rhodes et al., "Explosive Spread and High Prevalence of HIV Infection"; and Kozuharov, "Half of St. Pete Prostitutes Have HIV"; and Dave Burrows and Urban Weber, "The Time it Takes—When to Start Harm Reduction" (paper presented at the 12th International Conference on the Reduction of Drug Related Harm, New Delhi, India, April 1–5, 2001).

157. Irwin, "Opiate Type and Risk for HIV in the Russian Federation."

158. Robert S. Broadhead, "Peer-Driven Intervention Models for IDUs in Russia" (paper presented at the conference on Drug Policy and HIV Prevention in Russia, New Haven, Conn., October 8–9, 2004); and Kevin Irwin et al., "Reduced Injection-Related HIV-1 Risk Associated with Participation in a Harm Reduction Project in Kazan, Russia," *AIDS Education & Prevention* (2007).

Many locations in Russia detected rapid escalations in HIV prevalence among injectors between 1998 and 2002.<sup>159</sup> Since 2002, the number of new HIV infections reported annually has hovered between 30,000 and 40,000.<sup>160</sup> It is unclear whether this level represents a true plateau in the infection rate or whether prevalence in these locations will continue to increase.<sup>161</sup> Findings from St. Petersburg in 2006 suggest that the present prevalence of 49 percent among injectors does not represent a plateau because incidence rates were estimated to exceed 10 percent per year.<sup>162</sup> Information from other Russian cities is less reliable and less conclusive about the course of the epidemic.

### Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

Maintenance therapy is prohibited by law in the Russian Federation.<sup>163</sup> Methadone is expressly prohibited for use in maintenance therapy by the 1998 Federal Law on Narcotic Means and Psychotropic Substances. Buprenorphine is prohibited for use in maintenance therapy under article 31(6) of the same 1998 law. Because maintenance therapy is prohibited, no patients receive this form of treatment.

Current approaches to addiction focus on detoxification. Treatment of opioid addiction within the health care system is the sole province of psychiatric specialists, known as narcologists. The majority of those with addiction who seek treatment for opioid addiction are entered into a 7 to 10-day detoxification program. The vast majority of narcologists interviewed in a recent study recognized that the approach that relies on detoxification fails for 90 percent or more of their patients.<sup>164</sup>

Physicians often rely on what Dr. Evgeny Krupitsky, chief substance abuse physician for the Leningrad region, has labeled “shamanism”—using a placebo treatment combined with the threat that continued use of heroin after receiving this treatment will result in death.<sup>165</sup>

---

159. N. Mashkilleysen and P. Leinikki, “Evolution of HIV Epidemic in Kaliningrad, Russia,” *Journal of Clinical Virology* 12 (1999): pp. 37–42; Alla V. Shaboltas et al. “HIV Prevalence, Socio-Demographic and Behavioral Correlates and Recruitment Methods among Injection Drug Users in St. Petersburg, Russia,” *Journal of Acquired Immune Deficiency Syndrome* 41 (2006): pp. 657–663; and Burrows and Weber, “The Time It Takes—When to Start Harm Reduction.”

160. “Russian Federation.”

161. Nicholas Grassly et al., “Modeling Emerging HIV Epidemics: The Role of Injecting Drug Use and Sexual Transmission in the Russian Federation, China, and India,” *International Journal of Drug Policy* 14 (2003): pp. 25–43; and Tatiana Smolskaya et al., “HIV Epidemiology in the Northwestern Federal District of Russia: Dominance of HIV Type 1 Subtype A,” *AIDS Research & Human Retroviruses* 22 (2006): pp. 1074–1080.

162. Heimer et al., “Patterns of HIV Testing and HIV Incidence among Drug Injectors in St. Petersburg—2006.”

163. William E. Butler, *HIV/AIDS and Drug Misuse in Russia: Harm Reduction Programmes and the Russian Legal System* (London: International Family Health, 2003).

164. Robert Heimer et al., “HIV and Drug Use in Eurasia,” in *HIV/AIDS in Russia and Eurasia*, ed. Judyth L. Twigg (Basingstoke, UK: Palgrave Macmillan, 2007).

165. Evgeny M. Krupitsky, personal communication with Robert Heimer, March 13, 2007: effective and ineffective therapies for drug addiction.

Naltrexone has been used in limited clinical trials in St. Petersburg with some success relative to the standard of care, which is detoxification.<sup>166</sup> Naltrexone has proved especially effective when daily consumption of naltrexone can be monitored by the family of the addicts in therapy.

### Gaps in Treatment Coverage

With maintenance therapy prohibited, the first steps would need to be legislative changes followed by pilot programs conducted by well-respected narcologists. Influential senior narcologists, however, strongly oppose maintenance therapy. Realistically, necessary changes are unlikely to occur until the next decade, if at all. By that time, 50 percent or more of Russian injectors infected with HIV will require antiretroviral therapy as well as opioid maintenance. The best opportunity for initiating and expanding maintenance therapy will be in the context of providing high quality antiretroviral therapy. This approach has three strengths. First, maintenance therapy will help promote adherence to antiviral therapeutic regimens. Second, the combination will reduce HIV transmission by reducing injection frequency and viral load. Third, it will help build the collaborative health care infrastructure needed to provide high-quality AIDS care.

## Ukraine

### Prevalence of Injection Opioid Use

The most recent estimates reported by the UN place the number of IDUs in Ukraine at 400,000, with a range from 200,000 to 600,000.<sup>167</sup> The major opioid drug of abuse is heroin. In many parts of Ukraine, heroin is a homemade preparation that begins with poppy straw or opium gum.<sup>168</sup> Commercial heroin is generally available only in the larger cities.<sup>169</sup> Most illegal users of opioids inject their drugs.

### Prevalence of HIV Infection

Ukraine is now reported to have the highest population prevalence of HIV of any country in Europe. The number of newly documented infections has increased nearly every year, reaching 110,554 officially reported infections by May 2007.<sup>170</sup> UNAIDS estimates 360,000 persons living with HIV at the end of 2003 and 377,000 at the end of 2005.<sup>171</sup> This small increase between 2003 and 2005 is due less to a

166. Evgeny M. Krupitsky et al., "Naltrexone for Heroin Dependence Treatment in St. Petersburg, Russia," *Journal of Substance Abuse Treatment* 26 (2004): pp. 285–294.

167. Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level."

168. Nadia Abdala et al., "Can Homemade Injectable Opiates Contribute to the HIV Epidemic among Injection Drug Users in the Countries of the Former Soviet Union?" *Addiction* 101 (2006): pp. 731–737.

169. Robert Heimer et al., "HIV and Drug Use in Eurasia."

170. Francis Drobniowski et al., "Increasing Trends in HIV and TB Rates in Odessa and the Ukraine," *International Journal of STD & AIDS* 16 (2005): pp. 374–378; and "Ukraine," AIDS Foundation East-West, 2007, <http://www.afew.org/english/countries/ukraine.php>.

reduction in new infections and more to a change in methodology in extrapolating from registered to uncounted infections.<sup>172</sup> UNAIDS currently estimates that 410,000 adults are living with HIV/AIDS, with a range from 250,000 to 680,000.<sup>173</sup> The epidemic spread of HIV was first noted in 1995 in the southern Ukrainian cities of Odessa and Nikolaev.<sup>174</sup> The epidemic has since spread to all regions of Ukraine, but the regions in the southeastern part of the country remain most affected.<sup>175</sup>

The Ukrainian HIV epidemic is driven by infections among IDUs. Reliable data indicate that injectors accounted for more than 80 percent of HIV infections in the early years of the epidemic (1995–1999).<sup>176</sup> More recent reports from the Ukrainian Ministry of Health show injectors accounting for just under half of all cases in 2003. This attribution is suspect because of sampling and reporting biases that diminish testing of IDUs and increase testing among the sex partners of drug users.<sup>177</sup>

### Prevalence of HIV Infection in Injection Opioid Users

A minimal estimate for the number of cases directly attributable to injection drug use is 49,750 (45 percent of the 110,554 reported HIV infections as of May 2007),<sup>178</sup> although the true number is likely to be much higher.

Regardless of the extent to which the epidemic has remained concentrated in injector populations, injectors bear the brunt of the epidemic. In the southern cities of Odessa and Nikolaev, prevalence rates of 31 percent and 57 percent, respectively, were reported more than a decade ago.<sup>179</sup> Currently, the oblasts with the highest number of registered HIV injectors are in the eastern and southern parts of the country, including the oblasts of Dnipropetrovs'k, Donetsk, Nikolaev, and Odessa

---

171. *AIDS Epidemic Update: December 2006*.

172. Jean-Paul Grund et al., *The Role of IDUs in the Field of HIV-Infection Epidemic Development in Ukraine* (Kyiv: Ukrainian Centre for AIDS Prevention and Control and UNAIDS, 2004).

173. *AIDS Epidemic Update: December 2006*.

174. Vladimir A. Novitsky et al., "Molecular Epidemiology of an HIV-1 Subtype A Subcluster among Injection Drug Users in the Southern Ukraine," *AIDS Research & Human Retroviruses* 14 (1998): pp. 1079–1085; and A. M. Shcherbinskaia et al., "The Epidemic Situation in Relation to HIV Infection in Ukraine (1987–1997) [in Russian]," *Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii* 1 (1999): pp. 26–29.

175. *Socioeconomic Impact of HIV/AIDS in Ukraine* (Washington, D.C.: International HIV/AIDS Alliance in Ukraine and the World Bank, 2006), [http://ukraine.usaid.gov/lib/health/ukr\\_aids.pdf](http://ukraine.usaid.gov/lib/health/ukr_aids.pdf).

176. Tatiana Smolskaya et al., "HIV Epidemiology in the Northwestern Federal District of Russia: Dominance of HIV Type 1 Subtype A," *AIDS Research & Human Retroviruses* 22 (2006): pp. 1074–1080; and I. V. Kruglov et al., "The Results of Sentinel Epidemiological Surveillance on the Level of HIV Prevalence among Injection Narcotic Abusers in the City of Poltava [in Russian]," *Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii* 4 (2000): pp. 34–35.

177. Grund et al., *The Role of IDUs in the Field of HIV-Infection Epidemic Development in Ukraine*.

178. "Ukraine."

179. Lev Khodakevich, "Development of HIV Epidemics in Belarus, Moldova and Ukraine and Response to the Epidemics" (paper presented at the Eighth International Conference on the Reduction of Drug Related Harm, Paris, France, March 23–27, 1997).

and the Autonomous Republic of Crimea.<sup>180</sup> HIV seroprevalence data from a street-recruited three-site cross-sectional study conducted in 2005 found that, overall, 33 percent tested positive for HIV with seroprevalence varying by site; in Kyiv it was 34 percent, in Odessa 51 percent, and in Makeevka/Donesk 17 percent.<sup>181</sup>

### Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

Prior to 2004, treatment for opioid addiction relied exclusively on abstinence-based approaches with failure rates in excess of 67 percent.<sup>182</sup> Maintenance therapy was begun in 2004 by the enactment of legislation permitting the use of buprenorphine and was expanded through a Global Fund-supported program targeting HIV/AIDS.<sup>183</sup> Two projects with a total of 70 patients were begun in Kyiv and Kherson.<sup>184</sup> Expansion of maintenance programs at six additional sites began in October 2005 and appears to have been rapidly embraced by the medical establishment.<sup>185</sup> The chief narcologist of the Ministry of Health has stated that maintenance therapy is to be the main means of HIV prevention in Ukraine's national strategy, and federal funds were first allocated in 2006 to allow treatment of 300 HIV-positive patients. By the end of 2006, the programs had been scaled up to operate in nine regions, including the capital Kyiv. At that time, plans were in development to expand to 14 other oblasts and treat 3,000 by the end of 2007<sup>186</sup> and 6,000 by the end of 2008.<sup>187</sup> This represents only 1.5 percent of those estimated to need treatment.

The first medication introduced was buprenorphine in 2004.<sup>188</sup> In November 2006, the government officially registered methadone, making it possible to use methadone in maintenance therapy.<sup>189</sup> In May 2007, the Ministry of Health authorized expansion of methadone treatment to a variety of clinics, including those

---

180. Grund et al., *The Role of IDUs in the Field of HIV-Infection Epidemic Development in Ukraine*; and *Socioeconomic Impact of HIV/AIDS in Ukraine*.

181. Robert E. Booth et al., "Predictors of HIV Sero-Status among Drug Injectors at Three Ukraine Sites," *AIDS* 20 (2006): pp. 2217–2223.

182. Sergiy Dvoryak, "First Experience of Substitution Therapy for Opioid Abuse in Ukraine" (paper presented at the NIDA International Forum, College on the Problems of Drug Dependency, Orlando, Florida, July 17–20, 2005).

183. "Ukraine: Ministry of Health Is Expanding Substitution Therapy Using International and National Funds," Central and Eastern Europe Harm Reduction Network, 2007, <http://www.cee-hrn.org/?ItemId=17032>.

184. Dvoryak, "First Experience of Substitution Therapy for Opioid Abuse in Ukraine."

185. R. Douglas Bruce et al., "HIV Treatment Access and Scale-Up for Delivery of Opiate Substitution Therapy with Buprenorphine for IDUs in Ukraine—Programme Description and Policy Implications," *International Journal of Drug Policy* (2007).

186. "Ukraine: Ministry of Health Is Expanding Substitution Therapy Using International and National Funds."

187. Bruce et al., "HIV Treatment Access and Scale-Up for Delivery of Opiate Substitution Therapy with Buprenorphine for IDUs in Ukraine."

188. *Ibid.*

189. *Ibid.*

currently administering buprenorphine and some treating tuberculosis and AIDS. The Global Fund, which supplies the majority of funds to expand maintenance therapy, is seeking a balance that would have 90 percent of patients receiving methadone and 10 percent receiving buprenorphine. Given the costs and effectiveness of the two drugs, this balance is sound.

No methadone is being dispensed at present, but implementation of the first maintenance programs using methadone is expected by late 2007. Plans call for pilot methadone programs in 41 sites in 8 regions of Ukraine. The distribution of methadone will help Ukraine to meet the targets set by the round 6 proposal to the Global Fund to provide substitution treatment for up to 11,000 IDUs by 2011, representing 2.75 percent of those needing treatment.

The best available figure for the number of patients receiving buprenorphine maintenance therapy is 500 as of May 2007.<sup>190</sup> Guidelines for buprenorphine administration have resulted in relatively low doses—an average of only 9.3 milligrams per day.<sup>191</sup> This is lower than the average U.S. dose of 16 milligrams per day and below the recommended dosage to prevent relapse.

### Gaps in Treatment Coverage

Current plans call for 6,000 patients to be in maintenance treatment by the end of 2008, and 11,000 by 2011. Although it is unclear how this projected patient target will be met, the Ukrainian government is under financial pressure to meet this goal: The Global Fund has said that funds awarded in the round 6 grant will not be released unless this maintenance therapy goal is achieved.

Regardless of whether the goal is met, a program with 6,000–11,000 patients is too small to reverse the epidemic. Several features of Ukraine's epidemic and a number of program specifics will have an impact on the country's ability to reverse the epidemic. With HIV prevalence rates in many locations at 50 percent or more, conditions exist that maximize the likelihood that syringe sharing will be between someone infected and someone susceptible. Therefore, maintenance programs have to be structured to have a maximal impact in reducing injections by those capable of transmitting the infection.

If the maintenance therapy program maximizes its impact by focusing on those already infected, it must accomplish several tasks to reduce successfully the chances of transmission. It must provide adequate dosing to decrease injection frequency by at least 75 percent, and it must couple maintenance therapy with antiretroviral therapy. It also must be substantially larger than planned; programs that treat fewer than 100,000 of the 400,000 opioid injectors nationwide are unlikely to have much of an immediate impact on the ever-increasing number of HIV infections detected among injectors. This estimate is almost double the official UN minimum estimate

---

190. Ibid.; and Sergiy Dvoryak, "Progress with Opioid Substitution Therapy in Ukraine" (paper presented at the 18th International Conference on Drug Related Harm, Warsaw, Poland, May 13–17, 2007).

191. Bruce et al., "HIV Treatment Access and Scale-Up for Delivery of Opiate Substitution Therapy with Buprenorphine for IDUs in Ukraine."

of 60,000,<sup>192</sup> but it may be more realistic given the extent to which HIV has already spread among Ukrainian injectors.

## Kenya

### Prevalence of Injection Opioid Use

The number of IDUs in Kenya has been estimated at 30,000.<sup>193</sup> The United Nations Office on Drugs and Crime, using data from 2004, reported that 0.2 percent of people 15–64 are opiate users.<sup>194</sup>

A study examining drug use in five cities in Kenya found that injection drug use among those using psychoactive drugs was 9.8 percent, ranging from 21 percent in Malindi to 0.9 percent in Nakuru.<sup>195</sup> Approximately 1 in 10 drug users reported using heroin or other opioids.

### Prevalence of HIV Infection

Kenya, a country of 31 million, has an estimated 2.5 million persons (13 percent of adults) infected with HIV. This places Kenya fourth in the world, behind South Africa, India, and Nigeria, in terms of the number of people infected with HIV. Adult prevalence was 6.1 percent at the end 2004.<sup>196</sup> In some areas, prevalence remains as high as 13 percent. Gender disparities are evident; young women are especially vulnerable to HIV infection compared with young men. Injection drug use as a route of transmission accounted for 3,991 of the 82,369 incident HIV infections in 2005, or 4.8 percent of infections that year.<sup>197</sup> It is unknown what proportion of the cumulative HIV cases in Kenya are due to injecting drug use.

### Prevalence of HIV Infection in Injection Opioid Users

Some estimates place the prevalence of HIV/AIDS among IDUs in Nairobi and Coast Province at 68 to 88 percent.<sup>198</sup> In a 2004 cohort study of 120 drug users,

192. “Joint WHO/UNAIDS/UNODC Mission on Opioid Substitution Therapy in Ukraine,” WHO, UNAIDS and UNODC, 2005.

193. Susan Beckerleg et al., “The Rise of Injecting Drug Use in East Africa: A Case Study from Kenya,” *Harm Reduction Journal* 2 (2005): p. 12, <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1236949>; and Clement Deveau et al., “Heroin Use in Kenya and Findings from a Community-Based Outreach Programme to Reduce the Spread of HIV/AIDS,” *African Journal of Drug and Alcohol Studies* 5 (2006): pp. 95–106.

194. *World Drug Report 2006* (New York: UN Office on Drugs and Crime, 2006), <http://www.unodc.org/unodc/en/data-and-analysis/WDR-2006.html>.

195. David M. Ndeti et al., “Next Priorities for Intervention in Kenya: Results from a Cohort Study of Drug Use, HIV and HCV Patterns in Five Urban Areas,” *International Psychology Reporter* 10, no. 1 (2006): pp. 16–19.

196. *AIDS Epidemic Update: December 2006*.

197. Deveau et al., “Heroin Use in Kenya and Findings from a Community-Based Outreach Programme to Reduce the Spread of HIV/AIDS.”

198. “UNODC Report Sheds New Light on the Relationship between Drug Abuse, Injecting Drug Use and HIV/AIDS in Kenya,” Press release, UN Office on Drugs and Crime, July 1, 2004, [http://www.unodc.org/kenya/press\\_release\\_2004-07-01\\_1.html](http://www.unodc.org/kenya/press_release_2004-07-01_1.html).

including IDUs in Mombasa, 90 percent of whom were between the ages of 17 and 40 years, 52.5 percent were HIV infected.<sup>199</sup> A WHO study comparing IDUs to non-IDUs found HIV prevalence among IDUs was 36 percent (53/146) compared with 14 percent (25/185).<sup>200</sup> Women appear to be at much greater risk; prevalence of HIV in female IDUs in this study was 80 percent (12/15). Most recently, data presented at the 2006 HIV/AIDS Implementers Meeting of the PEPFAR reported HIV prevalence estimates among IDU in Kenya of 22.9 percent to 50 percent.<sup>201</sup>

### Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

Addiction treatment in Kenya is almost exclusively provided through in-patient or residential facilities. This treatment is usually restricted to male patients with resources to pay for services. It is mostly provided by non-physician counselors with limited training, does not incorporate pharmacotherapy, and rarely includes psychological counseling following detoxification.<sup>202</sup>

Neither methadone nor buprenorphine is registered or available in Kenya.

### Gaps in Treatment Coverage

It appears that Kenya may experience a second HIV epidemic, driven by injection drug use. Until a better understanding of the scope of the opioid dependence and risk of HIV is available, it is not possible to develop precise estimates of the size of the treatment programs needed to avert an epidemic. Registering methadone and buprenorphine for maintenance therapy and establishing pilot projects are necessary early steps in building effective treatment options to prevent further expansion of this neglected aspect of the HIV epidemic in Kenya.

## Nigeria

### Prevalence of Injection Opioid Use

Nigeria serves as a major international transit route for cocaine and heroin. The UNODC World Drug Report from 2006 estimates 200,000 opiate users in Nigeria, but this estimate comes from a figure reported in 1999 by the national government.<sup>203</sup> More recent local estimates for the capital, Lagos, were 5,000 opioid (mostly heroin) abusers in 2003.<sup>204</sup> Targeted studies of heroin users in Lagos found

---

199. Ibid.

200. Maurice Odek-Ogunde et al., "Seroprevalence of HIV, HBC and HCV in Injecting Drug Users in Nairobi, Kenya: World Health Organization Drug Injecting Study Phase II findings" (paper presented at the 15th International AIDS Conference, Bangkok, Thailand, July 11–16, 2004).

201. Clement Deveau, "Prevention of HIV/AIDS among Drug Users as a Vulnerable Population" (paper presented at the 2006 HIV/AIDS Implementers Meeting of the President's Emergency Plan for AIDS Relief, Durban, South Africa, July 27–28, 2006).

202. Lynn E. Sullivan et al., "Addiction and HIV in Kenya: A Descriptive Study of Treatment Services and Integration," *African Journal of Drug and Alcohol Studies* 6, no. 1 (2007): pp. 17–26.

203. *World Drug Report 2006*.

that 84 of 398 (21 percent) reported injection drug use and 11–15 percent reported needle sharing.<sup>205</sup> It is estimated that the total number of IDUs in Nigeria is 42,000.

### Prevalence of HIV Infection

It is currently estimated that the number of adults living with HIV in Nigeria is 2,600,000 (range of 2,300,000–3,800,000), a prevalence of 3.9 percent with a range of 2.3 to 5.6 percent.<sup>206</sup> The first case of AIDS was identified in Nigeria in 1986, and HIV prevalence rose from 1.8 percent in 1988, to 5.8 percent in 2001, to 5.4 percent in 2004.<sup>207</sup> Injecting drug use accounts for less than 10 percent of the cumulative HIV cases in Nigeria.<sup>208</sup>

### Prevalence of HIV Infection in Injection Opioid Users

The most recent data by PEPFAR investigators reported HIV prevalence among IDUs at 8 or 9 percent.<sup>209</sup> One 2000 study conducted in Lagos indicated HIV seroprevalence of 11 percent among current IDUs.<sup>210</sup> A series of studies conducted in seven Nigerian cities between 2000 and 2005 indicated HIV seroprevalence among IDUs of 0.0–8.9 percent.<sup>211</sup> Rates reported in all of these studies are more than twice those found in the general adult population.

### Availability and Number of Injection Opioid Users Who Are Receiving Maintenance Therapy

Treatment services reportedly include religious-based services, traditional healers, and drug users' organizations. Drug users report infrequent use of treatment services and cite inability to pay as a primary barrier.<sup>212</sup>

Neither methadone nor buprenorphine is available in Nigeria.

204. Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level"; and Edna Oppenheimer et al., "Treatment and Care for Drug Users Living with HIV/AIDS" (London: Centre for Research on Drugs and Health Behaviour, 2003), [http://www.ahrn.net/library\\_upload/uploadfile/Treatment\\_care\\_for\\_DUs.pdf](http://www.ahrn.net/library_upload/uploadfile/Treatment_care_for_DUs.pdf).

205. Sarah Dewing et al., "Review of Injection Drug Use in Six African Countries: Egypt, Kenya, Mauritius, Nigeria, South Africa and Tanzania," *Drugs: Education, Prevention and Policy* 13, no. 2 (2006): pp. 121–137.

206. "Nigeria," UNAIDS, 2007, <http://www.unaids.org/en/CountryResponses/Countries/nigeria.asp>.

207. Dewing et al., "Review of Injection Drug Use in Six African Countries: Egypt, Kenya, Mauritius, Nigeria, South Africa and Tanzania"; and Moruf L. Adelekan and Rahman A. Lawal, "Drug Use and HIV Infection in Nigeria: A Review of Recent Findings," *African Journal of Drug and Alcohol Studies* 5, no. 2 (2006): pp. 118–129.

208. "HIV & AIDS in Nigeria," AVERT, 2007, <http://www.avert.org/aids-nigeria.htm>.

209. Richard Needle, "Injection Drug Use in Sub-Saharan Africa: Emergence of an Under-Recognized HIV Transmission Risk" (paper presented at the 2006 HIV/AIDS Implementers Meeting of the President's Emergency Plan for AIDS Relief, Durban, South Africa, July 27–28, 2006); and Richard Needle et al., "Substance Abuse and HIV in Sub-Saharan Africa: Introduction to the Special Issue," *African Journal of Drug and Alcohol Studies* 5 (2006): pp. 83–94.

210. "UNODC Newsletter," UN Office on Drugs and Crime, March 2002.

211. Adelekan and Lawal, "Drug Use and HIV Infection in Nigeria."

212. *Ibid.*

## Gaps in Treatment Coverage

Like other countries in sub-Saharan Africa, Nigeria may experience a second HIV epidemic, driven by injection drug use.<sup>213</sup> Until a better understanding of the scope of the problem is available, it is not possible to develop precise estimates of the size of the treatment programs needed to avert an epidemic. Registering methadone and buprenorphine for maintenance therapy and establishing pilot projects are necessary early steps in building effective treatment options to prevent further expansion of this neglected aspect of the HIV epidemic in Nigeria.

---

213. Needle, "Injection Drug Use in Sub-Saharan Africa."



# Country Tables

On the following pages are tables that assess injection drug user–epidemics in four regions of the world:

- East Asia (China, Malaysia, Vietnam, and Indonesia),
- Central Asia (Kazakhstan, Kyrgyzstan, and Tajikistan),
- East-Central Europe (Georgia, Russia, and Ukraine), and
- Africa (Kenya and Nigeria).

Country Table 1. Assessment of IDU-Driven Epidemics: China, Vietnam, Malaysia, and Indonesia

Country	No. of IDUs	No. of adults living with HIV/AIDS*	Proportion of cumulative HIV cases caused by injection drug use	No. of adults living with HIV/AIDS who are IDUs	Adult HIV prevalence among IDUs	No. of people on maintenance therapy	Gap between no. receiving and needing maintenance therapy
Reference	A	B	C	D	E	F	G
<b>China</b>							
Estimated	1,928,000 (356,000–3,500,000)	650,000 (390,000–1,100,000)	43.2% (2005)	—	—	37,000 methadone 0 buprenorphine	1,216,200
Officially registered	1,600,000 (2004)	141,241 (2005)	—	288,000	6.5% (2004) 6%–8% (2005)	—	—
<b>Vietnam</b>							
Estimated	113,000 (70,000–156,000)	250,000 (150,000–420,000)	52.6% (2005) 50%–60% (2005)	59,890 (2006)	20% (2002) 34% (2005)	0 methadone 0 buprenorphine	73,450
Officially registered	—	111,148 (2005)	—	—	—	—	—
<b>Malaysia</b>							
Estimated	195,000 (150,000–240,000)	67,000 (32,000–220,000)	76.3% (2003)	51,121	19.2% (2006)	1,200 methadone 30,000 agonist maintenance	95,550
Officially registered	117,955 (2002)	64,439 (2004)	48,369 of 64,439: 75.1% (2004)	—	—	—	—
<b>Indonesia</b>							
Estimated	561,925 (123,849–1,000,000)	170,000 (100,000–290,000)	—	85,510	48% (2003)	1,000 methadone	364,252
Officially registered	160,000 (2006)	13,424 (2006)	54% (2006)	—	—	—	—

**Sources:****China**

A: Chinese Ministry of Public Security, cited in *2006 International Narcotics Control Strategy Report* (Washington, D.C.: U.S. Department of State, March 2006), [http://beijing.usembassy-china.org.cn/incsr06\\_chn.html](http://beijing.usembassy-china.org.cn/incsr06_chn.html); and Carmen Aceijas et al., "Global Overview of Injecting Drug Use and HIV Infection among Injecting Drug Users," *AIDS* 18 (2004): pp. 2295–2303; and Carmen Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level in Developing and Transitional Countries, and Gender and Age Distribution," *Sexually Transmitted Infections* 82, supp. 3 (2006): pp. iii10–iii17.

B: *AIDS Epidemic Update: December 2006* (UNAIDS and World Health Organization [WHO], December 2006); and Ministry of Health of China, UNAIDS, WHO, *2005 Update on the HIV/AIDS Epidemic and Response in China* (Beijing: National Center for AIDS/STD Prevention and Control, China CDC, 2005), [http://data.unaids.org/Publications/External-Documents/RP\\_2005ChinaEstimation\\_25Jan06\\_en.pdf](http://data.unaids.org/Publications/External-Documents/RP_2005ChinaEstimation_25Jan06_en.pdf).

C: Wang Longde, vice minister, Chinese Ministry of Health, briefing on the situation of HIV/AIDS prevention and treatment in China, referenced in ZM. Liu et al., "Drug Use and HIV/AIDS in China," *Drug & Alcohol Review* 25 (2006): pp. 173–175.

- D: Ministry of Health of China, UNAIDS, WHO, *2005 Update on the HIV/AIDS Epidemic and Response in China* (Beijing: National Center for AIDS/STD Prevention and Control, China CDC, 2005), [http://data.unaids.org/Publications/External-Documents/RP\\_2005ChinaEstimation\\_25Jan06\\_en.pdf](http://data.unaids.org/Publications/External-Documents/RP_2005ChinaEstimation_25Jan06_en.pdf).
- E: "Progress on Implementing UNGASS Declaration of Commitment in China," Office of the State Council Working on AIDS, China, December 2005, [http://data.unaids.org/pub/Report/2006/2006\\_country\\_progress\\_report\\_china\\_en.pdf](http://data.unaids.org/pub/Report/2006/2006_country_progress_report_china_en.pdf).
- F: Personal communication from Zhao P., senior professional officer, WHO, China, April 2007; "HPTN 058: Study Documents," HIV Prevention Trials Network, 2005, [http://www.hptn.org/research\\_studies/HPTN058StudyDocuments.htm#StudyProtocol](http://www.hptn.org/research_studies/HPTN058StudyDocuments.htm#StudyProtocol), a phase 3 randomized controlled trial to evaluate the efficacy of drug treatment in prevention of HIV infection among opiate dependent injectors.

G: Calculated as  $(0.65 * A) - F$ .

#### Vietnam

- A: Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level."
- B: *AIDS Epidemic Update: December 2006* (UNAIDS and World Health Organization [WHO], December 2006); and UNESCO, "Vietnam Country Report" (presentation at OPEC Fund/UNESCO Project Regional Workshop: Sharing Lessons, Planning Future Directions, October 31–November 1, 2006), [http://www.unescobkk.org/fileadmin/user\\_upload/hiv\\_aids/Documents/Workshop\\_doc/OPEC\\_Kawyai/presentations/Vietnam\\_Opec.pdf](http://www.unescobkk.org/fileadmin/user_upload/hiv_aids/Documents/Workshop_doc/OPEC_Kawyai/presentations/Vietnam_Opec.pdf).
- C: "Vietnam FY 2007 Country Operational Plan (COP), United States President's Emergency Plan for AIDS Relief," <http://www.pepfar.gov/about/82441.htm>; and UNESCO, "Vietnam Country Report."
- D: Calculated as  $0.53 * A = 59,890$ . 53% of HIV infections are among IDUs, reported in J. Stephen Morrison and Phillip Nieburg, "HIV/AIDS in Vietnam: Field Report of the CSIS HIV/AIDS Task Force Mission to Vietnam, January 2006" (Washington, D.C.: Center for Strategic and International Studies, June 2006), [http://www.csis.org/media/csis/pubs/hiv\\_in\\_vietnam\\_\(5-8-06\).pdf](http://www.csis.org/media/csis/pubs/hiv_in_vietnam_(5-8-06).pdf).
- E: "Vietnam FY 2007 Country Operational Plan (COP), United States President's Emergency Plan for AIDS Relief," <http://www.pepfar.gov/about/82441.htm>.
- F: "Vietnam Uses Methadone as Drug Substitute," Xinhua News Agency, March 26, 2007.
- G: Calculated as  $(0.65 * A) - F$ .

#### Malaysia

- A: *Estimation of Drug Users and Injecting Drug Users in Malaysia* (Kuala Lumpur: WHO, Ministry of Health, and Universiti Utara Malaysia, 2003), <http://www.dph.gov.my/aids/idu/idu.pdf>; and Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level."
- B: *AIDS Epidemic Update: December 2006*; and "Annual Report 2004," Ministry of Health Malaysia, AIDS/STD Section.
- C: "Annual Report 2004"; and *HIV/AIDS in Asia and the Pacific Region* (World Health Organization—Western Pacific South-east Asia, 2003): pp. 43–45, [http://searo.who.int/LinkFiles/HIV-AIDS\\_in\\_Asia\\_and\\_the\\_Pacific\\_Region\\_2003\\_HIV-AIDS\\_Asia-2003.pdf](http://searo.who.int/LinkFiles/HIV-AIDS_in_Asia_and_the_Pacific_Region_2003_HIV-AIDS_Asia-2003.pdf).
- D: Calculated as  $B * \text{number of adults living with HIV/AIDS}$ , thus yielding  $0.763 * 67000 = 51,121$ ; see *AIDS Epidemic Update: December 2006* (UNAIDS and World Health Organization [WHO], December 2006); see also "Malaysia," UNAIDS, 2007, <http://www.unaids.org/en/CountryResponses/Countries/malaysia.asp>.
- E: Marek C. Chawarski et al., "Heroin Dependence and HIV Infection in Malaysia," *Drug Alcohol Dependence* 82, supp. 1 (2006): S39–S42.
- F: Adeeba Kamarulzaman, "Country Perspective—Malaysia," University of Malaya Medical Centre, Kuala Lumpur, Malaysia, <http://www.iom.edu/Object.File/Master/31/763/Adeeba%20Kamarulzaman%20-%20Malaysia.pdf>; and Mahmud Mazlan et al., "New Challenges and Opportunities in Managing Substance Abuse in Malaysia," *Drug & Alcohol Review* 25, no. 5 (2006): 473–478.
- G: Calculated as  $(0.65 * A) - F$ .

#### Indonesia

- A: Ministry of Health, Republic of Indonesia, cited in: "Epidemiological Fact Sheet: Indonesia, 2006 Update" (Geneva: European Union, WHO, UNICEF, UNAIDS, 2006), [http://www.who.int/GlobalAtlas/predefinedReports/EF2006/EF2006\\_ID.pdf](http://www.who.int/GlobalAtlas/predefinedReports/EF2006/EF2006_ID.pdf); and Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level."
- B: *AIDS Epidemic Update: December 2006*; and "Cases of HIV/AIDS in Indonesia Reported thru September 2007," Ministry of Health of Indonesia, 2007, <http://www.spiritia.or.id/Stats/StatCurr.php>.
- C: "Cases of HIV/AIDS in Indonesia Reported thru September 2007" (denominator is officially registered AIDS cases only); "Report on HIV/AIDS cases to September of 2006" (Jakarta: Ministry of Health of Indonesia, 2006).
- D: "Cases of HIV/AIDS in Indonesia Reported thru September 2007."
- E: "Epidemiological Fact Sheet: Indonesia, 2006 Update."
- F: Fabio Mesquita et al., "Public Health the Leading Force of the Indonesian Response to the HIV/AIDS Crisis among People Who Inject Drugs," *Harm Reduction Journal* 4 (2007): p. 9.
- G: Calculated as  $(0.65 * A) - F$ .

Notes: "Estimated" refers to data reported in the scientific literature, such as UNAIDS estimates of adults living with HIV/AIDS. These data may or may not coincide with officially registered and government reported data. "Officially registered" refers to data that are officially registered and reported by government authorities. IDUs = injection drug users.

\* "Estimated values" in this column refer to the number of adults living with HIV/AIDS as reported by UNAIDS. "Officially registered cases" in this column refer to the cumulative number of HIV cases reported by the government and include adults and children as well as both those who are living with and who have died from the disease. The HIV epidemics in the countries included in this table are relatively new, reflecting fewer deaths caused by AIDS, and the epidemics primarily affect adults. Thus, the number of adults living with HIV/AIDS is presented as an approximation of the cumulative HIV cases.

Country Table 2. Assessment of IDU-Driven Epidemics: Kazakhstan, Kyrgyzstan, and Tajikistan

Country	No. of IDUs	No. of adults living with HIV/AIDS*	Proportion of cumulative HIV cases caused by injection drug use	No. of adults living with HIV/AIDS who are IDUs	Adult HIV prevalence among IDUs	No. of people on maintenance therapy	Gap between no. receiving and needing maintenance therapy
Reference	A	B	C	D	E	F	G
<b>Kazakhstan</b>							
Estimated	173,669 (97,338–250,000)	12,000 (11,000–76,000)	84% (2004)	10,800	10.4% (2005)	0 methadone 0 buprenorphine	112,885
Officially registered	45,000 (2004)	6,363	4,260 of 5,657: 75.3% (2005)	—	—	—	—
<b>Kyrgyzstan</b>							
Estimated	55,040	4,000 (1,900–13,000)	80% (2005)	3,200	65%–91% (2002)	150 methadone 0 buprenorphine	35,626
Officially registered	5,305 (2005)	865	640 of 822: 77.9% (2005)	—	<5% (2007)	—	—
<b>Tajikistan</b>							
Estimated	52,598 (43,316–61,880)	4,900 (2,300–16,000)	66%–86% (2006)	4,214	24% (2006)	0 methadone 0 buprenorphine	34,189
Officially registered	5,341 (2005)	506 (2005)	333 of 506: 65.8% (2005)	—	—	—	—

**Sources:****Kazakhstan**

- A: "Country Fact Sheet: Kazakhstan 2006," UNODC, 2007, [http://www.unodc.org/uzbekistan/en/fact\\_kaz.html](http://www.unodc.org/uzbekistan/en/fact_kaz.html); and Carmen Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level in Developing And Transitional Countries, and Gender and Age Distribution," *Sexually Transmitted Infections* 82, supp. 3 (2006): pp. iii10–iii17.
- B: *AIDS Epidemic Update: December 2006* (UNAIDS and World Health Organization [WHO], December 2006); and "Officially Registered HIV Cases in the Republic of Kazakhstan (based on data from the Kazakhstan AIDS Center)," AIDS Foundation East-West, December 31, 2006, <http://www.afew.org/english/statistics/HIVdata-Kaz.htm>.
- C: Srdan Vatic, Jeffrey V. Lazarus, and Martin C. Donogoe, eds., *HIV/AIDS in Europe: Moving from Death Sentence to Chronic Disease Management* (Copenhagen: WHO Regional Office for Europe, 2006), p. 259 (data from 2004), <http://www.euro.who.int/document/e87777.pdf>.
- D: Calculated as B\*number of adults living with HIV/AIDS, thus, 0.84\*12,000=10,800; see *AIDS Epidemic Update: December 2006*.
- E: Peter D. Ghys and Karen Stanecki, "Epidemiological Patterns and Trends and Their Implications for HIV Prevention" (presentation by UNAIDS, August 2006; data cited are from CDC Central Asia offices), [http://data.unaids.org/pub/Presentation/2007/ghysstanecki20060921\\_en.pdf](http://data.unaids.org/pub/Presentation/2007/ghysstanecki20060921_en.pdf).

F: Calculated as (0.65\*A)–F.

G: Not applicable.

**Kyrgyzstan**

- A: "Country Fact Sheet: Kyrgyzstan 2006," UNODC, 2007, [http://www.unodc.org/uzbekistan/en/fact\\_kyr.html](http://www.unodc.org/uzbekistan/en/fact_kyr.html); and State Commission under the Government of the Kyrgyz Republic on Drug Control, "Brief Review of Drug Situation for 2001," Government of Kyrgyzstan, State Commission on Drug Control, 2002, p. 5.
- B: *AIDS Epidemic Update: December 2006*; and "Officially Registered HIV Cases in the Republic of Kyrgyzstan (based on data from the Kyrgyzstan AIDS Center)," AIDS Foundation East-West, December 31, 2006, <http://www.afew.org/english/statistics/HIVdata-Kyr.htm>.
- C: Vatic, Lazarus, and Donogoe, eds., *HIV/AIDS in Europe*, p. 259 (data from 2005).

D: Calculated as  $B * \text{number of adults living with HIV/AIDS}$ , thus,  $0.8 * 4000 = 3200$ ; see *AIDS Epidemic Update: December 2006*, and "Officially Registered HIV Cases in the Republic of Kyrgyzstan (based on data from the Kazakhstan AIDS Center)," <http://www.afew.org/english/statistics/HIVdata-Kyr.htm>.

E: "Summary Country Profile for HIV/AIDS Treatment Scale-Up: Kyrgyzstan, 2005," World Health Organization, December 2005, [http://www.who.int/hiv/HIVCP\\_KGZ.pdf](http://www.who.int/hiv/HIVCP_KGZ.pdf); and "Grant Performance Report—KGZ-202-G01-H-00," The Global Fund, Geneva, May 15, 2007, [http://www1.theglobalfund.org/search/docs/2KGZH\\_94\\_178\\_gpr.pdf](http://www1.theglobalfund.org/search/docs/2KGZH_94_178_gpr.pdf).

F: "Grant Performance Report—KGZ-202-G01-H-00."

G: Calculated as  $(0.65 * A) - F$ .

#### Tajikistan

A: "Country Fact Sheet: Tajikistan 2006," UNODC, 2006. [http://www.unodc.org/uzbekistan/en/fact\\_taj.html](http://www.unodc.org/uzbekistan/en/fact_taj.html); and Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level."

B: *AIDS Epidemic Update: December 2006*; and "Officially Registered HIV Cases in the Republic of Tajikistan (based on data from the Tajikistan AIDS Center)," AIDS Foundation East-West, 2006, <http://www.afew.org/english/statistics/HIVdata-Taj.htm>;

C: Vatic, Lazarus, and Donogoe, eds., *HIV/AIDS in Europe*, p. 270 (data from 2004); and Peter D. Ghys et al., "Growing in Silence: Selected Regions and Countries with Expanding HIV/AIDS Epidemics," *AIDS* 17, supp. 4 (2003): pp. S45–S50; and "Officially Registered HIV Cases in the Republic of Tajikistan (based on data from the Tajikistan AIDS Center), 2006."

D: Calculated as  $B * \text{number of adults living with HIV/AIDS}$ , thus,  $0.86 * 4900 = 4214$ ; see *AIDS Epidemic Update: December 2006*.

E: *AIDS Epidemic Update: December 2007* (UNAIDS and World Health Organization [WHO], December 2007), p. 28 (2006 data); HIV prevalence among IDUs reported in the literature is for the capital city of Dushanbe and for Khujand only.

F: Not applicable.

G: Calculated as  $(0.65 * A) - F$ .

Notes: "Estimated" refers to data reported in the scientific literature, such as UNAIDS estimates of adults living with HIV/AIDS. These data may or may not coincide with officially registered and government reported data. "Officially registered" refers to data that are officially registered and reported by government authorities. IDUs = injection drug users.

\* "Estimated values" in this column refer to the number of adults living with HIV/AIDS as reported by UNAIDS. "Officially registered cases" in this column refer to the cumulative number of HIV cases reported by the government and include adults and children as well as both those who are living with and who have died from the disease. The HIV epidemics in the countries included in this table are relatively new, reflecting fewer deaths caused by AIDS, and the epidemics primarily affect adults. Thus, the number of adults living with HIV/AIDS is presented as an approximation of the cumulative HIV cases.

Country Table 3. Assessment of IDU-Driven Epidemics: Georgia, Russia, Ukraine

Country	No. of IDUs	No. of adults living with HIV/AIDS*	Proportion of cumulative HIV cases caused by injection drug use	No. of adults living with HIV/AIDS who are IDUs	Adult HIV prevalence among IDUs	No. of people on maintenance therapy	Gap between no. receiving and needing maintenance therapy
Reference	A	B	C	D	E	F	G
<b>Georgia</b>							
Estimated	12,420 (9,936–14,904)	5,600 (2,700–18,000)	67% (2004)	3,752	1.1% (2006)	155 methadone 0 buprenorphine	7,918
Officially registered	—	880	560 of 880: 63.6% (2005)	—	—	—	—
<b>Russia</b>							
Estimated	2,250,000 (1,500,000–3,000,000)	940,000 (560,000–1,600,000)	87% (2005)	817,800	3%–56% (2001, 2003)	0 methadone 0 buprenorphine	1,462,500
Officially registered	500,000 (2007)	373,718	154,883 of 329,980; (2005): 46.9%	—	—	—	—
<b>Ukraine</b>							
Estimated	400,000 (200,000–600,000)	410,000 (250,000–680,000)	60.1% (2005); 70% (2004)	246,000– 287,000	33% (2005)	0 methadone 500 buprenorphine	259,500 (or 253,500 if include 6,000 projected for maintenance therapy by end of 2008)
Officially registered	—	105,722	52,492 of 77,801: 67.5% (2005)	—	—	—	—

**Sources:****Georgia**

- A: Carmen Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level in Developing and Transitional Countries, and Gender and Age Distribution," *Sexually Transmitted Infections* 82, supp. 3 (2006): pp. iii10–iii17.
- B: *AIDS Epidemic Update: December 2006* (UNAIDS and World Health Organization [WHO], December 2006); and "Officially Registered HIV Cases in the Republic of Georgia (based on data from the Georgia National Center on Struggle with AIDS)," AIDS Foundation East-West, December 31, 2006, <http://www.afew.org/english/statistics/HIVinGeorgia.htm>.
- C: "Officially Registered HIV Cases in the Republic of Georgia"; and "Epidemiological Fact Sheet: Georgia, December 2006" (Geneva: European Union, WHO, UNICEF, UNAIDS, 2006) (2005 data), [http://www.who.int/globalatlas/predefine-reports/EFS2006/EFS\\_PDFs/EFS2006\\_GE.pdf](http://www.who.int/globalatlas/predefine-reports/EFS2006/EFS_PDFs/EFS2006_GE.pdf).
- D: Calculated as B\*number of adults living with HIV/AIDS, thus, 0.67\*5600=3752; *AIDS Epidemic Update: December 2006*; and "Officially Registered HIV Cases in the Republic of Georgia."
- E: "Epidemiological Fact Sheet: Georgia, December 2006" (Geneva: European Union, WHO, UNICEF, UNAIDS, 2006) (2005 data).
- F: "Grant Performance Report—GEO-202-G01-H-00," The Global Fund, Geneva, June 4, 2007, [http://theglobalfund.org/search/docs/2GEOH\\_86\\_163\\_gpr.pdf](http://theglobalfund.org/search/docs/2GEOH_86_163_gpr.pdf).
- G: Calculated as (0.65\*A)–F.

**Russia**

- A: Tim Rhodes et al., "HIV Transmission and HIV Prevention Associated with Injecting Drug Use in the Russian Federation," *International Journal of Drug Policy* 15 (2004): 1–16; and Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level"; and director general of the Federal Drug Control Service, quoted in "International Narcotics

Control Strategy Report—2007 (Russia),” Embassy of the United States, Moscow, Russia, [http://moscow.usem-bassy.gov/embassy/section.php?record\\_id=report\\_narcotics\\_2007](http://moscow.usem-bassy.gov/embassy/section.php?record_id=report_narcotics_2007).

B: *AIDS Epidemic Update: December 2006*; and “Officially Registered HIV/AIDS Cases in the Russian Federation,” available at “Russian Federation,” AIDS Foundation East-West, 2007, <http://www.afew.org/english/countries/russia.php>.

C: “Epidemiological Fact Sheet: Russian Federation, December 2006” (Geneva: European Union, WHO, UNICEF, UNAIDS, 2006) (2005 data), [http://www.who.int/globalatlas/predefinedReports/EFS2006/EFS\\_PDFs/EFS2006\\_RU.pdf](http://www.who.int/globalatlas/predefinedReports/EFS2006/EFS_PDFs/EFS2006_RU.pdf).

D: Calculated as  $B \times \text{number of adults living with HIV/AIDS}$ , thus,  $0.87 \times 940,000 = 817,800$ ; see *AIDS Epidemic Update: December 2006*.

E: Because of the wide geographic range of HIV prevalence rates among IDUs, a range is reported. Specifically, prevalences reported in the literature are: Moscow: 14%, Volgograd: 3%, Barnaul 9% (all 2003); and Togliatti City 56% (2001). Tim Rhodes et al., “Prevalence of HIV, Hepatitis C and Syphilis among Injecting Drug Users in Russia: A Multi-City Study,” *Addiction* 101, no. 2 (February 2006); pp. 252–266; Tim Rhodes et al., “Explosive Spread and High Prevalence of HIV Infection among Injecting Drug Users in Togliatti City, Russian Federation.,” *AIDS* 16 (2002): pp. F25–F32.

F: Not applicable

G: Calculated as  $(0.65 \times A) - F$ .

#### Ukraine

A: Aceijas et al., “Estimates of Injecting Drug Users at the National and Local Level.”

B: *AIDS Epidemic Update: December 2006*; and “Officially registered HIV cases in Ukraine, 1, January 1987 to 1 October 2007,” Ukrainian AIDS Center and Ministry of Health of Ukraine, <http://www.afew.org/english/countries/ukraine>.

C: “Epidemiological Fact Sheet: Ukraine, December 2006” (Geneva: European Union, WHO, UNICEF, UNAIDS, 2006) (2005 data), [http://www.who.int/GlobalAtlas/predefinedReports/EFS2006/EFS\\_PDFs/EFS2006\\_UA.pdf](http://www.who.int/GlobalAtlas/predefinedReports/EFS2006/EFS_PDFs/EFS2006_UA.pdf); and Ukrainian AIDS Center and Ministry of Health of Ukraine, <http://www.afew.org/english/statistics>; and “HIV/AIDS Surveillance in Europe; End-year report 2004,” EuroHIV, no. 71 (Saint-Maurice: Institute de Veille Sanitaire, 2005), [http://www.euro-hiv.org/reports/report\\_71/pdf/report\\_eurohiv\\_71.pdf](http://www.euro-hiv.org/reports/report_71/pdf/report_eurohiv_71.pdf). Official registered cases reported here do not include cases of mother-to-child transmission.

D: Calculated as  $B \times \text{number of adults living with HIV/AIDS}$ , thus, calculations yield  $0.60 \times 410,000$ ;  $0.70 \times 410,000$ ; see *AIDS Epidemic Update: December 2006*.

E: Robert E. Booth et al., “Predictors of HIV Sero-Status among Drug Injectors at Three Ukraine Sites,” *AIDS* 20, 17 (2006): pp. 2217–2223.

F: Sergiy Dvoryak, “Progress with Opioid Substitution Therapy in Ukraine” (paper presented at the 18th International Conference on Drug Related Harm, Warsaw, Poland, May 13–17, 2007); and “Grant Performance Report—UKR-102-G04-H-00,” The Global Fund, Geneva, August 29, 2007, [http://www.theglobalfund.org/search/docs/1UKRH\\_428\\_228\\_gpr.pdf](http://www.theglobalfund.org/search/docs/1UKRH_428_228_gpr.pdf).

G: Calculated as  $(0.65 \times A) - F$ .

Notes: “Estimated” refers to data reported in the scientific literature, such as UNAIDS estimates of adults living with HIV/AIDS. These data may or may not coincide with officially registered and government reported data. “Officially registered” refers to data that are officially registered and reported by government authorities. IDUs = injection drug users.

\* “Estimated values” in this column refer to the number of adults living with HIV/AIDS as reported by UNAIDS. “Officially registered cases” in this column refer to the cumulative number of HIV cases reported by the government and include adults and children as well as both those who are living with and who have died from the disease. The HIV epidemics in the countries included in this table are relatively new, reflecting fewer deaths caused by AIDS, and the epidemics primarily affect adults. Thus, the number of adults living with HIV/AIDS is presented as an approximation of the cumulative HIV cases.

Country Table 4. Assessment of IDU-Driven Epidemics: Kenya, Nigeria

Country	No. of IDUs	No. of adults living with HIV/AIDS*	Proportion of cumulative HIV cases caused by injection drug use	No. of adults living with HIV/AIDS who are IDUs	Adult HIV prevalence among IDUs	No. of people on maintenance therapy	Gap between no. receiving and needing maintenance therapy
Reference	A	B	C	D	E	F	G
<b>Kenya</b>							
Estimated	30,000 (2006); 37,670 (2004)	1,440,000 (2005)	3,991 of 82,369 incident infections (2005): 4.8%	See D: below	22.9%–50% (2006)	0 methadone 0 buprenorphine	19,500
Officially registered	—	—	—	—	—	—	—
<b>Nigeria</b>							
Estimated	5,000 (2003); 42,000 (1999)	4,310,000 (2005)	<10% (2005)	See D: below	8.9% (2006); 9.8% (2000)	0 methadone 0 buprenorphine	27,300
Officially registered	—	—	—	—	—	—	—

## Sources:

## Kenya

A: Clement Deveau, "Prevention of HIV/AIDS among Drug Users as a Vulnerable Population" (paper presented at the 2006 HIV/AIDS Implementers Meeting of the President's Emergency Plan for AIDS Relief, Durban, South Africa, July 27–28, 2006); Carmen Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level in Developing and Transitional Countries, and Gender and Age Distribution," *Sexually Transmitted Infections* 82, supp. 3 (2006): pp. iii10–iii17; Susan Beckerleg et al., "The Rise of Injecting Drug Use in East Africa: A Case Study from Kenya," *Harm Reduction Journal* 2 (2005): p. 12, <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1236949>; Susan Beckerleg et al., "A Rapid Assessment of Heroin Use in Mombasa, Kenya," *Substance Use & Misuse* 41 (2006): p. 1029; and *World Drug Report 2006* (New York: UN Office on Drugs and Crime, 2006), <http://www.unodc.org/unodc/en/data-and-analysis/WDR-2006.html>. Data from 2004 indicate 0.2% of people 15–64 are opiate users (both IDU and non IDU), numbering approximately 37,670.

B: Estimation: 140,000 deaths from AIDS +1.3 million total HIV infections (2005 data) using "Epidemiological Fact Sheet: Kenya, 2006 Update," (Geneva: European Union, WHO, UNICEF, UNAIDS, December 2006), [http://www.who.int/globalatlas/predefinedReports/EFS2006/EFS\\_PDFs/EFS2006\\_KE.pdf](http://www.who.int/globalatlas/predefinedReports/EFS2006/EFS_PDFs/EFS2006_KE.pdf); also "Kenya: Working Together at Local Level, A Case Study," Alliance of Mayors' Initiative for Community Action on AIDS at Local Level, UN AMICAALL Partnership Programme, Kenya, December 2005, [http://209.85.165.104/search?q=cache:XuxiPZ4wsPLJ:www.amicaall.org/publications/ICASAFinal\\_reports/ICASA\\_CaseStudyKenyaFinal.doc+kenya+hiv+cumulative&hl=en&ct=clnk&cd=6&gl=us](http://209.85.165.104/search?q=cache:XuxiPZ4wsPLJ:www.amicaall.org/publications/ICASAFinal_reports/ICASA_CaseStudyKenyaFinal.doc+kenya+hiv+cumulative&hl=en&ct=clnk&cd=6&gl=us).

C: Deveau et al., "Prevention of HIV/AIDS among Drug Users as a Vulnerable Population."

D: Not currently estimable.

E: Richard Needle, "Injection Drug Use in Sub-Saharan Africa: Emergence of an Under-Recognized HIV Transmission Risk" (paper presented at the 2006 HIV/AIDS Implementers Meeting of the President's Emergency Plan for AIDS Relief, Durban, South Africa, July 27–28, 2006); David Ndetel, "Study on the Assessment of the Linkages between Drug Abuse, Injecting Drug Abuse and HIV/AIDS in Kenya: A Rapid Situation Assessment 2004" (Nairobi: United Nations Office on Drugs and Crime, 2005); Maurice Odek-Ogunde, "World Health Organization Phase II Drug Injecting Study: Behavioural and Seroprevalence (HIV, HBV, HCV) Survey among Injecting Drug Users in Nairobi" (Nairobi: OMS, 2004); Lynn E. Sullivan et al., "HIV and Drug Use in Kenya: Assessing the Integration of HIV and Substance Abuse Treatment Services" (presentation, 2005), [http://cira.med.yale.edu/events/asd2005/panels/asd2005\\_sullivan.pdf](http://cira.med.yale.edu/events/asd2005/panels/asd2005_sullivan.pdf). Note that other sources cited above report even higher HIV prevalence among IDUs in Kenya: 52.5% in Nairobi (2004) and 68%–88% (2005).

F: Not applicable

G: Calculated as  $(0.65 * A) - F$ .

## Nigeria

A: Edna Oppenheimer et al., "Treatment and Care for Drug Users Living with HIV/AIDS" (London: Centre for Research on Drugs and Health Behaviour, 2003), [http://www.ahrn.net/library\\_upload/uploadfile/Treatment\\_care\\_for\\_DUs.pdf](http://www.ahrn.net/library_upload/uploadfile/Treatment_care_for_DUs.pdf); Aceijas et al., "Estimates of Injecting Drug Users at the National and Local Level"; estimated number of IDUs calculated as  $200,000 * .21 = 42,000$  (200,000 refers to the total number of opiate users, injection and noninjection, as reported in *World Drug Report 2006* (New York: UN Office on Drugs and Crime, 2006), <http://www.unodc.org/unodc/en/data-and-analysis/WDR-2006.html>). The proportion of opiate users who inject, 21%, was extrapolated from data reported by

Sarah Dewing et al., "Review of Injection Drug Use in Six African Countries: Egypt, Kenya, Mauritius, Nigeria, South Africa and Tanzania," *Drugs: Education, Prevention and Policy* 13, no. 2 (2006): pp. 121–137. Note that the lower number in the cell, 5,000 IDUs, refers to estimates from the literature for the capital, Lagos, only.

B: "2005 National HIV Seroprevalence Sentinel Survey," National AIDS/STDs Control Programme (NASCP), Federal Ministry of Health, Abuja, <http://www.nigeria-aids.org/pdf/2005SentinelSurvey.pdf>, reported 2.86 million adults living with HIV/AIDS and 1.45 million cumulative AIDS deaths.

C: "HIV & AIDS in Nigeria," AVERT, 2007, <http://www.avert.org/aids-nigeria.htm>.

D: Not currently estimable.

E: Needle et al., "Injection Drug Use in Sub-Saharan Africa"; Moruf L. Adelekan et al., "Injection Drug Use and Associated Health Consequences in Lagos, Nigeria: Findings from WHO Phase II Injection Drug Use Study," in *Third Annual Meeting Report, Global Research Network on HIV Prevention in Drug Using Populations* (Durban, South Africa: U.S. National Institute on Drug Abuse, July 5–7, 2000): pp. 27–40.

F: Not applicable

G: Calculated as  $(0.65 * A) - F$ .

Notes: "Estimated" refers to data reported in the scientific literature, such as UNAIDS estimates of adults living with HIV/AIDS. These data may or may not coincide with officially registered and government reported data. "Officially registered" refers to data that are officially registered and reported by government authorities. IDUs = injection drug users.

\* "Estimated values" in this column refer to the number of adults living with HIV/AIDS as reported by UNAIDS. "Officially registered cases" in this column refer to the cumulative number of HIV cases reported by the government and include adults and children as well as both those who are living with and who have died from the disease. The HIV epidemics in the countries included in this table are relatively new, reflecting fewer deaths caused by AIDS, and the epidemics primarily affect adults. Thus, the number of adults living with HIV/AIDS is presented as an approximation of the cumulative HIV cases.

# About the Authors

**David A. Fiellin, M.D.**, is an associate professor of medicine at Yale University School of Medicine. Dr. Fiellin has focused his scholarly work on the interface of primary care, substance abuse, and HIV. He conducts research on the transfer of treatment strategies, including opioid agonist maintenance with methadone and buprenorphine, from specialized settings to office-based, primary care, and HIV specialty settings. He is medical director of the Physician Clinical Support System for buprenorphine, he codirects the Veterans Aging Cohort Study on HIV and Alcohol, and he is coinvestigator on the Buprenorphine in HIV Primary Care National Evaluation and Support Center. He is a member of the Technical Guideline Development Group, Department of Mental Health and Substance Abuse, of the World Health Organization. Dr. Fiellin is coeditor of the *Principles of Addiction Medicine*, 4th ed.

**Traci Green, M.Sc.**, is a fourth-year doctoral student at the Yale School of Public Health, where she is studying drug abuse and HIV epidemiology. She is a graduate of Tufts University and received her master's of science degree in epidemiology and biostatistics from McGill University. Before pursuing doctoral studies, she conducted pharmaco-economic and outcomes research, worked as a biostatistician designing and analyzing preventive interventions, and helped design a national surveillance system for prescription opioid abuse. Her research interests pertain to harm reduction and HIV/AIDS epidemiology, with a focus on injecting drug users, prescription opioid abuse, and women. She received a National Research Service Award predoctoral fellowship from the National Institute on Drug Abuse for her doctoral training and is an affiliated scientist at the Yale Center for Interdisciplinary Research on AIDS.

**Robert Heimer, Ph.D.**, is professor of epidemiology and public health and of pharmacology at the Yale University School of Medicine and is director of the Interdisciplinary Research Methods Core at Yale's Center for Interdisciplinary Research on AIDS. His major research efforts include scientific investigation of syringe exchange programs, HIV survival in syringes, hepatitis B vaccination, hepatitis C transmission risks, overdose prevention and resuscitation, and pharmacological treatment of opiate addiction. His research combines laboratory, operational, behavioral, and structural analyses to evaluate the effectiveness of intervention programs in preventing the negative medical consequences of injection drug use.

# About the CSIS Task Force on HIV/AIDS

The CSIS Task Force on HIV/AIDS seeks to build bipartisan consensus on critical U.S. policy initiatives and to emphasize to senior U.S. policymakers, opinion leaders, and the corporate sector the centrality of U.S. leadership in strengthening country-level capacities to enhance prevention, care, and treatment of HIV/AIDS. J. Stephen Morrison, director of the CSIS Africa Program, manages the overall project, in cooperation with the CSIS Freeman Chair in China Studies, the CSIS Russia/Eurasia Program, and the CSIS South Asia Program.

The honorary cochairs of the task force are Senator Russell Feingold (D-Wis.) and Senator John E. Sununu (R-N.H.). Former senator William H. Frist remains an active partner of the task force. The CSIS Task Force on HIV/AIDS is funded principally by the Bill and Melinda Gates Foundation, with project support and input from the Henry J. Kaiser Family Foundation, the David and Lucile Packard Foundation, and Merck and Co. The task force outlines strategic choices that lie ahead for the United States in fighting the global HIV/AIDS pandemic and comprises a core network of experts drawn from Congress, the administration, public health groups, the corporate sector, activists, and others. This panel helps to shape the direction and scope of the task force and disseminate findings to a broader U.S. audience.

Now in its seventh year, the task force's principal focus is on two critical issues: first, raising the profile and improving the effectiveness of U.S. support to global prevention efforts and facilitating a bipartisan discussion of global HIV prevention policy; and second, examining how U.S. leadership can facilitate the sustainability of HIV/AIDS programs, both in terms of resource flows and in situating HIV/AIDS responses within a broader strategy to address gaps in gender equity, health infrastructure, human capacity, and international collaboration on global health. The task force continues to engage on the emerging dynamics of the epidemic in Russia, China, and India with recent delegation visits in mid-2007.

