

We Can Stop the HIV/AIDS Epidemic in New York City

Thomas R. Frieden, MD, MPH
 Commissioner, New York City Department
 of Health and Mental Hygiene
 New York, New York

SUMMARY BY TIM HORN
 EDITED BY SCOTT KELLERMAN, MD, MPH
 AND LUCIA V. TORIAN, PhD

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ON DECEMBER 1, 2005—WORLD AIDS DAY—A THOUGHT-PROVOKING commentary was published in the “Sounding Board” section of the *New England Journal of Medicine* (*NEJM*) arguing that the United States has long been lacking a comprehensive public health approach to combat HIV/AIDS (Frieden, 2005). “The failure to apply standard disease-control methods undermines society’s ability and responsibility to control the epidemic,” the authors wrote. “Now, given the availability of drugs that can effectively treat HIV infection and progress on antidiscrimination initiatives, perhaps society is ready to adopt traditional disease-control principles and proven interventions that can identify infected persons, interrupt transmission, ensure treatment and case management, and monitor infection and control efforts throughout the population.”

The commentary was written by Dr. Thomas Frieden and his colleagues at the New York City Department of Health and Mental Hygiene (DOHMH). When Dr. Frieden spoke at the December 2004 PRN meeting, he outlined the various challenges that exist in terms of stemming the spread of HIV in New York City. With the publication of the *NEJM* commentary, and a return visit to PRN this past December, Dr. Frieden presented some of the proactive—and admittedly controversial—plans being developed by the DOHMH to limit the HIV/AIDS epidemic in New York, home to one in six of all U.S. patients with AIDS.

therapy, we’ve seen a doubling over the past ten years. The increasing number of people living with HIV and AIDS is a direct result of the decreased number of people dying of AIDS over the past ten years.”

Since 2001 in New York City, HIV diagnoses are down by one-third, AIDS diagnoses are down by one-quarter, and AIDS deaths are down 18%. What’s more, Dr. Frieden noted, HIV testing has increased 20% over the past two years. “Testing among correctional populations has increased 150%,” he added. “The introduction of rapid testing has also brought a great deal of progress. We’ve long had a problem with people who get tested and don’t return for their results. With rapid testing, this number has fallen dramatically.”

Between 2003 and 2004, the age-adjusted death rate per 1,000 people living with AIDS declined 21.8% for HIV-related causes and 16.3% for non-HIV-related causes (see Figure 1).

The work, however, is far from over. According to epidemiologic data, New York City remains the epicenter of the HIV/AIDS epidemic in the United States. It has the highest AIDS case rate in the United States; while it is home to less than 3% of the U.S. population, the city accounts for one in six of national AIDS cases. The AIDS case rate in New York City is 60 times the national target for 2010, four times the U.S. average, and higher than any other city in the U.S.

Dr. Frieden also pointed out that of the 3,700 New York City residents diagnosed with HIV in 2004, approximately 28% of them learned they were

The Present

AS OF MARCH 31, 2005, A TOTAL of 96,707 New Yorkers have been diagnosed, reported, and are known to be living with HIV or AIDS, including 61,481 people who have received an AIDS diagnosis and 34,248 who are infected with HIV but have not met the immunologic or clinical case definition for AIDS. Of central concern to the DOHMH is the estimate that there are another 20,000 New York City residents who are HIV-positive but remain unaware of their serostatus.

The number of people living with AIDS in New York City has also continued to climb steadily. “Back in 1995,” Dr. Frieden noted, “we had approximately 30,000 people living with AIDS. With the advent of combination antiretroviral

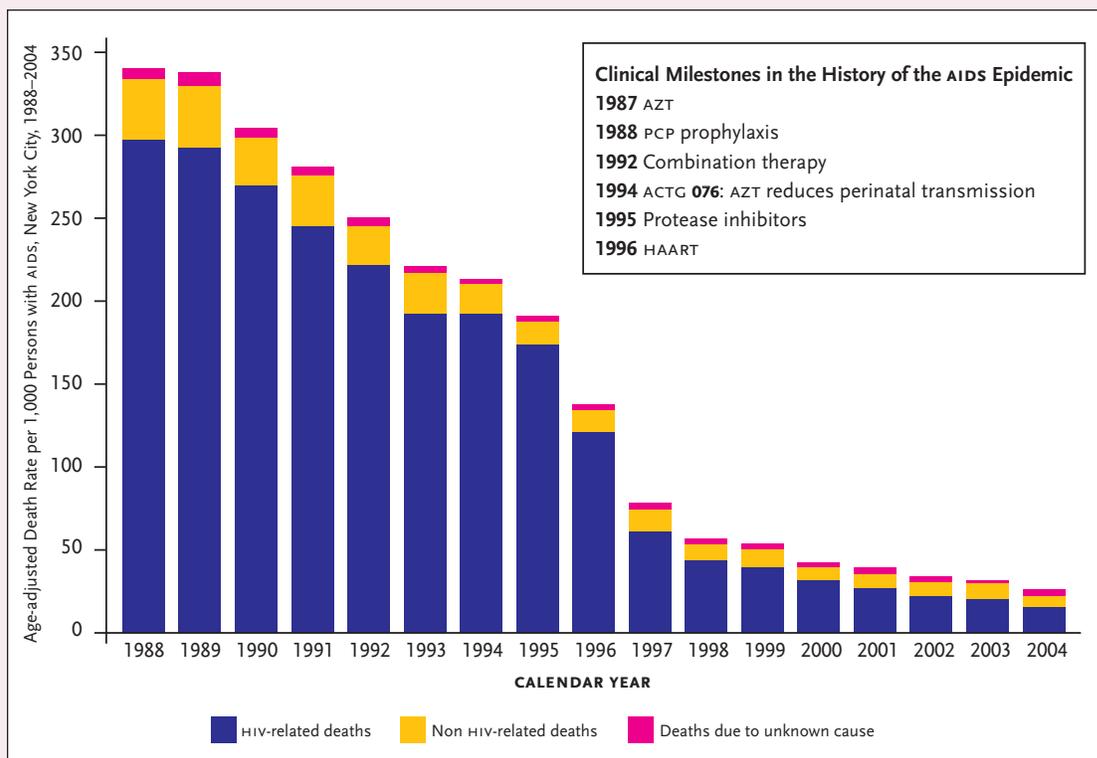


FIGURE 1. Age-Adjusted Death Rate Per 1,000 Persons with AIDS, New York City, 1988–2004

Source: New York City Department of Health and Mental Hygiene

HIV-positive at the time of their AIDS diagnosis. “That’s 1,038 people who had likely been in and out of some place where we could have touched them and offered them testing much earlier in their infection,” he said, “whether it was an emergency department, correctional facility, a social service agency, or a community organization. This really is an indictment of our system. The fact that people didn’t know their status means that they didn’t have a chance to get treatment that could have prevented illness and progression to AIDS for a considerable period of time. They were also much less likely to take steps to protect their partners.”

There are glaring epidemiologic disparities to consider as well. More than 80% of new AIDS diagnoses and deaths in New York City are among African Americans and Latinos. And, as has been documented nationally, an increasing proportion of new AIDS cases are diagnosed in women, most notably women of color. Black male residents of New York City, who are nearly three times more likely to be living with HIV/AIDS than other New Yorkers, have been hit especially hard by the epidemic. Approximately one in 14 black men between the ages of 40 and 54 is living with HIV/AIDS—seven times the rate of other New Yorkers. The only groups with higher infection rates are men who self-identify as gay or bisexual (one in ten are estimated to be living with HIV/AIDS) and injection drug users (one in seven are estimated to be living with HIV/AIDS).

The Future

“IF WE CONTINUE TO DO WHAT WE’VE ALWAYS DONE,” DR. FRIEDEN remarked, “we will continue to get the results we’ve always gotten. In turn, we’re proposing some changes. These changes include more consistent application of proven public health principles that have successfully controlled other diseases, such as case finding and surveillance, interruption of transmission, systematic treatment and case management, and population-based monitoring and evaluation.” A comparison of the public health approach to HIV infection and other infectious diseases is provided in Table 1.

Increased Testing

IN THE DOHMH COMMENTARY PUBLISHED IN *NEJM*, DR. FRIEDEN AND HIS colleagues argue that our outdated approach to HIV screening means that we not only fail to identify infected patients promptly and thus allow the epidemic to flourish, we may also be perpetuating HIV-related stigma by targeting screening only to those perceived to be at risk. “HIV testing needs to become a routine part of medical care,” he said in December. “We want HIV testing to be similar to routine screening for other treatable conditions.”

Table 1. Comparison of Public Health Approach to HIV Infection and Other Infectious Diseases

| Intervention | Other Infectious Diseases | HIV Infection |
|--|--|--|
| Case finding and surveillance | | |
| Named reporting on all with condition | Standard for all other reportable infectious diseases | Only recently implemented in many areas; still not implemented in some |
| Availability of routine testing in healthcare settings | Standard for all other reportable infectious diseases | Widely recommended and cost-effective but often not available |
| Notification and testing of partners by public health programs | Standard (e.g., testing and treatment of contacts exposed to <i>Neisseria meningitides</i> , acute hepatitis B, syphilis, tuberculosis) | Wide variation in proportion of contacts identified, contacted, and tested among jurisdictions |
| Interruption of transmission | | |
| Specific to mode of transmission | Prevention of many transfusion-related pathogens possible; vaccines widely used; condoms underused; prevention of other sexually transmitted infections | Transfusion-related and perinatal transmission largely controlled in the United States; vaccines not available; condoms neither widely available nor use strongly promoted; use of nonsterile needles by most injection-drug users |
| Systematic treatment and case management | | |
| Monitoring by public health agencies to determine whether infected contacts are receiving appropriate care and treatment | Standard (outbreak-control method used for <i>N. meningitides</i> cases in schools or daycare settings, for influenza in other community settings, and for all tuberculosis-infected contacts) | Generally not done |
| Case management by public health departments to ensure effective linkage of affected patients to care | Standard; case manager accountable for patients’ outcome (e.g., in pregnant women with hepatitis B or patients with tuberculosis) | Rarely done; duplication of services between community-based and government case management |
| Provision of social services to patients | Done as incentive to ensure treatment; was essential to control multidrug-resistant tuberculosis | Linkage of social services to care and treatment in few areas |
| Populated-based monitoring | | |
| Contact treating physicians by public health agencies if patients have inadequate response to treatment | Standard for some diseases | Not done; treatment complex and lifelong |
| Monitoring of trends in drug resistance among previously untreated patients | Standard for sexually transmitted diseases, tuberculosis, some bacterial infections | Not routine except on a research basis (mandated recently in New York State) |

Source: Frieden TR, Das-Douglas M, Kellerman SE, et al. **Applying public health principles to the HIV epidemic.** *N Engl J Med* 353(22):2397-402, 2005.

TABLE 2. Comparison of Conventional and Rapid Tests to Detect HIV Antibody

| | Conventional | Rapid |
|---|--------------------|-----------------------------------|
| Specimen Required | Blood (phlebotomy) | Oral swab or blood (finger stick) |
| Time to Result | 3–10 days | 20 minutes |
| Sensitivity | 99.9%* | 99.3–99.6%** |
| Specificity | 99.9%* | 99.8–100.0%** |
| Cost | ELISA \$20 | Test kit \$14 |
| Tested persons who receive their test results | Approximately 70% | 99.3% |

* Sensitivity/specificity from National Institute of Allergy and Infectious Diseases available at www.niaid.nih.gov/dir/labs/lir/hiv/packet1.htm.

** Sensitivity/specificity data from OraQuick literature, available at www.oraquick.com/uploaded/346.pdf?134&sec=2&subsec=2, accessed January 10, 2006.

Even though routine, voluntary testing is widely recommended and cost-effective, it has not occurred. In New York City in 2002, only one-third of adults who had had three or more sex partners in the preceding year—and only half of men who had sex with men who had had three or more partners—had been tested for HIV in the previous 18 months.

To be clear, Dr. Frieden stressed that he is opposed to testing without informed consent. “But I think the laws in New York State that require a separate written consent and explicitly detail what is supposed to be said to a patient before they are tested have outlived their usefulness. These laws were rational when they were first enacted, when there was no treatment for HIV, but this is no longer the case. This will require legislative change in Albany. However, there are some who would oppose that. I have to say that when I go out to minority communities experiencing the brunt of the epidemic, I don’t hear ‘how dare you do this.’ I hear ‘how dare you not have done this ten years ago.’”

Dr. Frieden also stressed that testing needs to be more readily available in non-clinical and community settings. “Plus,” he added, “rapid testing should be further expanded. However, testing for HIV isn’t enough. Linking patients to services and to treatment is also necessary.” A basic comparison of conventional and rapid tests to detect HIV antibodies is provided in Table 2.

Linkage to primary care for those who test positive is a key goal of the DOHMH. This year, the DOHMH will be issuing \$4 million in new funding to a variety of HIV testing programs. “We will be requiring that for every person who tests positive, the program is accountable for reporting to us whether that person began receiving HIV primary care within 30 days. That will be the basis for assessing success and continued funding, and we will verify the data that is reported.”

Early HIV Diagnosis is Crucial

EFFORTS SHOULD BE STEPPED UP TO DIAGNOSE HIV AS EARLY IN THE course of disease as possible. Early diagnosis enables effective medical treatment and access to social services. This can help suppress viral load when treatment is clinically needed, help prevent hospitalizations, aid in the prevention of drug resistance, and prolong life and improve quality of life.

“Early diagnosis can also help reduce risk of HIV transmission,” Dr. Frieden said. “This reduces spread of infection for two reasons. First, someone who is HIV positive and knows their status will, on average, reduce risky behavior by about half. Granted, we can all point to examples

of individuals who do not reduce their risky behavior after learning they’re positive, but if we’re thinking about trying to stop an epidemic on a community basis, a 50% reduction overall is actually a good result.

“We also know from studies that suppression of viral load below 1,500 copies/mL is associated with a drastic reduction in the likelihood of at least heterosexual transmission,” he said, referring to the pivotal prevention study conducted by Dr. Thomas Quinn and his colleagues in Uganda’s rural Rakai district (Quinn, 2000). “Reducing viral load is an important factor to consider.”

Expanding Prevention

EXPANDING PREVENTION PROGRAMS IS A critically important component of a revitalized public health approach to the HIV/AIDS epidemic. Condom availability and distribution is one such program. Condoms have consistently been proven to substantially reduce HIV transmission. However, they are not widely available or strongly promoted. Epidemiologic data suggest that condoms are used infrequently in high-risk sexual encounters.

“We’re now distributing a million condoms a month through our website,” Dr. Frieden proudly pointed out. “This program is on our homepage. Any New York City organization can order condoms from us. The right price for a condom, even in this society, is free, at least for those at risk. We would like to see them widely available and, of course, used.”

Syringe exchange programs (SEPs) are another vital program. Most intravenous drug users (IDUs) in the United States continue to use nonsterile needles. According to DOHMH estimates, there are approximately 150,000 active IDUs in New York City. Approximately a third of them are believed to have shared needles within the past six months. SEPs have been documented to decrease disease transmission and to save lives, with no evidence of increases in crime or drug use.

SEPs have been operating in New York City for more than a decade, and the NYC DOHMH is working to expand these programs into neighborhoods with demonstrated need for them. “I really salute the work that Allan Clear and the Harm Reduction Coalition” [see: “Clinical Approaches to Substance Use and Abuse in Primary Care: Treatment and Harm Reduction,” beginning on page 22], Dr. Frieden said. “SEPs are very effective. The number of New Yorkers who are diagnosed with AIDS from injection drug use has fallen from nearly 6,000 ten years ago to less than 800 last year. It’s a real success story, although of course more remains to be done. It reflects more testing, greater access to SEPs, and real progress in reducing injection drug use-associated HIV.”

Prevention With Positives (PWP) is a relatively new program that mandates specific prevention efforts focusing on those who are already infected. “Every new infection starts with someone who is already infected,” he said. “It is potentially more effective to target 100,000 HIV-positive New Yorkers than 8 million who are uninfected. If all HIV-positive individuals knew their status and participated in PWP, further spread could be stopped.”

HIV Stops with Me is a social marketing campaign funded by the CDC that aims to reduce the stigma associated with HIV and to acknowledge the role that people who are positive have in ending the epidemic. “I think this campaign has the potential to be very effective. I would hope that all clinicians who work with people living with HIV will reassess and

INVESTIGATING REPORTS OF EXCESSIVE FALSE-POSITIVE ORAL FLUID RAPID HIV TESTS

OVER THE PAST SEVERAL MONTHS, THERE HAVE BEEN NUMEROUS mainstream media reports regarding an unusually high number of false-positive HIV-antibody test results using the oral-based OraQuick rapid assay (the reliability of the blood-based OraQuick assay hasn't been disputed). Dr. Bernard Branson, a former PRN presenter, and his colleagues at the U.S. Centers for Disease Control have investigated these reports and reported their findings at the 13th Conference on Retroviruses and Opportunistic Infections in Denver.

Dr. Branson's group looked at three testing sites in New York City that have reported excessive false-positives (cases), along with seven sites in the city that have not reported excessive false-positive test results (controls). And in San Francisco, his group looked at one site with excessive false-positive and 11 sites without excessive false-positive test results.

Using November 2005 as an example, 1,581 individuals were tested throughout the month at the three case clinics in New York City. There were 32 false-positives in total, yielding a testing specificity of 98%. Among the seven control testing sites, 2,164 people were tested. There were three false-positive test results, putting the specificity at 99.9%. In San Francisco during the same month, 160 oral-based tests were conducted at the case clinic, six of which turned out to be false-positive (yielding a specificity of 96.3%). In the 11 control clinics, 551 tests were conducted, with five false-positive test results (yielding a specificity of 99.1%).

The FDA minimum threshold for specificity is 98%. Dr. Branson's group concluded that the false-positive results are not likely a limitation of the oral-based test itself, but rather attributed to site-specific factors, including the possibility of procedural errors. The CDC is still looking into the discrepancies. 

Source: Branson B, Wesolowski L, Delaney K. et al. Investigation of reports of excessive false-positive oral fluid rapid HIV tests [Abstract 34LBb]. 13th Conference on Retroviruses and Opportunistic Infections, Denver, 2006.

readdress risk and risk behaviors with their patients on a regular basis. It is well documented, for a broad variety of problems—whether it's tobacco use, drug use, alcohol use, or unsafe sex—that brief, personalized, and motivational counseling by the physician drastically improves the likelihood of success, and it doesn't need to take more than three minutes on a regular basis. Clinicians have a lot of power in this regard.”

Systematic Treatment and Case Management

IN THEIR *NEJM* ARTICLE, DR. FRIEDEN'S GROUP ARGUES THAT STANDARD public health approaches that have either not been applied—or have been applied inconsistently—to HIV prevention and control efforts include public health monitoring to ensure that all HIV-infected patients receive quality care, providing public health support through referrals and outreach for patients who are not receiving effective treatment, monitoring CD4+ cell counts and viral loads to identify patients who may be candidates for treatment or who are lost to care, and assisting clinicians with outreach and partner notification.

Although HIV infection remains incurable, AIDS is now a chronic disease for those fortunate enough to receive effective treatment. “One of the most startling facts about our city is that, if you're HIV-positive and you live in Chelsea, you have twice the likelihood of surviving as if you're HIV-positive and you live in the South Bronx, central Harlem, or central Brooklyn,” Dr. Frieden noted. “This is a direct result of our not ensuring that all patients get the quality care that can be provided and is needed.

“I come to this from the perspective of being an infectious disease physician. There are differences between HIV and TB,” he continued, “but when it comes to tuberculosis, the Health Department monitors treatment, it monitors drug resistance, it monitors whether patients are responding to treatment. If they're not, the Health Department intervenes with doctors and with patients to try to provide additional services, to ensure that patients are optimally treated.”

Dr. Frieden stressed that he doesn't think that mandatory testing or mandatory treatment have a role in HIV. “But I do think there are other aspects of a more traditional public health response that could make a huge difference in helping people get better care. We're currently prevented from doing this by New York State law.”

DOHMH monitoring of patients' CD4+ cell counts and viral loads is one such planned initiative. “While I recognize that treatment-experienced patients and others may quite rationally decide with their doctors to not try to completely suppress viral load, viral load—on a population basis—has the potential for monitoring how we're doing with treatment. It will allow us to monitor or identify patients who are not receiving effective care, to monitor trends in drug resistance, potentially to identify clusters of disease, to provide clinicians and patients not receiving care with more intensive services, and to identify indicators of transmission interruption so we know what's working.”

Beyond monitoring of treatment, the DOHMH is also interested in successfully linking HIV-positive patients to effective counseling and case management. As is reviewed in the *NEJM* article, the use of effective treatment that incorporates risk-reduction counseling, including distribution of condoms, promotion of the use of condoms and clean needles, and treatment for substance abuse and mental health conditions, would improve individual outcomes and reduce disease transmission. However, this remains uncommon.

As for case management, it is prominent in the HIV service delivery system, yet few if any jurisdictions attempt to ensure that every patient is offered effective treatment and prevention services. Public health interventions to monitor and improve HIV case management can be effective, but are rare.

Accountability

FOR NEW YORK CITY TO RESPOND FULLY AND EFFECTIVELY TO THE HIV/AIDS epidemic—ensuring the health of those infected and putting various prevention strategies into practice—accountability is going to be essential. “All parties must be held accountable,” Dr. Frieden said. “This includes accountability within the government, within the healthcare system, among community-based organizations, and among people living with HIV and AIDS.”

With this accountability comes a commitment to provide a full range of high-quality services to all who need them, including high-quality case management; participation in treatment, housing, social services, and substance abuse programs; and no reduction in support for services, but a commitment to use resources more intelligently.

Conclusion

AS SUMMARIZED BY DR. FRIEDEN, PROVEN, EXISTING INTERVENTIONS could prevent one-half to two-thirds of HIV infections in New York City. Further reductions in transmission are also feasible through expanded community-based prevention efforts, prevention counseling for individual patients, supporting patients to facilitate return to care, and improving availability of effective treatment.

The DOHMH is aware that its expanded public health initiatives may provoke controversy. “Some religious and political groups oppose effective prevention measures,” Dr. Frieden said. “There are also some advocacy groups that are opposed to expansion of testing. We also have some in the healthcare community that oppose increased monitoring of treatment efficacy. But the world—and the HIV epidemic—has changed over the past 25 years, and I think that our approaches to HIV/AIDS must also change. If we fully apply public health principles, we can improve the

health of people living with HIV/AIDS and prevent thousands of New Yorkers from becoming infected with HIV in the next decade.”

A detailed report of the New York City Commission on HIV/AIDS, published in October 2005, specifically outlines recommendations to make New York City a national and global model for HIV/AIDS prevention, treatment, and care. The complete report can be accessed at: <http://www.nyc.gov/html/doh/downloads/pdf/ah/ah-nychiv-report.pdf>.

References

Frieden TR, Das-Douglas M, Kellerman SE, et al. Applying public health principles to the HIV epidemic. *N Engl J Med* 353(22):2397-402, 2005.

Quinn TC, Wawer MJ, Sewankambo N, et al. Viral load and heterosexual transmission of human immunodeficiency virus type 1. Rakai Project Study Group. *N Engl J Med* 342(13):921-9, 2000.

NEW YORK STATE'S EXPANDED SYRINGE ACCESS PROGRAM (ESAP)

SYRINGE EXCHANGE PROGRAMS (SEPS) ARE VITAL COMPONENTS OF public health initiatives to reduce the transmission of HIV and other blood-borne infections. In New York State there is also the Expanded Syringe Access Program (ESAP), which permits anyone 18 years of age or older to purchase up to 10 sterile syringes at a time without a medical prescription. The program went into effect on January 1, 2001, and will remain active until September 1, 2007.

Licensed pharmacies, healthcare facilities, and healthcare practitioners authorized to prescribe the use of hypodermic needles or syringes may provide needles or syringes pursuant to this program, as long as they have registered with the New York State Department of Health. As of January 31, 2005, there were 2,789 registered ESAP providers throughout the state, more than a third of which were located in New York City.

Successes

THE NEW YORK STATE ESAP IS ACTUALLY A TEMPORARY DEMONSTRATION program, based on changes to the Public Health law by the New York State Legislature in 2000. The law mandates an independent evaluation of the program. Encouragingly, studies evaluating changes in syringe sharing since the inception of the ESAP have yielded positive data.

One study, published in the *Journal of Acquired Immune Deficiency Syndromes* this past summer, evaluated data from three projects that recruited 1,181 injection drug users (IDUs) into studies in Harlem and the Bronx from January 2001 through June 2003 (Pouget, 2005). The investigators reported that receptive syringe sharing decreased significantly, from 13.4% in the first quarter to 3.6% in the final quarter. The percentage of IDUs who obtained their most recent injection syringe from an ESAP source—primarily pharmacies—increased from 7.5% in the first quarter to 25% in the last quarter. Multiple logistic regression analysis found that variables associated with less receptive sharing were syringe exchange and ESAP syringe sources, as well as time since ESAP inception. Female gender and white race/ethnicity were significantly associated with more receptive sharing.

The investigators concluded that increasing use of ESAP syringe sources was associated with a decline in receptive syringe sharing. SEPs providing free syringes remained the most common source of new syringes among the subjects evaluated. With respect to the cost of syringes through the ESAP, the investigators suggested further research regarding the potentially serious barrier that the cost of syringes may represent for many IDUs. “Increasing SEP access and lowering the cost of syringes at pharmacies may lead to greater reductions in unsafe injecting practices, especially for IDUs with low incomes,” the authors wrote.

Looking Forward

AT THE PRESENT TIME, THE NEW YORK CITY COMMISSION ON HIV/AIDS recommends reviewing and making permanent ESAP legislation to further expand ESAPs at licensed pharmacies, healthcare facilities (such as Article 28 facilities and affiliated CBOs, as well as Health and Hospitals Corporation facilities) and healthcare practitioners, as well as providing social marketing about ESAPs and to encourage and promote participation in the program.

The Commission on HIV/AIDS is also recommending expansion of training programs that educate law enforcement officials about appropriate treatment of participants in SEPs and ESAPs, including not arresting people for possession of syringes, as well as increased support for low-threshold substance-use treatment that incorporates a harm reduction approach.

For additional information on the New York State ESAP and to register to provide syringes under ESAP, please visit: http://www.health.state.ny.us/diseases/aids/harm_reduction/needles_syringes/esap/overview.htm.

References

Pouget ER, Deren S, Fuller CM, et al. Receptive syringe sharing among injection drug users in Harlem and the Bronx during the New York State Expanded Syringe Access Demonstration Program. *J Acquir Immune Defic Syndr* 39(4):471-7, 2005.