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# FOCUS

## A Guide to AIDS Research and Counseling

## Lessons from Primary HIV Infection

Frederick Hecht, MD and Christopher Pilcher, MD

Soon after the HIV antibody test was developed, it became clear that individuals who had recently been infected were sometimes symptomatic. Their flu-like symptoms became known as “acute retroviral syndrome,” and the overall initial period of infection as “acute” or “primary” HIV infection. Now the term “primary HIV infection” usually describes the initial period in which infection occurs and immune responses develop, roughly spanning the first six months of infection. “Acute HIV infection” now commonly describes the period prior to and within the first few weeks of antibody seroconversion. Yet there is still some lack of consensus in the scientific community regarding the period to which each of these terms refers, and the terms “acute infection” and “primary infection” are sometimes used interchangeably.

It is increasingly clear that primary HIV infection is a critical period for HIV prevention and disease development, and may be an important period for treatment. Recent advances in HIV testing may make this primary infection diagnosis more accessible.

### What Is Primary HIV Infection?

A picture of the typical sequence of events in early HIV infection has emerged from a combination of studies of simian immunodeficiency virus infection in non-human primates and studies in people with HIV. After exposure, HIV probably spreads from the initial point of entry to local lymph nodes over a period of one to two days. A few days later, virus replication in the lymph nodes leads to spread of HIV throughout the body via the bloodstream. HIV replication ramps up rapidly, with viral loads doubling in less than half a day.<sup>1</sup> Symptoms of acute HIV infection typically develop one to three weeks after initial infection.<sup>2</sup> Common symptoms include

fever, rash, sore throat, severe fatigue, and joint and muscular pain. None of these symptoms clearly distinguish HIV from other viral illnesses. However, fever is usually seen in 80 percent to 90 percent of people with symptomatic HIV, so when fever is absent, the presence of acute HIV is less likely.<sup>3</sup> Rash is not common in adults with other viral infections, so its presence is one of the most specific symptoms for distinguishing acute HIV from other viral infections, but it is present in only about half of people with symptomatic acute HIV infection.<sup>3</sup>

During acute HIV, viremia (the amount of virus in the blood) is very high, and viral load levels above 500,000 copies per milliliter are common. Acute HIV symptoms tend to coincide with high levels of viremia and probably are part of the initial immune response to the new infection. As immune responses develop, viral load declines dramatically and, within a few months, typically reaches a characteristic range. This range, or “set point,” can predict disease progression: people with a low viral load set point usually remain healthy for years, while those with high viral load set points have a substantial risk of becoming sick within five years if HIV is not treated.

### Benefits of Identifying Primary HIV

There are several reasons why the period of primary infection may be a particularly important one for HIV transmission and treatment. First, greater risk of HIV transmission is correlated with higher viral load levels,<sup>4</sup> such as those that occur during the first two months of infection. Second, because newly HIV-positive people have recently engaged in behaviors that put them at risk for acquiring HIV, they may continue to engage in such behaviors with other partners, putting these partners at risk. Third, newly HIV-positive people typically do not know that they have HIV. In fact, they may assume that they are HIV-negative based on recent test results (performed either before infection or before the HIV antibody test becomes “positive”).

# Editorial: Window of Opportunity?

Michelle Cataldo, LCSW Clinical Editor

For many years, HIV providers have known that a key barrier to successful prevention efforts with HIV-positive people is that so many are unaware of their status. More recently, researchers estimated that up to one-half of all new HIV infections are transmitted by individuals who had themselves been recently infected.

Yet, in this early stage of infection, known as “acute” infection, the individual was less likely to know he or she was infected, since HIV antibody tests would not produce a seropositive result until two weeks or more after the exposure. Ironically, during this period, often referred to as “the window period,” an individual who receives an HIV-negative test result is, in fact, highly infectious.

Over the last several years, as our understanding of the importance of the period of acute infection has grown, the technology

for identifying acute infection has improved. With the advent of the new tests and techniques described by both Frederick Hecht and Christopher Pilcher and by Philippe Chiliade, the ability to diagnose HIV infection in the stage before antibody production is possible in a wider variety of settings ranging from the physician's office to the HIV test counseling site. More and more, front-line HIV providers will come into contact with clients receiving HIV RNA test results.

The new technology, however, raises questions as well as answers them. As all the authors in this issue point out, the quality of the counseling component accompanying diagnosis is critical to maximizing the opportunities presented by this new science. How do we place the appropriate emphasis on behavior change during this time without adding to the psychological burden newly

diagnosed people already face—without making them feel like “damaged goods” as Chiliade puts it? Experience suggests that it is far easier for people to change their behaviors (including sexual behaviors) for a short period of time than for a longer one. In this context, is Chiliade's call for abstinence during acute infection a reasonable one?

The word “acute” can refer both to a brief time period and to a period of crisis. In the case of the risks and opportunities presented by acute HIV infection, both meanings are accurate. Opportunities for effective transmission prevention and partner notification are enhanced, and we may soon know whether treatment opportunities are improved as well. Yet the very brevity of this period means that critical decisions about behavior change and treatment must be made on a tight timeline. The challenge for providers is to help clients get beyond the paralyzing feelings that crisis and fear can raise so that clients can make these key risk reduction and treatment decisions.

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3. Hecht FM, Busch MP, Rawal B, et al. *Use of laboratory tests and clinical symptoms for identification of primary HIV infection*. *AIDS*. 2002; 16(8): 1119–1129.

In one study in Africa, researchers found that the per-contact risk of heterosexual transmission of HIV was more than 10 times greater during the first six months of HIV infection than during the period of chronic HIV infection that followed.<sup>5</sup> More than 40 percent of study participants who had sexual contact with partners who were in the first six months of their own HIV infection became infected. This high rate of transmission during early infection underscores the potential importance of this period for HIV prevention efforts.

In terms of HIV treatment, HIV-1 RNA levels in the first year of infection are a strong predictor of long-term disease progression, suggesting that key events occurring during this initial period determine the course of the disease. Thus, it is hypothesized that treatment shortly after infection may improve the long-term course of disease by protecting the immune responses of CD4+ cells that are usually destroyed by the infection. While a recent observational study suggested that treatment during acute HIV may lead to modest reductions of HIV viral load and maintenance of higher CD4+ cell counts,<sup>6</sup> these findings have not yet been

conclusively proven in randomized, controlled trials.

## Identifying Primary HIV Infection

As noted, the symptoms of acute HIV are not specific to HIV, and so HIV cannot be readily distinguished from other viral illnesses without laboratory testing. Current tests typically detect HIV antibodies and show a positive result about two weeks after the onset of acute symptoms, which is usually about a month after exposure.<sup>2</sup> Although delayed seroconversion can occur, this one-month period is much shorter than the three-to-six-month window period between exposure and antibody detection that is still suggested in many HIV antibody test counseling settings (an estimate that is based on earlier data from less sensitive antibody tests that are no longer in use).

Despite the shortened window period, most people with acute HIV symptoms will not yet have produced antibodies and will test HIV-negative on conventional antibody tests. In such situations, diagnosis requires detection of viral antigens using either p24 antigen testing or viral nucleic acid ampli-

**Many people do not seek medical care during acute infection, so acute HIV testing now occurs in other settings, such as some antibody test sites.**

4. Quinn TC, Wawer MJ, Sewankambo N, et al. Viral load and heterosexual transmission of human immunodeficiency virus type 1. *New England Journal of Medicine*. 2000; 342(13): 921-929.

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fication testing, such as viral load testing. The p24 antigen test has excellent specificity—that is, it does not result in many “false positives”—but it has a sensitivity of only 80 percent for pre-seroconversion acute HIV.<sup>3</sup> This means that 20 percent of actual acute infections might remain undetected by this test.

On the other hand, HIV viral load tests are highly sensitive for acute HIV in people with symptoms, but their specificity ranges from 97 percent to 99

percent.<sup>3</sup> This means that 1 percent to 3 percent of people without HIV infection who undergo viral load testing will have a result showing “detectable virus.” In a moderate-risk population undergoing testing, a substantial proportion of tests reporting detectable HIV RNA are actually false positives.

In a group at moderate risk of having acute HIV, only 2 percent to 3 percent of people being tested may truly have acute HIV (in many HIV testing settings, less than 2 percent of people have any form of HIV infection). In such a setting, half the people who might be diagnosed with acute HIV based on a detectable viral load and negative HIV antibody test would actually be uninfected. Although most false-positive viral load tests will show results with low viral copies (less than 3,000 copies per milliliter), these quantitative tests have not been approved by the FDA for diagnosis of HIV infection, in part because of the issues with false positive results.

A qualitative nucleic acid test, Aptima, has been recently approved by the FDA for diagnosis of acute HIV, and a related assay is used for blood donor screening but is not broadly available. Rather than measuring the number of copies of the virus in a unit of blood, as do viral load tests, qualitative nucleic acid tests produce results that are either positive or negative for the presence of the virus.

Studies that follow groups of people with HIV over time suggest that at least two-thirds of people experience acute HIV symptoms shortly after they are infected.<sup>7</sup> These symptoms may be mild and are often misdiagnosed even when patients present for medical care. For this reason, the combination of symptoms consistent

with acute HIV infection in a person who may have been recently exposed to HIV should prompt providers to suggest a test for acute HIV. However, many people with acute HIV do not seek medical care during this crucial period. Thus, efforts were made to expand this testing beyond medical settings and into HIV test counseling sites. The practical value of this strategy will depend on whether or not the cost of acute HIV testing can be reduced, while its accuracy is simultaneously increased.

Group or pooled specimen approaches have recently been evaluated with the goal of achieving these seemingly contradictory objectives. This testing approach, first used by blood banks, involves combining blood or plasma samples from many individuals. For example, once a group of specimens has been cleared as HIV antibody negative, small amounts of plasma are withdrawn from 10 individual blood samples and combined into one plasma pool. Plasma from five of these pools are then combined to create a “master pool” representing plasma from 50 seronegative patients. Once the master pool has been created, one nucleic acid amplification test can be then performed on the pool. If the master pool is negative, acute HIV is not present in any of the 50 patients. If HIV is detected in the master pool, each sub-pool of 10 patients is tested, and the individual patients belonging to the sub-pool testing positive for HIV are then identified for final, individual sample testing.

To make testing as efficient as possible, the numbers of specimens used to create pools can be varied based on prevalence of acute HIV in the population being tested. If the prevalence of acute HIV is low, large pools are efficient because acute HIV can be excluded in a large number of people in one test; if the prevalence is high, smaller pools decrease the frequency with which each master pool test has to be followed by sub-pool testing.

The pooling process achieves two goals. First, it decreases cost by reducing the number of nucleic acid amplification tests needed. Second, it dramatically increases specificity by requiring multiple positive tests (in the example above, three separate positive tests).

HIV nucleic acid amplification group testing was used by North Carolina’s public HIV testing program beginning in 2002.<sup>8</sup> This program tested 109,250 people over 12 months at 110 public testing sites. Of the 606 HIV-positive people that were identified, 583 were also HIV-antibody positive, but an additional 23 cases (4 percent) were in individuals who were still antibody negative. Over the year, the program identified



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only two false-positive HIV viral load results, and the additional cost reported in this study was just \$3.63 per test.

Subsequently, similar findings have now been confirmed in diverse urban HIV testing populations, including San Francisco, Los Angeles,<sup>9</sup> and Seattle.<sup>10</sup> Together, these studies indicate that group nucleic acid amplification testing has great promise. However, it also has some critical limitations. Current nucleic acid amplification tests are technically demanding, require laboratory infrastructure, demand strict attention to quality assurance, and, at present, require venous blood. Group nucleic acid amplification testing may therefore not be feasible in resource-limited testing settings, or in testing situations where phlebotomy is not available.

## Acute HIV and Test Counseling

Acute HIV cases provide unique opportunities for HIV prevention, but they also pose counseling challenges different from those found in other HIV counseling situations. Depending on the test used, the higher false positive rates of viral load or p24 antigen testing require extra caution about the certainty of diagnosis. The authors of this article recommend repeat testing using a new blood sample to confirm the acute HIV infection. However, because of the greater potential for transmission during the acute infection period, counseling about risk reduction and treatment decisions should not be delayed while awaiting confirmatory results. Instead, providers should address these issues at the same time that they obtain a repeat blood sample, and providers should let patients know that repeat testing is being performed to exclude the unlikely possibility of a false positive test.

Where pooled nucleic acid amplification tests are used to exclude acute HIV infec-

tions for HIV antibody-negative testing clients, caution should also be used in counseling clients about their preliminary negative test results. For example, the results from rapid antibody tests may be available well ahead of the pooled nucleic acid amplification test. While false-negative antibody tests will virtually always be rare (less than 1 percent), providers should strenuously avoid the consequences of falsely reassuring an acutely infected individual that he or she is “HIV negative.” As always, risk reduction counseling should strive to address the immediate events that led to infection and seek additional “teachable moments” related to knowledge of recent infection, for example, an added sense of grief and distress.

Since the identification of acute infection facilitates partner counseling and referral services (including partner notification), it may lead to more effective interruption of HIV transmission in sexual or needle-sharing contact networks. Partner counseling and referral strategies may be especially successful in the case of acute infection, because recent partners are often more easily identifiable than chronologically remote partners, and because partners of acutely infected people are at high risk for acquiring HIV. When partners who are already HIV-positive are identified, they can be offered HIV prevention and care services.

## Conclusions

There are significant benefits related to the diagnosis of primary HIV infection. These benefits support a new stance with regard to the timing of HIV testing. Since it can detect HIV before antibodies develop, nucleic acid amplification testing is increasingly likely to be incorporated into both physician’s office visits and routine HIV antibody testing, particularly in high-incidence settings, enabling us to take advantage of this crucial period.

# Clearinghouse: Acute HIV Infection

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# Acute Infection: Client and Provider Challenges

Philippe Chiliade, MD, MHA

In 2004, the Washington D.C.-based Whitman-Walker Clinic became one of the first clinics in the country to conduct pooled HIV RNA testing. This testing, which detects the virus, not antibodies formed in response to the virus, allows the clinic to identify individuals with acute HIV infection who have not yet developed antibodies.

Acute HIV infection begins one week after infection and lasts for several weeks.

This period is characterized by extremely high HIV viral loads and high infectivity—that is, a heightened risk of transmitting the virus to others. It has been speculated that, in the United States, up to 50 percent of the 40,000 new HIV infections annually are transmitted during the acute phase.<sup>1</sup>

As Medical Director of Whitman-Walker Clinic, I oversaw the RNA-based acute HIV Testing Program through the STD Clinic, which primarily serves

gay men. When clients came in for HIV testing, they often took other blood tests—to screen for syphilis, herpes, or hepatitis—as well. We performed pooled-HIV RNA testing on the blood of consenting patients who had received an HIV-negative rapid test

result and whose blood was available as a result of their taking one of these other medical tests. In the 16 months during which I was responsible for the program, providers tested approximately 3,000 samples and identified 10 gay men who were actually HIV-infected but who had not yet developed detectable HIV antibodies.

The pooling-RNA technique involves mixing samples of blood from up to 50 patients who have received negative rapid test results and then looking for the presence of HIV RNA in the resulting single pooled sample. If no HIV RNA is detected, we can say with confidence that none of the samples mixed in the pool were from patients with acute HIV infection. If HIV is detected in the pooled sample, we then test all 50 individual patients' samples to find the one or ones that contain HIV. This pooling process is actually cost-effective enough to enable clinics to use HIV RNA testing technology that is otherwise prohibitively expensive.

HIV RNA testing, however, raises several psychosocial challenges. It has required clinicians at Whitman-Walker to find new ways to rapidly inform patients of their diagnosis, to counsel them more strenuously regarding their sexual activities and the need to notify recent partners, and to talk with them about treatment options.

## Breaking the RNA-Positive News

Unlike rapid HIV antibody testing, the pooling HIV RNA testing method used by Whitman-Walker Clinic takes two to three days. This raises two problems: how to bring a patient back to the clinic to hear the RNA result in person without revealing the result on the telephone; and, more importantly, how to break the news to the "HIV-negative" individual that he or she is, in fact, HIV-positive. We addressed the first problem by having clinic staff inform the patient that one of

**RNA testing required providers to find new ways to rapidly inform clients of their diagnosis, counsel them about risk, notify recent partners, and discuss treatment options.**

versus established HIV infections: results from the Canadian HIV strain and drug resistance surveillance program. *Journal of Acquired Immune Deficiency Syndromes*. 2006; 42(1): 86–90.

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See also references cited in articles in this issue.

his STD tests had come back “positive,” and asking the patient to come in to see a medical provider for treatment and more information. This method also allowed us to alert the patient to the importance of avoiding any transmission-related behaviors until speaking with one of our physicians.

In response to the second challenge, we found that the normal grief and crisis of being informed of an HIV diagnosis were usually compounded by confusion about the new result, since the patient had just received an “HIV-negative” test result a few days previously. While the written consent that clients signed prior to testing explained the process of RNA testing, most clients either did not notice or did not recall the explanation. Providers did not typically review the RNA testing process verbally with clients, since so few would test HIV antibody-negative and HIV RNA-positive. Patients’ reactions varied widely from shock to rationalization to anxiety, anger, and even emotional collapse—many reported feeling like “damaged goods.” Because of the recency of the infection, many acutely infected patients believed they could identify the partner that infected them, sometimes adding to the client’s burden of stress and blame, and even rupturing relationships.

### Prevention and Partner Notification

During counseling sessions, concerned about the dramatically increased potential for HIV transmission, Whitman-Walker clinicians emphasized that HIV is particularly contagious during the acute infection period. It was our policy to recommend draconian measures for this period: either abstain entirely from sex or use condoms for all insertive and receptive anal, vaginal—and even oral—sex. Patients usually adopted one of these approaches—at least until the period of acute infection had passed. It is easier for providers to suggest that a patient engage in harm reduction by abstaining or using condoms consistently for several weeks during acute infection than to ask the patient to do so for the rest of his or her sexual life. Further, we emphasized the importance of a healthy sex life after the acute infection period to quality of life and emotional health.

Since people exposed to HIV within the prior 72 hours are eligible for treatment with post-exposure prophylaxis medications, we worked with patients to bring their sexual partners of the previous three days in for prophylactic treatment. We also urged patients to inform other recent sexual partners of their potential HIV exposure, and of the heightened risk of acquiring HIV from an acutely infected individual. We referred these partners to providers that could

screen them for acute HIV infection. Most patients chose to inform their recent sexual partners themselves, and many came back with exposed partners for testing.

### Acute Infection and HIV Treatment

A critical medical question for acutely infected individuals and their medical providers is whether or not to begin HIV antiviral treatment. There is some evidence that beginning treatment as close as possible to the time of infection (ideally within the first few weeks) can preserve the part of the immune system necessary to control HIV infection, thus increasing the chance that disease progression will slow. Unfortunately, preliminary studies have failed to provide definitive evidence for this benefit versus the benefit of delaying treatment until there is significant disease progression.

If there is a benefit to starting HIV antiviral treatment during the acute period, the decision whether or not to begin the treatment must be made within days of the diagnosis of acute infection. Patients were confronted with complicated (and conflicting) scientific evidence and asked to make a critical treatment decision quickly. Further, patients faced another difficult decision: whether or not to participate in one of the few randomized controlled clinical trials that are investigating immediate versus delayed treatment.

I typically recommended that patients start treatment, and the majority did start. I reminded them that they could always stop treatment after beginning, but, having chosen to defer treatment, they would not be able to regain the unique opportunity that might be afforded by early treatment.

### Conclusion

The timely diagnosis of acute HIV infection is a key means of breaking the cycle of HIV transmission. Yet with each opportunity for advancement—in prevention, partner notification, and treatment—comes added challenges for acutely diagnosed patients and their providers.

### Comments and Submissions

We invite readers to send letters responding to articles published in *FOCUS* or dealing with current AIDS research and counseling issues. We also encourage readers to submit article proposals. Send correspondence to [rob.marks@ucsf.edu](mailto:rob.marks@ucsf.edu) or to Editor, *FOCUS*, UCSF AIDS Health Project, Box 0884, San Francisco, CA 94143-0884.

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*1. Pilcher CD, Tien HC, Eron JJ, et al. Brief but efficient: Acute HIV infection and the sexual transmission of HIV. Journal of Infectious Diseases. 2004; 189: 1785–1792.*



## Recent Reports

### Primary HIV: Symptoms and Care-seeking

Stekler J, Collier AC, Holmes KK, et al. Primary HIV infection education: Knowledge and attitudes of HIV-negative men who have sex with men attending a public health sexually transmitted disease clinic. *Journal of Acquired Immune Deficiency Syndromes*. 2006; 42(1): 123–126. (University of Washington.)

*The articles in this issue of FOCUS demonstrate the critical nature of primary HIV infection, particularly in terms of its capacity to increase transmissibility of HIV. This University of Washington study sought to determine the extent to which HIV-negative men in an HIV epicenter understand the significance of primary infection. The following summary was excerpted from the cited article and its abstract:*

This survey of 150 men who have sex with men in Seattle and King Counties found that while most participants could identify some symptoms of primary HIV infection, few would seek care for such symptoms.

Between April 2004 and March 2005, HIV-negative men attending these public health sexually transmitted disease clinics completed an anonymous, self-administered, written questionnaire. Of the 150 subjects, 96 (64 percent) were able to name one or more symptoms associated with primary HIV infection. Of the 46 men who knew that primary HIV infection could resemble influenza, only 18 (39 percent) claimed that they would seek care for flu-like symptoms. Finally, of 23 men reporting a week-long illness with fever and rash in the preceding year, 15 (65 percent) sought health care, but only 7 were tested for HIV.

The study suggests that individuals and their physicians must improve their recognition of the symptoms of primary HIV infection, and that HIV RNA testing must be used more routinely if primary HIV infection screening programs are to have a meaningful impact on HIV prevention.

### Surveillance of Recent HIV Infection

Truong HH, Grant RM, McFarland W, et al. Routine surveillance for the detection of acute and recent HIV infections and transmission of antiretroviral resistance. *AIDS*. 2006; 20: 2193–2197. (University of California San Francisco; and San Francisco Department of Public Health.)

*The authors in this issue explore the ways that testing for acute (defined here as less than 21 days) and recent (defined here as less than 155 days) HIV infection can make prevention and treatment efforts more effi-*

*cient and successful. In this article, investigators use a combination of technologies to identify both acute and recent HIV infections and antiretroviral-resistant infections. The following summary was excerpted from the cited article and its abstract:*

Integrating data on three factors—HIV nucleic acid amplification, duration of infection, and HIV antiviral drug resistance testing—may enhance HIV surveillance, and may be important to reduce HIV transmission, including the transmission of antiviral-resistant strains of HIV.

Working in conjunction with multiple San Francisco sexually transmitted disease clinics, researchers screened 3,789 men for HIV. Of this population, 125 men tested HIV-positive. Among HIV-positive specimens, an “IgG capture enzyme immunoassay” identified 81 cases classified as long-term infections and 44 cases classified as recent infections (those occurring within a period of 155 days). From the 3,064 HIV-negative specimens, a nucleic acid amplification test identified 11 cases of acute infection that had been undetectable by the antibody test. Researchers concluded that such case identification might help avoid further HIV transmission to subsequent partners by providing opportunities for risk-reduction interventions, facilitating partner notification efforts, and helping identify sexual networks.

Genotyping of the entire cohort of HIV-positive specimens revealed 17 HIV antiviral drug-resistant cases. Among these, 11 cases were resistant to non-nucleoside reverse transcriptase inhibitors, three cases were resistant to two classes of drugs, and one case was resistant to more than two classes of drugs. Identification of such mutations has the potential to guide the selection of treatment in HIV positive patients, as well as post-exposure prophylactic regimens.

### Treatment Breaks in Early HIV

Hoen B, Fournier I, Lacabaratz C. Structured treatment interruptions in primary HIV-1 infection: The ANRS 100 PRIMSTOP trial. *Journal of Acquired Immune Deficiency Syndromes*. 2005; 40(3): 307–316. (Department of Infectious Diseases, University Medical Center of Besancon and Universite de Franche-Comte, Villejuif, France.)

*As the authors in this issue discuss, further research is needed to determine the most effective course of treatment for individuals in the early stages of HIV infection. In this article, the investigators examined the effect of structured treatment interruptions and HIV antiviral therapy termination on individuals whose treatment was initi-*



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*ated during the primary phase of HIV infection. The following summary was excerpted from the cited article and its abstract:*

Researchers were unable to demonstrate successful viral suppression in a significant number of patients with primary HIV infection after a sequence of HIV antiviral therapy structured treatment interruptions followed by HIV antiretroviral therapy discontinuation.

In this multicenter, prospective trial, twenty-nine patients with early symptomatic primary HIV infection received HIV antiviral therapy continuously for 34 weeks. Afterward, patients with a plasma viral load of less than 50 copies per milliliter entered the structured treatment interruption phase, which consisted of three consecutive periods of two, four, and eight weeks off HIV antiviral therapy, each separated by 12 weeks on HIV antiviral therapy. HIV antiviral therapy was permanently stopped at week 84 and patients were followed up for 24 weeks.

Of the 29 patients enrolled, 26 completed the trial. Six months after HIV antiviral therapy discontinuation, only one patient (3.8 percent) had a plasma viral load of less than 50 copies per milliliter, whereas 6 of 26 (23.1 percent) had a plasma viral load of less than 1,000 copies per milliliter. Female gender was the only parameter significantly associated with a plasma viral load greater than 1,000 copies per milliliter. No other parameter, either at baseline or before HIV antiviral therapy discontinuation, predicted virologic success (defined as a viral load level of less than 50 copies per milliliter) at week 108. A major protease inhibitor resistance mutation (L90M) developed in three patients.

### Identifying Recent HIV Infection

Schwarzc S, Weinstock H, Louie B. Characteristics of persons with recently acquired HIV infection: Application of the serologic testing algorithm for recent HIV seroconversion in 10 US cities. *Journal of Acquired Immune Deficiency Syndromes*. 2007; 44(1): 112-115. (San Francisco Department of Public Health.)

*The earlier HIV is diagnosed in an individual, the sooner prevention and treatment interventions can be offered, potentially decreasing the number of subsequent HIV infections. In this article, researchers identified demographic characteristics of individuals likely to be diagnosed early in the course of HIV infection (within several months of seroconversion) versus those of individuals likely to be diagnosed later. The following summary was excerpted from the cited article and its abstract:*

Investigators studying the characteristics of individuals recently infected with HIV in 10 U.S. cities concluded that HIV testing should be more routinely offered to individuals with a recent history of sexually transmitted diseases and to African Americans and Latinos in a variety of settings.

From 1997 through 2001, specimens from consenting persons for whom a diagnosis of HIV was made within the past 12 months were tested using a serologic testing algorithm with a “desensitized” antibody test that can identify recent HIV seroconversion. Investigators identified the characteristics of those whose HIV diagnosis occurred within 170 days (on average) from seroconversion. For 191 (20 percent) of the 964 participants, an HIV diagnosis was made during the period of recent infection.

Recent infection was diagnosed more frequently among men (21.7 percent), whites (29.3 percent), men who have sex with men (25.5 percent), persons with a known HIV-infected partner (24.9 percent), and persons with a diagnosis of gonorrhea made in the 12 months before interview (27.0 percent). Recent infection was diagnosed less frequently among African Americans (15.5 percent), Latinos (15.5 percent), and heterosexual men (14.7 percent) and women (14.4 percent).

### Next Issue

Harm reduction has played a central role in HIV prevention efforts since early in the epidemic. Needle exchange services in particular have long been a critical way to reduce injection-related HIV risk. In the March issue, **Valerie Rose, MPH, DrPH**, a policy analyst for the AIDS Office of the San Francisco Department of Public Health, and a policy evaluation researcher and consultant, discusses the need for and impact of new legislation offering expanded access to injection syringes in California pharmacies.

Also in the March issue, **Emalie Huri- aux, MPH**, Project Manager of the Harm Reduction Coalition and Training Institute’s Drug Overdose Prevention and Education (DOPE) Project in San Francisco explores the importance of offering overdose prevention services to clients in HIV service venues.



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