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Serologic Testing Algorithm for Recent HIV Seroconversion to be launched

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New STARHS test will clarify problem areas

Prevention researchers presented a sobering picture of the challenges that remain in reducing HIV transmission and increasing HIV testing and treatment at the 2003 National HIV Prevention Conference recently held in Atlanta. While officials unveiled details of a new HIV diagnosis test, investigators also pointed to several problem areas, including these:

- Youths, and teen-agers in particular, have had increases in HIV infections due to injection drug use (IDU) in the last few years in at least 25 states. That reverses the general steep decline in IDU-related HIV diagnoses in the United States.¹
- HIV diagnoses among men who have sex with men (MSM), also within 25 states that long have reported HIV diagnoses, have increased significantly.
- African-American men and women are less likely than whites to realize that there are life-prolonging HIV antiretroviral treatments available. One study also shows that at-risk African-American women are both unaware of their own risk for HIV and are unwilling to be tested for the virus.^{2,3}

The chief positive news presented at the Center for Disease Control and Prevention (CDC)-sponsored conference was the introduction of the Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS), which will be used at 35 testing sites that

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Jailed youth at high risk of HIV

Investigators have found that among incarcerated youths in Chicago, there are very high rates of behavior, which place that group of children and teen-agers at risk for HIV infection. The study examined youth, ages 10 to 18, who were held between 1995 and 1998 at the Cook County Juvenile Temporary Detention Center, using the AIDS Risk Behavior Assessment 117

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Editor: **Melinda Young**, (864) 241-4449.

Vice President/Group Publisher: **Brenda Mooney**, (404) 262-5403, (brenda.mooney@ahcpub.com).

Editorial Group Head: **Glen Harris**, (404) 262-5461, (glen.harris@ahcpub.com).

Managing Editor: **Robin Mason**, (404) 262-5517, (robin.mason@ahcpub.com).

Senior Production Editor: **Ann Duncan**.

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Editorial Questions

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cover an area that accounts for an estimated 93% of the annual HIV infections in the United States.

"This system is expected to provide our clearest picture yet of the magnitude of the HIV epidemic, and it will propel us toward a greater understanding of the incidence of new HIV infections," said **Robert Janssen**, MD, a director in the Division of HIV/AIDS Prevention of the CDC. Janssen, who spoke about STARHS at the CDC conference, was the lead scientist in development of the STARHS technology.

STARHS, using a detuned assay, will be performed on blood samples that test positive for HIV through standard HIV tests. Since the detuned assay is unable to detect HIV antibodies at the low concentrations that are detected by standard HIV tests, it can be assumed that any blood sample that tests positive for HIV on the enzyme immunoassay or Western blot test, but does not test positive on the detuned assay, is one in which a recent infection has occurred, Janssen explained.

The technology is 95% accurate, and while it is less useful as a clinical treatment tool, it is a good way to assess trends in a large population base, he said.

Also, STARHS will solve the CDC's problem with obtaining accurate statistics about new infection rates across the United States. Although 25 states have collected HIV diagnoses since the early-to-mid 1990s, the CDC continues to be reluctant to use these data because they are considered either incomplete or based on a progression rate of HIV to AIDS, which has changed.

So with STARHS, the CDC and local public health departments will be able to collect very useful, accurate information about who is becoming infected, where new infections are occurring, and ultimately, which populations are being most impacted.

"In fact, the impact of the new system on our nation's HIV prevention efforts is expected to be profound," Janssen said. "With these data, the CDC will be able to develop more accurate data of new HIV infections, which is an important step toward understanding where the epidemic is headed."

Moreover, state and local health departments will be able to use the information to better target prevention efforts on whichever populations currently appear to be at highest risk for HIV infection, he added.

STARHS data, which are expected to be available in 2005, could not come too soon for the

prevention community, which is coping with worrisome HIV/AIDS trends. **Ronald Valdiserri**, MD, MPH, deputy director of the National Center for HIV, STD, and TB Prevention at the CDC, said recent studies show that among some populations there may be an HIV resurgence.

"According to new data, HIV diagnoses among gay and bisexual men in some states increased by 7.1% in 2001 and 2002, and this is the third annual increase reported," he said. "Since the low point in 1999, HIV diagnoses among gay and bisexual men has risen by 17.7%."

The statistics come from the 25 states that have been collecting HIV diagnoses since the 1990s, Valdiserri added. "So HIV increases among gay and bisexual men adds to our growing concern about a resurgence in HIV among this population."

Likewise, CDC officials are concerned about an increase in new HIV diagnoses due to IDU among youth and young adults. Data show that between 2000 and 2001, IDU-related HIV diagnoses increased among 13- to 29-year-olds, and youth 19 years and younger than showed the greatest increase. Specifically, CDC data from the 25 HIV-reporting states show that HIV diagnoses among IDUs, ages 13-29, increased 15% from 2000 to 2001, after a 58% decline from 1994 to 2000.¹

This underscores the continuing need to target HIV prevention and drug treatment programs to young people, Valdiserri said.

Minority populations require new focus

Two major studies presented at the conference suggest that prevention, testing, and treatment efforts aimed at minority populations need renewed focus and resources.

One CDC study shows that 19.1% of African Americans and 22% of Latinos are unaware that antiretroviral treatments are available to prolong the lives of people with HIV infection.²

"The disparity was even greater in some states where up to one-third of the people didn't know there was treatment to prolong the life of people with HIV," said **Shahul Ebrahim**, MD, MSc, PhD, senior service fellow and behavioral scientist with the Prevention Research Branch of the Division of HIV/AIDS Prevention — Intervention Research and Support at the CDC.

Another study found that 73% of 308 African-American women surveyed in a Dallas family clinic did not believe they were at risk for HIV infection, despite the fact that more than half had

a history of other sexually transmitted diseases (STDs).³ Also, the study found that many of the 159 women in the study who had a history of STDs reported inconsistent condom use and had multiple sexual partners. About 75% of these women did not believe they were at risk for HIV infection, and 60% of all of the women surveyed declined to have a free HIV test, which would not have required an additional blood draw.³

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Needle exchanges do not boost drug use, study says

IDU remains major HIV risk factor

In the same summer that the Centers for Disease Control and Prevention's (CDC) latest data show that injection drug use remains a major factor in AIDS cases, a new study offers evidence that needle exchange programs do not cause an increase in injection drug use.

CDC data from 1994 to 2000 show that 25% of total 765,559 cumulative AIDS cases diagnosed through December 2000 were of injection drug users (IDUs).¹ The CDC's HIV data collected from the 25 states that have had HIV-infection case reporting since 1993 also show that HIV diagnoses reported among IDUs declined 42% between 1994 and 2000, while HIV diagnoses among men who have sex with men (MSM) declined by 15%, and heterosexual HIV transmission had increased by 9% in the same period.¹

Most public health officials attribute the decline to the proliferation of needle exchange programs and other initiatives that have made clean needles readily available to IDUs.

"Needle exchange programs decrease drug use communitywide when they are done right," says **Robert Heimer**, PhD, associate professor of epidemiology, public health, and pharmacology at Yale University School of Medicine in New Haven, CT.

"The federal ban on needle exchange funding has increased drug use because well-run, well-supported, well-integrated needle exchange programs are points of contact for drug users who seek to enter treatment," he says.

Heimer researched the issue of needle exchanges serving as gateways to drug treatment and found when there is adequate funding for a substance abuse treatment counselor, the needle exchange program will not only encourage IDUs to enter drug treatment, but it will encourage other drug users as well, such as crack cocaine users.²

"But as resources have dried up for needle exchange in Connecticut, and there is no federal funding, these programs have stopped decreasing drug use," he adds.

Nonetheless, the federal government has continued to refuse to fund needle exchange programs, and some states have outlawed the practice, claiming that it encourages people to inject illegal drugs.

Former President Bill Clinton told researchers and others at the XIV International AIDS Conference in Barcelona in July 2002 that he was wrong to refuse to lift the ban on federal funding of needle-exchange programs, and that he had bowed to pressure that it would send the wrong message on the drug front.

To date, no research has supported the political argument that needle exchanges increase injection drug activity, and a new, five-year study provides very strong evidence that needle exchange programs do not cause IDUs to inject more drugs.

Basically, the study shows that there is no significant difference in the number of injections between IDUs who use a needle exchange program and those who obtain needles through other means, says **Dennis Fisher**, PhD, professor of psychology and the director of the Center for Behavioral Research and Services in Long Beach, CA.

With a randomized controlled trial, from May 1997 to June 2000, investigators compared IDUs who were given access to a needle exchange program with IDUs who were trained in how to purchase needles and syringes at pharmacies.²

Researchers designed the study with a comparison group to answer critics who charge that previous needle exchange program studies were

(Continued on page 114)

People with AIDS Year-End 2001, by Exposure Category and U.S. State

State	MSM	IDU	MSM/IDU	Heterosexual contact	Other	Pediatric	Total
Alabama	1,679	598	278	766	59	27	3,408
Alaska	126	40	9	43	6	1	225
Arizona	2,459	564	385	388	96	8	3,900
Arkansas	972	319	155	347	34	23	1,850
California	33,182	6,421	4,380	4,410	776	243	49,411
Colorado	2,159	361	341	289	50	10	3,211
Connecticut	1,333	3,263	175	1,417	68	76	6,332
District of Columbia	3,193	2,263	309	1,569	70	93	7,497
Delaware	393	614	80	311	15	14	1,426
Florida	17,205	7,418	1,819	12,394	858	679	40,373
Georgia	5,863	2,456	737	2,756	244	99	12,154
Hawaii	821	102	77	91	21	5	1,117
Idaho	130	32	28	41	8	0	240
Illinois	5,625	3,146	677	1,746	244	135	11,573
Indiana	1,902	392	205	466	74	29	3,069
Iowa	371	91	47	98	25	4	635
Kansas	640	118	116	162	25	5	1,066
Kentucky	1,138	317	111	343	51	16	1,977
Louisiana	2,694	1,431	535	1,328	128	59	6,174
Maine	277	89	19	63	15	7	469
Maryland	2,863	5,052	461	2,539	163	174	11,251
Massachusetts	2,593	3,076	273	1,455	231	80	7,707
Michigan	2,826	1,192	325	805	130	35	5,314
Minnesota	1,087	214	113	220	97	14	1,745
Mississippi	1,033	346	154	778	57	27	2,394
Missouri	2,985	526	426	584	85	20	4,627
Montana	109	20	24	19	7	0	179
Nebraska	288	77	54	89	21	4	533
Nevada	1,445	365	185	271	22	12	2,300
New Hampshire	247	135	27	77	24	4	514
New Jersey	3,765	6,949	591	4,002	403	263	15,972
New Mexico	733	125	105	84	19	6	1,072
New York	17,766	25,721	1,668	13,153	1,292	837	60,437
North Carolina	2,160	1,520	351	1,622	199	55	5,907
North Dakota	20	6	4	10	6	1	47
Ohio	3,209	815	312	809	130	45	5,320
Oklahoma	988	239	203	209	35	9	1,683
Oregon	1,517	309	213	215	54	9	2,317
Pennsylvania	4,577	5,388	718	2,805	143	199	13,830
Rhode Island	302	379	41	247	14	10	994
South Carolina	2,154	1,022	269	1,862	98	37	5,443
South Dakota	50	17	6	11	10	1	95
Tennessee	2,827	868	313	1,108	89	20	5,226
Texas	13,874	4,660	2,347	4,122	332	162	25,498
Utah	685	209	94	83	30	7	1,108
Vermont	121	40	14	32	17	3	228
Virginia	3,334	1,456	385	1,562	156	94	6,986
Washington	3,081	544	444	471	90	15	4,644
West Virginia	333	100	37	74	14	5	564
Wisconsin	952	296	124	265	45	16	1,698
Wyoming	39	18	13	6	3	2	81

Source: Centers for Disease Control and Prevention, Atlanta.

tainted by selection bias, Fisher says.

"The problem with needle exchange studies is that for a number of years, people couldn't figure out how to do a comparison study," he explains. "We figured out how to do it by randomizing injectors to either a needle exchange condition or to pharmacy sales conditions."

The study recruited 653 IDUs in Alaska, at a time when needles and syringes were legal for sale in pharmacies without prescriptions, Fisher says. "We went a little further and provided maps to pharmacies and told IDUs what to say and what not to say and how to keep track of which pharmacies were more likely to sell. Then we compared these two parts of the clinical trial and did an honest-to-goodness prospective, randomized arm of the clinical trial of needle exchange."

Investigators studied negative effects, such as an increase in drug use, in both parts of the study and found that there was no increase in drug use and no significant difference between the two groups, he says. "The one place where we did marginally see a difference was actually a bigger decrease in cocaine drug use in the needle exchange arm of the study, but the effect was marginal," Fisher adds.

IDU participants were studied at six months, 12 months, and 18 months, and researchers never saw an increase in injection drug use, he says.

According to CDC data, IDU continues to account for a major HIV transmission source in most states.

In Connecticut, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, and Puerto Rico, IDU was the greatest risk factor among people living with AIDS at the end of 2001. (**See CDC AIDS exposure category chart, p. 113.**)

Historically, some Northeastern urban areas have had greater numbers of AIDS patients who are IDUs; but in most of these states, there has been some effort in the past decade to decrease HIV transmission among IDUs through prevention programs that include needle exchange and over-the-counter pharmacy sale of syringes, Heimer says.

One major exception to that trend is New Jersey, which had actively arrested volunteers running needle exchange programs in the late 1990s and currently has no organized needle exchange programs, he says.

New Jersey also has the second-highest number of IDUs living with AIDS in the nation, according to CDC data; and unlike its neighboring states, it has had no decrease in the incidence and prevalence of HIV infection among IDUs, Heimer

explains. New York, which began in 2001 to reverse its AIDS epidemic among IDUs through needle exchange programs, had 25,721 IDUs living with AIDS at the end of 2001. New Jersey had 6,949 IDUs living with AIDS at that time.

Likewise, New Jersey is one of only three states and territories where the number of people living with AIDS (PLWA) who were infected through heterosexual contact outnumbers the PLWA who were infected through homosexual contact, according to CDC data.

Connecticut and Puerto Rico are the other places where MSM transmission has resulted in fewer AIDS cases through 2001 than IDU and heterosexual sex transmission.

"Certainly, in many locations, the easiest introduction to the virus into heterosexual populations comes from IDUs, but that doesn't mean that we have to have IDUs to see large-scale heterosexual epidemics," Heimer says. "And it's clearly easier to change risky injection behavior than risky sexual behavior because IDUs like clean needles and don't like to use old and dirty needles."

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Testing gains shown in antiretroviral resistance

Research addresses new recommendations

Resistance testing has proved useful in treating some HIV patients, but its expense and inconsistent value in predicting the future course of HIV disease have left clinicians with some doubts about when and how to best use it.

As published reports continue to suggest HIV drug resistance is increasing and may affect both an individual's response to antiretroviral treatment as well as an HIV population's clinical outcomes, the decision on whether to use a resistance test in any particular case grows more complicated.

"In some cases, the suggestion is that resistance, in fact, has an important clinical outcome impact in that people who have acquired viruses with more resistance seem not to respond as well to treatment," says **Chuck Hicks**, MD, associate professor of medicine at the Duke University Medical Center in Durham, NC.

Hicks and colleagues have studied HIV antiretroviral resistance and the use of resistance testing in clinical treatment, addressing the 2002 resistance-testing guidelines.

The 2002 *Antiretroviral Therapy Guidelines*, published by the U.S. Department of Health and Human Services (DHHS), says viral-resistance testing helps doctors choose the most effective drugs.

It recommends resistance testing when a patient's viral load is not controlled by new medications or when there is viral breakthrough during a regimen that has been working.

Resistance testing revisions

The latest guidelines, published by DHHS July 14, have a revised section on resistance testing. The new guidelines discuss in detail the limitations of genotyping and phenotyping assays, including the lack of uniform quality assurance for all available assays, the high cost, and insensitivity for minor viral species. The new guidelines state when therapy is about to be initiated in someone with acute HIV infection, resistance testing at baseline could optimize virologic response, although the strategy is untested.

The 2002 guidelines suggests that conducting resistance testing before treating a newly infected HIV patient is a reasonable clinical practice.

"What we wondered was: Are the kinds of resistance reported from San Francisco, San Diego, and New York City similar in our part of the country [North Carolina]?" Hicks says. "And also, does this resistance impact how they respond to treatment?"

North Carolina investigators found that rates of antiretroviral resistance were quite uncommon in the population they studied, and the resistance that did exist seemed to have no impact on clinical outcomes under highly active antiretroviral therapy (HAART), Hicks says.

Out of a total of 31 patients with primary HIV infection, genotypic resistance testing showed there were two cases of resistance to nucleoside reverse transcriptase inhibitors (NRTIs) and one case of resistance to non-nucleoside reverse transcriptase inhibitors (NNRTIs). Phenotypic resistance testing

indicated two cases of resistance to NRTIs, two cases of resistance to protease inhibitors, and three cases of resistance to NNRTIs.¹

"In the most generous form of reporting resistance we found, there might be up to five patients who had some resistance to drugs they were prescribed for acute infection," Hicks says. "Four out of five patients achieved viral loads of less than 50 copies, so they had very good response to therapy; and one patient — who had the greatest amount of resistance — did not achieve less than 50 copies."

Investigators concluded that transmitted resistance among Southeastern U.S. patients is relatively infrequent and is an imperfect predictor of treatment response.¹

Another difference between what the North Carolina study found and what has been published previously involved the time period of resistance.

"Other studies report increased rates of resistance over time; but in our study, the opposite was true," Hicks says. "Those diagnosed between 1998 and 1999 were more likely to have resistance than those diagnosed after 2000, so that's a little bit different."

A possible explanation for the difference is that the study's population was so small that it was just a quirk, he suggests.

"Another potential explanation could be that the population of people who were among gay white men who acquired it from other gay white men may be more likely to have received therapy and more likely to pass on resistant viruses," Hicks explains. "Our patients were not as likely to have acquired their infection from a population that has been treated a lot in the past, and so there perhaps was less potential to pass on resistance."

The issue of how relevant resistance testing is to one particular type of HIV population vs. others only is one of the challenges clinicians face when deciding whether to order a resistance test. Another difficulty involves the accuracy of the test itself.

Another study published this year investigated whether a lab generates the same real-time results in genotyping for resistance testing when duplicate clinical samples are examined.²

"Basically, I think genotyping is a fairly accurate assay, but there are instances where you will get discrepant data coming back if you had the opportunity to send replicate samples, and most people don't," says **Diana Huang**, PhD, assistant professor at the Rush Medical College in Chicago.

Resistance testing typically is a brief look at

data from one point in time, she says.

Therefore, Chicago investigators decided to submit replicate samples to genotyping labs to see how consistent the reporting was, Huang explains. "Generally, the labs were pretty good at being able to get similar results for both the replicate samples and the entire panel; but every now and then, you'd get discordant results," she points out.

The discordant results could be attributed to a number of different causes, including the way a codon is read, which might result in an interpretation of a virus being wild type or containing a resistance mutation, Huang says.

Also, inherent within the sample itself are genomes that represent mixed populations of virus, and the person who is doing the genotyping assay will have to determine what is real and what isn't, she adds.

"You can have situations where the performance of the assay itself may select out different populations to be predominant, and that could affect the identification of a resistance mutation in the sample," Huang says. "How the call is made may be based on proportionate populations in the sample."

Also, there could be technical and mechanical problems earlier in the assay that affect later steps of the assay, which generate the identification of resistance mutations, she adds.

Second samples

All of this suggests that physicians need to be careful when interpreting genotyping results and, occasionally, send in a second sample, Huang says. "The discrepancies occur, but they are not that common. I don't want people to think it's that widely prevalent, but occasionally, you will see this."

Although the latest HIV treatment guidelines suggest that antiretroviral resistance testing has some merit as part of baseline treatment of newly infected HIV patients, some recent research offers clues to its usefulness as a screening tool.

While physicians are divided on the issue of when to begin antiretroviral treatment, one outcome of this decision may be an increase or decrease in drug-resistant virus.

"It is in the interest of patients to have a genotypic profile done at the time of primary infection, because if you are infected with drug-resistant virus, it's going to disappear with time," says Luc Perrin, MD, professor of clinical virology at

Geneva University in Switzerland.

"In two to three years, the virus will be back to the wild type, but the one type of resistance is still there, so you won't be able to detect it several years later," Perrin adds. "So you will treat patients and not take into account that in the reservoir, there is drug resistance and the response is going to be inefficient." The optimal time for the initial drug-resistance test is within the first six months, before antiretroviral treatment and at the time of primary HIV infection, Perrin says.

Perrin and other investigators from Switzerland found a 10.5% prevalence of drug resistance in recently infected Swiss patients, and they further discovered that about 30% of the recently infected patients were infected by other recently infected patients.³

"By making a calculation to find out the genetic profile of a potential transmitter, and by comparing the genetic profile of a potential transmitter to the genetic profile of acutely and recently infected HIV patients, you find out there's a lot less Class 2 resistance than expected," Perrin says.

The study concluded that multidrug-resistant HIV-1 has a decreased transmission capacity, which is an explanation for the reduced spreading of variants in newly infected patients.³

However, the problem with that strategy is that the resistance tests are very expensive in the United States, where HIV patients do not have the advantage of a universal health care system.

So again, clinicians may find it impractical to routinely order resistance testing screening and will have to continue to make this decision on a per-patient, per-case basis.

"There are two main groups of people for whom resistance testing is potentially useful," Hicks says. "One is the group of people on therapy who are failing treatment and you're trying to decide what to do next, and that's someone you know is HIV-positive, who has been started on therapy and has not been as successful as you'd like."

The other group involves people who have never been on treatment, including those who are acutely infected or who have been infected for a year or two, he says. "Resistance testing could be helpful." And if resistance testing costs \$5 per sample, then it would make sense to offer it routinely in the case of the newly or recently infected patients, Hicks adds.

"But it doesn't cost \$5, and the amount of money available to care for HIV patients is not infinite," he says. "So it would be hard to argue

that it's cost-effective to do resistance testing when there's no acute infection."

Perhaps in areas where HIV drug resistance is known to be high, such as in San Francisco, a clinician could justify the cost of doing routine resistance testing of newly infected patients, Hicks suggests.

"By contrast, in North Carolina, it appears from an undersized sample that drug resistance is a much less common phenomenon. In what settings does the information, which is of excellent quality, really impact decision making that's of benefit to the patient?" he asks.

"And as we study the question of what kind of patient will benefit from what kind of resistance testing, then cost-effectiveness arguments fade into the background," Hicks adds.

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Jailed youth at high risk of HIV, researchers find

Youngest kids also have high-risk behaviors

Investigators have found that among incarcerated youths in Chicago there are very high rates of behavior that place the children and teen-agers at risk for HIV infection.

The study included interviews with youth, ages 10 to 18, who were arrested and detained between 1995 and 1998 at the Cook County Juvenile Temporary Detention Center in Chicago.¹

The longitudinal study included 1,829 youths, who were part of the Northwestern Juvenile Project and who were part of a random sample. Trained interviewers determined risk, using the AIDS Risk Behavior Assessment.¹

Researchers found several surprises in the data,

including high rates or risk behavior among the younger children, says **Linda A. Teplin**, PhD, an Owen L. Coon professor of psychiatry and behavior sciences and director of the Psycho-Legal Studies program at Feinberg School of Medicine at Northwestern University in Chicago.

"The very high risk behaviors among girls surprised me," she says. "The depths of these young women's problems were disturbing."

Part of the problem is that a large number of the girls who end up in detention have been abused, neglected, and are likely to be runaways who take drugs and drink alcohol, Teplin adds.

"If you want to know what the most high-risk kids are doing — the drug abusers, kids who drink, kids in the foster care system — then the logical place to study them is in a detention center," she says.

A study that looks solely at jailed youth is rare and difficult to conduct because the children and teen-agers typically stay in detention facilities for an average of two weeks, Teplin explains.

Such research also is difficult to conduct because of the very strict human subjects requirements for research involving prisoners, she says. "It's so difficult to do research on prison populations that it can be intimidating for researchers."

Nonetheless, it's an important population to study because the problems that begin when people are youths will continue as they become adult offenders and adults who place themselves at high risk for HIV infection, Teplin notes.

"We've done research on adults in jails for the last 20 years; and we found in our studies that many first got into trouble when they were kids, and they first developed psychiatric symptoms when they were kids," she says. "So, for us, a logical [approach] was to study kids in detention."

Studying HIV/AIDS risk was only one part of the study. Investigators also looked at psychiatric disorders, drug use, alcoholism, sex abuse, physical abuse, violent victimization perpetration, and other issues, Teplin says.

Here are some of the HIV/AIDS risk results:

- Of the males interviewed, more than 90% reported being sexually active, and nearly 61% had more than one sexual partner within the past three months.
- Nearly 87% of females were sexually active, and 26.3% of females had more than one sexual partner within the past three months.
- Nearly 12% of males and 6.7% of females reported having anal sex.
- About one-third of males and slightly more

than a third of females reported having unprotected sex when they were high or drunk.

- Among males, 28.2% had used alcohol and 27.6% had used marijuana before age 13; among females, 32.4% had used alcohol and 28.5% had used marijuana before age 13.
- Both males and females (greater than 40%) reported having tattoos.
- Use of other substances was reported by 14.6% of males and 21% of females, with white and Hispanics reporting far greater incidences of substance use than African-Americans (3.8% of African American males vs. 57.9% of whites and 49.8% of Hispanics, and 4% of African-American females vs. 58.4% of whites and 55% of Hispanics).
- On a more positive note, injection drug use, sharing needles, and trading sex and drugs were reported by very small percentages of the youths.

"What this tells us is that there's still opportunity to intervene with these kids because many of them have not yet engaged in the highest-risk behaviors," Teplin says.

Since the study was conducted at a research university and received no local or state funding, it was not designed to include interventions or suggestions for interventions, she points out.

"If we start intervening locally and making trouble locally, then we couldn't be able to do our research, and our research informs public health policy nationwide — not just in Cook County," Teplin says.

However, the study does suggest that interventions are needed for youths who end up in detention centers, she adds. "I think that we often neglect research intervention for correctional populations; and this research demonstrates that it's a very high-risk population, and interventions can have a huge payoff."

Since the at-risk youths who can be found in detention centers are difficult to reach in communities and schools, HIV prevention programs directed at these populations in detention centers are probably the best strategy, Teplin notes.

"This is an innovative idea because people perceive that folks in detention are safely put away and so they're not the responsibility of the community or a threat to community public health," she says.

"That's a great misperception because they only stay in detention from a few days to a few weeks, and so they are a burden to the community," Teplin adds.

Reference

1. Teplin LA, Mericle AA, McClelland GM, et al. HIV and AIDS risk behaviors in juvenile detainees: Implications for public health policy. *Am J Pub Health* 2003; 93(6):6-12. ■

Treatment for cocaine use may have HIV benefits

Study shows how to achieve best results

While it's common knowledge that methadone treatment or any treatment that helps people quit injection drug activity can help prevent HIV infection, the impact of cocaine addiction treatment is less commonly understood.

A recent study helps shed light on this intervention strategy by finding an average 40% reduction in HIV risk behavior among cocaine-dependent patients when they are provided with intense outpatient psychosocial treatment.¹

"It's well documented that having methadone maintenance reduces the HIV risk because there's less needle sharing and injecting," says **George E. Woody**, MD, member of behavioral health staff at the Philadelphia VA Medical Center and professor in the department of psychiatry at the University of Pennsylvania in Philadelphia.

"It is also well known that cocaine dependence is associated with a lot of unprotected sex, so theoretically, cocaine treatment might help reduce HIV risk as well," he explains. "Because of our interest in HIV risk reduction and the relation to treatment, and because HIV money was funding a good chunk of that study, we were interested in it and were obliged to look at the HIV risk behavior of patients."

Investigators examined HIV risk among 487 cocaine-dependent patients, including crack smoking and snorting, in a trial that examined the efficacy of various outpatient psychosocial treatments. This included group drug counseling, group counseling plus individual drug counseling, cognitive therapy, and supportive-expressive therapy. Patients received treatment two to three times per week for six weeks.

The findings showed that the average patient who had been using cocaine — primarily crack — for seven years had a decrease in cocaine use from an average of 10 days per month at baseline to one day per month at six months.

"Across the board, there was a big reduction in

cocaine use and associated with that was a reduction in psychiatric symptoms and a reduction in HIV risk behavior — all due to less unprotected sex," Woody says.

"So it looks like this approach was clearly effective to cocaine dependency in this group of patients who were not psychotic or medically ill or on psychotropic medications and who seemed to have some chance of responding to outpatient treatment," he notes.

Reference

1. Woody GE, Gallop R, Lubinsky L, et al. HIV risk reduction in the National Institute on Drug Abuse Cocaine Collaborative Treatment Study. *J AIDS* 2003; 33(1):82-87. ■

FDA Notifications

Reyataz is approved for HIV treatment

The Food and Drug Administration has approved Reyataz (atazanavir sulfate), a protease inhibitor, to be used in combination with other antiretroviral agents for the treatment of patients with HIV infection.

The approval permits patient access to a once-a-day protease inhibitor. The recommended dose of Reyataz is 400 mg (two 200 mg capsules) once daily with food.

The FDA based its approval of Reyataz on data from two Phase 2 48-week trials and from 24 to 48-week data from Phase 3 studies. Trial results showed a decrease in viral load (the amount of

CE/CME directions

To complete the post-test for *AIDS Alert*, study the questions and determine the appropriate answers. After you have completed the exam, check the answers **on p. 120**. If any of your answers are incorrect re-read the article to verify the correct answer. At the end of the semester in December, the participant will receive an evaluation form to complete and return to receive credit.

CE/CME questions

9. Recent CDC data on HIV diagnoses among injection drug users in the United States between 1994 and 2000 show a decline of how much?
 - A. 13%
 - B. 24%
 - C. 37%
 - D. 42%
10. The most recent *Antiretroviral Therapy Guidelines* offers which of the following as guidance for the use of resistance testing?
 - A. Resistance testing is advisable when a patient has viral breakthrough while on antiretrovirals but is not recommended for newly infected HIV patients.
 - B. Resistance testing should be ordered as a test of last resort when a patient appears to be failing antiretroviral therapy.
 - C. Resistance testing is recommended when a patient's viral load is not controlled by new medications or there's viral breakthrough during a regimen that was working, and conducting resistance testing before treating a newly infected HIV patient is a reasonable clinical practice.
 - D. none of the above
11. A recent study of youth in Chicago detention facilities showed this population engages in some behaviors that place them at risk for HIV infection. Which is among the findings?
 - A. Nearly 12% of males and 6.7% of females reported having anal sex.
 - B. About one-third of males and slightly more than a third of females reported having unprotected sex when high or drunk.
 - C. Among males, 28.2% used alcohol and 27.6% used marijuana before age 13; among females, 32.4% used alcohol and 28.5% used marijuana before age 13.
 - D. all of the above
12. HIV risk among cocaine-dependent patients, including crack users, can be reduced when which programs are used for the drug users?
 - A. Patients are arrested for their drug use and incarcerated long enough to break the physical addiction to cocaine.
 - B. Patients receive outpatient psychosocial treatments, such as group drug counseling, individual counseling, cognitive therapy, and supportive-expressive therapy.
 - C. Patients are enrolled in an inpatient detox and drug rehabilitation program.
 - D. none of the above

HIV-1 virus circulating in plasma) and an increase in CD4 cell counts (a measure of immune cells created by the body) in patients taking Reyataz in combination with other antiretroviral agents. These treatment benefits were observed both in patients who had not been previously treated and in patients who had previously received other antiretroviral therapy.

A significant safety concern commonly observed with the use of protease inhibitors is hyperlipidemia. Reyataz appears to have minimal impact on lipid parameters such as triglycerides and cholesterol, the FDA said.

The most common laboratory abnormality observed with the use of Reyataz is hyperbilirubinemia (abnormally high amounts of bilirubin, an orange-yellow pigment in the bile that forms as a product of hemoglobin; excess amounts in the blood produce the yellow appearance observed in jaundice) in the blood.

This laboratory abnormality resulted in the clinical adverse event of jaundice (yellowing of the skin) or scleral icterus (yellowing of the eyes) in 15% to 24% of subjects taking Reyataz. This abnormality was shown to be reversible upon discontinuation of the drug. Hyperbilirubinemia with Reyataz did not appear to be associated with an increased risk of liver injury.

The most frequently reported adverse events among patients in the clinical trials were nausea, infection, headache, vomiting, diarrhea, abdominal pain, somnolence (drowsiness), insomnia, and fever.

Currently, there are six other protease inhibitors approved by FDA for the treatment of HIV infection. These medications work at the final stages of viral replication and attempt to prevent HIV from making new copies of itself by interfering with the HIV protease enzyme. As a result, the new copies of HIV are not able to infect new cells.

Reyataz is manufactured by Bristol-Myers Squibb Company of Princeton, NJ. ■

CE/CME answers

The correct answers to this month's CME/CE questions are as shown below:

- 9. D
- 10. C
- 11. D
- 12. B

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CE objectives

After reading this issue of *AIDS Alert*, CE participants should be able to:

- identify the particular clinical, legal, or scientific issues related to AIDS patient care;
- describe how those issues affect nurses, physicians, hospitals, clinics, or the health care industry in general;
- cite practical solutions to the problems associated with those issues, based on overall expert guidelines from the Centers for Disease Control and Prevention or other authorities and/or based on independent recommendations from specific clinicians at individual institutions. ■