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# HIV Clinician

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## Largely-hidden HIV epidemic among adolescents creates challenge for clinicians

*April Palmer, MD*

Since the first diagnosis of AIDS was made in a series of gay white males 25 years ago, the demographics of the epidemic have shifted.

Although men who have sex with men (MSM) remain a high risk group, the worldwide epidemic now primarily involves people of color, including women and youth.<sup>1</sup>

In the US, the percentage of estimated new HIV cases (from the 33 states with name-based HIV reporting) in youth (ages 13-24 years) has increased from 10.4% in 2001 to 12.6% in 2004.<sup>2</sup>

These numbers may not reflect the true infection rate in youth as several states do not report HIV infection without AIDS and many at risk youth are not tested.

The Committee on Pediatric AIDS and Committee on Adolescence estimate that only 50% of infected youth are diagnosed.<sup>3</sup>

A recent longitudinal study in adults 19-24 years of age (Add Health study), found the overall HIV prevalence in this group to be 1/1000.<sup>4</sup>

Since 1999 there has been a 37% increase in the number of youth living with AIDS.

Through 2003, 4% percent of total AIDS cases and 2% of AIDS deaths have occurred in youth.

In 2003, only 17% of youth aged 15-24 years progressed to AIDS within 12 months of HIV diagnosis.<sup>5</sup>

Therefore, a large population of undiagnosed HIV-infected youth is living in the US and at a stage in their disease where treatment is likely to prevent progression to AIDS.

The challenge for outreach workers, case managers and clinicians is to locate HIV-infected youth, bring them into care, prevent attrition from medical care, and assure medication adherence for youth needing antiretroviral therapy.

Many risk factors associated with HIV infection in adults are seen in youth.

The main risk factor for all age groups is race/ethnicity with the highest prevalence rates occurring in African Americans.

This racial disparity is most striking when noting that al-

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## Medicine

# Estimate: Only 50% of HIV-infected youth are diagnosed

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though African Americans are only 17% of the general adolescent population, they make up 70% of adolescents diagnosed with HIV/AIDS.

Some adolescents were infected perinatally and of this group, 69% are African American.<sup>7</sup>

Sexual transmission is the most frequently cited behavioral risk factor. Heterosexual transmission is reported in 64% and 81% of cumulative AIDS cases in females ages 13-19 years and 20-24 years, respectively.<sup>6</sup>

Of this group, 70% are African American.<sup>7</sup> HIV prevalence in disadvantaged African American adolescent females is high at 4.9/1000 Job Corp applicants.

When evaluating prevalence rates per race/ethnicity, gender and home region, African American females from the South had the highest HIV prevalence rate at 6.4/1000 Job Corps applicants.<sup>8</sup>

Several factors may explain this racial disparity in adolescent females.

Although poverty and poor access to health care have been proposed as explanations for racial disparity, the existence of sexual partner networks consisting of congruent sexual relationships has been found to be significant.<sup>4</sup>

Male-to-male sexual contact is reported in 58% and 69% of cumulative AIDS cases in males 13-19 years of age and 20-24 years of age, respectively.<sup>6</sup>

Sexual risk behaviors are amplified in certain youth groups.

Homeless and runaway youth are likely to engage in "survival sex" for drugs, food and housing.

High rates of mental illness, including post-traumatic stress disorder from prior sexual abuse, and substance abuse in gay/lesbian, bisexual and transgender youth groups, increases their risk for engaging in high risk sexual behaviors.<sup>9,10</sup>

Gender-based violence is reported frequently among African American females and may contribute to high risk sexual behavior either indirectly through inability to negoti-

ate condom use or directly through forced sexual encounters.<sup>11</sup>

Adolescents are inherent risk takers. However, certain risk factors associated with HIV infection appear to be on the decline nationwide.

According to the Center for Disease Control's Youth Risk Behavior Survey of High School Students, conducted biannually since 1991, prevalence rates of ever having sexual intercourse, sexual intercourse with  $\geq 4$  people during their lifetime, and current sexual activity have shown a linear decrease from 1991-2005.

Prevalence of the above risk factors remains high in certain geographic areas and demographic groups.

Compared to the national average in 2005, youth in New Orleans reported higher than average rates of ever having sexual intercourse (61.3% vs. 46.8%), sexual intercourse with  $\geq 4$  people during their lifetime (28.1% vs. 14.3%), and current sexual activity (45.2% vs. 33.9%).

Nationwide, African American and Hispanic youth report higher rates of



the above risk factors and males report higher rates than females.<sup>12</sup>

Both primary and secondary HIV prevention programs may impact HIV/AIDS disease rates in adolescents.

Primary prevention programs attempt to significantly reduce HIV risk behaviors.

Secondary prevention programs involve early identification of HIV-infected individuals and referral to care.

The goal of secondary prevention is to delay or prevent progression to AIDS.

Controversy still exists over the content of HIV/STD and pregnancy prevention programs for adolescents in the US.

Since 1996, Congress has funded abstinence-only education.

Studies to date have not clearly shown efficacy with this approach.<sup>13</sup> Many of these programs involve virginity pledges.

Results from the 1995-1996 Add Health study showed that inconsistencies occurred from year to year on reporting of sexual activity and virginity pledges.

Participants who changed their religious beliefs (later renounced reli-

gious association) or sexual identity were more likely to retract their virginity pledges.<sup>14</sup>

Programs aimed at reducing early onset of sexual activity may still prove useful but will need to be directed at young adolescents, as early as age 11-12 for girls.

Primary HIV/STD prevention programs with safer sex messages have been

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studied in several groups of high risk adolescents.

Programs which proved successful in either increasing HIV knowledge and/or increasing condom use were time intensive, culturally sensitive, and involved youth and adult educators.<sup>15,16</sup>

Several studies show that involvement of the adolescents' mothers in HIV prevention programs may offer additional benefit.<sup>17,18</sup>

HIV prevention messages are important for HIV-

infected teens to reduce their risk of acquiring other STD's and spreading HIV.

Perinatally infected adolescents should not be left out of safer sex interventions.

A recent study has shown that perinatally infected teens have high rates of sexual activity and desire for future pregnancy.<sup>19</sup>

Identifying HIV-infected adolescents has proven challenging.

Laws concerning parental notification for HIV testing of adolescents vary by state.

However, since HIV is considered a reportable STD in many states, HIV testing of adolescents without parental consent is allowed in most states.<sup>3</sup>

Few opportunities for HIV testing currently exist for teens.

Females are more likely to be tested than males due to routine HIV testing during pregnancy.

Females may also be tested in public family planning clinics. STD treatment, African American race, and having public insurance are associated with increased rates of HIV testing in youth.<sup>20</sup>

Since adolescents rarely self-initiate HIV testing,

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## Medicine

# More innovative research is needed to curb teen HIV epidemic

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HIV testing of adolescents during routine medical care may increase identification of HIV-infected youth.

After adolescents are identified as HIV positive, rapid referral into medical care is imperative.

Referral delays were seen in one study when testing was performed in a non-medical facility (e.g., juvenile detention center).<sup>21</sup>

Once an HIV-infected adolescent is in care, retaining him/her in regular care and obtaining good adherence to medication remains challenging.

Barriers to keeping clinical appointments and taking medications consistently include poor HIV and/or antiretroviral knowledge, domestic violence and mental illness.<sup>22-24</sup>

HIV infection in youth remains a largely hidden epidemic.

However, gains in understanding how to diagnose and treat HIV-infected youth have been made over the last decade.

More innovative research is needed to prevent further spread of HIV in our youth.

From previous research it is clear that in order to stem the tide of this epidemic, intervention needs to be comprehensive, culturally sensitive, age and gender specific, and youth-oriented. ♦

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## Nursing

# HPV vaccination: important for perinatally-infected adolescents

Deborah Konkle-Parker,  
PhD, FNP, ACRN

Merck has developed a new vaccine for prevention of infection with the four types of Human Papilloma Virus (HPV) that are present in more than half of the cases of invasive cervical cancer and high-grade intraepithelial lesions.

Because of the widespread nature of HPV virus, individuals who are sexually active are likely to have been infected already with HPV, and thus a preventive vaccine is not useful.

The most appropriate target population for the HPV vaccine is the group of adolescents who have not yet started sexual activity, in order to prevent infection with this potentially dangerous virus.

### HPV virus

HPV infections are sexually transmitted infections that can be transmitted through any genital contact, not only intercourse.

Most of the time, these infections are asymptomatic and resolve spontaneously. (KaiserEDU.org, 2006).

HPV is present in more than 90% of the cases of

cervical squamous cell carcinomas.

HPV types 16 and 18 account for 64% of the HPV types which are associated with cases of carcinoma (Berry & Palefsky, 1998).

It appears that these viruses become integrated into the chromosomes of the tumor suppressor cells of the cervix and anus, which can lead to increased chromosomal instability and proliferation of cells, leading to dysplasia.

Although most HPV infections do not progress to invasive cancers, these changes make it more likely to lead toward cancer.

### HIV and HPV

According to a paper by Berry & Palefsky at UCSF (1998), multiple studies have shown a higher prevalence of cervical HPV infection in HIV-infected women compared to HIV-negative women.

A large New York study of 344 HIV-positive and 325 HIV-negative women showed that the prevalence of HPV of any type was significantly greater in women who were seropositive compared to seronegative, 60% vs. 36%.

In addition, multiple types of HPV were present in 51% of the HIV-positive women compared to 26% of the HIV-negative women.

Another study from San Francisco General Hospital of 114 women showed that 20% of the HIV-positive women had cervical squamous epithelial lesions (CSIL), whereas only 4% of the HIV-negative women had CSIL. All of the women with high grade SIL were HIV-infected.

Similar results were found in another larger study from New York.

In addition, the likelihood of persistent HPV infection was related to the level of immunosuppression, with women with CD4 counts less than 200 being more than twice as likely to have persistence compared to women with CD4 counts greater than 500.

In addition, individuals with HIV are more likely than the general public to have had multiple sex partners, making infection with HPV Type 16 or 18 more probable.

Anal cancer is a rare cancer that is becoming more widespread, and actu-

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## Nursing

# Persistent HPV related to level of immunosuppression

### HPV vaccination, from previous page

ally more common than cervical cancer in the US due to the widespread screening for cervical cancer (Berry & Palefsky, 1998).

The relative risk of anal cancer in homosexual men is estimated to be 80-fold higher than in heterosexual men.

HPV is thought to be implicated in the development of anal cancer in much the same way as in cervical cancer.

For this reason, some are recommending routine anal Pap smears as part of routine medical care, although this remains controversial.

### **HPV Vaccine: Gardasil®**

Gardasil® was developed by Merck, licensed for use in girls/women aged 9-26.

It is particularly recommended for females aged 11-12 who are not yet sexually active in order to prevent infection with HPV 16 and 18, strains which cause 70% of cervical cancer cases, and HPV 6 and 11, which cause 90% of genital warts cases.

Sexually active women may have already acquired the four types of HPV that

the vaccine covers so it may not have any preventive effect, but those with a minimal number of partners may still have some benefit.

It is not recommended for pregnant women.

The vaccine is almost 100% effective in preventing diseases caused by the four HPV types covered by the vaccine, and the immunity is at least for five years.

It is unknown if or when a booster vaccine is needed. It requires three doses over a six month period.

It is unknown if the vaccine is effective in boys or men for preventing genital warts or anal/penile cancer.

Cervical cancer screening is still recommended after the HPV vaccine because it doesn't protect against all types of HPV that cause cervical cancer and individuals may have already been infected with one of the four HPV types prior to the vaccination.

### **Implication for Nurses**

For those individuals who are not yet sexually active, recommendation for the HPV vaccine may prevent potential life-threatening cervical cancer.

This may be the case for men who have sex with men as well, in order to prevent anal cancer and genital warts, though the vaccine has not been tested in this population.❖

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## Research

# Hurricane Katrina's effect on research at one HIV clinic

Rebecca Clark, MD, PhD

Pre-Katrina, several pharmaceutical-supported clinical trials and epidemiologic studies were conducted in the HIV Outpatient Program (HOP) clinic of the Medical Center of Louisiana at New Orleans.

HOP clinical services were forced to close temporarily because of Hurricane Katrina.

They reopened initially in Baton Rouge, and then expanded with limited services to new locations in New Orleans in October 2005.

The clinic opened November in a temporary location in the Hutchinson Building on Tulane Avenue, but moved back to its old location on South Roman Street in April 2006.

With the exception of one pharmaceutical trial studying a new entry inhibitor, all studies were placed on hold following Hurricane Katrina.

The local Principal Investigator, Dr. Ronald Wilcox, worked with the pharmaceutical company and the hospital administrations in Baton Rouge and New Orleans to keep the entry inhibitor study open and one enrolled active patient still in Louisiana post-Katrina supplied with study drug.

LSUHSC was awarded one of the National Institutes of Health-supported Sexually Transmitted Infections/Topical Microbicides Cooperative Research Centers (STI TM CRCs) in August of 2004.

Three of the four projects were dependent upon New Orleans study populations that were scattered throughout the United States following the hurricane.

One of the projects was a clinical trial studying two different metronidazole treatment regimens for trichomonas vaginitis in HIV-infected women.

This study was halted in New Orleans until April 2006, but new clinical investigation sites were established or evaluated in Jackson, MI, and Houston, TX.

The study reopened when the clinic moved back to the Roman Street location. Three new subjects have been enrolled at this site to date.

Dr. Michael Hagensee of LSUHSC is studying the risks of cervical cancer in women with HIV.

Specifically, he has some preliminary data on a possible interaction between two cancer-causing viruses: Epstein-Barr virus (EBV) and the human papillomavirus (HPV).

These viruses may interact in the HIV-infected woman's cervix to lead to a higher rate of cervical dysplasia.

Dr. Hagensee is also studying the risk for oral HPV infection in HIV-infected individuals.

He and others have noted an increase in oral warts since the advent of highly active antiretroviral therapy and are trying to determine why this has happened.

Dr. Janet Leigh is recruiting for an NIH fungal study and is looking for patients with a history of sporadic or recurrent oral pharyngeal candidiasis.

The purpose of the study is to evaluate the local immune response to superficial fungal infections.

Two studies which were placed on hold because of Hurricane Katrina will hopefully reopen this summer in the HOP clinic.

These include the Roche supported phase IV retrospective study that will determine the association between pneumonia and enfurvirtide, and the Bristol-Myers Squibb-supported study to evaluate the prevalence of resistance mutations to atazanavir among persons using this drug.

Both the National Institutes of Health-sponsored Pediatric AIDS Clinical Trials Unit (ACTU) and Community Programs for Clinical Research on AIDS (CPCRA) unit continue to offer participation into national clinical trials.

Currently, the only open trial available through CPCRA is a study which is evaluating the association between genetics and characteristics of the HIV virus among persons already enrolled on CPCRA clinical trials.

Although the Pediatric ACTU will be opening up several studies at Children's and Lakeside hospitals for either pregnant women or children, the only study open at HOP is an antiretroviral study for naïve adolescents.

Given the decrease in the HOP patient population and in overall financial support, HOP has downsized research personnel, but will be continuing to offer participation in a limited selection of studies to patients.

The plan for the next few years will be to open selected early access or "compassionate use" studies to provide drug to patients who may not have other options.

In addition, a few other pharmaceutical-sponsored studies which are of interest to the HOP patient population may be opened, depending upon study nurse support.

HOP patients will continue to be offered participation into studies available through other study or clinical trials groups, including the STI TM CRC, Pediatric ACTU, and CPCRA.

Investigators wishing to conduct studies in HOP, or have HOP patients referred to their studies, need to submit applications to the HOP Research Committee.

Please contact Dr. Rebecca Clark at [rclark@lsuhsc.edu](mailto:rclark@lsuhsc.edu) if you have any questions. ♦

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## Stay current with the latest HIV/AIDS journal articles

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NEW ORLEANS, LOUISIANA

*A clinical preceptorship for nurses and clinical service providers: Comprehensive Management of the Patient with HIV Disease—November 6-7, 2006. 21 contact hours. Contact Danielle Pierce, 504-903-0788 or dpierce@lsuhsc.edu*

NEW ORLEANS, LOUISIANA

*A clinical preceptorship for HIV-experienced physicians, nurse practitioners, physician assistants: Advanced Care and Management of the Patient with HIV Disease—December 11-12, 2006. 8.0 CMEs. Contact Danielle Pierce, 504-903-0788 or dpierce@lsuhsc.edu*

NEW ORLEANS, LOUISIANA

*A clinical preceptorship for MDs, NPs, PAs: Care and Management of the Patient with HIV Disease—February 5-6, 2007. 13.5 CMEs. Contact Danielle Pierce, 504-903-0788 or dpierce@lsuhsc.edu*

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*A multidisciplinary preceptorship for physicians, dentists, pharmacists, nurses: Comprehensive Management of HIV Disease. For current date, contact Jessie Lindsay, 601-984-5542 or jlindsay@medicine.umsmed.edu*

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*Clinical preceptorships for primary care providers—ongoing by request. To arrange, contact Derrick Newby, 870-535-3062 or dnewby700@aol.com*

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