

Why is the HIV prevalence rate for black women 18 times greater than the rate for white women?

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Presenter Disclosures

Gilbert R. Lavoie, M.D., MPH

(1)The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

“No relationships to disclose”

HIV Among Black Females

OBJECTIVES

1. Expose the face of the HIV epidemic – MAD
2. Involve the community - Protect the children



Definitions and Abbreviations

- MSM: Men who have sex with men: anal intercourse (AI)*
- IDU: Injection drug use
- Hetero: Heterosexual: vaginal (VI) and/or anal intercourse (AI)
- STD's: Sexually transmitted diseases
- Core transmitter groups: MSM (AI) and IDU
- Multiple sexual partners: vaginal (VI) and/or anal intercourse (AI)
- PRAI: Protected receptive anal intercourse
- PRVI: Protected receptive vaginal intercourse
- URVI: Unprotected receptive vaginal intercourse
- URAI: Unprotected receptive anal intercourse



The Problem:

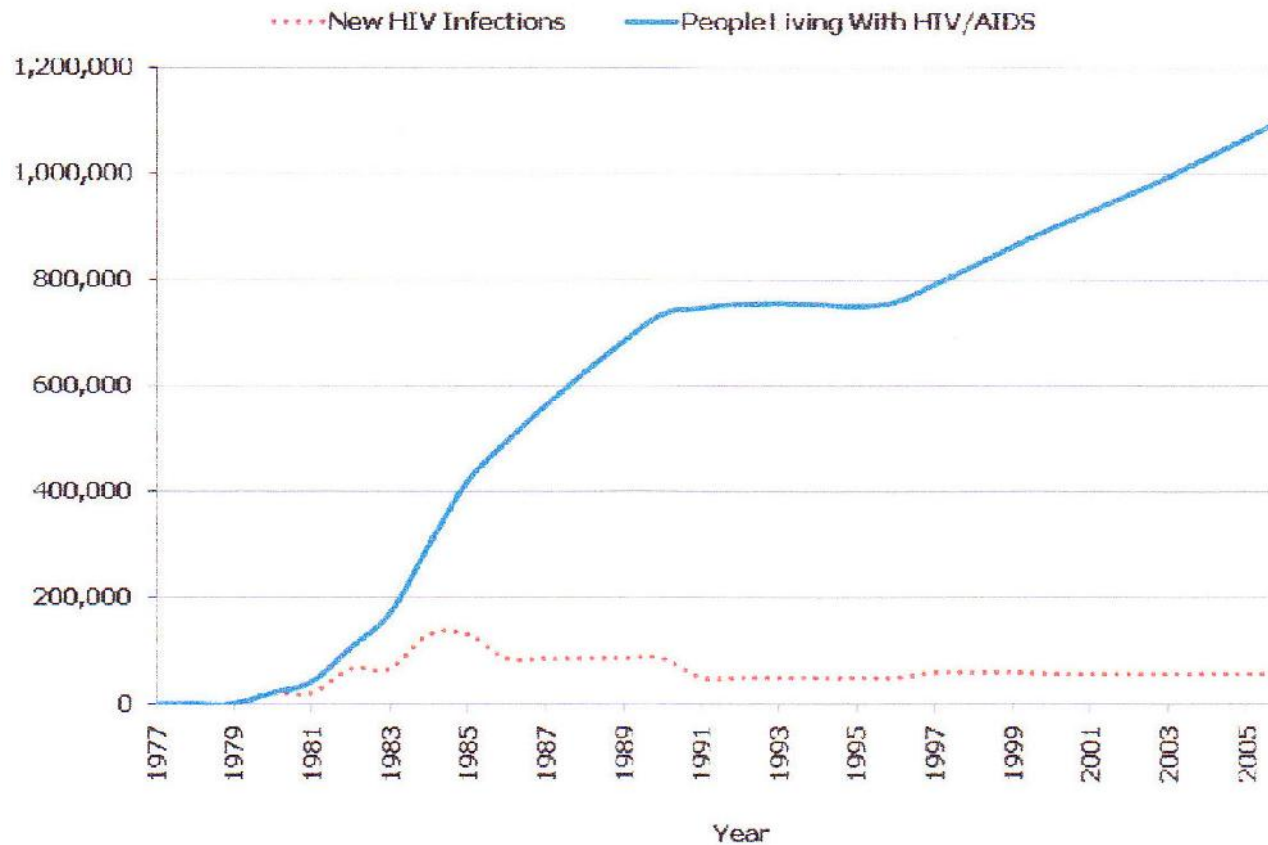
- The HIV prevalence rate (U.S., 2006) for black females is 1,122.4 per 100,000, vs. 62.7 for white females. This rate for black females is nearly 18x greater than that for white females.*

Why? And what can we do about it?

- We will look at the characteristics/behaviors that propel the HIV epidemic.
- We will look at the epidemiology of HIV transmission, comparing blacks to whites, focusing on core transmitter groups, heterosexual communities, and early sexual debut.
- We will document the estimated per act risk for HIV transmission for each of the three major exposure routes for women.
- Finally, we will propose an information paradigm shift that unbundles the sexual exposure routes of HIV transmission and addresses the driving forces of the epidemic affecting black women.



HIV Prevalence (blue line) and New HIV Infections (dotted line) in the United States, Years 1977–2006



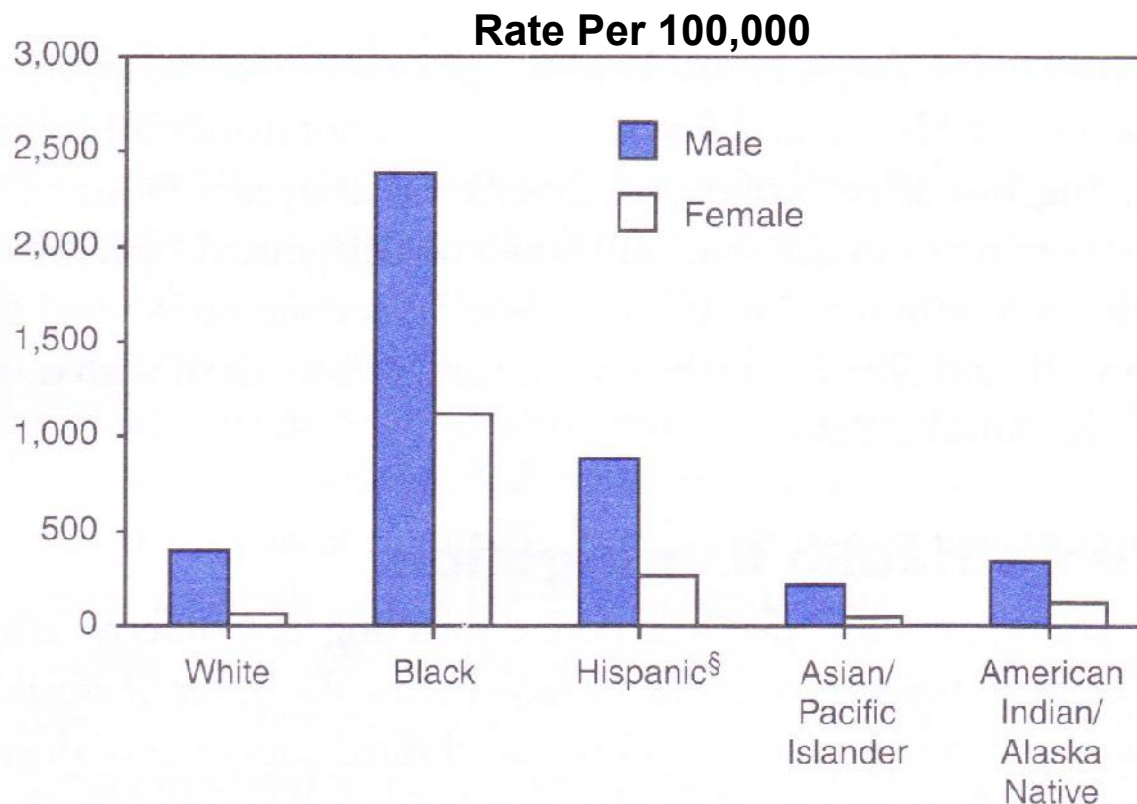
Will this ever end?



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Source: CDC. HIV in the US: An overview. July 2010, see chart on p 2. Also Hall HI, Song R, Rhodes P, et al. Estimation of HIV Incidence in the US. *JAMA* 2008; 300: 520-9. Also CDC. HIV Prevalence Estimates—US, 2006. *MMWR* 2008;57:1073-6.

Estimated HIV Prevalence Rate Among Persons Aged ≥ 13 Years, by Race/Sex – United States, 2006



- By 2006, black males and black females had a much higher prevalence of HIV per 100,000 population than any other race.

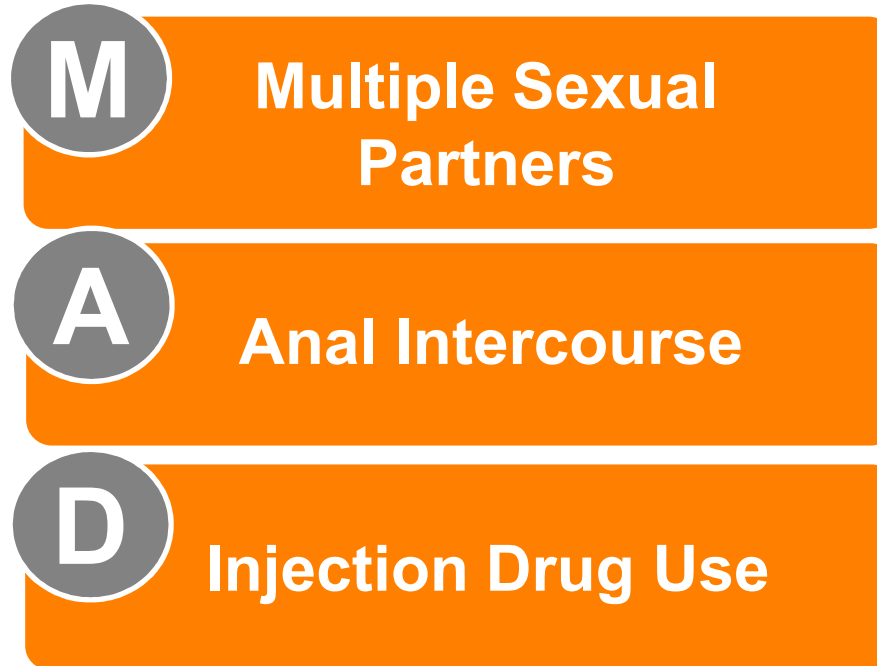


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Source: CDC.HIV Prevalence estimates – US, 2006 . MMWR 2008; 57 (No. 39)1075.

The Face of the HIV Epidemic is MAD

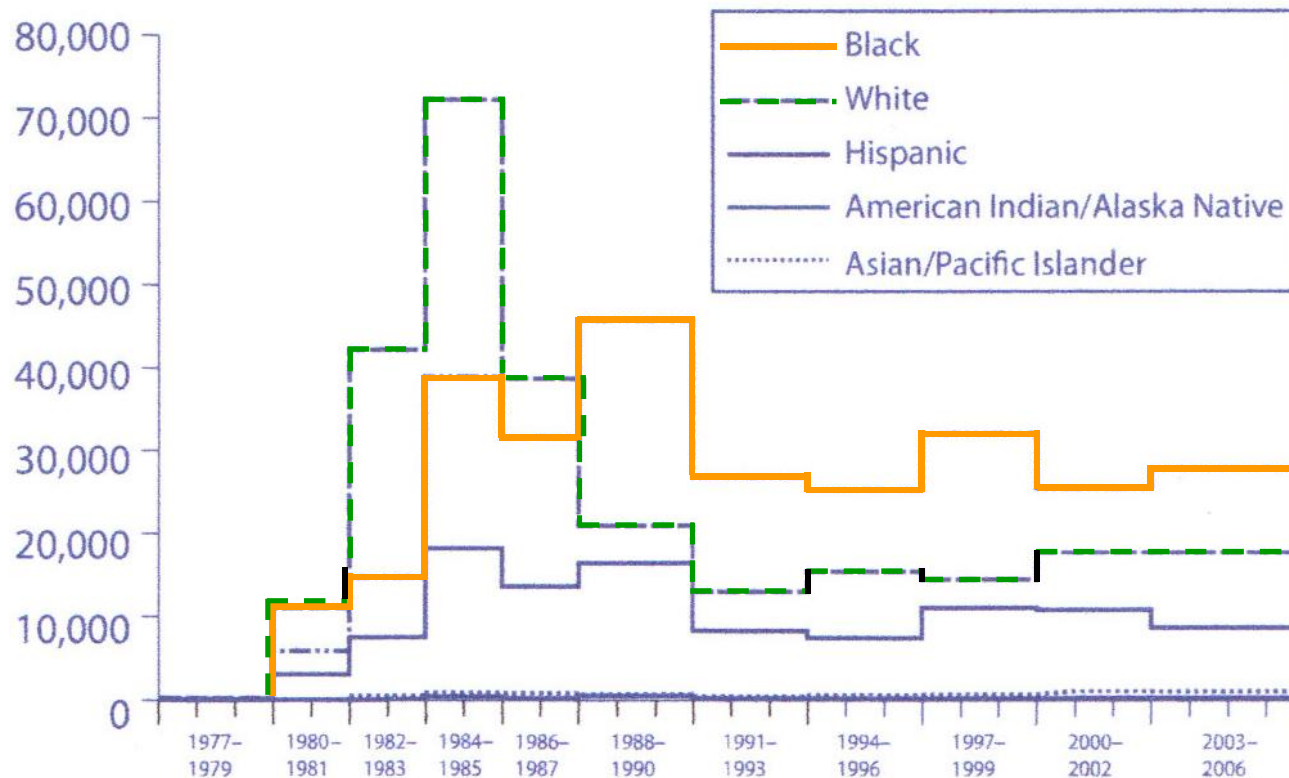
- In the 1980s when HIV became a dominant epidemic, there were three major characteristics/behaviors* discovered very early that were responsible for propelling the epidemic forward:



- As we study this epidemic we will keep in mind these three major behaviors. Now let's look at the data.



Estimated Number of New HIV Infections 1977-2006 By Race (Extended Back-Calculation Model)



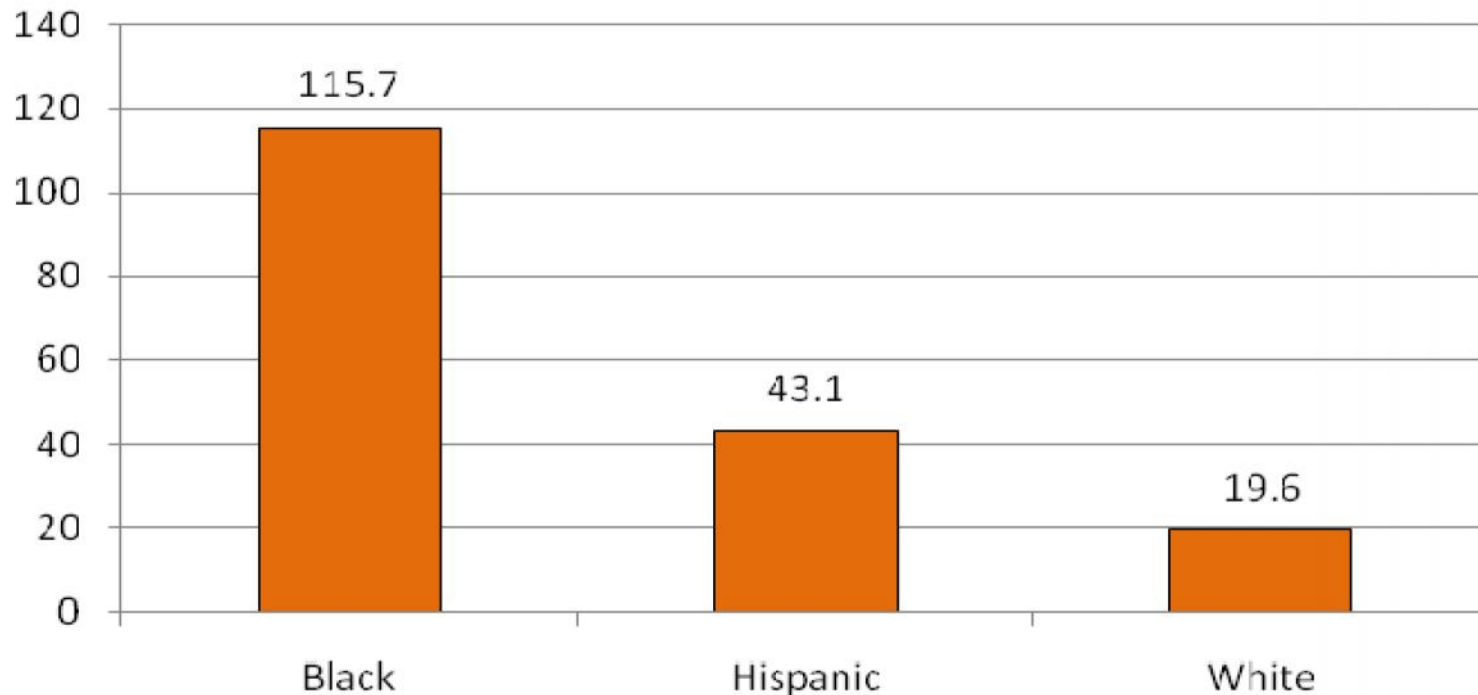
- The black population (orange line) has had a higher number (in absolute numbers) of HIV infections than the white or Hispanic populations since 1988 (22 years), despite the blacks being only ~13% of the population. ***We cannot let this continue.***



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Source: - Hall HI, Song R, Rhodes P, et al. Estimation of HIV Incidence in the US. *JAMA* 2008; 300: 520-9, Figure 3 - Note: Estimates =2-year intervals during 1980-1987, 3 year intervals during 1977-1979 and 1988-2002, and 4 year interval for 2003-6.

Rates of New HIV Infections Among Males, per 100,000 population, US 2006



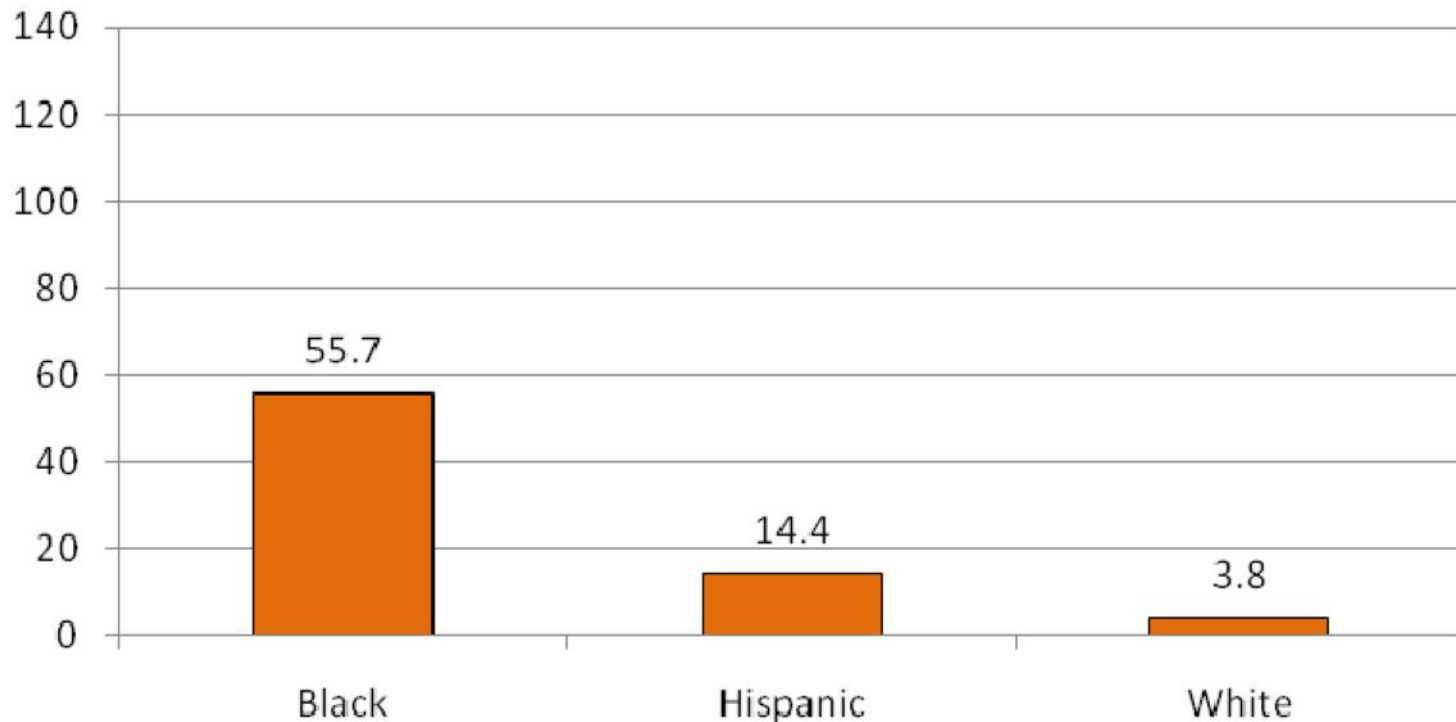
- Black males had 5.9x more new HIV infections than white males.



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Source: CDC - HIV/AIDS Surveillance Report vol. 19; Cases of infection and AIDS in the US and dependent areas, 2007. Table 3. Estimated numbers and rates (per 100,000 population) of new HIV infections in adults and adolescents, 2006--50 states and the District of Columbia.

Rates of New HIV Infections Among Females, per 100,000 Population, US 2006



- Black females had 14.7x more new HIV infections than white females. Why the disparity? To answer this we will look at the epidemiology of HIV transmission, comparing blacks to whites.



Source: CDC - HIV/AIDS Surveillance Report vol. 19; Cases of infection and AIDS in the US and dependent areas, 2007. Table 3. Estimated numbers and rates (per 100,000 population) of new HIV infections in adults and adolescents, 2006--50 states and the District of Columbia.

Compare Black Males with HIV to White Males with HIV by Exposure Route of Transmission – New Cases in 2008

	Black Male		White Male
MSM (AI)	$\frac{9,136}{14,283} = 64.0\%$		$\frac{8,483}{9,918} = 85.5\%$
IDU	$\frac{1,430}{14,283} = 10.0\%$		$\frac{458}{9,918} = 4.6\%$
MSM+IDU	$\frac{426}{14,283} = 3.0\%$		$\frac{465}{9,918} = 4.7\%$
Hetero (VI/AI)	$\frac{3,245}{14,283} = 22.7\%$		$\frac{468}{9,918} = 4.7\%$

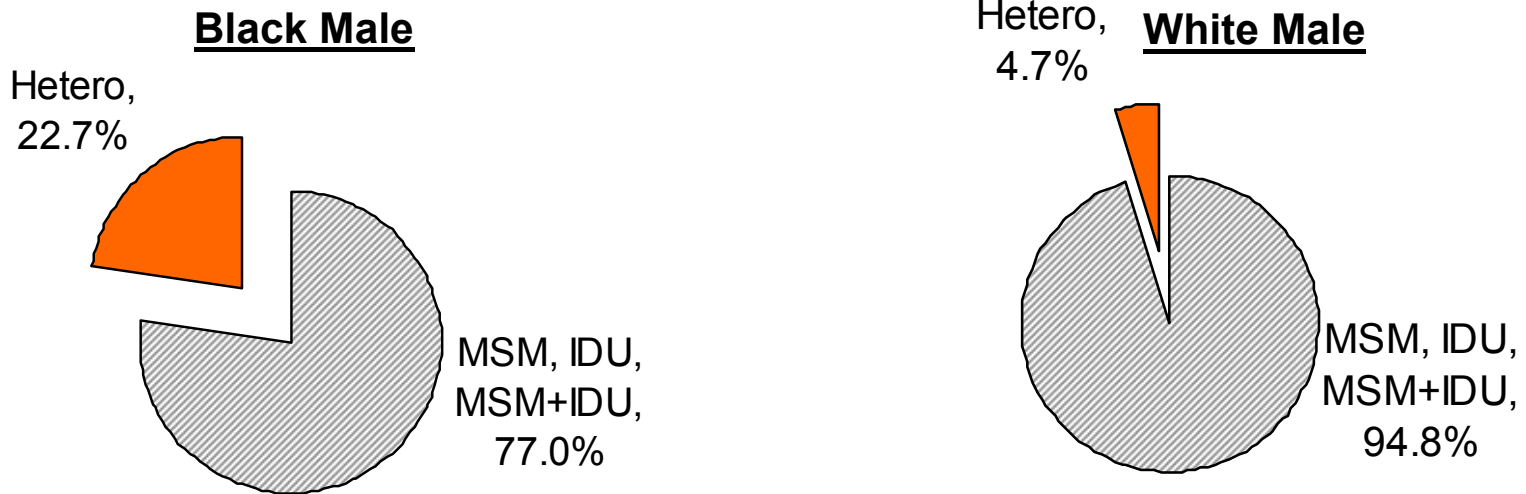
- MSM (anal intercourse) and IDU are the core transmitter groups (all in orange) of HIV in both the black and white races.



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Source: CDC– HIV Surveillance Report 2008. Diagnosis of HIV infections and AIDS in the US and dependent areas, 2008. Vol. 20. Table 3b. Diagnoses of HIV infection, by race/ ethnicity and selected characteristics, 2008 – 37 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting .

Compare Black Males with HIV to White Males with HIV by Exposure Route of Transmission – New Cases in 2008



- Core transmitter groups - MSM (which is anal intercourse- AI) plus IDU- account for 94.8% of HIV in the white males. Without MSM (AI) and IDU, heterosexual activity alone might not maintain this epidemic in the white males.
- Heterosexual HIV is 4.8x greater in black males than in white males, which means that HIV has moved from core transmitter groups (MSM and IDU) to the black heterosexual community.

Source: CDC– HIV Surveillance Report 2008. Diagnosis of HIV infections and AIDS in the US and dependent areas, 2008. Vol. 20. Table 3b. Diagnoses of HIV infection, by race/ ethnicity and selected characteristics, 2008 – 37 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting .



Key Question:

- Why has HIV in the blacks moved from **core transmitter groups** (MSM and IDU) to the **heterosexual community**, resulting in the HIV disparity between black and white females?

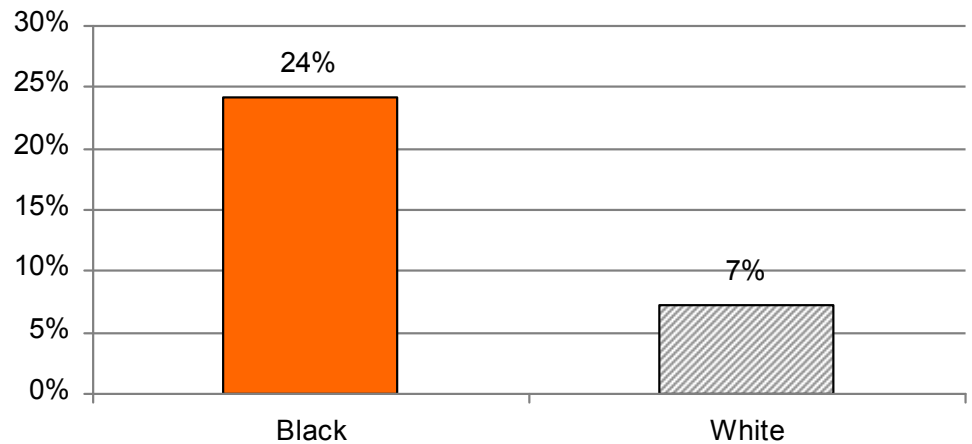
Let us compare black and white core transmitter groups in more detail:

- MSM (AI)
- IDU



Prevalence of HIV among MSM, 2008

MSM	Total no. tested	HIV Prevalence	
		No.	%
Black			
20-24 yrs	482	95	
25-29 yrs	346	105	
	<u>828</u>	<u>200</u>	24%
White			
20-24 yrs	440	29	
25-29 yrs	607	46	
	<u>1,047</u>	<u>75</u>	7%



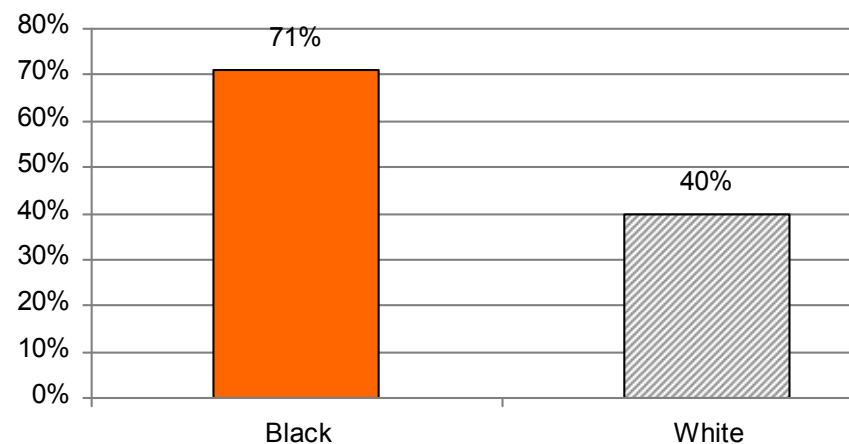
- Black MSM have 24% HIV prevalence compared to white MSM who have only 7% HIV prevalence.



Source: : CDC. Prevalence and Awareness of HIV Infection Among Men Who Have Sex With Men – 21 Cities, Unites States, 2008. MMWR 2010;59:1201-27. Table 2 on page 1205: Prevalence of human immunodeficiency virus (HIV) infection and proportion unaware of HIV infection among young men who have sex with men, by age group and race/ethnicity - National HIV Behavior Surveillance System, 21 U.S. cities, 2008

MSM Who Are Unaware of HIV Infection, 2008

MSM	Total no. tested	HIV Prevalence		Unaware of HIV Infection	
		No.	%	No.	%
Black					
20-24 yrs	482	95		66	
25-29 yrs	346	105		76	
	<u>828</u>	<u>200</u>	24%	<u>142</u>	71%
White					
20-24 yrs	440	29		16	
25-29 yrs	607	46		14	
	<u>1,047</u>	<u>75</u>	7%	<u>30</u>	40%



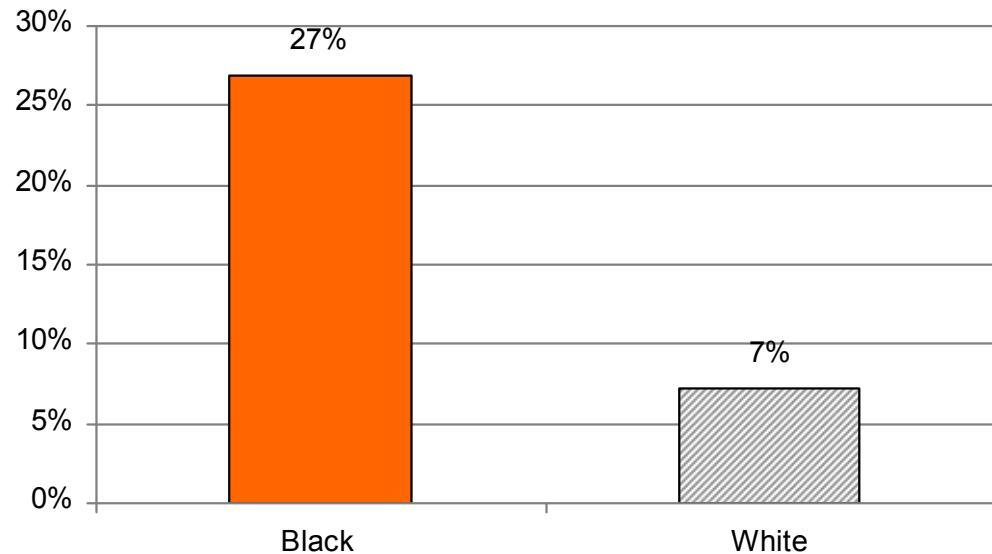
- Among black MSM, 71% are unaware of their HIV diagnosis, compared to 40% of white MSM.



Source: CDC. Prevalence and Awareness of HIV Infection Among Men Who Have Sex With Men – 21 Cities, United States, 2008. MMWR 2010;59:1201-27. Table 2 on page 1205: Prevalence of human immunodeficiency virus (HIV) infection and proportion unaware of HIV infection among young men who have sex with men, by age group and race/ethnicity - National HIV Behavior Surveillance System, 21 U.S. cities, 2008.

Percentage of MSM Who Also Have Sex With a Female By Race, November 2003-April 2005

MSM	No.	Female partner Vaginal or Anal	
Black	1,739	468	27%
White	4,510	327	7%

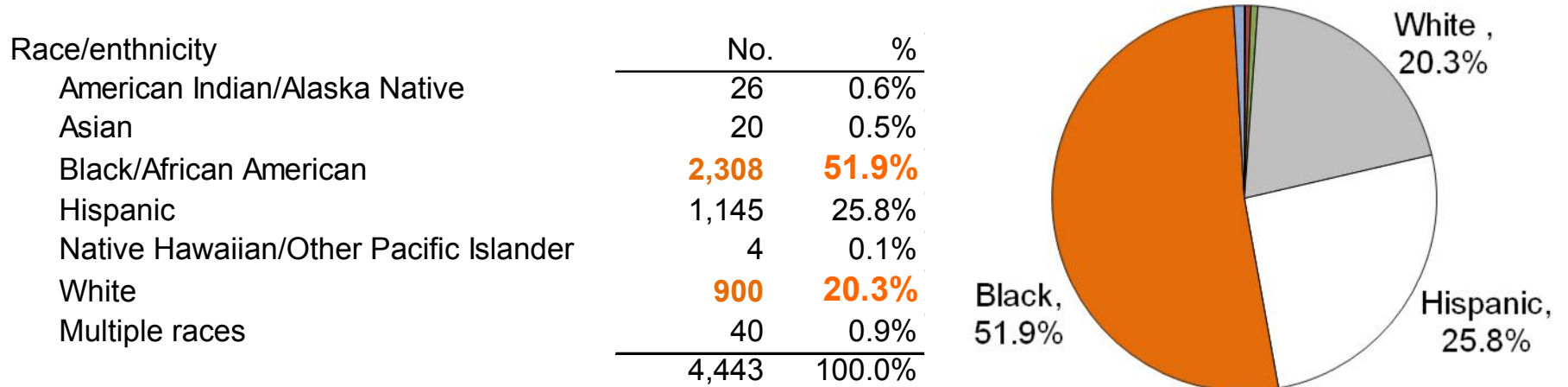


- 27% of black MSM also have sex with a female, compared to only 7% of white MSM.

Source: CDC. Immunodeficiency Virus (HIV) Risk, Prevention, and Testing Behaviors -- United States, National HIV Behavioral Surveillance System: Men Who Have Sex with Men. November 2003-April 2005. MMWR 2006;55(SS06) 1-16. Table 7 on page 23: Number and percentage of participants reporting having had sex with both male and female partners during the preceding 12 months - United States, National HIV Behavioral Surveillance System; Men Who Have Sex with Men, November 2003 - April 2005.



Male and Female HIV Infections Attributed to Injection Drug Use (IDU), by Race, 2008



- More than half (52%) of the diagnosed HIV infections attributed to IDU were among blacks as compared to whites (20.3%).*
- Over 50% of black IDU's have multiple sexual partners.**
- Therefore, the black male and female IDU core transmitter group is a significant contributor to the transmission of HIV to the heterosexual community via heterosexual vaginal and/or anal intercourse.



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Source: *CDC– HIV Surveillance Report 2008. Diagnosis of HIV infections and AIDS in the US and dependent areas, 2008. Vol. 20. Table 3b. Diagnoses of HIV infection, by race/ ethnicity and selected characteristics, 2008 – 37 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting . **CDC. HIV-Associated Behaviors Among Injecting Drug Users – 23 Cities, United States, May 2005-February 2006. MMWR 2009;58 (No. 13)329-32.

Summary: Why Black HIV has Moved from Core Transmitter Groups to the Heterosexual Community

White male HIV has moved only slightly from its core transmitter groups into the white male heterosexual community. By contrast, black male heterosexual HIV is 4.8x greater than that of the white male.

Black MSM have a higher HIV prevalence, are less aware of their HIV infection, and a much larger percentage have sex with a female than white MSM.

There are more than twice as many black than white IDU's with HIV, and more than half of these have multiple sexual partners.

Black MSM and IDU's (core transmitter groups) contribute significantly more HIV to their heterosexual community than the whites.



What Next?

- As we have seen, black and white **core transmitter groups** are different enough to certainly contribute to the HIV disparity between black and white females.

Now the question is:

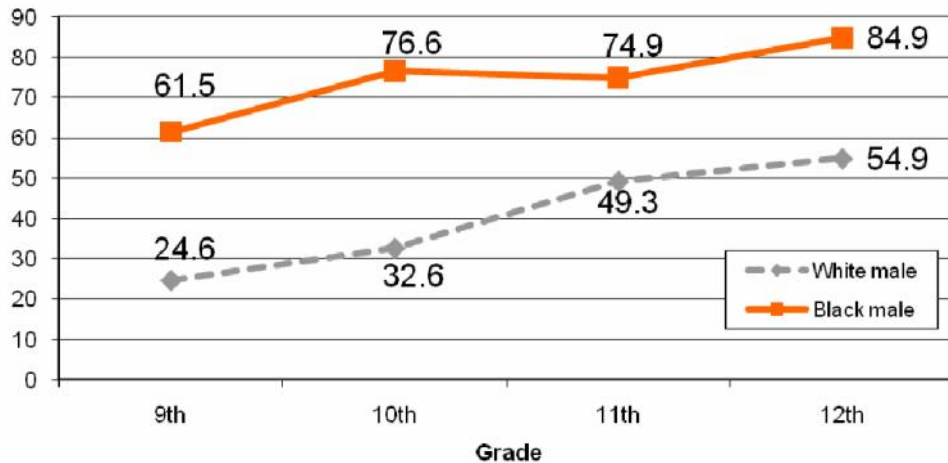
- Is there a difference in the sexual behaviors in the black and white **heterosexual communities** which also contributes to the disparity of HIV infections between black and white females?
- The following CDC High School Youth Behavior Risk Survey of 2009 and other CDC data will help to answer this question.



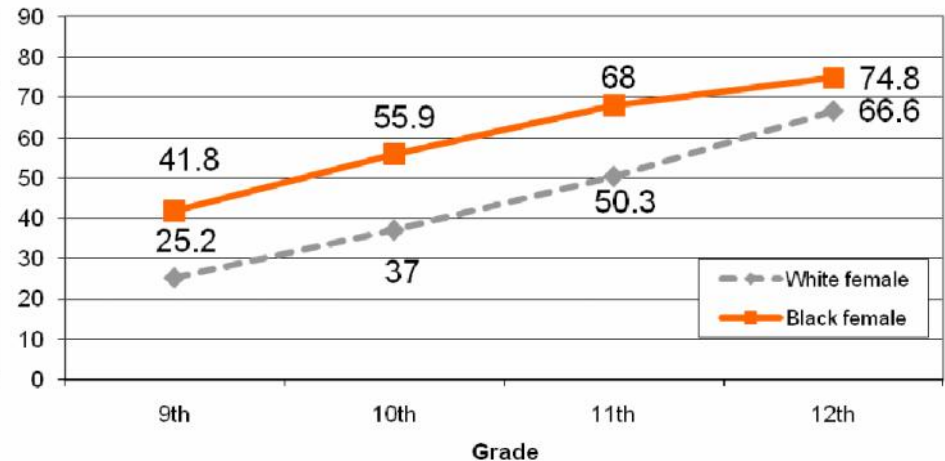
Sexual Intercourse Among High School Youth, 2009

Percentage (%) That Ever Had Sexual Intercourse
(among students who were currently sexually active)

Male



Female



- The percentage (%) of students who ever had sexual intercourse increases from the 9th to the 12th grade. Blacks are consistently higher than whites.



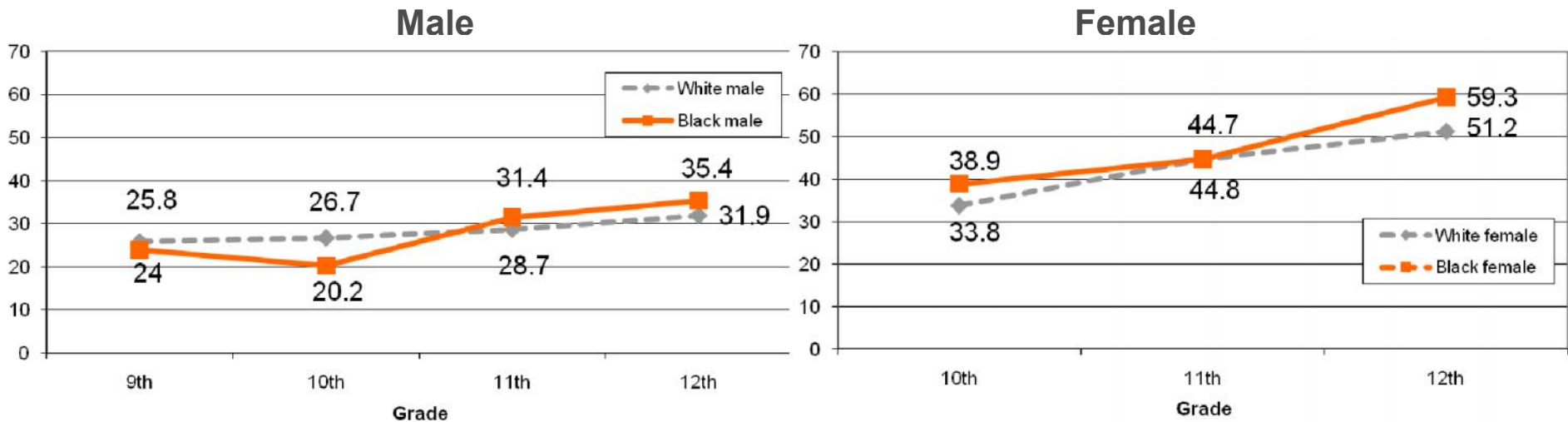
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Source: CDC Youth Online: YRBS 2009 Results - Sexual Behaviors - 2 Tables: Ever had sexual intercourse among black and white 9th, 10th, 11th, and 12th grades.

Condom Use Among High School Youth, 2009

Percentage (%) That DID NOT USE A Condom During Last Sexual Intercourse

(among students who were currently sexually active)



- From the 10th to the 12th grade, both black and white students are less likely to use condoms during sexual intercourse.

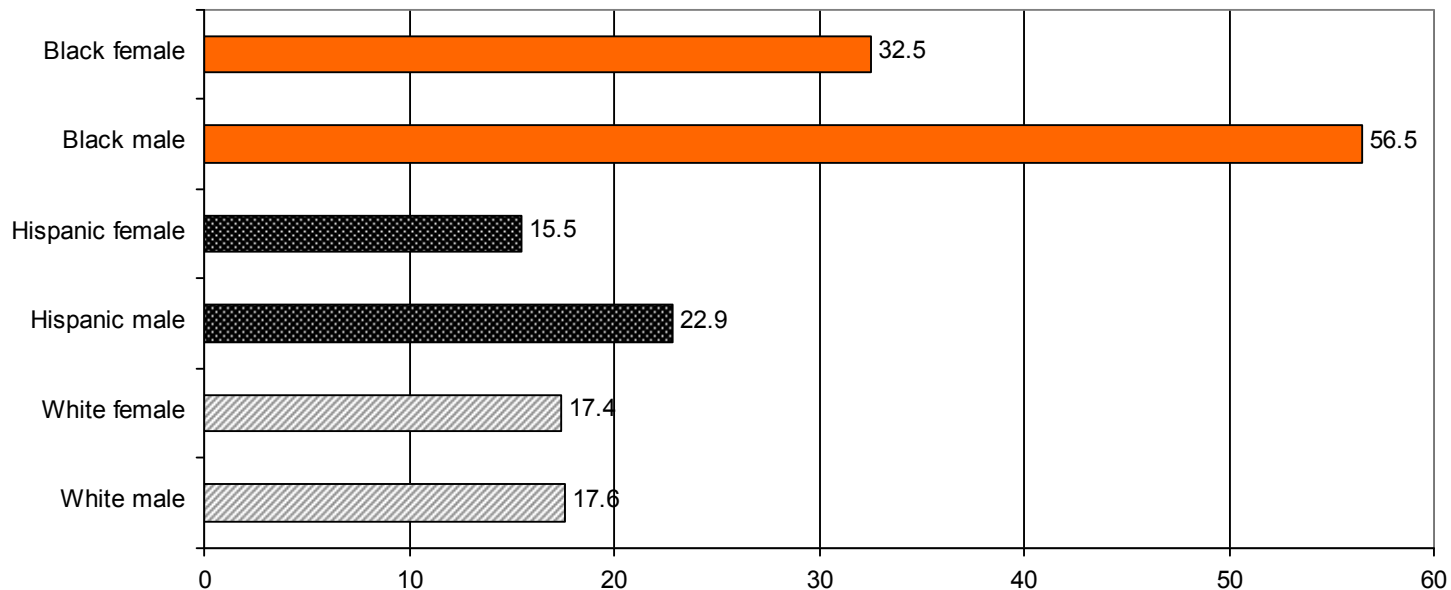


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Source: CDC Youth Online: YRBS 2009 Results - Sexual Behaviors – 2 Tables: Did not use a condom during last sexual intercourse among black and white 9th, 10th, 11th, and 12th grades.

By the 12th Grade, the Percentage (%) of Students Who Had Sexual Intercourse with Four or More Persons by Race, 2009

Percentage (%) That Had Sexual Intercourse With Four Or More Persons



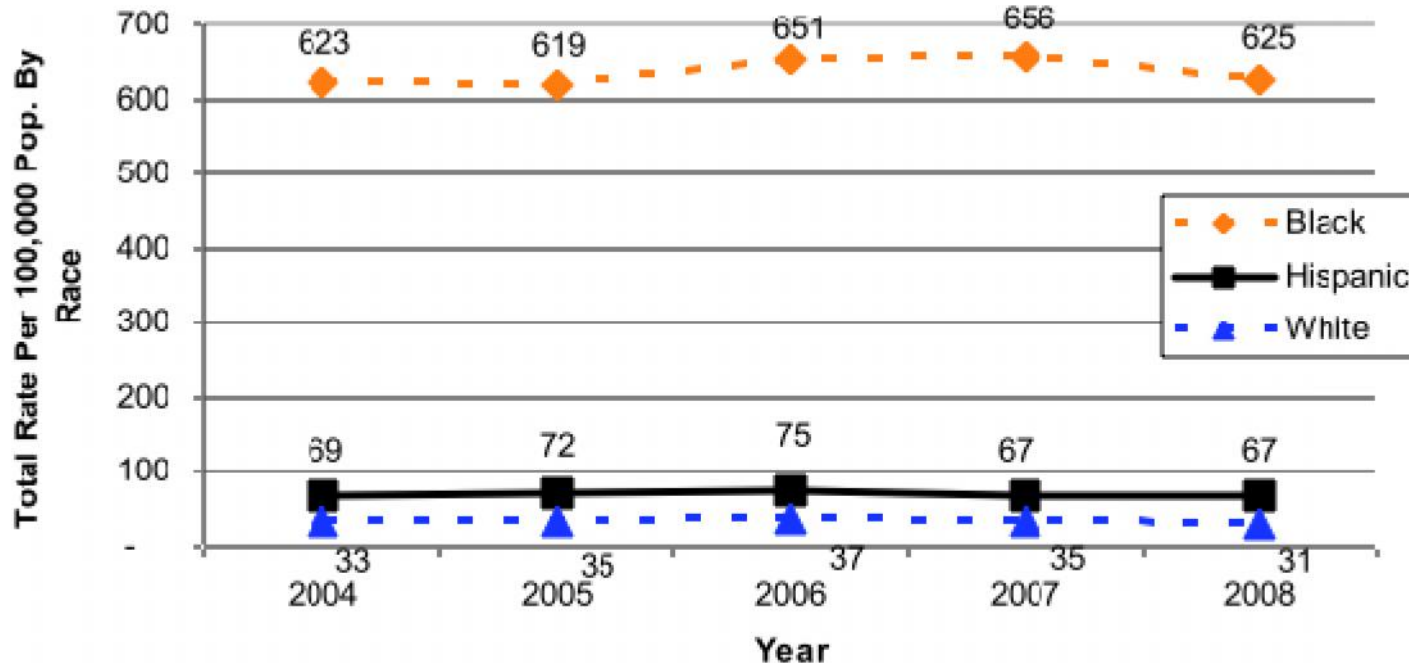
- By the 12th grade, 56.5% (3x) of black males have had intercourse with four or more persons as compared with 17.6% of white males, and 32.5% (almost 2x) of black females have had intercourse with four or more persons as compared to 17.4% of white females.



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Source: CDC Youth Online: YRBS 2009 Results - Sexual Behaviors - 3 Tables: Had Sexual Intercourse with four or more persons among :black, Hispanic, and white, 12th grade students.

Gonorrhea - Rates per 100,000 Population by Race, US 2004-2008



- Gonorrhea rates in the blacks are significantly higher. The risk of HIV transmission is increased in the presence of STD's because of their synergistic* effect.



Summary: Sexual Behaviors in Black and White Heterosexual Communities

- By the 12th grade, blacks as compared to whites have had:
 - More sexual intercourse
 - More multiple sexual partners
 - Higher rates of sexually transmitted diseases (which is a consequence of having had more multiple sexual partners).
- The black and white heterosexual communities differ enough in sexual behavior to contribute to the disparity of HIV infections between black and white females.

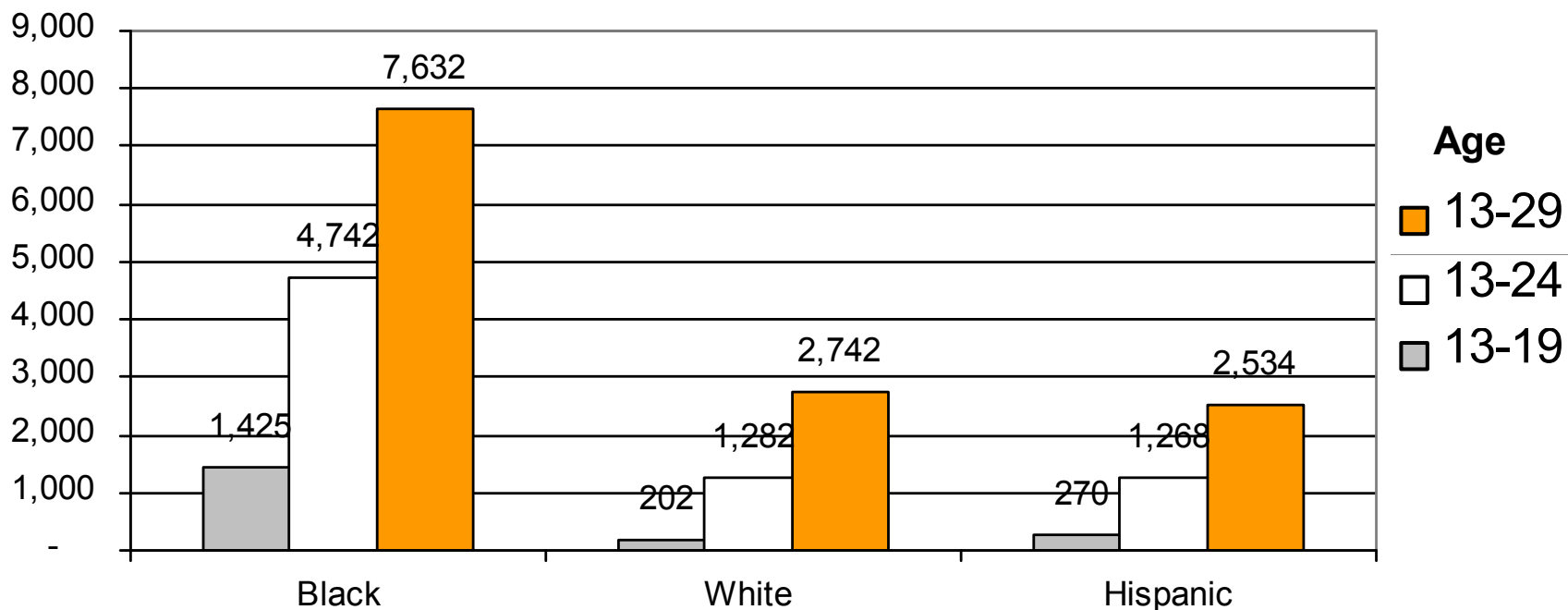


What Next?

- What else contributes to the disparity of HIV infections between black and white females? In the CDC data presented in the following chart, it is evident that there are many more young blacks that have HIV than young whites or Hispanics. The question is why?
- The following data from the CDC and other sources will help to answer why.



Estimated Number of HIV Infections in 37 States 2008, Comparing Black, White, and Hispanic by Age



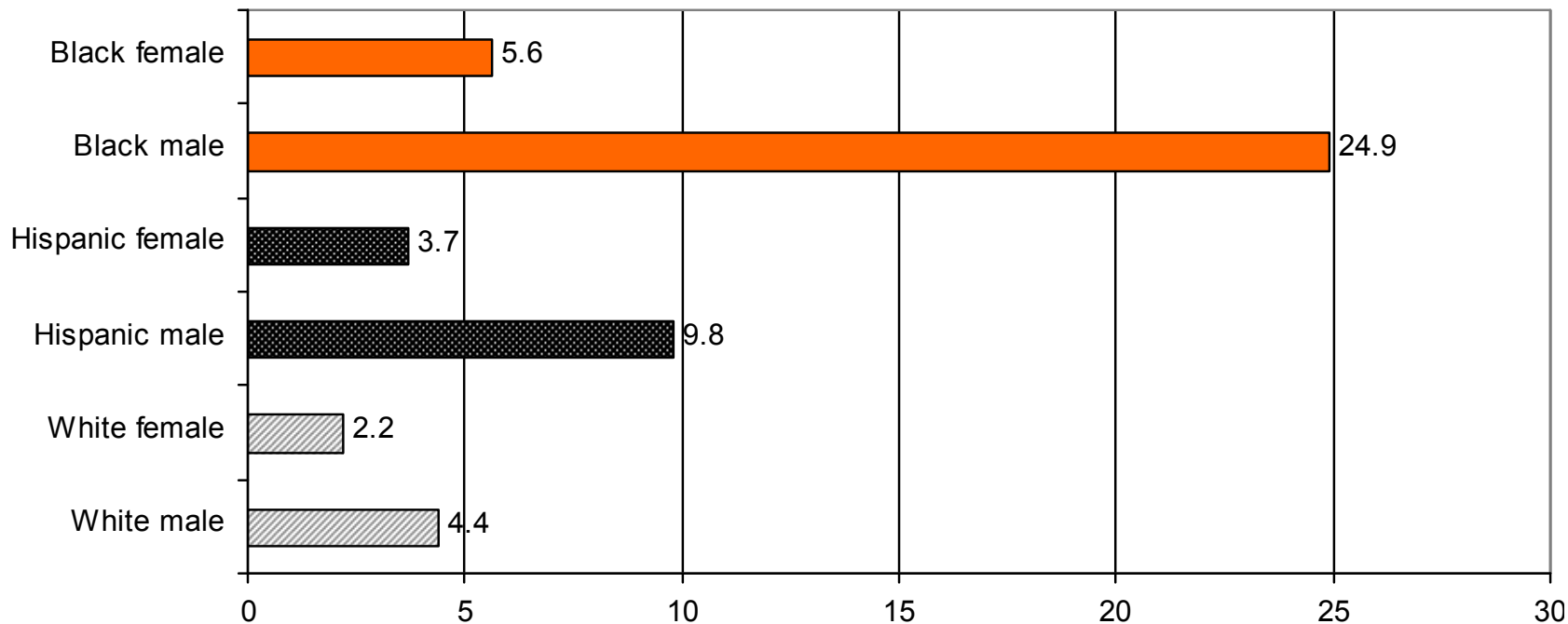
- There is a significantly higher number of HIV infections in the young black population. We know from previous slides that multiple sexual partners and much higher STD rates are contributing to this. **But why are there so many more young blacks?**



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Source: CDC— HIV Surveillance Report 2008. Diagnosis of HIV infections and AIDS in the US and dependent areas, 2008. Vol. 20. Table 3b. Diagnoses of HIV infection, by race/ ethnicity and selected characteristics, 2008 – 37 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting .

Percentage (%) of Adolescent Children Having Sexual Intercourse for First Time Before Age 13 Years (YRBS US 2009)



- Almost 25% of black males under 13 years of age have had an early sexual debut. This compares to 9.8% of Hispanic males, and 4.4% of white males.



Source: CDC Youth Online: YRBS 2009 Results - Sexual Behaviors - 3 Tables: Had Sexual Intercourse for the first time before age 13 among black, white, and Hispanic students.

Early Sexual Debut Among Black Youth 9 to 15 Years of Age Results in High Risk Behavior

In this survey 39% of the 351 black boys and girls recruited from a low income urban community had experienced sexual intercourse (60% of the 194 boys and 13% of the 157 girls).

- 21% of the 194 boys had anal intercourse.
- 6% of the 157 girls had anal intercourse.

What are the consequences of this early sexual activity?

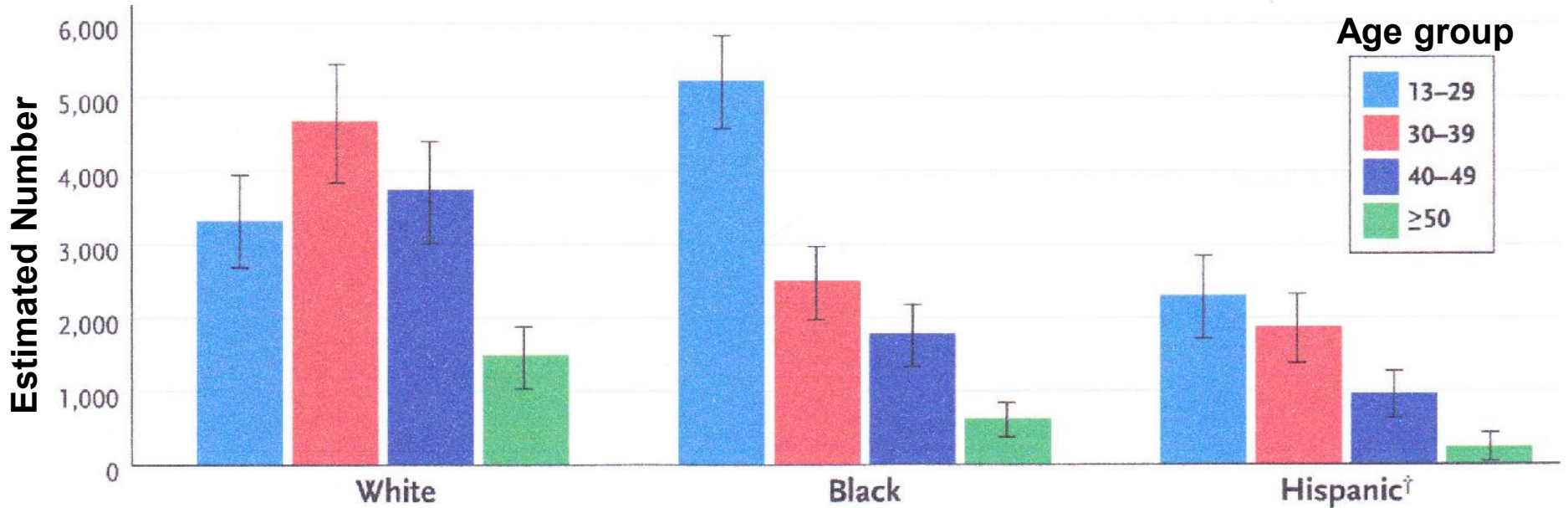


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Source: Stanton B, Li X, Black M, et al. Sexual practices and intentions among preadolescent and early adolescent low-income urban African-Americans. *Pediatrics* 1994;93:966-73.

“Stanton B, Li X, Black M, et al. Anal intercourse among preadolescent and early adolescent low-income urban African-Americans. *Arch Pediatr Adolesc Med* 1994;148:1201-4.

Estimated Number of New HIV Infections in MSM, by Race and Age Group, US 2006



- Black MSM (AI) in the youngest age group (13-29) account for the highest number of new HIV infections as compared to whites and Hispanics of the same ages.
- Some of the boys who have experienced early sexual debut will end up contributing to the pool of the young black MSM core transmitter group.

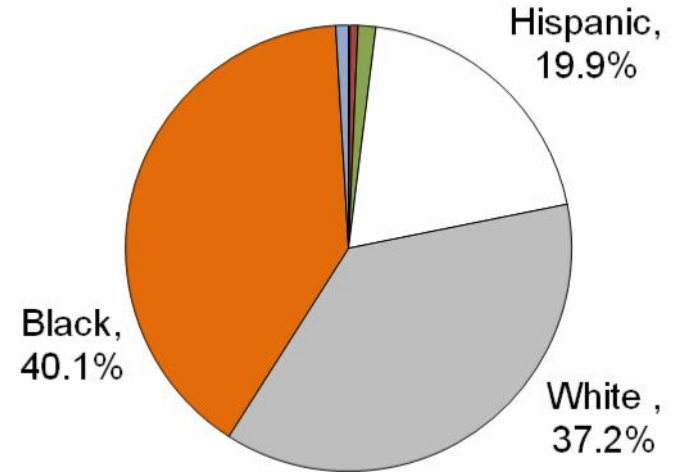


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Source: CDC. Subpopulation estimates from the HIV incidence surveillance system – US, 2006. MMWR 2008;57: 985-9.
Figure. Estimated number of persons with new HIV infections among MSM by race/ethnicity and age group – US 2006

Diagnosed HIV Infections Attributed to MSM Contact, by Race, 2008

Race/ethnicity	No.	%
Native Hawaiian/Other Pacific Islander	25	0.1%
American Indian/Alaska Native	128	0.6%
Asian	295	1.3%
Hispanic	4,533	19.9%
White	8,483	37.2%
Black/African American	9,136	40.1%
Multiple races	211	0.9%
	22,811	100.0%



- (U.S. Census Bureau 2009: Black 12.4%, white 65.1%, Hispanic 15.8% of the population)
- Blacks make up only ~13% of the population, BUT the HIV infections attributed to black MSM contact is 40% compared to 37% of white MSM.



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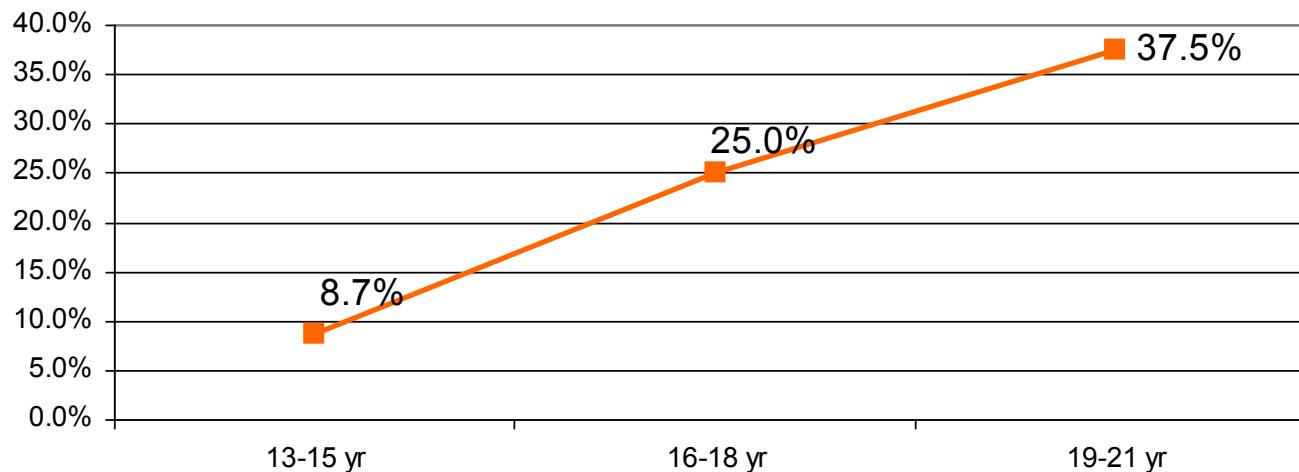
Source: CDC– HIV Surveillance Report 2008. Diagnosis of HIV infections and AIDS in the US and dependent areas, 2008. Vol. 20. Table 3b. Diagnoses of HIV infection, by race/ ethnicity and selected characteristics, 2008 – 37 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting .

Anal Intercourse Among Minority-Group Female Adolescents

Anal intercourse among 111 sexually active inner-city adolescents, Black (46.8%) and Hispanic (44.0%), between the ages of 13 and 21

% Subjects by age (yr)

13-15 yr (n = 23)	16-18 yr (n = 56)	19-21 yr (n = 32)
8.7	25.0	37.5



- This study¹ shows an upward trend in AI with age - 37.5% by age 21. Female receptive anal intercourse is now well documented and is associated with drug use^{2,3}, multiple sexual partners, and is used for birth control⁴. It is a major concern for the transmission of HIV in females^{5,6,7}.



Summary: The Contribution that Early Male Sexual Debut makes to the HIV Disparity between Black and White Females

- The data strongly suggests that early male sexual debut results in:
 - A. Increased anal sex for both men and women
 - B. Larger core transmitter group of MSM
 - C. Greater numbers of multiple sexual partners (VI and/or AI) and STD's.
- These all contribute to the HIV disparity between black and white females.



What are the major routes of HIV transmission and why is AI the predominant route of transmission?

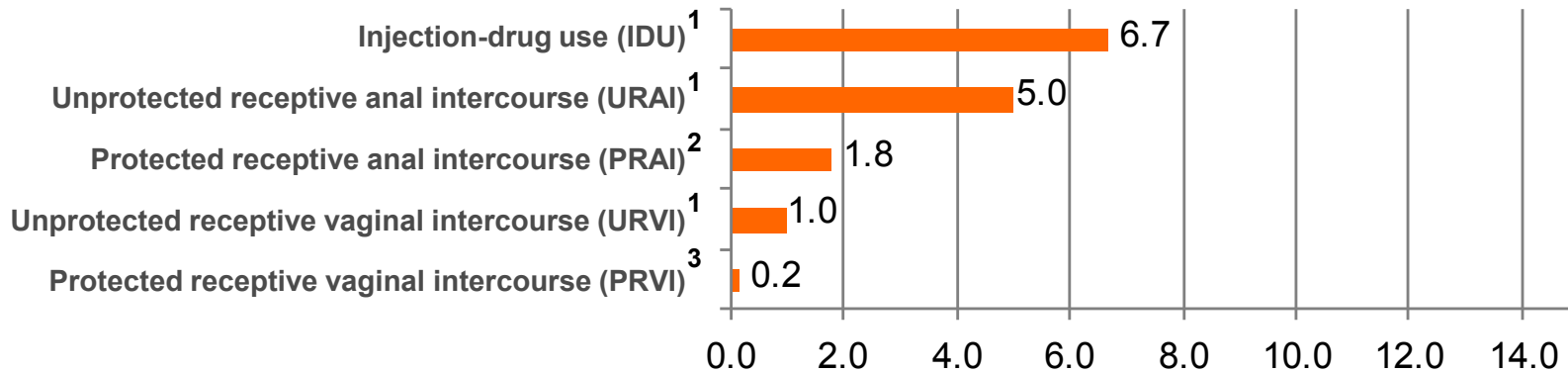
Since the HIV epidemic began in the U.S. in the 1980's, anal intercourse has been the number one route of HIV transmission. The other two are injection drug use and vaginal intercourse.

The following CDC data and data from other sources gives us a perspective of why AI has remained the dominant route of HIV transmission.



Estimated Per-Act Risk For Acquisition of HIV, by Exposure Route

**Risk per 1,000 exposures
to an infected source**

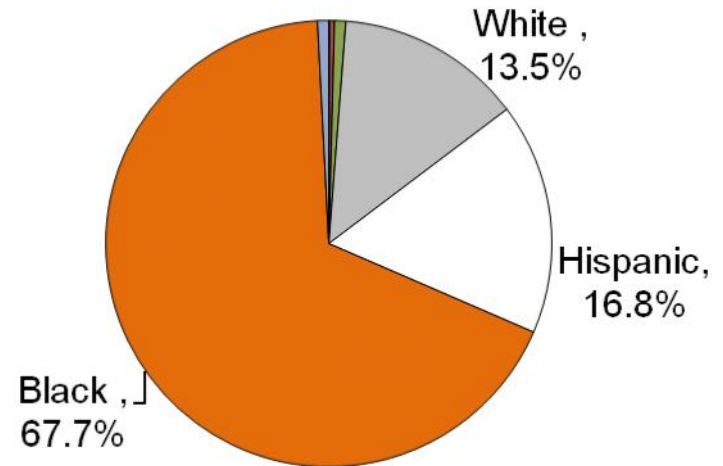


- URAI is 5x more risky than URVI. URAI is almost as risky as IDU which is 6.7X more risky than URVI. Other studies⁴ have shown that URAI is 14x more risky than URVI. Therefore, URAI can be more risky than IDU.
- Note that PRAI is 9x more risky than PRVI and is almost twice as risky as URVI. Therefore, PRAI carries substantial risk.
- STD's increase the risk of HIV infection in the sexual exposure routes of transmission.



Diagnosed HIV Infections Attributed to Heterosexual Contact, by Race, 2008

Race/ethnicity	No.	%
Native Hawaiian/Other Pacific Islander	7	0.1%
American Indian/Alaska Native	49	0.4%
Asian	111	0.8%
White	1,840	13.5%
Hispanic	2,288	16.8%
Black/African American	9,233	67.7%
Multiple races	111	0.8%
	13,639	100.0%



- More than two-thirds of diagnosed HIV infections associated with heterosexual contact were among blacks (68%).
- In the black community, HIV has passed from the core transmitter groups to the heterosexual community.



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Source: CDC— HIV Surveillance Report 2008. Diagnosis of HIV infections and AIDS in the US and dependent areas, 2008. Vol. 20. Table 3b. Diagnoses of HIV infection, by race/ ethnicity and selected characteristics, 2008 – 37 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting .

Social Pressures have a Major Influence on the Health of Young Blacks in Poor Urban Areas

- Rap Music and Videos* that glamorize:
 - Disrespect for women and violence
 - Drug use and binge drinking
 - Multiple sexual partners (VI and/or AI)
- Pornography
 - Black vaginal and anal sex – hundreds of sites on the internet
- Drug economy of inner cities
 - Injection and non-injection drug use



These three economies encourage black youth to participate in the three major risk behaviors that propel the HIV epidemic:

- (1) Multiple sexual partners
- (2) Anal intercourse
- (3) Injection drug use.



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Source: Peterson S, Wingood G, DiClemente R, et al. Images of Sexual Stereotypes in Rap Videos and the Health of African American Female Adolescents. *J of Women's Health* 2007;16:1157-64.

Final Summary

This study confirms that the three major characteristics/behaviors-MAD discovered in the 1980's are still responsible for propelling the epidemic.

Social justice demands that we expose and describe the face of the HIV epidemic to the public. It is the only way to decrease the disparity of HIV between black and white females.

We can accomplish this:



We can accomplish this:

We must now make an information paradigm shift and campaign full force against the 3 driving forces of the HIV epidemic, especially in the black urban HIV epicenters, and say NO to MAD.

We must take the pressure off the young and create a counter-culture against the 3 economic forces that encourage these three risky behaviors.

Most important, by changing the culture, moms and dads will then have the community support to further empower them to protect their boys from early sexual debut.



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What is MAD?

The Face of the HIV Epidemic is MAD: the Behaviors that Cross all Lifestyles and Sexes

M

Multiple Sexual Partners

- The public must understand that having multiple sexual partners puts them at high risk for STD's including HIV. Having STD's then places them at an even higher HIV risk with both vaginal and anal intercourse because of the synergistic effects of STD's.

A

Anal Intercourse

- The public must understand that anal intercourse is the number one transmission route of the HIV epidemic. Receptive anal intercourse is the most efficient sexual exposure route of HIV transmission. Receptive anal intercourse, even if protected, is still high risk.

D

Injection Drug Use

- The public must understand the high risk of HIV transmission that is associated with IDU. Moreover, having intercourse (VI, AI) with injection drug users is high risk. All drug use dulls decision making, which can lead to high risk behaviors.



Children Must Be Protected
From Life-Altering Behaviors.

Social Justice Demands It.



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Supplemental Bibliography

Slide 8 The Face of the HIV Epidemic

1. Chaisson R, Bacchetti P, Osmond D, et al. Cocaine use and HIV infection in intravenous drug users in San Francisco. JAMA 1989;261:561-5.
2. Winkelstein W, Lyman D, Padian N, et al. Sexual practices and risk of infection by the human immunodeficiency virus. The San Francisco men's health study. JAMA 1987;257:321-5.

Slide 24 Gonorrhea Rates per 100,000 Population From 2004-2008

1. * Fleming D, Wasserheit J. From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. Sex Transm Inf 1999;75:3-17.

Slide 32 Anal Intercourse Among Minority-Group Female Adolescents

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