

## Sexually Transmitted Diseases among Young Adults: Prevalence, Perceived Risk, and Risk-Taking Behaviors

By Elizabeth Wildsmith, Ph.D., Erin Schelar, B.A., Kristen Peterson, B.A., and Jennifer Manlove, Ph.D.

May 2010

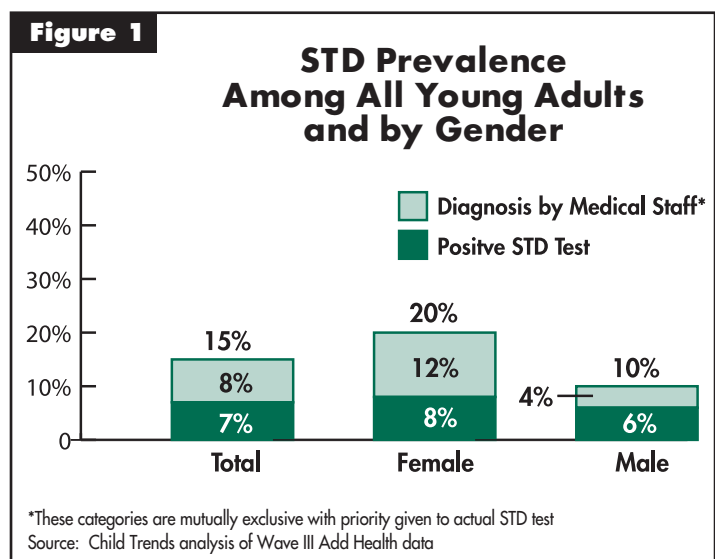
**Overview.** *The incidence of sexually transmitted diseases (STDs) in the United States is among the highest in the western industrialized world.<sup>14</sup> Nearly 19 million new STDs are diagnosed each year,<sup>22</sup> and more than 65 million Americans live with an incurable STD, such as herpes and human papillomavirus (HPV).<sup>3</sup> Young people, in particular, are at a heightened risk of acquiring an STD.<sup>4</sup> The Centers for Disease Control and Prevention (CDC) estimates that those between the ages of 15 and 24 account for about one-half of the new STDs diagnosed every year,<sup>4</sup> although this age group represents only one-quarter of the sexually active population.<sup>22</sup>*

*The health costs of STDs are high. For example, untreated chlamydia and gonorrhea—the two most common reportable STDs—can cause significant health problems, including infertility, pregnancy complications, and increased risk of HIV infection.<sup>4</sup> And some strains of HPV, which is widespread, are linked to cervical cancer.<sup>3</sup> The economic costs are also high. The lifetime medical costs of STD incidence to young adults who were between the ages of 15 and 26 in 2000 were estimated to be \$6.5 billion.<sup>7</sup>*

*This Research Brief presents updated information on STDs among young adults, a major public health challenge that calls for creative solutions. To produce the brief, Child Trends analyzed recently released data from the National Longitudinal Study of Adolescent Health (Add Health) to provide estimates on the prevalence of and attitudes towards STDs among young adults, as well as on the behaviors that may put youth at risk of contracting an STD. We found that 15 percent of young adults between the ages of 18 and 26 have had an STD within the past year, with that proportion varying by gender, race/ethnicity, and relationship status. We also found that despite the high prevalence of STDs within this age group, most young adults did not perceive that they were at risk. Perhaps even more troubling, we found that large numbers of young adults continue to engage in behaviors that do put them at risk of contracting an STD.*

### STD PREVALENCE

Add Health Wave III data include two measures of STDs. The first measure, based on specimens taken at the time of the interview and screened for STDs, indicates whether each young adult tested positive for chlamydia, gonorrhea, and/or trichomoniasis at the time of the interview. Yet this testing will not reveal whether the person was treated for an STD in the past year or before. The second measure, based on respondent reports, indicates whether each young adult said that he or she had been diagnosed with any STD by a doctor or nurse in the past 12 months. It covers diagnoses of gonorrhea, chlamydia, and trichomoniasis (the same as the first measure) as well as of herpes, HPV, HIV, and other STDs. This measure is not intended to find evidence of incurable STDs



## ABOUT THE DATA SOURCE FOR THIS BRIEF

The National Longitudinal Study of Adolescent Health (Add Health) is a nationally representative survey of adolescents designed to measure the health and well-being of young adults. To date, there have been three phases of the survey, the first of which was conducted of adolescents who were in grades seven through 12 in the United States in 1995.<sup>a</sup> This brief is based on Child Trends' analyses of data from the third phase of the survey (Wave III), which were collected in 2002. In this wave, respondents were asked about their present or past STD status and their attitudes and behaviors as they relate to STDs. Additionally, respondents were actually tested for markers of three of the most common STDs (gonorrhea, chlamydia, and trichomoniasis) at the time of the interview.<sup>5, b</sup>

The study sample on which this brief is based is made up of 14,322 young adults who were between the ages of 18 and 26 in 2002. Of these, 49 percent were female; 54 percent were white, 21 percent were black, 16 percent were Hispanic, and 7 percent were Asian; 20 percent were married, while 20 percent were living with their romantic partners and 35 percent were involved in a romantic relationship but not living with their partners. Figures 1-3 are based on Child Trends' analyses of data from the full study sample. The sample is somewhat smaller for figures 7-9, which use data from questions that were only asked of those respondents who reported that they had sex in the past year (77 percent of the total sample). Finally, figures 4-6 present data from the sample of young adults who either tested positive for an STD on the basis of specimens collected and screened at interview or were diagnosed with an STD by a doctor or nurse in the past year (n=1,801).

All analyses are weighted to present population-level estimates, and all differences presented in this brief are significant ( $p < .05$ ) unless otherwise noted. We include analytic results for the full sample, as well as by gender, race/ethnicity, and relationship status.

(such as herpes, HPV, or HIV) diagnosed more than a year ago. It also will miss those young adults who have not been tested in the past year or who choose not to report the results.

Therefore, to get a fuller picture of STD prevalence, we combined the two measures—that is, one based on what a respondent's actual STD test revealed about his or her STD status and one based on what a respondent said about any STD diagnoses he or she may have received—to create one indicator of whether each young adult had any STD in the past year. We gave priority to results of the STD test because they provide incontrovertible evidence of current infection.

### **More than one in seven young adults had an STD at the time of the survey or within the past year.**

Seven percent of respondents tested positive for an STD, and another 8 percent of respondents reported that a doctor or nurse had told them that they had an STD within the past year, even though they did not receive a positive test at the time of the survey (see Figure 1).

- In total, 15 percent of young adults either tested positive for an STD or were told by a doctor or nurse that they had an STD.

### **Young women are more likely than are young men to test positive for and to have been diagnosed with an STD in the past year.**

- Eight percent of female respondents tested positive for gonorrhea, chlamydia, and/or trichomoniasis, compared with 6 percent of male respondents. A larger disparity was found for respondents who reported being told by a doctor or nurse that they had an STD: 12 percent of women and only 4 percent of men. One reason for this disparity may be that women seek health care more often than do men, for example, through regular OB-GYN visits for birth control counseling.<sup>6</sup>
- Overall, then, women in the full study sample were twice as likely as were men to have either a positive test or to have been told that they had an STD in the past year (20 percent versus 10 percent, respectively).

### **Black young adults are more likely than are young adults from other racial/ethnic groups to have an STD.**

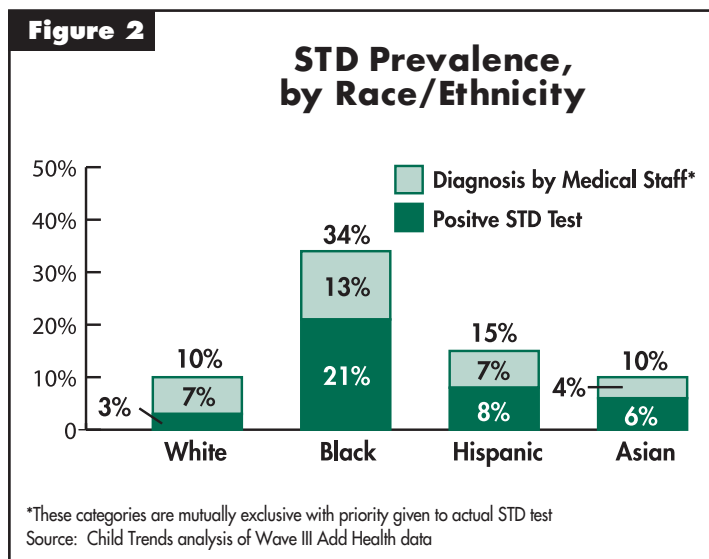
Twenty-one percent of black respondents tested positive for gonorrhea, chlamydia, and/or trichomoniasis, compared with 3 percent of white, 8 percent of Hispanic, and 6 percent of Asian respondents.

<sup>a</sup> It is important to note, however, that Add Health is not representative of youth who leave or have dropped out of school or who are home schooled.

<sup>b</sup> Respondents were encouraged to call a designated number for the STD test results. If they had a positive result, they had an opportunity to speak with a trained counselor.

Thirteen percent of black respondents had been diagnosed with an STD in the past year, compared with 7 percent of white and Hispanic respondents, and 4 percent of Asian respondents.

- One-third of black respondents (34 percent) had an STD based on testing or a diagnosis by a doctor or nurse, compared with 15 percent of Hispanic respondents and 10 percent of white and Asian respondents (see Figure 2).

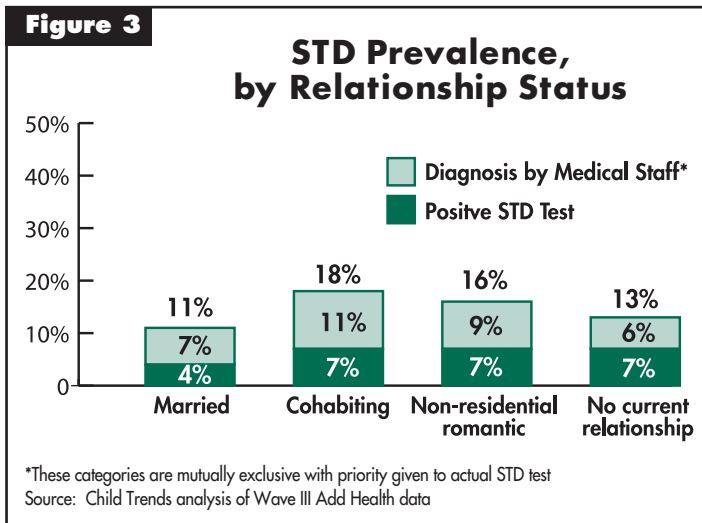


**STD prevalence also differs by relationship status, with young adults in cohabiting and dating relationships having the highest levels of STDs.**

Young adults in their late teens and early twenties are involved in many types of romantic relationships, and the incidence of STDs varies somewhat across relationship types.

- Eighteen percent of those who were living with their romantic partners (cohabiting) and 16 percent of those who were in a romantic relationship but not living with their partners (dating) either tested positive for or received an STD diagnosis in the past year, compared with 13 percent of those respondents who were not in a relationship and 11 percent who were married (see Figure 3).

Although young adults who were not currently in a relationship were among the least likely to report being diagnosed with an STD in the past year (similar to those in married relationships), they were just as likely as those in dating and cohabiting relationships to actually test positive for an STD at the time of interview.

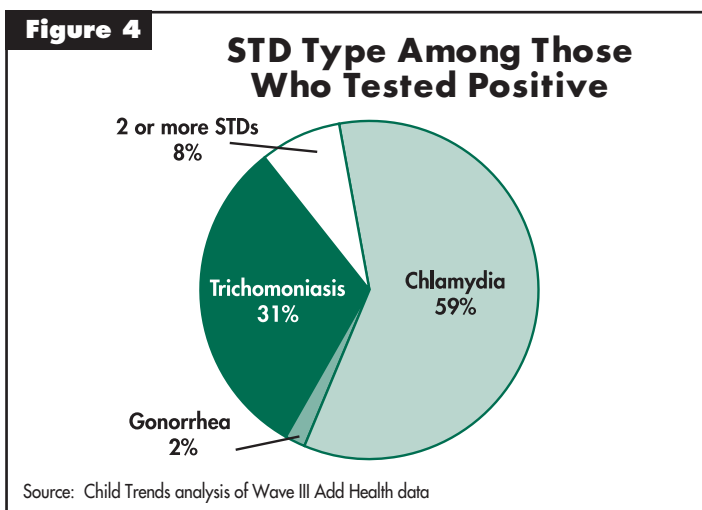


- Four percent of married respondents tested positive for an STD, compared with 7 percent of those in the other relationship types and those not in a relationship.
- Eleven percent of those in cohabiting relationships and 9 percent of those in dating relationships reported that they had been diagnosed with an STD by a doctor or nurse in the past 12 months, compared with 7 percent of married respondents and 6 percent of respondents who were not in a relationship.

**Among those testing positive for an STD, chlamydia is the most commonly identified STD, followed by trichomoniasis; substantially fewer young adults test positive for gonorrhea.**

Ninety-two percent of those who tested positive for an STD have just one STD: 59 percent had chlamydia; 31 percent had trichomoniasis; and only 2 percent had gonorrhea (see Figure 4).

- Eight percent of respondents tested positive for two or more STDs.



## PERCEIVED RISK OF STDs

Relatively new methods make it easier to test for and diagnose STDs, but these advances may not benefit young adults if they deny that they may be at risk and, therefore, avoid being tested. This section presents our findings about how young adults perceive their own risk of contracting an STD. In addition, it examines dimensions of behavior that may also reflect perceived risk, such as getting tested in the past or being willing to call in for the results of an STD test. Many of these questions were asked only of those who tested positive for chlamydia, gonorrhea, or trichomoniasis at the interview; therefore data presented in Figures 5 and 6 are limited to young adults who tested positive for an STD.

### Nearly three-quarters of young adults with a positive STD test do not perceive themselves to be at risk of having an STD.

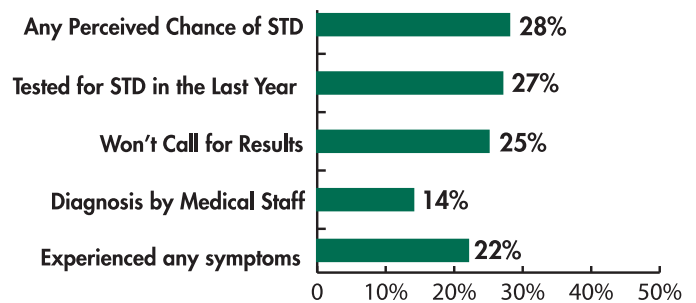
- Only 28 percent of the respondents who tested positive for an STD believed that they had any chance of having one (see Figure 5).
- Twenty-seven percent of the respondents who tested positive for at STD at the time of the interview had also been tested for an STD in the past year.
- Moreover, about one-half of these young adults (14 percent of all respondents who tested positive for an STD) had been told by a doctor or nurse that they had an STD within the past year. Although some of the prior diagnoses may have been for STDs other than chlamydia, gonorrhea, and trichomoniasis, some of these cases may also reflect a repeat or ongoing infection with one of these three STDs.
- When asked if they would call to learn the results of their STD test, 25 percent of respondents reported that they would not call to learn their status.

### This reluctance to recognize or acknowledge being at risk may be due, in part, to the fact that many STDs have few or no obvious physical symptoms.

- Only 1 in 5 (22 percent) respondents who tested positive for an STD reported experiencing any symptoms related to the infection. This proportion is even smaller than other estimates. For example, according to one estimate, up to 75 percent of young adult women and 50 percent of young adult men with chlamydia will be asymptomatic.<sup>3</sup>

Figure 5

### Attitudes and Behaviors Among Those with a Positive Test



Source: Child Trends analysis of Wave III Add Health data

### Young adult women are more likely than are young adult men to have been tested for an STD in the past year.

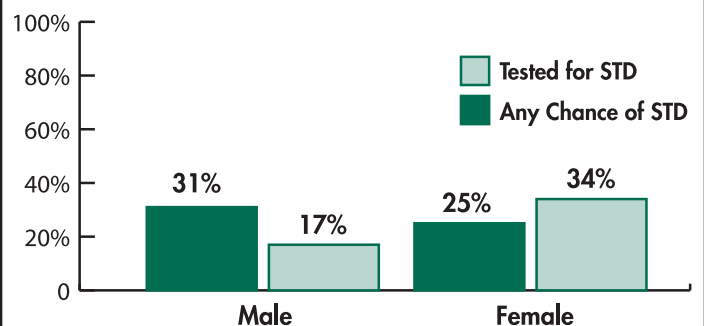
- Thirty-four percent of female respondents were tested for an STD within the past year, compared with 17 percent of their male counterparts (see Figure 6). Again, this finding likely reflects the greater likelihood that women regularly seek reproductive health care.

### However, young adult men and women similarly downplay their risk of acquiring an STD.

- Only 31 percent of male respondents and 25 percent of female respondents who tested positive for an STD believed that they had any chance of contracting one.

Figure 6

### STD Testing and Perceived STD Risk Among Those with Positive STD Test



Source: Child Trends analysis of Wave III Add Health data

**Among young adults testing positive for an STD at the time of the interview, attitudes and behaviors reflecting perceived STD risk differed substantially by race/ethnicity; Hispanics and blacks were more likely than were whites to perceive themselves at risk.**

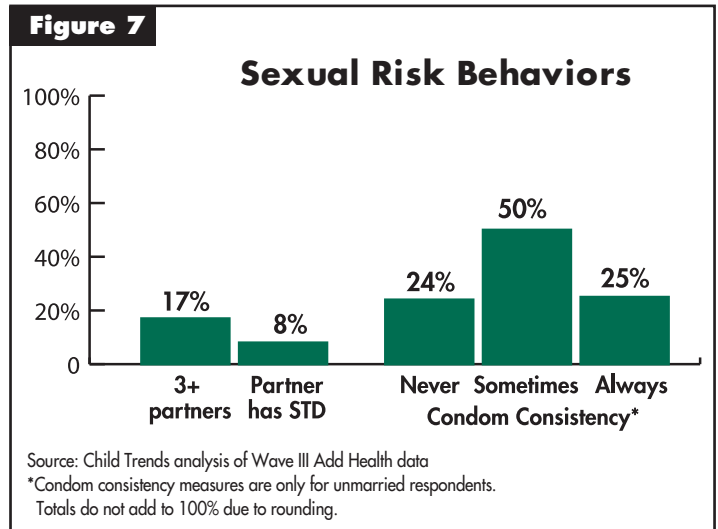
- Just 14 percent of white respondents who tested positive for chlamydia, gonorrhea, or trichomoniasis at interview believed that they had any chance of having an STD, compared with 37 percent of Hispanic respondents and 33 percent of black respondents. Twenty five percent of Asian respondents believed they were at risk (results not shown).
- Hispanic and Asian respondents who tested positive for an STD at interview were less likely to have been tested for or diagnosed with a prior STD than were respondents from other racial and ethnic groups (results not shown). This may reflect more limited access to health care among Hispanics and Asians.<sup>1,19</sup>

### STD RISK-TAKING BEHAVIORS

Although we found that only 15 percent of all the young adults in our study had been told that they had an STD in the past year or tested positive for chlamydia, gonorrhea, or trichomoniasis at interview, many more young adults engage in sexual behaviors that put them at risk of becoming infected. The National Longitudinal Study of Adolescent Health collects information from all sexually active youth on sexual behaviors that are known to increase the risk of contracting an STD. These behaviors include having three or more sexual partners, having a sexual partner who has ever had an STD, and using condoms inconsistently.

**Many young adults are engaging in risky sexual behaviors that make them more susceptible to STDs.**

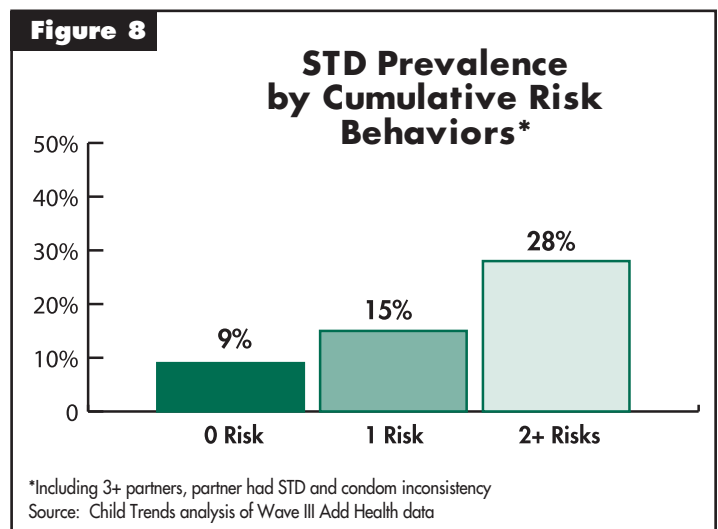
Seventeen percent of sexually active respondents reported having had three or more sexual partners in the past year and 8 percent reported having had a sexual partner who had ever had an STD (see Figure 7). Moreover, among unmarried respondents, just 25 percent reported always using a condom during sexual intercourse, with 50 percent saying that they used condoms sometimes, and 24 percent saying that they never used a condom in the past year.<sup>c</sup>



**Young adults who engage in multiple risky sexual behaviors are substantially more likely to have an STD.**

Fourteen percent of respondents reported that they engaged in two or more risky sexual behaviors, whereas 48 percent reported that they did not engage in any, and 39 percent reported that they engaged in only one such behavior in the past year.<sup>d</sup>

- Among those respondents who engaged in two or more risky sexual behaviors, 28 percent learned that they had an STD through diagnosis by a doctor or nurse or through results of a positive STD test, compared with 15 percent of those respondents who had just one risk behavior and 9 percent who reported having no sexual risk behaviors (see Figure 8).



<sup>c</sup> Information on condom use was not calculated for married respondents because their contraceptive use patterns differ from young adults in other relationship types. Married respondents, therefore, were also not coded as taking a risk if they did not use condoms, although they could engage in the other risk behaviors that were measured.

<sup>d</sup> Totals equal more than 100% due to rounding.

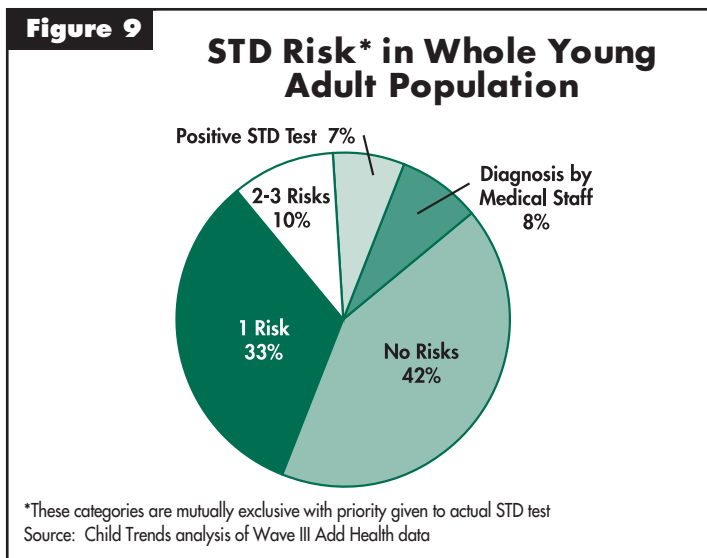
**More than one-half of young adults either have had an STD in the past year or are engaging in sexual behaviors that put them at risk for contracting one.**

Figure 9 presents data on STD prevalence and STD risk, combined. The categories here are mutually exclusive, with priority given to STD diagnosis. Respondents in categories other than STD diagnosis (by test or by medical staff) have not been diagnosed with or tested positive for an STD in the past year.

- In this sample, 58 percent of the respondents either had an STD or reported engaging in at least one risky sexual behavior (see Figure 9). Fifteen percent of the respondents had an STD, either by diagnosis (8 percent) or a positive test result (7 percent). Thirty-three percent of the respondents reported engaging in one risky sexual behavior over the past year, and an additional 10 percent of the respondents reported engaging in two or more such behaviors.

adult women and 10 percent of young adult men in our study sample tested positive for chlamydia, gonorrhea, or trichomoniasis at the time of the interview or were diagnosed with an STD by a medical practitioner in the past year. These estimates of STD prevalence are likely to be low because young adults are only tested for three STDs at data collection, and not for some of the more widespread infections, such as herpes and HPV. Nonetheless, the gender differences are consistent with other data.<sup>3,4</sup> Some of the gender disparity may not reflect true differences in disease prevalence, but rather differences in levels of screening.<sup>3</sup> We see some evidence of this in our data. Although women were much more likely than were men to have been diagnosed with an STD in the past year, women were only slightly more likely than were men to test positive for chlamydia, gonorrhea, and/or trichomoniasis at the time of the interview. This finding suggests that underdiagnosis of STDs continues to be a concern among young adults,<sup>3,4,21</sup> perhaps even more so for men than for women.

- **STD prevalence varies by racial/ethnic group and, to a lesser extent, by relationship status.** One in three black young adults was diagnosed with or tested positive for an STD, compared with 15 percent of Hispanic young adults and 10 percent of white young adults. Other research also documents higher rates of STDs for blacks, and in some cases, for Hispanics, than for whites.<sup>3,4,11</sup> Although some of the disparity may reflect differences in levels of screening,<sup>3</sup> the extent of disparity in testing positive for an STD at interview suggests that other issues are important as well. Research suggests that in addition to individual factors that contribute to racial disparities in STDs, such as engagement in high-risk sexual behaviors, social factors also play a role. These factors include access to and trust in the health care system, the prevalence of STDs within social networks, economic and residential stability, and differing levels of incarceration.<sup>3,4,13</sup>



## SUMMARY AND DISCUSSION

There are more than 25 diseases that are spread primarily through sexual behavior. These sexually transmitted diseases present the United States with a huge public health challenge.<sup>3</sup> This *Research Brief* has provided updated information on how prevalent STDs are among young men and women between the ages of 18 and 26, how these young adults perceive their chances of being infected, and how their sexual behaviors may (or may not) put them at risk.

- **The prevalence of STDs among young adults is high.** Twenty percent of young

Young adults in dating and cohabiting relationships were the most likely to have an STD. This finding may reflect higher levels of screening, as well as greater engagement in more risky sexual behaviors (such as having multiple partners) than married respondents.

Underdiagnosis of STDs may be a particular concern among young adults who are not in romantic relationships, as shown by the fact they were just as likely as those in dating and cohabiting relationships to test positive for an STD at the time of interview, despite low levels of diagnosis by a doctor or nurse in the past year. Casual sexual relationships are becoming more and more common among young adults, and these types of relationships are generally associated with increased engagement in risky sexual behaviors.<sup>10</sup>

■ **Among young adults who tested positive for an STD at interview, most of these same young adults did not perceive themselves at risk for being infected.**

Only 28 percent of young adults who tested positive for chlamydia, gonorrhea, or trichomoniasis at interview actually believed that they were at risk of contracting an STD. Other research has documented the loose connection between perceived and actual risk of STDs.<sup>9,15</sup> Some of the low perceived risk may reflect the fact that only 22 percent of young adults who tested positive for an STD experienced any symptoms of an STD in the past year. (Typical symptoms include, but are not limited to, painful sores or blisters, painful or frequent urination, warts on genitals, and oozing or pus from vagina or penis.) Additionally, research shows that perceived risk of an STD is associated with risk knowledge.<sup>15</sup> Data from the National Survey of Adolescents and Young Adults, however, finds that although pregnancy and sexual health issues are a primary concern of young adults, misperceptions about STDs are common and young adults still do not feel comfortable talking about sexual issues with partners, family members, or even health providers.<sup>12</sup> Moreover, the stigma surrounding STDs remains a barrier to screening and treatment.<sup>17</sup>

■ **Many sexually active young adults engage in risky sexual behaviors.**

Half of sexually active young adults reported at least one risk behavior, including having three or more sex partners in the previous year, having a partner with a known STD, or either never or only sometimes using condoms. Fourteen percent of the respondents in this group had engaged in at least two risky sexual behaviors in the past year and,

not surprisingly, these respondents were far more likely to have an STD. Many factors at the individual level (biological, psychological, and behavioral), at the family level, and outside the family (peers, schools, neighborhoods) have been linked to engagement in risky sexual behaviors.<sup>16</sup> While the interplay of these factors may complicate intervention strategies, research has found that teens and young adults tend to continue contraceptive habits (e.g., condom use) learned in prior relationships.<sup>18</sup> This finding suggests that interventions should begin early, prior to engagement in sexual relationships.

## CONCLUSION

The prevalence of sexually transmitted infections is high among young adults in the United States. In fact, evidence suggests that the incidence of many STDs (such as syphilis, genital herpes, and HPV) is continuing to increase, while the incidence of many others (such as gonorrhea and chlamydia) remains at levels that are too high.<sup>3,4</sup> While testing for STDs has expanded and improved, it is clear that more needs to be done to protect young adults and reduce the costs associated with STDs in the United States.

The high level of misinformation about STDs among many young adults, along with their continued engagement in high-risk sexual behaviors, makes it particularly difficult to get them to recognize the danger posed by these infections. Young adults are harder to reach than are students in secondary schools. However, research suggests that school-based, clinic-based, and community-based programs all have the potential to help educate young adults and get them to change their behavior, thus reducing their risk of contracting STDs. The most successful programs are those that have tailored intervention strategies, that are based on theory, and that go beyond merely teaching about STDs to also focus on self efficacy and the psychological correlates of risk (such as building problem solving skills, social skills and ethnic/gender pride).<sup>20</sup> However, changes need to occur on other fronts as well. For example, STD testing is not a routine part of a gynecological exam in a physician's office, and a majority of physicians do not adhere to recommended screening guidelines for STDs.<sup>8</sup> Thus, interventions should also target health care providers of men and women, by making sure that they have access to up-to-date information and encouraging them to routinely screen all patients for STDs, even those whom they think are low risk (such as married youth).<sup>8</sup>

Child Trends thanks the William and Flora Hewlett Foundation for its support of this *Research Brief*.

Editor: Harriet J. Scarupa

## REFERENCES

- <sup>1</sup> Agency for Healthcare Research and Quality. (2009). *National healthcare disparities report, 2008*. Rockville, MD: US Department of Health and Human Services.
- <sup>2</sup> Centers for Disease Control. (2004). *National Health and Nutrition Examination Survey (NHANES) 2003-2004*, from <http://www.cdc.gov/nchs/nhanes.htm>
- <sup>3</sup> Centers for Disease Control and Prevention. (2000). *Tracking the hidden epidemics: Trends in STDs in the United States, 2000*. Atlanta: Division of STD Prevention, U.S. Department of Health and Human Services, Public Health Service.
- <sup>4</sup> Centers for Disease Control and Prevention. (2008). *Sexually transmitted disease surveillance, 2007*. Atlanta, GA: Department of Health and Human Services.
- <sup>5</sup> Centers for Disease Control and Prevention. (2009). *Trends in reportable sexually transmitted diseases in the United States, 2007: National surveillance data for Chlamydia, gonorrhea, and syphilis*. Atlanta, GA.
- <sup>6</sup> Cherry, D. K., Hing, E., Woodwell, D. A., & Rechtsteiner, E. A. (2008). *National ambulatory medical care survey: 2006 summary*. *National Health Statistics Reports, no. 3*. Hyattsville, MD: National Center for Health Statistics.
- <sup>7</sup> Chesson, H., Blandford, J., Gift, T., Tao, G., & Irwin, K. (2004). The estimated direct medical cost of sexually transmitted diseases among American youth, 2000. *Perspectives on Sexual and Reproductive Health, 36*(1), 11-19.
- <sup>8</sup> Cook, R. L., Wiesenfeld, H. C., Ashton, M. r., Krohn, M. A., Zamborsky, T., & Scholle, S. H. (2001). Barriers to screening sexually active adolescent women for chlamydia: A survey of primary care physicians. *Journal of Adolescent Health, 28*(3), 204-210.
- <sup>9</sup> Ford, C. A., Jaccard, J., Millstein, S. G., Bardsley, P. E., & Miller, W. C. (2004). Perceived risk of chlamydial and gonococcal infection among sexually experienced young adults in the United States. *Perspectives on Sexual and Reproductive Health, 36*(6), 258-264.
- <sup>10</sup> Ford, K., Sohn, W., & Lepkowski, J. (2001). Characteristics of adolescents' sexual partners and their association with use of condoms and other contraceptive methods. *Family Planning Perspectives, 33*(3), 100-105, 132.
- <sup>11</sup> Gavin, L., MacKay, A. P., Brown, K., Harrier, S., Ventura, S. J., Kann, L., et al. (2009). *Sexual and reproductive health of persons aged 10-24 years — United States, 2002-2007*. Atlanta, GA: Centers for Disease Control and Prevention.
- <sup>12</sup> Hoff, T., Greene, L., & Davis, J. (2003). *National Survey of Adolescents and Young Adults: Sexual health knowledge, attitudes and experiences*. Menlo Park, CA: The Henry J. Kaiser Family Foundation.
- <sup>13</sup> Hogben, M., & Leichter, J. S. (2008). Social determinants and sexually transmitted disease disparities. *Sexually Transmitted Disease, 35*(12), S13-S18.
- <sup>14</sup> Institute of Medicine. (1997). *The hidden epidemic: Confronting Sexually Transmitted Diseases*. Washington, DC: National Academy Press.
- <sup>15</sup> Kershaw, T. S., Ethier, K. A., Niccolai, L. M., Lewis, J. B., & Ickovics, J. R. (2003). Misperceived risk among female adolescents: Social and psychological factors associated with sexual risk accuracy. *Health Psychology, 22*(5), 523-532.
- <sup>16</sup> Kotchick, B. A., Shaffer, A., & Forehand, R. (2001). Adolescent sexual risk behavior: A multi-system perspective. *Clinical Psychology Review, 21*(4), 493-519.
- <sup>17</sup> Lichtenstein, B. (2003). Stigma as a barrier to treatment of sexually transmitted infection in the American deep south: Issues of race, gender and poverty. *Social Science & Medicine, 57*, 2435-2445.
- <sup>18</sup> Manlove, J., Ryan, S., & Franzetta, K. (2007). Contraceptive use patterns across teens' sexual relationships: The role of relationships, partners, and sexual histories. *Demography, 44*(3), 603-621.
- <sup>19</sup> Ro, M. (2002). Moving forward: Addressing the health of Asian American and Pacific Islander women. *American Journal of Public Health, 92*(4), 516-519.
- <sup>20</sup> Sales, J. M., Milhausen, R. R., & DiClemente, R. (2006). A decade in review: Building on the experiences of past adolescent STI/HIV interventions to optimize future prevention efforts. *Sexually Transmitted Infections, 82*, 431-436.
- <sup>21</sup> Tarr, M. E., & Gilliam, M. L. (2008). Sexually transmitted infections in adolescent women. *Clinical Obstetrics and Gynecology, 51*(2), 306-318.
- <sup>22</sup> Weinstock, H., Berman, S., & Cates Jr., W. (2004). Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health, 36*(1), 6-10.

---

Child Trends is a nonprofit, nonpartisan research center that studies children at all stages of development. Our mission is to improve outcomes for children by providing research, data, and analysis to the people and institutions whose decisions and actions affect children. For additional information, including publications available to download, visit our Web site at [www.childtrends.org](http://www.childtrends.org). For the latest information on more than 100 key indicators of child and youth well-being, visit the Child Trends DataBank at [www.childtrends.org/databank](http://www.childtrends.org/databank). For summaries of over 400 evaluations of out-of-school time programs that work (or don't) to enhance children's development, visit [www.childtrends.org/WhatWorks](http://www.childtrends.org/WhatWorks).