

## Testing and Treatment for Sexually Transmitted Infections in Adolescents—What's New?

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### ABSTRACT

**Background:** Significant changes are taking place in the diagnosis and management of sexually transmitted infections (STI) in adolescents and young adults.

**Findings:** In this review article, we provide an update of STIs in adolescents and young adults including: (1) Adolescent risk; (2) Screening guidelines; (3) Clinical manifestations; (4) Diagnostic testing; (5) Treatment; and (6) Prevention; with an emphasis on “what’s new” in the field.

**Conclusions/Significance:** While the impacts of STI epidemiology and health care access are leading to new recommendations for screening and prevention, changes in technology and drug resistance are promoting new methods of STI testing and ongoing revisions of STI treatment recommendations.

**Key Words:** Sexually transmitted infection, Diagnostic testing, Adolescent risk

### Youth at Risk

Young sexually active teens have the highest risk of sexually transmitted infections (STI), attributable to behavioral, cognitive, and biologic factors. Adolescents are less likely than adults to use condoms, more likely to have multiple partners, and less likely to have sex in the context of an intimate relationship. Those at high risk for STIs are more likely to have early coitarche, sexual activity with a new partner, multiple sexual partners, and substance use, leading to a decrease in safe sex behaviors. A significantly older partner predisposes an adolescent to a relationship power imbalance, thus making sexual negotiation more difficult, increasing the risk of involuntary intercourse and unsafe sex practices, and increasing potential exposure to STIs.<sup>1–5</sup> Young adolescents are more likely to be concrete thinkers, with an as yet undeveloped capacity for good judgment and decision making, resulting in an inability to plan ahead.<sup>6</sup> Adolescent females are more biologically susceptible to becoming infected when exposed to STIs, due to cervical ectopy, decreased local immunity, a smaller introitus, and a lack of lubrication that can lead to traumatic sex; in males, increased susceptibility occurs in uncircumcised males regardless of age.<sup>7</sup> Non-Hispanic black youth have a greater prevalence of STIs despite similar behaviors to their white counterparts, indicating that social and population-level determinants, such as characteristics of sexual networks or access to health care, may contribute to their higher rate of STIs.<sup>8</sup>

STI guidelines from the Centers for Disease Control and Prevention (CDC) note that the youth at highest risk include those in detention facilities, injection-drug users, teens with a history of sexual molestation, and males who have had anal sex with other males. At-risk youth often lack confidential and affordable health care and suffer from fear of disclosure or lack of education.<sup>9–11</sup> Female victims of childhood sexual abuse are at an increased risk for STIs, possibly due to younger age at sexual initiation and unsafe sex practices.<sup>12</sup> Compared to their heterosexual peers, self-identified gay, lesbian, and bisexual youth are more likely to report having had sexual intercourse, to have had more partners, and to have experienced sexual contact before 13 years of age, thereby placing them at increased risk of acquisition of STIs.<sup>13,14</sup>

While the 2011 Youth Risk Behavior Survey (YRBS) published by the CDC found significant decreases from 1991 to 2001 in the percentage of high school students who had sexual intercourse: ever (54.1%–45.6%), currently (37.5%–33.7%), before age 13 years (10.2%–6.6%), or with 4 or more lifetime partners (18.7%–14.2%), there was no significant change from 2001 to 2011. Black students were found to have the highest prevalence of these indicators at 66.9%, 41.3%, 13.9%, and 24.8%, respectively, with the highest rates in black males. The YRBS found that condom use at last sex had stabilized in sexually active adolescents at 60.2%. This was after an initial increase in use from 1991 to 2003 of 46.2% to 63%, with highest rates of use in black males.<sup>15</sup>

While a significant delay in testing for STIs has been found for younger adolescents, one study of urban female teens found that the median interval between first intercourse and first STI was 2 years.<sup>16</sup> By age 15 years, 25% of women in this setting had acquired their first STI. The high prevalence of STIs soon after sexual initiation was supported

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in a CDC-sponsored study, which noted a 26% prevalence of 5 STIs evaluated among adolescent females within 1 year of sexual initiation.<sup>8</sup> This study of adolescent females noted that a higher prevalence of STIs existed for those with multiple partners, as well as for non-Hispanic black females, despite similar risk behavior profiles when compared to Mexican-American and non-Hispanic white females.

### STI Screening

As the great majority of STIs are asymptomatic, routine annual screening of sexually active teens for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* is strongly recommended by the CDC. While concerns about confidentiality and time constraints have interfered with the ability and willingness of many practitioners to obtain a sexual history and perform STI testing, especially from young teens, the ease of testing with the newer technologies that have now become available should eliminate these barriers to testing, thereby allowing for earlier diagnosis of the most common STIs.

The United States Preventive Services Task Force (USPSTF) recommends screening guidelines for chlamydia, gonorrhea, syphilis, and herpes infections.<sup>17–20</sup> The CDC Sexually Transmitted Disease Treatment Guidelines – 2010 provides screening strategies based on the USPSTF and other research. Specific CDC recommendations for STI screening in these guidelines are:

#### *Chlamydia*

Annual screening of all sexually active women aged less than 25 years is recommended, with more frequent screening for those at increased sexual risk. Screening of men is recommended in clinical settings with a high prevalence of chlamydia (eg, adolescent clinics, correctional facilities, STD clinics) and as a secondary strategy to prevent chlamydia infection among women. Men who have sex with men (MSM) should have annual urethral or rectal screening if they have had insertive or receptive sex. In a 2010 longitudinal cohort study of female adolescents involving quarterly STI testing of all participants,<sup>21</sup> chlamydia prevalence was unchanged with this “test and treat” intervention, due to high rates of re-infection. A 26% prevalence of chlamydia in male partners indicated that screening adolescent males may be required.

#### *Gonorrhea*

Screening of all sexually active women at increased risk for infection is recommended, with USPSTF risk defined as women less than 25 years of age or those with: a prior history of gonorrhea infection or other STIs, new or multiple sex partners, inconsistent condom use, sex work, drug use, or residence in urban communities or communities with high rates of poverty. MSM with insertive or receptive anal or receptive oral sex should be tested for urethral, rectal, or pharyngeal gonorrhea. Due to the lower incidence of asymptomatic infection, inadequate evidence exists to recommend routine screening for men.

#### *Trichomonas Vaginalis (TV)*

Women should be screened if they are at risk for infection due to new or multiple partners, have a history of STIs, exchange sex for payment, or use injection drugs.

#### *Bacterial Vaginosis (BV)*

The USPSTF recommends that asymptomatic pregnant women should not be screened for BV, regardless of the risk level for preterm delivery. For women at high risk of preterm delivery, the evidence is conflicting and risk-benefit cannot be determined. For women at low risk of preterm delivery, screening has no apparent benefit.<sup>22</sup>

#### *Syphilis*

All persons at increased risk for syphilis infection, including all pregnant women, should be screened for syphilis annually. Populations at increased risk for syphilis infection (based on incident rates) include MSM who engage in anal sex, sex workers, persons who exchange sex for drugs, and those in adult correctional facilities.

#### *Herpes Simplex Virus (HSV)*

The USPSTF recommends against routine serologic screening for HSV, including in asymptomatic pregnant women.

#### *Human Papillomavirus (HPV)*

The most recent recommendation of the American College of Obstetricians and Gynecologists is that routine testing is not indicated for cervical cytology in women less than 21 years of age or for cervical HPV in women less than 30 years of age. Due to lack of evidence on the reliability of screening methods as well as the safety of and response to treatment, routine testing for anal cytology or anal HPV is not recommended at this time.

#### *HIV*

The CDC Sexually Transmitted Diseases Treatment Guidelines–2010 recommend that all individuals between 13 and 64 years of age be screened in all health care settings at least once for HIV, regardless of recognized risk factors. Annual screening for HIV should be provided to sexually active MSM. The CDC recommends an “opt-out” format of assent, rather than signed informed consent, and streamlined pretest counseling. HIV testing laws vary from state to state and even for rapid versus traditional testing methods. The USPSTF recommends that all sexually active HIV-infected individuals should be screened for gonorrhea, chlamydia, and syphilis. The CDC estimates that 21% of HIV infected individuals are unaware of their disease and that approximately 50% of new HIV infections are transmitted by individuals unaware of their disease. It is estimated that knowledge of HIV status could reduce new infections by 30% due to behavior change.

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