Special Populations

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CDC now recommends 11 to 12 year olds get two doses of HPV vaccine—rather than the previously recommended three doses—to protect against cancers caused by HPV. The second dose should be given 6-12 months after the first dose. For more information on the updated recommendations, see Use of a 2-Dose Schedule for Human Papillomavirus Vaccination — Updated Recommendations of the Advisory Committee on Immunization Practices (https://www.cdc.gov/mmwr/volumes/65/wr/mm6549a5.htm) MMWR December 16, 2016

Pregnant Women

Intrauterine or perinatally transmitted STDs can have severely debilitating effects on pregnant women, their partners, and their fetuses. All pregnant women and their sex partners should be asked about STDs, counseled about the possibility of perinatal infections, and provided access to screening and treatment, if needed.

Recommendations to screen pregnant women for STDs are based on disease severity and sequelae, prevalence in the population, costs, medico-legal considerations (e.g., state laws), and other factors. The screening recommendations in this report are generally broader (i.e., more pregnant women will be screened for more STDs than would by following other screening recommendations) and are consistent with other CDC guidelines.

Recommended Screening Tests

- All pregnant women in the United States should be screened for HIV infection at the first prenatal visit, even if they have been previously tested *(103, 104)*. Screening should be conducted after the woman is notified of the need to be screened for HIV as part of the routine panel of prenatal tests, unless she declines (i.e., opt-out screening). For women who decline HIV testing, providers should address their objections, and when appropriate, continue to encourage testing. Women who decline testing because they have had a previous negative HIV test should be informed of the importance of retesting during each pregnancy. Testing pregnant women and treating those who are infected are vital not only to maintain the health of the woman, but to reduce perinatal transmission of HIV through available antiretroviral and obstetrical interventions. Retesting in the third trimester (preferably before 36 weeks' gestation) is recommended for women at high risk for acquiring HIV infection (e.g., women who use illicit drugs, have STDs during pregnancy, have multiple sex partners during pregnancy, live in areas with high HIV prevalence, or have partners with HIV infection). Rapid HIV screening should be performed on any woman in labor who has not been screened for HIV during pregnancy unless she declines. If a rapid HIV test result is positive in these women, antiretroviral prophylaxis should be administered without waiting for the results of the confirmatory test *(105)*.
- A serologic test for syphilis should be performed for all pregnant women at the first prenatal visit *(106)*. When access to prenatal care is not optimal, rapid plasma reagin (RPR) card test screening (and treatment, if that test is reactive) should be performed at the time that a pregnancy is confirmed. Women who are at high risk for syphilis or live in areas of high syphilis morbidity should be screened again early in the third trimester (at approximately 28 weeks' gestation) and at delivery. Some states require all women to be screened at delivery. Neonates should not be discharged from the hospital unless the syphilis serologic status of the mother has been determined at least one time during pregnancy and preferably again at delivery if at risk. Any woman who delivers a stillborn infant should be tested for syphilis.
- All pregnant women should be routinely tested for hepatitis B surface antigen (HBsAg) at the first prenatal visit even if they have been previously vaccinated or tested *(107)*. Women who were not screened prenatally, those who engage in behaviors that put them at high risk for infection (e.g., having had more than one sex partner in the previous 6 months, evaluation or treatment for an STD, recent or current injection-drug use, and an HBsAg-positive sex partner) and those with clinical hepatitis should be retested at the time of admission to the hospital for delivery. Pregnant women at risk for HBV infection also should be vaccinated. To avoid misinterpreting a transient positive HBsAg result during the 21 days after vaccination, HBsAg testing should be performed before vaccine administration. All laboratories that conduct HBsAg tests should test initially reactive specimens with a licensed neutralizing confirmatory test. When pregnant women are tested for HBsAg at the time of admission for delivery, shortened testing protocols can be used, and initially reactive results should prompt expedited administration of immunoprophylaxis to neonates *(107)*. Pregnant women who are HBsAg positive should be reported to the local or state health department to ensure that they are entered into a case-management system and that timely and appropriate prophylaxis is provided to their infants. Information concerning the pregnant woman's HBsAg status should be provided to the hospital in which delivery is planned and to the health-care provider who will care for the newborn. In addition, household and sex contacts of women who are HBsAg positive should be vaccinated. Women who are HBsAg positive should be provided with, or referred for, appropriate counseling and medical management.
- All pregnant women aged <25 years and older women at increased risk for infection (e.g., those who have a new sex partner, more than one sex partner, a sex partner with concurrent partners, or a sex partner who has a sexually transmitted infection) should be routinely screened for *Chlamydia trachomatis* at the first prenatal visit

(108). Women aged <25 years and those at increased risk for chlamydia also should be retested during the third trimester to prevent maternal postnatal complications and chlamydial infection in the neonate. Pregnant women found to have chlamydial infection should have a test-of-cure to document chlamydial eradication (preferably by nucleic acid amplification testing [NAAT]) 3–4 weeks after treatment and then retested within 3 months. Screening during the first trimester might prevent the adverse effects of chlamydia during pregnancy, but evidence for such screening is lacking.

- All pregnant women aged <25 years and older women at increased risk for gonorrhea (e.g., those with a new sex partner, more than one sex partner, a sex partner with concurrent partners, or a sex partner who has a sexually transmitted infection) should be screened for *N. gonorrhoeae* at the first prenatal visit (108). Additional risk factors for gonorrhea include inconsistent condom use among persons not in mutually monogamous relationships, previous or coexisting sexually transmitted infection, and exchanging sex for money or drugs. Clinicians should consider the communities they serve and might choose to consult local public health authorities for guidance on identifying groups that are at increased risk. Gonococcal infection, in particular, is concentrated in specific geographic locations and communities. Women found to have gonococcal infection should be treated immediately and retested within 3 months. Pregnant women who remain at high risk for gonococcal infection also should be retested during the third trimester to prevent maternal postnatal complications and gonococcal infection in the neonate.
- All pregnant women at risk for HCV infection should be screened for hepatitis C antibodies at the first prenatal visit. The most important risk factor for HCV infection is past or current injection drug use (109). Additional risk factors include having had a blood transfusion before July 1992, receipt of an unregulated tattoo, having been on long-term hemodialysis, intranasal drug use, and other percutaneous exposures. No established treatment regimen exists for pregnant women infected with HCV. However, all women with HCV infection should receive appropriate counseling and supportive care as needed (see Hepatitis C, Prevention). No vaccine is available to prevent HCV transmission.
- Pregnant women should undergo a Papanicolau (Pap) test at the same frequency as nonpregnant women, although recommendations for management of abnormal Pap tests in pregnancy differ (110).

Other Tests

- Evidence does not support routine screening for BV in asymptomatic pregnant women at high risk for preterm delivery (111). Symptomatic women should be evaluated and treated (see Bacterial Vaginosis).
- Evidence does not support routine screening for *Trichomonas vaginalis* in asymptomatic pregnant women. Women who report symptoms should be evaluated and treated appropriately (see Trichomonas).
- Evidence does not support routine HSV-2 serologic screening among asymptomatic pregnant women. However, type-specific serologic tests might be useful for identifying pregnant women at risk for HSV infection and guiding counseling regarding the risk for acquiring genital herpes during pregnancy. In the absence of lesions during the third trimester, routine serial cultures for HSV are not indicated for women in the third trimester who have a history of recurrent genital herpes.

For a more detailed discussion of STD screening and treatment among pregnant women, refer to the following references: *Screening for HIV in Pregnant Women: Systematic Review to Update the 2005 U.S. Preventive Services Task Force Recommendation (103); Screening for HIV: U.S. Preventive Services Task Force Recommendation Statement (104); ACOG/AAP Guidelines for Perinatal Care (112); Rapid HIV Antibody Testing During Labor and Delivery for Women of Unknown HIV Status: A Practical Guide and Model Protocol (113); Viral Hepatitis in Pregnancy (114); Hepatitis B Virus: A Comprehensive Strategy for Eliminating Transmission in the United States — Recommendations of the Immunization Practices Advisory Committee (ACIP) (4); Screening for Chlamydia and Gonorrhea: U.S. Preventive Services Task Force Recommendation Statement (108); Canadian guidelines on sexually transmitted infections (115); USPSTF recommendations for STI screening (116); and Screening for Bacterial Vaginosis in Pregnancy to Prevent Preterm Delivery: U.S. Preventive Services Task Force Recommendation Statement (111).*

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Adolescents

In the United States, prevalence rates of many sexually acquired infections are highest among adolescents and young adults (117,118). For example, the reported rates of chlamydia and gonorrhea are highest among females during their adolescent and young adult years, and many persons acquire HPV infection at this time.

Persons who initiate sex early in adolescence are at higher risk for STDs, along with adolescents residing in detention facilities, those who use injection drugs, adolescents attending STD clinics, and young men who have sex with men (YMSM). Factors contributing to this increased risk during adolescence include having multiple sexual partners concurrently, having sequential sexual partnerships of limited duration, failing to use barrier protection consistently and correctly, having increased biologic susceptibility to infection, and facing multiple obstacles to accessing health care (118).

All 50 states and the District of Columbia explicitly allow minors to consent for their own health services for STDs. No state requires parental consent for STD care, although some states restrict a minor's ability to provide consent on the basis of age or type of service (i.e., prevention, diagnosis, or treatment only). No state requires that providers notify parents that an adolescent minor has received STD services, except in limited or unusual circumstances. However, many states authorize parental notification of a minor's receipt of STD services, even where the minor can legally provide his or her own consent to the service (http://www.guttmacher.org/statecenter/spibs/spib_OMCL.pdf (http://www.guttmacher.org/statecenter/spibs/spib_OMCL.pdf) ; http://www.cahl.org/state-minor-consent-laws-a-summary-third-edition (http://www.cahl.org/state-minor-consent-laws-a-summary-third-edition)). Protecting confidentiality for such care, particularly for adolescents enrolled in private health insurance plans, presents multiple problems. After a claim has been reported, many states mandate that health plans provide a written statement to the beneficiary indicating the service performed, the charges covered, what the insurer allows, and the amount for which the patient is responsible (i.e., explanation of benefit [EOB]) (119). In addition, federal laws obligate notices to beneficiaries when claims are denied, including alerting beneficiaries who need to pay for care until the allowable deductible is reached. For STD detection- and treatment-related care, an EOB or medical bill that is received by a parent might disclose services provided and list STD laboratory tests performed or treatment given.

Despite the high rates of infections documented in the adolescent population, providers frequently fail to inquire about sexual behaviors, assess STD risks, provide risk-reduction counseling, and ultimately, screen for asymptomatic infections during clinical encounters. Discussions concerning sexual behavior should be appropriate for the patient's developmental level and should be aimed at identifying risk behaviors (e.g., multiple partners; unprotected oral, anal, or vaginal sex; and drug-use behaviors).

Careful, nonjudgmental, and thorough counseling is particularly vital for adolescents who might not feel comfortable acknowledging their engagement in behaviors that place them at high risk for STDs.

Screening Recommendations

Routine laboratory screening for common STDs is indicated for sexually active adolescents. The following screening recommendations summarize published federal agency and medical professional organizations' clinical guidelines for sexually active adolescents.

- Routine screening for *C. trachomatis* on an annual basis is recommended for all sexually active females aged <25 years *(108)*. Evidence is insufficient to recommend routine screening for *C. trachomatis* in sexually active young men based on efficacy and cost-effectiveness. However, screening of sexually active young males should be considered in clinical settings serving populations of young males with a high prevalence of chlamydia (e.g., adolescent clinics, correctional facilities, and STD clinics) and should be offered to YMSM (see Special Populations, MSM) *(120,121)*.
- Routine screening for *N. gonorrhoeae* on an annual basis is recommended for all sexually active females <25 years of age *(108)*. Gonococcal infection is concentrated in specific geographic locations and communities. Clinicians should consider the communities they serve and might choose to consult local public health authorities for guidance on identifying groups that are at increased risk. Screening should be offered to YMSM (see MSM section).
- HIV screening should be discussed and offered to all adolescents. Frequency of repeat screenings of those who are at risk for HIV infection should be based on level of risk *(122,123)*. Persons who test positive for HIV should receive prevention counseling and referral to care before leaving the testing site.
- The routine screening of adolescents who are asymptomatic for certain STDs (e.g., syphilis, trichomoniasis, BV, HSV, HPV, HAV, and HBV) is not generally recommended. However, YMSM and pregnant adolescent females should be screened for syphilis.
- Guidelines from USPSTF, ACOG, and ACS recommend that cervical cancer screening begin at age 21 years *(124-126)*. This recommendation is based on the low incidence of cervical cancer and limited utility of screening for cervical cancer in adolescents *(127)*.

Primary Prevention Recommendations

Primary prevention and anticipatory guidance to recognize symptoms and behaviors associated with STDs are strategies that can be incorporated into any or all types of health-care visits for adolescents and young adults. The following recommendations for primary prevention of STDs (i.e., vaccination and counseling) are based on published federal agency and medical professional organizations' clinical guidelines for sexually active adolescents and young adults.

- The HPV vaccine, bivalent, quadrivalent, or 9-valent, is recommended routinely for females aged 11 and 12 years and can be administered beginning at 9 years of age *(16)* https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hpv.html (https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hpv.html). Vaccination is also recommended for females aged 13–26 years who have not yet received all doses or completed the vaccine series. The quadrivalent or 9-valent HPV vaccine is recommended routinely for males aged 11 and 12 years and also can be administered beginning at 9 years of age *(16)*. Vaccination with quadrivalent or the 9-valent HPV vaccine is recommended for males aged 13–21 years who have not yet received all doses or completed the vaccine series, although males aged 22–26 years also can be vaccinated *(16)*. For persons with HIV infection and for MSM, vaccination is recommended through age 26. HPV vaccination has not been associated with a change in perceptions about risks posed by sexual behavior *(128)*.
- The HBV vaccination series is recommended for all adolescents and young adults who have not previously received the hepatitis B vaccine *(3,4)*.
- The HAV vaccination series should be offered to adolescents and young adults who have not previously received the HAV vaccine series.
- Information regarding HIV infection, testing, transmission, and implications of infection should be regarded as an essential component of the anticipatory guidance provided to all adolescents and young adults as part of health care *(122)*.
- Health-care providers who care for adolescents and young adults should integrate sexuality education into clinical practice. Providers should counsel adolescents about the sexual behaviors that are associated with risk for acquiring STDs and educate patients regarding evidence-based prevention strategies, all of which include a discussion about abstinence and other risk-reduction behaviors (e.g., consistent and correct condom use and reduction in the number of sex partners). Interactive counseling approaches, such as high-intensity behavioral counseling (HIBC) and motivational interviewing, are effective STD/HIV prevention strategies. USPSTF recommends high-intensity behavioral counseling for all sexually active adolescents *(7)* to prevent sexually transmitted infections*. Educational materials (e.g., handouts, pamphlets, and videos) can reinforce office-based educational efforts.

* STI is the term used by USPSTF to describe the syndromes caused by various pathogens that can be acquired and transmitted through sexual activity.

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Children

Management of children who have STDs requires close cooperation between clinicians, laboratorians, and child-protection authorities. Official investigations, when indicated, should be initiated promptly. Certain diseases (e.g., gonorrhea, syphilis, and chlamydia), if acquired after the neonatal period, strongly suggest sexual contact. For other diseases (e.g., HPV infections and vaginitis), the association with sexual contact is not as clear (see Sexual Assault and STDs).

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Persons in Correctional Facilities

Multiple studies have demonstrated that persons entering correctional facilities have high rates of STDs (including HIV) and viral hepatitis (www.cdc.gov/correctionalhealth/ (https://www.cdc.gov/correctionalhealth/)), especially those aged ≤35 years *(118)*. Incarcerated persons are more likely to have low socioeconomic status, live in urban areas, and be ethnic and racial minorities. Risk behaviors for contracting STDs (e.g., having unprotected sex; having multiple sexual partners; using drugs and alcohol; and engaging in commercial, survival, or coerced sex) are common among incarcerated populations. Before incarceration, many have had limited access to medical care.

Although no comprehensive national guidelines regarding STD care and management have been developed for correctional populations, growing evidence demonstrates the utility of expanded STD screening and treatment services in correctional settings. For example, in jurisdictions with comprehensive, targeted jail screening, more chlamydial infections among females (and males if screened) are detected and subsequently treated in the correctional setting than any other single reporting source *(118,129)* and might represent the majority of reported cases in certain jurisdictions *(130)*.

Both men and women ≤35 years of age in juvenile and adult detention facilities have been reported to have higher rates of chlamydia *(131)* and gonorrhea *(118)* than their nonincarcerated counterparts in the community, and across many studies, rates have been consistently higher among women than men. Syphilis seroprevalence rates, which can indicate previous or current infection, are considerably higher among adult men and women than in adolescents, consistent with the overall national syphilis trends *(132)*. Detection and treatment of early syphilis in correctional facilities might impact rates of transmission *(133)*.

In short-term facilities, including jails and juvenile detention facilities that commonly house entrants for <1 year, up to half of entrants are released back in the community within 48 hours. As a result, treatment completion rates for those screened for STDs and who receive STD diagnoses in short-term facilities might not be optimal. However, because of the mobility of incarcerated populations in and out of the community, the impact of screening in correctional facilities on the prevalence of infections among detainees and subsequent transmission in the community after release might be considerable *(134)*. Moreover, treatment completion rates of >95% can be achieved by offering screening at or shortly after intake, facilitating earlier receipt of test results; follow-up of untreated persons can be conducted through public health outreach *(130)*.

Universal screening for chlamydia and gonorrhea in women ≤35 years entering juvenile and adult correctional facilities has been a long-standing recommendation. However, no such recommendation existed for men until 2006, when CDC convened a consultation on male chlamydia screening *(121)* that resulted in recommendations to screen men <30 years for chlamydia at intake into jails.

Whereas several studies have shown a high prevalence of trichomonas among incarcerated persons, none have demonstrated the impact of trichomonas screening in correctional facilities *(135-137)*. Women who report vaginal discharge should be evaluated and treated appropriately.

Chlamydia and Gonorrhea Screening

Women ≤35 and men <30 years in correctional facilities should be screened for chlamydia and gonorrhea. Chlamydia and gonorrhea screening should be conducted at intake.

Syphilis Screening

Universal screening should be conducted on the basis of the local area and institutional prevalence of early (primary, secondary, and early latent) infectious syphilis. Correctional facilities should stay apprised of syphilis prevalence as it changes over time.

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MSM

The term "men who have sex with men" (MSM) describes a heterogeneous group of men who have varied behaviors, identities, and health-care needs *(138)*. Some MSM are at high risk for HIV infection and other viral and bacterial STDs because MSM may practice anal sex, and the rectal mucosa is uniquely susceptible to certain STD pathogens. In addition, multiple sex partners, substance use, and sexual network dynamics of MSM increase risk for HIV and STDs in this population. The frequency of unsafe sexual practices and the reported rates of bacterial STDs and incident HIV infection declined substantially in MSM from the 1980s through the mid-1990s. However, since that time, increased rates of early syphilis (primary, secondary, or early latent), gonorrhea, and chlamydial infection and higher rates of sexual risk behaviors have been documented among MSM in the United States and virtually all industrialized countries.

Approximately two thirds of the cases of primary and secondary syphilis diagnoses in the United States are in MSM, particularly those in ethnic minority groups *(118, 139,140)*. Increased syphilis screening in MSM demonstrated a doubling of early syphilis detection; however, 71% of the syphilis diagnoses occurred when the patient sought care for symptoms *(141)*. Acute HIV infection has been associated with a recent or concurrent STD, including syphilis, among men at a municipal STD clinic *(142)* and in the multisite iPrex study *(143)*, and several studies have demonstrated that early syphilis is associated with HIV infection among MSM *(144,145)*. Factors associated with increases in syphilis among MSM have included substance abuse (e.g., methamphetamine), having multiple anonymous partners, and seeking sex partners through the internet *(146,147)*. One study found that 5.9% of MSM had repeat primary or secondary syphilis infection within 2 years of an initial infection; factors associated with repeat syphilis infection were HIV infection, black race, and having ≥10 recent sexual partners *(148)*. Because of this risk for repeat infection, these data suggest that prevention efforts should include follow up serologic testing.

Gonococcal infection in MSM has been associated with similar risk factors, including having multiple anonymous partners and abuse of substances, particularly crystal methamphetamine *(149)*. Rectal gonococcal rates are increasing among MSM with HIV infection, underscoring the importance of obtaining an accurate, current sexual history and asking about correlates of increased risk (e.g., anonymous sex and substance use) *(150)*. Insertive oral sex has been associated with urethral gonorrhea acquisition *(151,152)*; the prevalence of pharyngeal gonorrhea and pharyngeal chlamydia has been demonstrated to be 7.3% and 2.3%, respectively *(153)*. In a multicity study, rectal gonorrhea and rectal chlamydia prevalence rates among MSM were 5.4% and 8.9%, respectively *(154)*. Rectal gonorrhea and chlamydia infections, especially those that are recurrent, have been associated with increased risk for HIV seroconversion among MSM *(155,156)*. MSM with new HIV infection diagnoses are more likely than HIV-uninfected MSM to receive a diagnosis of asymptomatic gonorrhea (25.9% versus 10.9%, p<0.001) and chlamydia (18.5% vs 7.8%, p<0.001) *(157)*. Thus, rectal gonorrhea and chlamydia screening in MSM might be a cost-effective intervention in certain urban settings *(158)*.

MSM remain at disproportionate risk for HIV acquisition and transmission in the United States, particularly those who are black or Hispanic. Factors that increase the risk for HIV infection in MSM include either receptive or insertive anal sex without a condom, having another STD, having sex with anonymous partners without a condom, and using methamphetamines or drugs that enhance sexual performance *(159)*.

Substantial numbers of MSM remain unaware of their serostatus (up to 44% in one recent survey of young men in minority populations) *(160)*. Unfortunately, many men are not asked about STD-related risks, including the gender of sex partners. Even if gender of sex partners is ascertained, many MSM, including those with HIV infection, are neither asked about risky sexual behaviors nor provided with routine STD testing (especially at anatomic sites of exposure for gonorrhea or chlamydia), often because of the discomfort associated with these discussions *(161-163).* Clinicians should routinely ask sexually active MSM about symptoms consistent with common STDs, including urethral discharge, dysuria, genital and perianal ulcers, regional lymphadenopathy, skin rash, and anorectal symptoms consistent with proctitis (e.g., discharge and pain on defecation or during anal intercourse) and then perform appropriate diagnostic testing. In addition, providers should offer evidence-based counseling on safer sex using interventions that have been demonstrated to decrease STD incidence in clinical-care settings *(10)*.

Clinicians should be familiar with local resources available to assist MSM with syphilis and HIV partner services as well as HIV linkage and retention in care. In addition, interventions promoting behavior change also might be appropriate. In recent years, medical educational materials have been developed in print *(164)* and through electronic media (www.lgbthealtheducation.org (http://www.lgbthealtheducation.org)) to increase primary-care provider knowledge and cultural competency regarding the diagnosis and management of STDs and other clinical conditions in the lesbian, gay, bisexual, and transgender populations. Electronic media is also an important tool for disseminating and collecting information to and from MSM. Because many MSM meet partners online and seek health information from web sites, increased use of the internet for STD prevention might be warranted. MSM are amenable to receiving HIV and STD risk-reduction messages online *(165)* and willing to respond to requests for partner identification from public health authorities through the internet *(166)*.

The following screening tests should be performed at least annually for sexually active MSM, including those with HIV infection.

- HIV serology, if HIV status is unknown or negative and the patient himself or his sex partner(s) has had more than one sex partner since most recent HIV test.
- Syphilis serology to establish whether persons with reactive tests have untreated syphilis, have partially treated syphilis, are manifesting a slow serologic response to appropriate prior therapy, or are serofast.
- A test for urethral infection† with *N. gonorrhoeae* and *C. trachomatis* in men who have had insertive intercourse§ during the preceding year (testing of the urine using NAAT† is the preferred approach).
- A test for rectal infection† with *N. gonorrhoeae* and *C. trachomatis* in men who have had receptive anal intercourse§ during the preceding year (NAAT of a rectal specimen is the preferred approach).
- A test for pharyngeal infection† with *N. gonorrhoeae* in men who have had receptive oral intercourse§ during the preceding year (NAAT of a pharyngeal specimen is the preferred approach). Testing for *C. trachomatis* pharyngeal infection is not recommended.

† Regardless of condom use during exposure.
§ Commercially available NAATs have not been cleared by FDA for these indications, but they can be used by laboratories that have met all regulatory requirements for an off-label procedure. Source: *MMWR*. Mar 14 2014;63(No RR-12):1-19.

MSM with HIV infection are also at risk for STDs. Data from a study of 557 adults with HIV infection receiving primary care in four U.S. cities demonstrate that 13% had STD at study enrollment, and 7% had incident STD at 6 months; among MSM with HIV infection, STD incidence was 20% *(10)*. Excluding trichomoniasis, 94% of incident STDs were diagnosed in MSM. All MSM with HIV infection entering care should be screened for gonorrhea and chlamydia at appropriate anatomic sites of exposure, as well as for syphilis *(17)*. The frequency of follow-up testing might be dictated by subsequent behavior; screening is recommended annually, at a minimum, to include syphilis serologic testing and chlamydia and gonorrhea screening at exposed anatomic sites *(138)*. STD screening rates in HIV clinics have been suboptimal. In one study involving eight U.S. cities, although syphilis testing was provided to most MSM with HIV infection, <10% were screened for extra-genitourinary gonorrhea or chlamydia, and <20% provided the urine or urethral specimens needed for testing *(162)*. More frequent STD screening (i.e., for syphilis, gonorrhea, and chlamydia) at 3–6-month intervals is indicated for MSM, including those with HIV infection if risk behaviors persist or if they or their sexual partners have multiple partners. Evaluation for HSV-2 infection with type-specific serologic tests also can be considered if infection status is unknown in persons with previously undiagnosed genital tract infection.

HPV infection and HPV-associated conditions (e.g., anogenital warts and anal squamous intraepithelial lesions) are highly prevalent among MSM. The quadrivalent vaccine is recommended routinely for MSM through age 26 years *(16, 167,168)*; the efficacy of this vaccine in preventing HPV associated diseases in men aged >26 years is unknown.

Data are insufficient to recommend routine anal-cancer screening with anal cytology in persons with HIV infection or HIV-negative MSM. More evidence is needed concerning the natural history of anal intraepithelial neoplasia, the best screening methods and target populations, safety of and response to treatments, and other programmatic considerations before screening can be routinely recommended. However, some clinical centers perform anal cytology to screen for anal cancer among high-risk populations (e.g., persons with HIV infection and MSM), followed by high-resolution anoscopy for those with abnormal cytologic results (e.g., ASC-US).

All MSM should be tested for HBsAg to detect chronic HBV infection. Prompt identification of chronic infection with HBV is essential to ensure necessary care and services to prevent transmission to others *(169)*. Screening among past or current drug users should include HCV and HBV testing. Vaccination against hepatitis A and B is recommended for all MSM in whom previous infection or vaccination cannot be documented *(2,3)*. Preimmunization serologic testing might be considered to reduce the cost of vaccinating MSM who are already immune to these infections, but this testing should not delay vaccination. Vaccinating persons who are immune to HAV or HBV infection because of previous infection or vaccination does not increase the risk for vaccine-related adverse events (see Hepatitis A and Hepatitis B).

Sexual transmission of HCV can occur, especially among MSM with HIV infection (see Emerging Issues, Hepatitis C). Serologic screening for HCV is recommended at initial evaluation of persons with newly diagnosed HIV infection. Because of accumulating evidence of acute HCV infection acquisition among persons with HIV infection (especially MSM with HIV infection *(170-175)*) and because regular screening for HCV infection is cost effective *(176,177)*, MSM with HIV infection should be regularly screened for HCV. Screening should be performed at least yearly and more frequently depending on specific circumstances (e.g., local HCV prevalence and incidence, high-risk sexual behavior, and concomitant ulcerative STDs or STD-related proctitis). Screening should be performed using HCV antibody assays followed by HCV RNA testing for those with a positive antibody result *(178)*.

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WSW

Women who have sex with women (WSW) are a diverse group with variations in sexual identity, sexual behaviors, sexual practices, and risk behaviors. Recent studies indicate that some WSW, particularly adolescents and young women as well as women with both male and female partners, might be at increased risk for STDs and HIV based on reported risk behaviors *(179-183)*. Certain studies have highlighted the wide diversity of sexual practices and examined use of protective/risk reduction strategies among populations of WSW *(184-186)*. Use of barrier protection with female partners (gloves during digital-genital sex, condoms with sex toys, and latex or plastic barriers [also known as dental dams for oral-genital sex]) was infrequent in all studies. Despite this, few comprehensive and reliable resources of sexual health information for WSW are available *(187)*.

Few data are available on the risk for STDs conferred by sex between women, but transmission risk probably varies by the specific STD and sexual practice (e.g., oral-genital sex; vaginal or anal sex using hands, fingers, or penetrative sex items; and oral-anal sex) *(188,189)*. Practices involving digital-vaginal or digital-anal contact, particularly with shared penetrative sex items, present a possible means for transmission of infected cervicovaginal or anal secretions. This possibility is most directly supported by reports of shared trichomonas infections *(190,191)* and by concordant drug resistance genotype testing and phylogenetic linkage analysis identifying HIV transmitted sexually between women *(192,193)*. Most self-identified WSW (53%–97%) have had sex with men in the past and might continue this practice, with 5%–28% of WSW reporting male partners within the past year *(189, 194-196)*.

HPV, which can be transmitted through skin-to-skin contact, is common among WSW, and sexual transmission of HPV likely occurs between female sex partners (*197-199*). HPV DNA has been detected through polymerase chain reaction (PCR)-based methods from the cervix, vagina, and vulva in 13%–30% of WSW *(197,198)*. Among WSW who reported never having had a male sexual partner, 26% had antibodies to HPV-16, and 42% had antibodies to HPV-6 *(197)*. High- and low-grade squamous intraepithelial lesions (SIL) have been detected on Pap tests in WSW who reported no previous sex with men *(197,198, 200,201)*. WSW are at risk for acquiring HPV from both their female partners and from current or prior male partners, and thus are at risk for cervical cancer. Therefore, routine cervical cancer screening should be offered to all women, regardless of sexual orientation or sexual practices, and women should be offered HPV vaccine as per current guidelines *(16)*.

Genital transmission of HSV-2 between female sex partners is inefficient, but can occur. A U.S. population-based survey among women aged 18–59 years demonstrated an HSV-2 seroprevalence of 30% among women reporting same-sex partners in the past year, 36% among women reporting same-sex partners in their lifetime, and 24% among women reporting no lifetime same-sex behavior *(195)*. HSV-2 seroprevalence among women self-identifying as "homosexual or lesbian" was 8%, similar to a prior clinic-based study of WSW *(195,196)*. The relatively frequent practice of orogenital sex among WSW might place them at higher risk for genital infection with HSV-1, a hypothesis supported by the recognized association between HSV-1 seropositivity and previous number of female partners among WSW. Thus, sexual transmission of HSV-1 and HSV-2 can occur between female sex partners. This information should be communicated to women as part of a larger sexual health counseling and evaluation effort.

Less is known regarding transmission of bacterial STDs between female partners. Transmission of syphilis between female sex partners, probably through oral sex, has been reported. Although the rate of transmission of *C. trachomatis* between women is unknown, infection also might be acquired from past or current male partners. More recent data suggests that *C. trachomatis* infection among WSW might be more common than previously believed *(179, 202)*. Reports of same-sex behavior in women should not deter providers from offering and providing screening for STDs, including chlamydia, according to current guidelines.

BV is common among women in general and even more so among women with female partners *(203,204)*. Sexual behaviors that facilitate the transfer of vaginal fluid and bacteria between partners may be involved in the pathogenesis of BV. A study including monogamous couples demonstrated that female sex partners frequently share identical genital Lactobacillus strains *(205)*. Within a community-based cohort of WSW, extravaginal (i.e., oral and rectal) reservoirs of BV-associated bacteria were a risk factor for incident BV *(206)*. Several new studies have examined the impact of specific sexual practices on the vaginal microflora *(207-209)* and on recurrent *(210)* or incident *(211,212)* BV among WSW and non-WSW. These studies have continued to support, though have not proven, the hypothesis that sexual behaviors, specific BV-associated bacteria, and possibly exchange of vaginal or extravaginal microbiota (e.g., oral bacterial communities) between partners might be involved in the pathogenesis of BV in WSW.

Although BV is common in WSW, routine screening for BV is not recommended. Results of a randomized trial using a behavioral intervention to reduce persistent BV among WSW through reduced sharing of vaginal fluid on hands or sex toys has been published *(213)*. Although women randomized to the intervention were 50% less likely to report receptive digital-vaginal contact without gloves than controls and reported sharing sex toys infrequently, these women had no reduction in persistent BV at 1 month post-treatment and no reduction in incident episodes of recurrent BV. To date, no reported trials have examined the potential benefits of treating female partners of women with BV; thus, no recommendation can be made regarding partner therapy in WSW. Increasing awareness of signs and symptoms of BV in women and encouraging healthy sexual practices (e.g., avoiding shared sex toys, cleaning shared sex toys, and barrier use) might benefit women and their partners. WSW are at risk for acquiring bacterial, viral, and protozoal STDs from current and prior partners, both male and female. WSW should not be presumed to be at low or no risk for STDs based on sexual orientation. Report of same sex behavior in women should not deter providers from considering and performing screening for STDs and cervical cancer according to current guidelines. Effective screening requires that care providers and their female patients engage in a comprehensive and open discussion of sexual and behavioral risks that extends beyond sexual identity.

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Transgender Men and Women

Persons who are transgender identify as a gender that is not congruent with the sex they were assigned at birth. Transgender women ("trans-women" or "transgender male to female") identify as women but were born with male anatomy. Similarly, transgender men (also referred to as "trans-men" or "transgender female to male") identify as men but were born with female anatomy. However, transgender persons might use different and often fluid terminology to refer to themselves through their life course. Gender identity is independent from sexual orientation. Persons who are transgender might have sex with men, women, or both and consider themselves to be heterosexual, gay, lesbian, or bisexual. Prevalence studies of transgender persons in the overall population have been limited and often based on small convenience samples.

Transgender Women

A systematic review of studies of HIV among transgender women suggests that the prevalence of HIV in the United States is 27.7% among all transgender women and 56.3% among black transgender women *(214)*. Data also suggests high rates of HIV among transgender women globally *(215)*. Bacterial STD prevalence varies among transgender women, but is based largely on convenience samples. Providers caring for transgender women should have knowledge of their patients' current anatomy and patterns of sexual behavior before counseling them about STD and HIV prevention *(216)*. Most transgender women have not undergone genital affirmation surgery and may retain a functional penis *(217-219)*; in this instance, they might engage in insertive oral, vaginal, or anal sex with men and women.

Transgender Men

The few studies of HIV prevalence and incidence in transgender men suggest that although some transgender men engage in risky behaviors, they have a lower prevalence of HIV than transgender women *(220)*. Providers should consider the anatomic diversity among transgender men, because many still have a vagina and cervix and are at risk for bacterial STDs, cervical HPV, and cervical cancer *(221)*.

Recommendations

Clinicians should assess STD- and HIV-related risks for their transgender patients based on current anatomy and sexual behaviors. Because of the diversity of transgender persons regarding surgical affirming procedures, hormone use, and their patterns of sexual behavior, providers must remain aware of symptoms consistent with common STDs and screen for asymptomatic STDs on the basis of behavioral history and sexual practices.

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