

Adherence to guidelines for universal screening of sexually active adolescents and young adults: A guide to solutions and strategies

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Introduction

In the United States, it is estimated that there are 20 million new sexually transmitted infections (STIs) each year, with more than 110 million total infections, both new and existing, at any given time.¹ STIs can lead to long-term health consequences, including: pelvic inflammatory disease (PID), infertility, chronic pelvic pain, and an increase in the likelihood of HIV transmission. Chlamydia is the most common reportable disease in the United States and is also among the most treatable.^{1,2} More than half (63%) of reported cases of chlamydia occur in adolescents aged 15-24 years, and chlamydia rates for this age group continue to rise.¹ Gonorrhea is the second most common reportable disease in the United States, and, like chlamydia, is especially common in female adolescents and young adults between the ages of 15 and 24 years.^{1,2} In particular, sexually active adolescents (ages 15 through 19 years) and young adults (ages 20 through 24 years) are at the highest risk of acquiring STIs due to behavioral, biological, and cultural factors. In addition, female adolescents within this age group may have increased susceptibility to some STIs due to increased cervical ectopy, which is normal in this age group and refers to columnar cells being located on the outer surface of the cervix rather than within the cervical canal. Adolescents and young adults also face barriers to accessing healthcare and STI management services,

including lack of transportation, inability to pay for services, long waiting times, scheduling difficulties, embarrassment to seek STI services, and concerns about confidentiality.¹ Healthcare providers play an essential role in the prevention and treatment of STIs in adolescents and young adults, and how the provider approaches this sensitive topic is critical.³

Universal (also called opt-out) screening for chlamydia and gonorrhea in at-risk groups, such as sexually active adolescents and young adults, effectively reduces infection rates. Several barriers, including privacy concerns, missed opportunities for screening, and changes in cervical cancer screening guidelines, limit the access of these at-risk groups to appropriate screening and treatment. Healthcare providers must strive to overcome these barriers using a variety of tools and, ideally, universal screening approaches, in order to increase the overall screening rate in at-risk populations and decrease the rate of complications stemming from STIs. This article discusses the health consequences and epidemiologic data for chlamydia and gonorrhea in at-risk populations, current screening guidelines and barriers in adherence to these guidelines, how a universal screening approach can reduce incidence rates, and tools for implementation.

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Problem: Untreated chlamydia and gonorrhea infections can have serious consequences for reproductive health

Chlamydial and gonorrheal infections are often asymptomatic, and untreated infections can result in major health consequences, including PID and related complications such as infertility, ectopic pregnancy, and chronic pelvic pain. Infection during pregnancy carries serious risks, as transmission can occur from pregnant mothers to their infants during delivery and result in ophthalmia neonatorum, which may lead to blindness and pneumonia.¹ Further, chlamydial infection can increase the likelihood of HIV transmission. Risk factors for chlamydial infection include: inconsistent condom use, short duration of monogamous relationships, cervical ectopy, age of 15 to 24 years, and barriers to accessing STI prevention services.³⁻⁷

Like chlamydia, gonorrhea is often asymptomatic in women and when left untreated can result in PID and related health complications including infertility, ectopic pregnancy, and chronic pelvic pain, and facilitate the transmission of HIV. Risk factors for gonorrheal infection include: new sex partner, >1 sexual partner, a sexual partner with concurrent partners, a partner who has an STI, inconsistent condom use among individuals not in a monogamous relationship, previous or coexisting STI, and the exchange of sex for money or drugs.^{3,7} Of particular note, *N. gonorrhoeae* is associated with resistance to commonly used antibiotics to the extent that declining susceptibility to cefixime has resulted in changes to the Centers for Disease Control (CDC) treatment guidelines: dual therapy with ceftriaxone and azithromycin is currently the only CDC-recommended treatment regimen.

Problem: Chlamydia and gonorrhea rates are at an all-time high, especially among adolescents and young adults

As shown in Table 1, approximately 1.6 million cases of *C. trachomatis* infection were reported to the CDC in 2016, an increase of 4.7% from the prior year. The rate increased more sharply among men, with an increase of 9.2%, compared with 2.6% in women, but the overall rate of reported chlamydial infection in women is still nearly double the rate in men (Table 1). The availability of urine and extragenital (oropharyngeal or rectal) testing has increased the number of men who are screened for

chlamydia, which may explain the dramatic increase in the reported infection rate in men.¹ According to the National Health and Nutrition Examination Survey (NHANES), the prevalence of chlamydia in responding individuals ages 14 to 39 years was 1.7%; among the population targeted for screening (sexually active female adolescents and young adults ages 14 through 24 years), the prevalence was 4.7%.⁸ When considering age and sex, the rate of reported infection in 2016 was highest amongst female adolescents and young adults, with a rate of 3,779.0 per 100,000 in females ages 20 to 24 years and a rate of 3,070.9 cases per 100,000 females ages 15 to 19 years (Table 1).¹

Solution: Major societies have issued guidelines for screening and management of chlamydia and gonorrhea

The CDC, U.S. Preventive Services Task Force (USPSTF), American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), and American College of Obstetricians and Gynecologists (ACOG) all recommend routine screening for chlamydia and gonorrhea in sexually active adolescents and young women up to the age of 24 or 25 years (see Table 2 for specific recommendations) and older women at increased risk for infection.^{3,7,9-11,13} Factors that increase risk include a new sex partner, more than one sexual partner, a partner with concurrent partners, a sex partner with an STI, inconsistent condom use between two partners who are not mutually monogamous, previous or co-existing STI, and exchanging sex for drugs or money. The USPSTF, the AAFP, and the ACOG do not recommend routine screening of men who have sex with women because of insufficient evidence to justify the risks and harms of screening.^{7,9,11} The AAP recommends screening for patients who have been exposed to chlamydia or gonorrhea in the past 60 days from an infected partner, whereas the CDC recommend screening if exposed within the past 90 days.^{3,10} In addition, the AAP recommends screening all sexually active adolescent and young adult males who have sex with males, with recommended testing intervals as short as every 3 to 6 months depending on the risk of the individual. The CDC and AAP recommend considering annual screening for chlamydia and gonorrhea of all sexually active males in high-prevalence settings based on individual and population-based risk factors.^{3,10}

Table 1. Reported rates of chlamydia and gonorrhea infections by age group and sex (2016).
Table adapted from the Centers for Disease Control and Prevention.¹

Age Group (years)	Chlamydia (per 100,000)			Gonorrhea (per 100,000)		
	Males	Females	Total	Males	Females	Total
15-19	832.6	3,070.9	1,929.2	280.8	482.1	379.8
20-24	1,558.6	3,779.0	2,643.8	616.8	595.5	607.5

Table 2. Recommendations for chlamydia and gonorrhea screening.

	CDC ³	USPSTF ⁷	AAFP ⁹	AAP ¹⁰	ACOG ^{11,12}
Sexually active women ≤24 years	Yes (≤25 years)	Yes (including pregnant women)	Yes	Yes (≤25 years)	Beginning in sexually active adolescents
Women >24 years at increased risk	Yes (≥25 years)	Yes (including pregnant women)	Yes	Yes	Yes (>25 years)
Pregnant women	Yes if ≤25 years or at increased risk	Yes if <25 or at increased risk	NR	NR	For CT and if at risk for NG infection
Women <35 years at intake into corrections	Yes	NR	NR	NR	NR
Men in high-prevalence settings	Yes	NR	NR	Yes, based on individual and population-based risk	NR
MSM	Yes	NR	NR	Yes, as often as every 3-6 months	NR
Patients exposed to CT or NG in the past 60 days	Yes (90 days)	NR	NR	Yes	NR

CT: Chlamydia trachomatis; MSM: men who have sex with men; NG: Neisseria gonorrhoeae; NR: No recommendation

According to the CDC recommendations, all pregnant women under 25 years of age, as well as older pregnant woman at increased risk of infection, should be screened for *C. trachomatis* and *N. gonorrhoeae* at the first prenatal visit as well as in the third trimester to prevent postnatal complications in the mother and infection in the child.³ In addition, CDC recommendations include screening women under the age of 35 years for chlamydia and gonorrhea upon intake into juvenile detention or jail facilities.

The Society for Adolescent Health and Medicine (SAHM) recommends that all providers follow professional guidelines, as discussed above, when conducting a comprehensive sexual health history, examination, counseling and education, testing, and treatment. Clinical and nonclinical staff in medical settings in which adolescents receive care should also receive training. The SAHM recommends the provision of STI and HIV education, counseling, and services to all adolescents, possibly incorporated into well adolescent and contraception visits. Healthcare providers should offer STI screening to all sexually active teens, as well as prompt, effective, and confidential STI treatment for adolescents and their partners, possibly through the provision of expedited partner therapy.¹⁴

Expedited partner therapy (EPT) is an approach that has been shown to reduce the prevalence of both chlamydia and gonorrhea at follow-up by around 20% and 50%, respectively.³ EPT refers to the clinical practice of treating the sexual partners of patients with a chlamydia or gonorrhea diagnosis by giving the patient medications or prescriptions for the partner without the partner being seen by the healthcare provider. The CDC recommends that patients with chlamydia or gonorrhea routinely be offered EPT if they cannot confidently ensure that the patient's sexual partners from the last 2 months will be treated.³ Medications or prescriptions should include treatment instructions, appropriate warnings about taking

medications, general health counseling, and a statement to urge the partners to seek medical evaluation for STIs.³ The ACOG also recommends EPT to prevent gonorrhea and chlamydia reinfection when a patient's partner is either unwilling or unable to attain medical care, but only after the healthcare provider has assessed the risk of intimate partner violence associated with partner notification.¹⁵ Three US trials of EPT that included adult heterosexual men and women with gonorrhea or chlamydia reported that the offer of EPT increased the numbers of partners treated. Two of these trials reported significant declines of reinfection rates, and one reported a lower, though statistically nonsignificant, risk of persistent/recurrent infection.¹⁶⁻¹⁸ While clinical evidence has demonstrated that EPT is an effective strategy to address the increased incidence of these infections, providers should consider that several states have legal statutes that prevent implementation of EPT. Maps showing the legal status of EPT are available at <https://www.cdc.gov/std/ept/legal/default.htm>.

Problem: Despite clear screening guidelines, significant barriers to implementation prevent adherence

According to the CDC, USPSTF, AAFP, AAP, and ACOG guidelines, routine laboratory screening for *N. gonorrhoeae* and *C. trachomatis* infections should be performed in all sexually active female adolescents.^{3,7,9,11,15} However, rates of screening in adolescents are low. In a retrospective, cross-sectional study of 1,000 randomly selected teenagers (males and females ages 13 to 19 years old) attending routine well visits, documentation of sexual history was performed only in 212 (21.2%) patient visits. Of adolescents with documented sexual history, 45 (21.2%) reported being sexually active. Only 23 patients (2.3%) had been tested for gonorrhea and chlamydia within a year of their visit or 1 month after the visit.¹⁹ Additionally, several studies have found an association between sexual history documentation and STI testing with race/ethnicity and

insurance status, which may indicate a clinician bias in perceived patient risk based on race or ethnicity and socioeconomic status.¹⁹⁻²⁴

For many STIs, including chlamydia and gonorrhea, prevalence rates are highest amongst adolescents and young adults (Table 1), thus necessitating special considerations. Individuals who initiate sexual contact early in adolescence, those who use injection drugs, adolescents who attend STI clinics, and men who have sex with men are at higher risk of contracting STIs compared with other groups. These increased risks may be due to factors such as sequential sexual relationships of short duration (“serial monogamy”), multiple concurrent sexual partners, failure to consistently use condoms correctly, increased susceptibility to infection, the presence of multiple obstacles to healthcare access, and an imbalance in power between relationship partners.^{1,3,25}

One factor that contributes to low adherence to STI screening recommendations in adolescents is age. Adolescents who are 15 or 16 years of age are more likely to have clinician-documented sexual histories than 13- or 14-year-old patients, and older patients (17 to 19 years) are more likely to undergo STI screening.¹⁹ This discrepancy could be related to clinicians’ perceptions of when adolescents become sexually active, despite reports indicating that more than 10% of adolescents report having had sexual intercourse by the age of 15 years.^{19,26} Medical providers often do not ask about sexual behaviors, assess STI risks, provide risk-reduction education, or screen for asymptomatic infections during encounters with adolescents, despite their increased risk for STIs.³ Even when providers are asking about at-risk behavior, adolescents and young adults may not be truthful, as one study noted that 10% of positive chlamydia tests were from adolescents who reported no sexual activity in the previous 12 months. This finding indicates a discrepancy between self-reported sexual behavior and a positive STI status.²⁷

Another barrier to the adherence of STI screening recommendations concerns protecting the confidentiality of minors enrolled in private insurance plans who receive STI services. Many states require health plans to provide a written statement to the beneficiary that includes the services performed, charges covered by the health plan, what costs the insurer allows, and the amount for which the patient is responsible. This document, received by parents of minors who obtained STI services, may reveal the type of services provided, including the STI laboratory tests that were performed or the treatment that was provided.

Prior to 2009, ACOG recommended that young women begin screening for cervical cancer 3 years after the first sexual encounter or by age 21, whichever occurred first.¹³ With this recommendation, chlamydia and gonorrhea screening was more likely to be ordered when a Pap test was also being performed.²⁸ However, a 2009 update recommended that cervical cancer screening be delayed until the age of 21 years. This change resulted in a significant decrease in chlamydial screening for females between the ages of 15 and 21 years, a group at high risk of chlamydial and gonorrheal infections, even though the number of office visits did not decrease.^{28,29} One study found that the annual rate of chlamydia testing decreased significantly after the 2009 ACOG Pap testing guidelines, from 1.9% to 1.0% for adolescents (P <.05) and from 2.5% to 1.7% for young adults (P <.05).³⁰

Together, these findings strongly suggest the need to unlink chlamydial and other STI screening and Pap tests in young women.^{28,30}

Because of the escalated rates of unintended pregnancy among women under 24 years of age,³¹ providing contraception and intervention aimed to prevent these high rates should also be targeted at reducing STIs. Given the number, as well as the increased sensitivity and specificity, of noninvasive screening modalities, guidelines recommended that less frequent pelvic exams should not deter from universal screening of STIs or contraception initiation and management.

Solution: Universal screening and opt-out approaches are effective in improving screening rates and decreasing prevalence

The benefits of the opt-out screening approach for adolescents and young adults, including increased rates of test acceptance and screening as well as the number of positive diagnoses, have been demonstrated for HIV.³² Since 2006, the CDC has recommended an opt-out approach for HIV screening regardless of history of risk behaviors.³³ In opt-out screening, patients are told that an HIV test will be conducted unless they explicitly decline the testing.^{3,33} In one study of patients 13 to 64 years of age at an urban emergency department, 38.0% in the opt-in arm, 51.3% of patients in the active choice arm, and 65.9% of patients in the opt-out arm consented to an HIV test; the opt-out approach resulted in a 14.6 percentage point increase in acceptance of HIV screening.³⁴ In a study of opt-in vs opt-out testing for STIs in inmates of a county jail, individuals were more likely to be tested for chlamydia in an opt-out program than the opt-in program.³⁵ The Cook County Jail of Chicago, Illinois initiated opt-out chlamydia and gonorrhea screening of all female inmates at the time of intake in April 2011. Of the 17,065 women followed, opt-out screening increased the number of chlamydia or gonorrhea diagnoses by more than 4-fold (9.3 cases/month to 40.8 cases/month).³⁶

Authors of another study evaluated the cost-effectiveness of opt-out chlamydia testing for young women at high-risk of infection in the United States. The authors estimated that an opt-out testing strategy would result in annual testing coverage of approximately half of all sexually active women between the ages of 15 and 24 years. Based on a modeling approach, the opt-out testing strategy could decrease the overall prevalence of chlamydia by more than 55%. This model predicted cost-savings and improved screening coverage for an opt-out chlamydia screening approach compared with current testing strategies (\$70,843,300 vs \$88,951,100). However, testing gaps would likely remain due to lack of health insurance coverage or underutilization of available healthcare resources.³⁷

Key Strategy: Preserve Confidentiality

The SAHM provides recommendations for healthcare providers when discussing sexual practices with patients and their parents. Beginning during early adolescence, healthcare providers should discuss the importance of confidentiality to set expectations about the transition from childhood to adolescence. This should include education about the importance of developing autonomy and responsibility for the patient’s own health and healthcare. Providers should also encourage developmentally appropriate, accurate, respectful, and frequent communication about sexual health between

parents or caregivers and their children. This type of open communication is associated with reduced sexual risk taking in adolescents. Healthcare providers can provide parents with guidance on how to discuss sexual issues with their children.

Key Strategy: Manage Workflow

The Adolescent Health Initiative at the University of Michigan provides information regarding STI screening in adolescent patients that is available at <http://www.umhs-adolescenthealth.org/improving-care/starter-guides/>. This group recommends creating workflows to ensure that every female patient between the ages of 15 and 24 years is screened. A workflow might consist of the following:

- 1) The patient (and parent, if the patient is a minor) receives a letter at check-in that describes chlamydia and gonorrhea testing as part of routine care recommended for all patients. Sample letters to the patient and parents are provided at the link above. By making chlamydia screening a routine part of the visit, the family is less likely to be surprised or concerned if STI screening appears on the explanation of benefits (EOB) form.³⁸
- 2) As the patient is called back for the appointment, the medical assistant collects a urine sample or self-collected vaginal swab and asks the patient to provide the direct contact number at which they can confidentially share results without contacting the parent.
- 3) During the visit, the provider decides if the screening test should be sent.

Although laws permitting adolescents to consent to STI services are available in most states, the Adolescent Health Initiative recommends giving the parent(s) a letter at check-in about the importance of confidential time between the healthcare provider and the adolescent patient. When the patient is called back, the medical assistant explains to the parents that their child will initially go back alone to have vital signs checked and complete a brief health survey, and that the medical assistant will bring the parent to the exam room after that. If there is pushback to this approach, the medical assistant can take the patient to the exam room without performing risk screening, and the provider can address the issue. At the end of the visit, the provider can ask the parents to step out of the room for confidential time, during which the provider can perform or review the risk screen with the patient.³⁸

It is important that information on sexual health be provided to adolescents and their parents in a confidential and respectful manner by competent, nonjudgmental, and sensitive providers.¹⁴ Many adolescent medicine subspecialists begin screening for STIs starting at the age of 12 years.

Key Strategy: Improve Communication

When speaking to patients, language such as, “We collect samples and test everyone for HIV chlamydia and gonorrhea because this is recommended for all people over the age of 15 years,” should be used to communicate to parents and young people that they are not being singled out. In matters of sexuality or discussions of sexual behavior, treating adolescent patients as responsible young adults should always be consistently encouraged by every healthcare provider.

Another key strategy that increases the acceptance and success of STI screening in this demographic is to limit the number of individuals asking sensitive questions. For example, patients will often provide a different answer to the medical assistant or nursing staff during the intake process only to provide the healthcare provider with a different and more accurate answer once they are assured that the information will be held in confidence.

Medical staff can then collect a sample from the patient and explain that every teenager gets tested at least once yearly. It is also important to emphasize that the patient—not the parents—will be notified directly about the results. A foundational rapport based on discretion, openness, respect, and trust fosters a positive patient-provider relationship that leads to honest sharing of accurate information. It is conveyed up-front to the parent and the patient that everything discussed with the adolescent will be held in confidence, and that further communications will also be handled in this manner. Many adolescents have their own cellphone that can be used to communicate with them in a patient-controlled manner thereby reducing the anxiety associated with parental involvement.

Very little resistance is encountered with this approach, and most parents support the testing. A universal screening approach destigmatizes testing, which in turn can decrease concerns that the patient may have about parents and guardians seeing the test result descriptions on the EOB form.

Conclusion

Chlamydia and gonorrhea infections represent serious health burdens that can result in significant lifelong complications such as: infertility, ectopic pregnancy, chronic pelvic pain, and increased risk of HIV infection. In particular, adolescent and young adult women between the ages of 15 and 24 years are at increased risk for acquiring chlamydia and gonorrhea.¹ Healthcare providers treating patients that fall within this high-risk population must overcome barriers in both STI screening and treatment. Such barriers include patient and parent concerns over confidentiality, missed opportunities for screening at well-visit checks, and recent changes in guidelines related to the frequency of cervical cancer screening. Healthcare providers can reduce the burden of these STIs through implementation of the universal screening approaches using the tools and techniques provided herein.

Author Biographies

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