

# We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

5,400

Open access books available

133,000

International authors and editors

165M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index  
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?  
Contact [book.department@intechopen.com](mailto:book.department@intechopen.com)

Numbers displayed above are based on latest data collected.  
For more information visit [www.intechopen.com](http://www.intechopen.com)



# Adolescents and Young Adults: Targeting the Unique Challenges of This High Risk Group

*Kari Schneider, Joanna Ekstrom and Rachel Cafferty*

## Abstract

Adolescents, particularly sexual minority youth, account for a disproportionate number of sexually transmitted infections and pelvic inflammatory disease cases. This population is at increased risk of infection and presents unique challenges when it comes to screening and treatment. This chapter will discuss these challenges and suggest some evidence based solutions. Challenges to be discussed include lack of physician comfort in discussing sexual activity with adolescents, issues of confidentiality, difficulties with contacting adolescent patients with their test results, and arranging for treatment of both patients and their partners. A discussion about expedited partner therapy will be included—the legal implications and the role it plays in sexually transmitted infection reduction efforts.

**Keywords:** adolescent, young adult, confidentiality, emergency department, LGBT, expedited partner therapy

## 1. Introduction

Adolescents and young adults 15–24 years of age represent approximately 25% of the sexually active United States (US) population, but account for nearly half of all new sexually transmitted infection (STI) cases [1]. Adolescents have the highest incidence of *Neisseria gonorrhoea* and *Chlamydia trachomatis* among any sexually active age group [2]. The most significant complication from STIs is pelvic inflammatory disease (PID) with approximately 200,000 adolescents diagnosed annually in the US [3]. This population also has an elevated risk of subsequent STIs after initial PID, thus putting them at increased risk of associated reproductive health sequelae such as infertility, ectopic pregnancy, and chronic abdominal pain [4, 5]. Given that adolescents are just entering their reproductive years, STI and PID reduction efforts must be maximized.

When it comes to STI reduction efforts in adolescents, a multifactorial approach is necessary. It starts with meeting adolescents where they intersect with health care professionals (this is not always simply in a physician's office setting), talking to adolescents about sex in a confidential manner, screening appropriately, notifying patients with positive results, and treating both the patients and their partners to prevent reinfection. This chapter discusses these aspects of tackling STI reduction in this age group.

## **2. Inherent risk of the adolescent period**

Adolescence is a period of rapid physical, social–emotional, and sexual change, characterized by experimentation and exploration as one searches to define their own identity. For many, sexual debut occurs during adolescence. A number of behavioral, biological, and cultural factors among sexually active adolescents and young adults lead to higher risk of acquiring an STI in this age group. Biologically, young women are more susceptible to STIs because of increased cervical ectopy (which refers to columnar cells, usually located within the cervical canal, being located on the outer surface of the cervix). These areas of ectopy are fragile with thin, vascularized epithelium and thus blood vessels lie in close contact with the vaginal environment; possibly diminishing mucosal barriers to sexually transmitted infections.

Beyond biological factors, adolescents are more likely to engage in unprotected sex, have multiple sexual partners, and use drugs and alcohol, which may result in high risk sexual behaviors [6].

According to the Centers for Disease Control and Prevention (CDC), condom use, as reported by sexually active high school students, is inconsistent. Among US high school students surveyed in 2017, 46% did not use a condom the last time they had sex [6]. Young women are using very effective and long-lasting contraceptive options like intrauterine devices and implants at higher rates and should be applauded for this, but these offer no protection against STIs such as gonorrhea or chlamydia [6].

Sexual minority youth, identified as lesbian, gay, bisexual, transgender (LGBT), represent a subset of the adolescent population at heightened risk for sexually transmitted infections. While many LGBT youth are resilient and thriving, the effects of homophobia, heterosexism, and parental rejection may result in psychological distress and a subsequent increase in self-destructive risk behaviors [7]. Sexual minority youth are more likely to report having intercourse, initiating intercourse at younger ages (before age 13), have a greater number of sexual partners ( $\geq 4$  partners), and are less likely to use barrier contraception compared to heterosexual or cis-gender peers [7]. LGBT youth have higher rates of homelessness, which results in increased sexual violence and survival sex [7]. Transgender teens (particularly male to female transgender youth) have higher rates of HIV and STIs and self-report lower rates of preventive health checkups and overall poorer health [7, 8].

## **3. Utilization of health care by adolescents**

Utilization of health care by adolescents (LGBT, heterosexual, and cis-gender alike) is complicated, and their overall usage of health care is low. Higher rates of STIs among adolescents may reflect barriers to accessing preventive care and services for sexual and reproductive health. The American Academy of Pediatrics (AAP) recommends at least one preventive health visit per year. The data, however, show that only 40–80% of adolescents report a primary care visit within 12 months [9–11]. A 2010 study of insured adolescents, revealed that one-third had no preventive care visits between the ages of 13 through 17 years, and another 40% had only one preventive care visit during this 4 year period of their lives [12]. Barriers in accessing care include believing they only need appointments when sick, lack of transportation, conflict between school and clinic hours, concerns about confidentiality, lack of health insurance, inability to pay for contraception or STI testing, and stigma surrounding accessing STI services [10].

While non-preventive care visits are slightly more frequent among adolescents (approximately 1–1.5 visits per year among adolescents age 11 through 17 years), a busy practice environment and short encounters with a clinician may not afford

the opportunity for full discussions of sexual health, risk taking behaviors, and concerns outside of the presenting problem [12]. Nordin and colleagues recommend a no-missed-opportunities paradigm, by which all adolescent visits, regardless of busy practice environments and short encounters with a clinician, be viewed as an opportunity to provide preventive care services [12]. One clinic successfully increased the number of preventive health visits for adolescents by “flipping” acute/sick visits into well-care visits when patients were overdue [13]. Given the disproportionate burden of STIs among adolescents, preventive visits including discussions about sexuality and sexual risk factors are of paramount importance.

The AAP, American Medical Association, and Society for Adolescent Medicine recommend that physicians discuss sexuality with youth as part of routine health-care. Physicians have an important role in helping adolescents develop healthy relationships and behaviors. However, when adolescents intersect with healthcare, physicians may not feel fully equipped or have the expertise in managing specific sexual health needs. The literature suggests that primary care pediatricians are not consistent in having important discussions regarding sexuality and sexual risk-taking behaviors with adolescents [14]. In a survey of AAP members who provide health supervision visits to adolescent patients, 58% of pediatricians self-reported a lack of interest in adolescent health issues [14]. Perhaps more alarming is the fact that <9% of those surveyed were very familiar with AAP policies or CDC recommendations regarding STI and HIV testing for youth [14]. Additionally, 25% of providers did not know their own state laws regarding testing of teens for STIs without parental consent [14]. While pediatricians believed that reproductive health services were an important part of adolescent health care delivery, less than half (46%) recommend STI testing for all sexually active teenagers and the vast majority (>70%) did not prescribe or distribute condoms, or provide education on effective condom use [14].

Given that adolescents are not always consistent with seeing their primary physicians for preventive visits, providers need to utilize other opportunities for screening for STIs. School-based health centers (SBHCs) are another important place where adolescents may access health care. SBHCs remove some of the common barriers to health care for this age group, including scheduling and transportation, as the clinics are located where the adolescents already spend their days in school. Many of these centers are in urban areas, and they primarily serve high schools, alternative schools, or schools with a combination of grade levels [15]. Adolescents who use SBHCs have been shown to have more primary care visits and fewer emergency department visits than those who do not use these clinics. Although SBHCs are sometimes prohibited from dispensing contraceptives by school district policy or state law, some are able to provide these services, and they also can screen for and treat STIs.

Adolescents also seek care in emergency departments (EDs). The ED has been described as a critical “safety net”, treating patients without other sources of care [16]. Adolescents make up about 15% of the patient population in the emergency department [17, 18]. One study found that 18% of 10–17-year-olds, and 25% of 18–24-year-olds, had visited an emergency department in the previous year [19]. And the rates of STIs found for this patient population in this venue are significant [20–23]. PID is the most common diagnosis among adolescents seeking care for STIs in US EDs and studies have unfortunately shown incorrect treatment of PID in this setting [24, 25].

While the ED is a readily-available place for adolescents to receive health care, it poses many challenges, especially given the complex nature of adolescent health care. Goyal et al. demonstrated that, in adolescents presenting to the ED with genitourinary complaints, the prevalence of STIs was 26% [21]. Schneider et al.

found that in adolescents presenting to the ED with non-genitourinary complaints, the prevalence of STIs was 10% [22]. Given the nature of emergency care and lack of continuity, there is concern that patients testing positive but were not treated in the ED may become lost to follow up, and therefore remain untreated [26]. This needs to be balanced with antibiotic stewardship and development of antibiotic resistant organisms associated with overtreatment [27]. This highlights some of the complexities of adolescent STI reduction initiatives in the ED setting.

#### **4. Confidentiality**

Where ever they choose to seek care, confidentiality is important to adolescents. Multiple medical and legal organizations recognize the need for providing confidential health care to adolescents and a growing body of research has shown the importance of this, but this comes with challenges [28–30]. According to the Society for Adolescent Medicine, “Confidentiality protection is an essential component of health care for adolescents because it is consistent with their development of maturity and autonomy and without it, some adolescents will forgo care” [28]. A 1997 study by Ford et al. showed that assurances of confidentiality increased the number of adolescents willing to return for a future visit to a physician’s office by 10 percentage points, from 62 to 72% ( $P = 0.001$ ) [29]. Additionally, adolescents who report health risk behaviors have been shown to have an increased likelihood of citing confidentiality concerns as a reason for forgone health care [30].

In the United States, each state has legal statues that authorize minors to consent for care under a variety of circumstances [31]. Care that minors are allowed to consent for without a parent usually includes contraceptive services, pregnancy-related care, diagnosis and treatment of STIs, care related to a sexual assault, treatment for drug or alcohol problems, or mental health services. Some states, however, require that a minor be of a certain age (generally around 14 years old) before being allowed to consent [32].

The Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule creates rights for individuals to have access to their protected health information and to control the disclosure of that information in some circumstances. It contains specific requirements pertaining to the medical records of minors [33]. The HIPAA Privacy Rule provides that, in general, when minors legally consent to health care or can receive it without parental consent, the parent does not necessarily have the right to access the minor’s health information. This is all dependent, however, on each individual state’s laws. Thus, a health care provider must look to state law to determine whether it specifically addresses the confidentiality of a minor’s health information. If state law is silent on the question of parents’ access, a health care professional exercising professional judgment has discretion to determine whether or not to grant access [33].

Likely one of the biggest limitations in providing confidential care to adolescents has to do with payment. Most often, parents or parents’ health insurance pays for an adolescent’s health care. As of the time of publication of this text, there is no legal way to prevent a parent from viewing a billing statement and/or explanation of benefits (EOBs) from the insurance company. EOBs are notifications to policyholders that health care services were provided under a health insurance plan, including those services provided to any dependents covered by the plan. EOBs generally disclose the name and of the provider and the specific laboratory tests used or other services rendered. They are intended to protect policyholders and insurers from fraud and abuse and to explain financial obligations, but can have unanticipated and unintended negative consequences such as a breach of confidentiality [34].

## **5. Testing and follow-up**

Testing and follow-up are also areas with unique nuances when it comes to adolescent patients. Methods for testing and/or screening adolescents for gonorrhea and chlamydia include self-obtained vaginal swabs, self-collected urine samples, and provider-collected endocervical swabs. For adolescents, the idea of a provider-collected specimen can be a barrier to seeking care [35, 36]. Self-collected specimens have been shown time and again in the medical literature to be preferred by adolescents over provider-collected specimens [37]. Many studies have also evaluated the utility of these other forms of testing and have found that the sensitivity and specificity of self-collected swabs and urine samples compared to swabs collected by clinicians supports the use of these tests in screening for gonorrhea and chlamydia [38, 39].

Given that adolescents do not always present regularly for preventive health care visits, the acceptability of and ease of collection with self-collected specimens may allow clinicians an opportunity to screen patients in the clinic for STIs who are not presenting for pelvic or urogenital examinations and might not otherwise be screened as regularly as they should be.

Follow up of adolescents can be problematic, especially for those seeking care in emergency departments. ED personnel in one study cited difficulty in reaching adolescents and the ease of empiric treatment to justify the practice of empirically treating STI tested patients and only providing follow-up contact to those who tested positive but were not treated at the ED visit [40]. Confirming that STI-positive patients receive appropriate treatment is a vital component of any screening initiative. Success in contacting adolescents with their results has been found, especially when a confidential cell phone number is used [41, 42]. Reed et al. worked on increasing the proportion of adolescent patients able to be contacted with their test results from 45 to 65% and decreased their lost to follow up rate [43]. This was done almost entirely by focusing on making sure that a confidential phone number was documented in the electronic medical record. They also gave out a card with contact information for a cell phone given to a nurse practitioner who was dedicated to contacting and being available for being contacted by the patients regarding their results. They learned that adolescents often have cell phone plans with limited minutes of talk time, but can still send and receive texts. So while they might not answer their phones or check their messages frequently, they will respond quickly to a text message.

It is important for adolescents to be aware of their test results, even in the case where they have already been empirically treated, as having knowledge about their diagnosis can lead to behavior changes [44]. Dr. Reed's group also followed up, by phone, a convenience sample of adolescent women who were empirically treated in the ED or teen clinic setting for STI [45]. They found that those who believed they had an STI were more likely to abstain from sexual activity and to notify their partners. Those who were treated with antibiotics but did not believe they tested positive for STIs did not change their behavior.

## **6. Treatment of adolescents patients and their partners**

Treating the partners of STI-positive patients is another important factor in STI reduction. Ideally, partners of STI-positive patients would seek health care for evaluation, treatment, and counseling in person. This can prove to be a challenge in all ages, especially in adolescents and unfortunately, rates of reinfection in adolescents and young adults are high. A 2008 study by Gaydos et al. reported up to 26% of

adolescent and young adult women were reinfected with their STI within 12 months [46]. The AAP has endorsed a position paper by the Society for Adolescent Health and Medicine supporting the use of expedited partner therapy (EPT) as a treatment option for heterosexual sex partners of adolescents with gonorrhea and chlamydia when other partner treatment methods are impractical or unsuccessful [47].

EPT is a management technique in which medications or prescriptions are provided for the partner of a patient who tests positive for gonorrhea and/or chlamydia without physical examination of that partner. It involves prescribing the medication (it is acceptable to write “Expedited Partner Therapy” in place of the partner’s name; no date of birth needed). It should also include treatment instructions, warnings about the medications, general health counseling, and a statement that advises the partner to seek medical evaluation in the setting of symptoms.

This technique has proven to be beneficial [48–50]. In a 2005 study by Golden et al., EPT was more effective than standard referral of partners in reducing persistent or recurrent infection among patients with gonorrhea (3% vs. 11%,  $P = 0.01$ ) [50]. It is currently not recommended, however, for men who have sex with men or women with trichomoniasis because of increased risk of coinfections and lack of supporting evidence in these populations.

Optimal STI control requires more than testing and treatment to disrupt transmission; the CDC urges us to counsel these patients on partner treatment and safer sex practices. In adolescents especially, communication is key. Talking with adolescents about their risks of reinfection, both surrounding their acute infection as well as in the future unless they change their behaviors, is of paramount importance.

## **7. Conclusion**

Adolescents, particularly sexual minority youth, account for a disproportionate number of sexually transmitted infections. Several factors that put adolescents at increased risk for STIs have been reviewed here, including high-risk behaviors (unprotected sex, sex with multiple partners, increased substance abuse, survival sex by homeless LGBT youth) and decreased reproductive and sexual health care utilization by teens. Barriers in accessing preventive care and treatment for STIs contributes to higher STI rates in this vulnerable population. Despite recommendations to discuss sexuality and risk behaviors with adolescents, providers may lack time, resources and appropriate knowledge surrounding screening guidelines, minor consent, and confidentiality to fully meet the needs of adolescent patients. A strong STI reduction initiative must place emphasis on the adolescent population and its unique attributes and needs.

IntechOpen

### **Author details**

Kari Schneider<sup>1\*</sup>, Joanna Ekstrom<sup>1</sup> and Rachel Cafferty<sup>2</sup>

1 University of Minnesota Masonic Children's Hospital, Minneapolis, Minnesota, USA

2 Children's Hospital Colorado, Aurora, Colorado, USA

\*Address all correspondence to: [sch1005@umn.edu](mailto:sch1005@umn.edu)

### **IntechOpen**

© 2019 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. 

## References

- [1] Centers for Disease Control and Prevention. Sexually Transmitted Diseases: Adolescents and Young Adults. 7 Dec 2017. Available from: <https://www.cdc.gov/std/life-stages-populations/adolescents-youngadults.htm>
- [2] Centers for Disease Control and prevention. Sexually Transmitted Disease Surveillance 2017: Gonorrhea. Available from: <https://www.cdc.gov/std/stats17/gonorrhea.htm>
- [3] Sutton MY, Sternberg M, Zaidi A, St Louis ME, Markowitz LE. Trends in pelvic inflammatory disease hospital discharges and ambulatory visits, United States, 1985-2001. *Sexually Transmitted Diseases*. 2005;**32**(12):778-784
- [4] Westrom L, Joesoef R, Reynolds G, Hagdu A, Thompson SE. Pelvic inflammatory disease and fertility. A cohort study of 1,844 women with laparoscopically verified disease and 657 control women with normal laparoscopic results. *Sexually Transmitted Diseases*. 1992;**19**(4):185-192
- [5] Trent M, Chung SE, Forrest L, Ellen JM. Subsequent sexually transmitted infection after outpatient treatment of pelvic inflammatory disease. *Archives of Pediatrics & Adolescent Medicine*. 2008;**162**(11):1022-1025
- [6] Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance—United States. 2017. Available from: [https://www.cdc.gov/mmwr/volumes/67/ss/ss6708a1.htm?s\\_cid=ss6708a1\\_w](https://www.cdc.gov/mmwr/volumes/67/ss/ss6708a1.htm?s_cid=ss6708a1_w)
- [7] Levine DA, Committee on Adolescence. Office-based care for lesbian, gay, bisexual, transgender, and questioning youth. *Pediatrics*. 2013;**132**(1):e297-e313
- [8] Rider GN, McMorris BJ, Gower AL, Coleman E, Eisenberg ME. Health and care utilization of transgender and gender nonconforming youth: A population-based study. *Pediatrics*. 2018;**141**(3):e20171683
- [9] Sabharwal M, Masinter L, Weaver KN. Examining time to treatment and the role of school-based health centers in a school-based sexually transmitted infection program. *The Journal of School Health*. 2018;**88**(8):590-595
- [10] Aalsma MC, Gilbert AL, Xiao S, Rickert VI. Parent and adolescent views on barriers to adolescent preventive health care utilization. *The Journal of Pediatrics*. 2016;**169**:140-145
- [11] Adams SH, Park MJ, Irwin CE Jr. Adolescent and young adult preventive care: Comparing national survey rates. *American Journal of Preventive Medicine*. 2015;**49**(2):238-247
- [12] Nordin JD, Solberg LI, Parker ED. Adolescent primary care visit patterns. *Annals of Family Medicine*. 2010;**8**(6):511-516
- [13] Kumra T, Antani S, Johnson SB, Weaver SJ. Improving adolescent preventive care in an urban pediatric clinic: Capturing missed opportunities. *The Journal of Adolescent Health*. 2017;**60**(6):734-740
- [14] Henry-Reid LM, O'Connor KG, Klein JD, Cooper E, Flynn P, Futterman DC. Current pediatrician practices in identifying high-risk behaviors of adolescents. *Pediatrics*. 2010;**125**(4):e741-e747
- [15] Council On School Health. School-based health centers and pediatric practice. *Pediatrics*. 2012;**129**(2):387-393

- [16] Rhodes KV, Gordon JA, Lowe RA. Preventive care in the emergency department, part I: Clinical preventive services--are they relevant to emergency medicine? Society for Academic emergency medicine public health and education task force preventive services work group. *Academic Emergency Medicine*. 2000;**7**(9):1036-1041
- [17] Ziv A, Boulet JR, Slap GB. Emergency department utilization by adolescents in the United States. *Pediatrics*. 1998;**101**(6):987-994
- [18] Melzer-Lange M, Lye PS. Adolescent health care in a pediatric emergency department. *Annals of Emergency Medicine*. 1996;**27**(5):633-637
- [19] Mulye TP, Park MJ, Nelson CD, Adams SH, Irwin CE Jr, Brindis CD. Trends in adolescent and young adult health in the United States. *The Journal of Adolescent Health*. 2009;**45**(1):8-24
- [20] Anaene M, Soyemi K, Caskey R. Factors associated with the over-treatment and under-treatment of gonorrhea and chlamydia in adolescents presenting to a public hospital emergency department. *International Journal of Infectious Diseases*. 2016;**53**:34-38
- [21] Goyal MK, Teach SJ, Badolato GM, Trent M, Chamberlain JM. Universal screening for sexually transmitted infections among asymptomatic adolescents in an urban emergency department: High acceptance but Low prevalence of infection. *The Journal of Pediatrics*. 2016;**171**:128-132
- [22] Schneider K, FitzGerald M, Byczkowski T, Reed J. Screening for asymptomatic gonorrhea and chlamydia in the pediatric emergency department. *Sexually Transmitted Diseases*. 2016;**43**(4):209-215
- [23] Silva A, Glick NR, Lyss SB, Hutchinson AB, Gift TL, Pealer LN, et al. Implementing an HIV and sexually transmitted disease screening program in an emergency department. *Annals of Emergency Medicine*. 2007;**49**(5):564-572
- [24] Goyal M, Hersh A, Luan X, Localio R, Trent M, Zaoutis T. National trends in pelvic inflammatory disease among adolescents in the emergency department. *The Journal of Adolescent Health*. 2013;**53**(2):249-252
- [25] Solomon M, Tuchman L, Hayes K, Badolato G, Goyal MK. Pelvic inflammatory disease in a pediatric emergency department: Epidemiology and treatment. *Pediatric Emergency Care*. 2017. DOI: 10.1097/PEC.0000000000001148
- [26] Krivochenitser R, Bicker E, Whalen D, Gardiner C, Jones JS. Adolescent women with sexually transmitted infections: Who gets lost to follow-up? *The Journal of Emergency Medicine*. 2014;**47**(5):507-512
- [27] Bolan GA, Sparling PF, Wasserheit JN. The emerging threat of untreatable gonococcal infection. *The New England Journal of Medicine*. 2012;**366**(6):485-487
- [28] Ford C, English A, Sigman G. Confidential health care for adolescents: Position paper for the society for adolescent medicine. *The Journal of Adolescent Health*. 2004;**35**(2):160-167
- [29] Ford CA, Millstein SG, Halpern-Felsher BL, Irwin CE Jr. Influence of physician confidentiality assurances on adolescents' willingness to disclose information and seek future health care. A randomized controlled trial. *Journal of the American Medical Association*. 1997;**278**(12):1029-1034
- [30] Lehrer JA, Pantell R, Tebb K, Shafer MA. Forgone health care among U.S. adolescents: Associations between risk

characteristics and confidentiality concern. *The Journal of Adolescent Health*. 2007;**40**(3):218-226

[31] Kenney AEK. *State Minor Consent Laws*. Chapel Hill, North Carolina: Center for Adolescent Health & the Law; 2003

[32] Guttmacher Institute. *State Laws and Policies: Minors' Access to STI Services*. 1 May 2019. Available from: <https://www.guttmacher.org/state-policy/explore/minors-access-sti-services>

[33] English A, Ford CA. The HIPAA privacy rule and adolescents: Legal questions and clinical challenges. *Perspectives on Sexual and Reproductive Health*. 2004;**36**(2):80-86

[34] Society for Adolescent H, Medicine, American Academy of P. Confidentiality protections for adolescents and young adults in the health care billing and insurance claims process. *The Journal of Adolescent Health*. 2016;**58**(3):374-377

[35] Avuvika E, Masese LN, Wanje G, Wanyonyi J, Nyaribo B, Omoni G, et al. Barriers and facilitators of screening for sexually transmitted infections in adolescent girls and young women in Mombasa, Kenya: A qualitative study. *PLoS One*. 2017;**12**(1):e0169388

[36] Tilson EC, Sanchez V, Ford CL, Smurzynski M, Leone PA, Fox KK, et al. Barriers to asymptomatic screening and other STD services for adolescents and young adults: Focus group discussions. *BMC Public Health*. 2004;**4**:21

[37] Serlin M, Shafer MA, Tebb K, Gyamfi AA, Moncada J, Schachter J, et al. What sexually transmitted disease screening method does the adolescent prefer? Adolescents' attitudes toward first-void urine, self-collected vaginal

swab, and pelvic examination. *Archives of Pediatrics & Adolescent Medicine*. 2002;**156**(6):588-591

[38] Fang J, Husman C, DeSilva L, Chang R, Peralta L. Evaluation of self-collected vaginal swab, first void urine, and endocervical swab specimens for the detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in adolescent females. *Journal of Pediatric and Adolescent Gynecology*. 2008;**21**(6):355-360

[39] Lunny C, Taylor D, Hoang L, Wong T, Gilbert M, Lester R, et al. Self-collected versus clinician-collected sampling for chlamydia and gonorrhea screening: A systemic review and meta-analysis. *PLoS One*. 2015;**10**(7):e0132776

[40] Gillespie GL, Reed J, Holland CK, Munafo JK, Ekstrand R, Britto MT, et al. Pediatric emergency department provider perceptions of universal sexually transmitted infection screening. *Advanced Emergency Nursing Journal*. 2013;**35**(1):76-86

[41] Reed JL, Huppert JS, Taylor RG, Gillespie GL, Byczkowski TL, Kahn JA, et al. Improving sexually transmitted infection results notification via mobile phone technology. *The Journal of Adolescent Health*. 2014;**55**(5):690-697

[42] Maraynes ME, Chao JH, Agoritsas K, Sinert R, Zehtabchi S. Screening for asymptomatic chlamydia and gonorrhea in adolescent males in an urban pediatric emergency department. *World Journal of Clinical Pediatrics*. 2017;**6**(3):154-160

[43] Huppert JS, Reed JL, Munafo JK, Ekstrand R, Gillespie G, Holland C, et al. Improving notification of sexually transmitted infections: A quality improvement project and planned experiment. *Pediatrics*. 2012;**130**(2):e415-e422

[44] Reed JL, Zaidi MA, Woods TD, Bates JR, Britto MT, Huppert JS. Impact of post-visit contact on emergency department utilization for adolescent women with a sexually transmitted infection. *Journal of Pediatric and Adolescent Gynecology*. 2015;**28**(3):144-148

or persistent gonorrhea or chlamydial infection. *The New England Journal of Medicine*. 2005;**352**(7):676-685

[45] Huppert JS, Taylor RG, St Cyr S, Hesse EA, Reed JL. Point-of-care testing improves accuracy of STI care in an emergency department. *Sexually Transmitted Infections*. 2013;**89**(6):489-494

[46] Gaydos CA, Wright C, Wood BJ, Waterfield G, Hobson S, Quinn TC. Chlamydia trachomatis reinfection rates among female adolescents seeking rescreening in school-based health centers. *Sexually Transmitted Diseases*. 2008;**35**(3):233-237

[47] Burstein GR, Eliscu A, Ford K, Hogben M, Chaffee T, Straub D, et al. Expedited partner therapy for adolescents diagnosed with chlamydia or gonorrhea: A position paper of the Society for Adolescent Medicine. *The Journal of Adolescent Health*. 2009;**45**(3):303-309

[48] Kissinger P, Mohammed H, Richardson-Alston G, Leichter JS, Taylor SN, Martin DH, et al. Patient-delivered partner treatment for male urethritis: A randomized, controlled trial. *Clinical Infectious Diseases*. 2005;**41**(5):623-629

[49] Trelle S, Shang A, Nartey L, Cassell JA, Low N. Improved effectiveness of partner notification for patients with sexually transmitted infections: Systematic review. *BMJ*. 2007;**334**(7589):354

[50] Golden MR, Whittington WL, Handsfield HH, Hughes JP, Stamm WE, Hogben M, et al. Effect of expedited treatment of sex partners on recurrent