

Mini-Review

The Chlamydia Cascade: Enhanced STD Prevention Strategies for Adolescents

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Abstract. The rising trends in Chlamydia, the prevalence in the adolescent female population, and the relevance of the sexually transmitted disease (STD) continue to be a burden in the United States. According to the World Health Organization (WHO), the most common cause of STDs is *Chlamydia trachomatis*, the infecting pathogen for Chlamydia, making this a worldwide health concern. The WHO also estimates that the disease burden for treating Chlamydia patients is \$10 billion annually, with adolescent females in the urban setting exhibiting an incidence as high as 30%. This article will evaluate the magnitude of the problem in the adolescent female population. The latest trends in Chlamydia, the disease sequelae, and the current health statistics will be reviewed the research and evidence-based STD guidelines from the Centers for Disease Control and Prevention and the United States Preventive Task Force. Implications for clinical practice target the initiation of a primary intervention strategy through wellness care education. This wellness care plan includes sexual health promotion and STD prevention education for early adolescents approaching a highly vulnerable stage for contracting Chlamydia and STDs. Additional goals center on reinforcing STD awareness and the need for more STD prevention education in young adolescents. Finally, this article targets health care providers, educators and all other professionals who are engaged in caring for this select population.

Key Words. Chlamydia trachomatis—Sexually transmitted disease (STD)—Pelvic Inflammatory Disease (PID)

Introduction

According to the Centers of Disease Control and Prevention (CDC), there has been a steady rise in Chlamydia rates from 1986 through 2005 with reported statistics from 35.2 to 332.5 per 100,000 population (see Fig. 1).¹ This rising trend is partially attributed to increased screening efforts, diagnostic improvements

and newer reporting laws¹; yet, Chlamydia infection is considerably underreported due to its asymptomatic tendencies.^{2,3} Likewise, the prevalence of Chlamydia in adolescent females ages of 15 to 19 continues to exceed that of any other age group in the United States.^{2,4} According to the World Health Organization (WHO),⁵ *Chlamydia trachomatis* (*C. trachomatis*) is the infecting pathogen most commonly responsible for sexually transmitted disease (STD). The WHO also estimates that the disease burden for treating patients infected with Chlamydia averages \$10 billion per year in the US and that adolescent females in the urban setting have an incidence rate as high as 30%.⁵ In addition, the CDC reports that Chlamydia has surpassed rates of gonorrhea three-fold, and has accounted for the largest percentage of reportable STDs nationally since 1994.¹

The latest trends and health statistics specific to Chlamydia and current screening and treatment recommendations are presented. Primary intervention strategies for young adolescents will be offered in the form of wellness care education with a special focus on sexual health promotion and STD prevention. Both traditional and supplementary interventions will be recommended for health care providers, primary care clinicians, public health and school nurses, and other trained professionals who are engaged in caring for young adolescents or people at high-risk for contracting Chlamydia and other STDs.

Incidence and Prevalence

Additional escalating health threats, such as Human Papilloma Virus (HPV), currently share the limelight along with other STD infections encroaching on the adolescent population. While HPV is credited as the most commonly sexually transmitted infection in the US with estimates at 6.2 million new cases annually,⁶ Chlamydia remains the number one reported bacterial STD in the US^{2,7,8} with an incidence of more than 2.8 million new cases annually.^{3,9} In fact, the CDC recognizes that

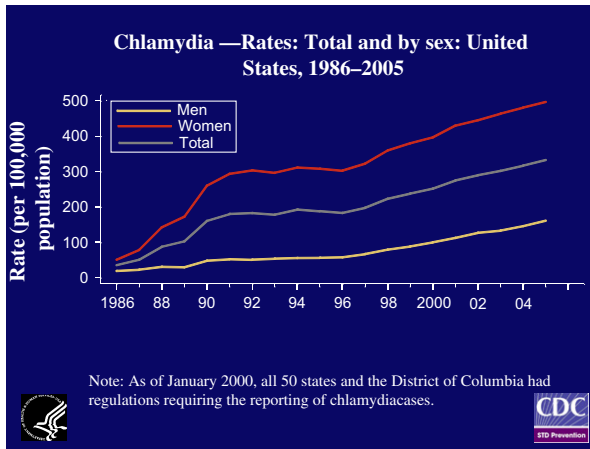


Fig. 1. STD surveillance 2005.

a strong correlation exists between STD infected individuals and the increased risk for contracting HIV.^{3,10}

Chlamydia infected women have an HIV risk five times greater than non-infected Chlamydia women if exposed to the HIV.³ Similarly, the CDC confirms that Chlamydia facilitates the transmission of HIV and purports that greater STD control may decrease HIV transmission.¹ Therefore, it is imperative that health care professionals recognize that a relationship exists between Chlamydia, HIV, and other STDs. Hence, preventive health care must play a pivotal role in targeting all sexually transmitted diseases.

According to CDC statistics, the prevalence of Chlamydia reveals a disproportionate vulnerability in adolescent girls (see Fig. 2).^{1,2,4} Chlamydia infection rates increased 5.1% from 2004 to 2005 for 15-19 year old females.¹ This trend suggests the inadequacy of current intervention strategies aimed at safeguarding this population against contracting Chlamydia. The CDC recognizes that due to varying sensitivity and specificity of diagnostic Chlamydia

tests, there are limits to statistical information.^{2,11} Despite limitations, however, the CDC suggests that data collected from a wide variety of settings allows generalizability.¹

Current Knowledge

Trends, Statistics & High-risk Groups

According to the CDC’s 2005 STD Surveillance Report, requirements for reporting Chlamydia in the US were mandated in all 50 states, including the District of Columbia, since the year 2000.^{2,7,8,12} Rising trends are notable from 1986 through 2005 according to rates reported for Chlamydia infection which increased from 35.2 to 332.5 cases per 100,000 individuals.¹ Several populations have been shown to be disproportionately affected by the incidence of Chlamydia.^{2,4} For instance, females ages 15 to 19 in 2005 reportedly have the highest rates of Chlamydia (2,797), followed by females ages 20 to 24 (2,691) per 100,000 population.¹²

Other groups who have demonstrated higher risks for contracting Chlamydia include those with new or multiple sex partners and those with previous Chlamydia or STD history.³ People who practice inconsistent barrier contraception, or who have cervical ectopy, low socioeconomic status, or individuals who are of African-American descent, are also considered to be at high risk.¹³ African-American women have rates seven times higher than that of white women and two times higher than that of Hispanic women.¹² Nevertheless, according to the U.S. Department of Health and Human Services Preventive Services Task Force, age is the sociodemographic factor most strongly correlated with Chlamydial infection.¹³

According to the CDC, black females reported 1,729 cases per 100,000 as compared to 237 per

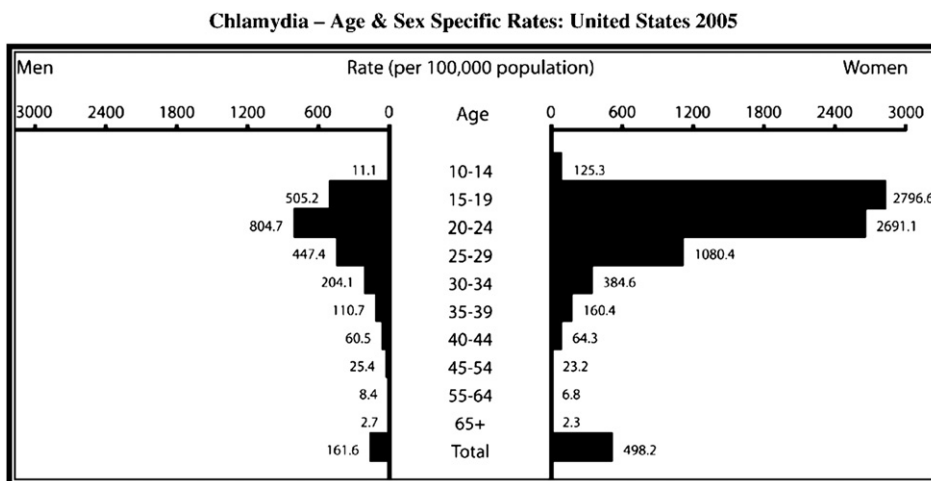


Fig. 2. STD Surveillance 2005

100,000 for white females and 733 per 100,000 for Hispanic females.¹² Furthermore, the second highest reported rate was among American Indian/Alaska Native females at 1,178 and lowest among Asian/Pacific Islander women at 222 per 100,000. The CDC stated that from 2004 to 2005, family planning clinics reported Chlamydia rates in women increased from 480.6 to 496.5 per 100,000 females. Finally, Chlamydia rates exceeded gonorrhea rates among women in all states.⁴

Further, Chlamydia disease data has been reported by the national Infertility Prevention Program (IPP). This is an organization supported by the CDC and the Office of Population Affairs of the Department of Health and Human Services, which was started in 1988 to detect and treat women and men with Chlamydia and gonorrhea infections.¹⁴ The IPP has shown that through the regular screening of women, the prevalence of Chlamydia and pelvic inflammatory disease (PID) can decrease substantially. The IPP reports in 2005 that the median state-specific Chlamydia test positivity among 15- to 24-year-old women living in 25 states, Puerto Rico and the Virgin Islands was 8.0% (range 2.8% to 16.9%).¹⁵ In addition, the median state-specific Chlamydia test positivity among 15- to 24-year-old women, was 6.3% (range 3.0% to 20.3%).¹⁵

One major goal the CDC has for the Youth Risk Behavior Surveillance Survey (YRBSS) is examination of trends in health risk behaviors in high school age students that can increase risk for STDs.¹⁶ The CDC recognizes that these high-risk behaviors are commonly established in childhood. The CDC determined in their 2005 YRBSS survey that 46.8% of high school students had at least one sexual intercourse encounter and that 14% of high school students reported four or more sex partners in their lifetime.¹⁶ In addition, they found that 37.2% of currently sexually active high school students did not engage in condom use with their most recent sexual intercourse.¹⁶ This high-risk behavioral trend in high school students confirms the greater need for primary prevention methods.

Pathogenesis, Transmission & Disease Sequelae

C. trachomatis is the gram-negative pathogenic agent that causes Chlamydia and it is not part of the normal human flora.¹⁷ In women, this microorganism can travel through the cervix and ascend the urinary tract causing numerous complications if undiagnosed. *C. trachomatis* invades epithelial tissues and can be transmitted through tissue secretions during vaginal, anal, or oral contact.³ It can also inoculate several sites on a newborn infant when passing through the infected cervix of the mother.^{3,17} According to the CDC, Chlamydia is frequently asymptomatic,

underdiagnosed, and underreported.^{2,3,7,8,17} When left untreated, it can cause scarring of the fallopian tubes and reproductive organ inflammation and infection. In addition, complications of Chlamydia can trigger other adverse health conditions such as PID which can later result in infertility.^{3,17}

Other complications of Chlamydia include chronic pelvic pain and ectopic pregnancy, which is a condition potentially fatal to the mother.^{17,18} Neonatal complications consist of ophthalmia and pneumonia which can be passed from an infected mother to a fetus.^{1,19} Since the presence of Chlamydia causes inflammation in the reproductive tract, individuals with infection have a higher risk of HIV acquisition.^{1,10,18}

Recommendations and Treatment

Prior to the acceptance of additional interventions, it is necessary to stay abreast of the current guidelines and treatments. The current CDC Sexually Transmitted Diseases Treatment Guidelines²⁰ state the following for the treatment of Chlamydia: (1) annual Chlamydia screening for all sexually active women \leq 25 years of age; (2) women $>$ 25 years of age should be screened if other risk factors are present; (3) repeat screening for women, especially adolescents, 3–4 months after treatment for *C. trachomatis*; (4) repeat screening for all women treated for *C. trachomatis* when they next present for care; (5) more frequent screenings for sexually active adolescents and women with recent *C. trachomatis* infections; (6) during pregnancy, screen women at their initial prenatal visit; and (7) pregnant women $<$ 25 years of age and those who are at increased risk for Chlamydia should be screened again in the third trimester.²⁰ Routine screening is not yet recommended for sexually active men, based on insufficient evidence to support efficacy and cost-effectiveness, but it is currently under investigation.^{20,21}

Treatment of Chlamydia serves a dual purpose because individuals with gonorrhea are frequently co-infected with Chlamydia.²² Therefore, the CDC also recommends presumptive treatment for Chlamydia when individuals test positive for gonorrhea.²⁰ Although several screening tools exist, the nucleic acid amplification test (NAAT) is the most sensitive diagnostic tool to detect *C. trachomatis* and *Neisseria gonorrhoeae* infections.¹⁸ However, if patients present with a negative Chlamydial NAAT at the time of treatment for gonorrhea, then they do not need to be treated for Chlamydia. If Chlamydia test results are not available or if a non-NAAT was negative for Chlamydia, providers should proceed with treatment for both diseases.^{20,21}

Although several treatment regimens are currently available and fluoroquinolones are no longer

recommended for the treatment of gonorrhea in the United States,²³ the most typical treatment regimen for Chlamydia patients is one gram of Azithromycin orally in a single dose to treat the Chlamydia combined with 125 milligrams of Ceftriaxone intramuscularly in a single dose to treat gonorrhea, unless contraindicated. As always, alternative treatment regimens need to be considered based upon allergies, pregnancy or other contraindications.^{20,21,23}

Prevention and Education

Levels of Prevention

Given the presently rising rates in Chlamydia in the adolescent female population, it is necessary to recognize and understand the various levels of prevention. Implications for clinical practice need to support primary, secondary, and tertiary STD prevention along with the integration of wellness care for the adolescent population. According to the CDC,²⁴ there are three levels of prevention categorized according to the stage of disease they target. Specifically, these are referred to as primary, secondary, and tertiary levels of prevention.²⁴

As defined in the National Institute of Health's Request for Application in the Community-Based Prevention and Intervention Research Report, primary prevention methods aim at taking action prior to the incidence of disease.²⁵ For instance, primary prevention for Chlamydia and other STDs could include strategies such as public education, billboards, and campaigns, holding special events, or raising awareness through Internet, television, radio or print media. Secondary prevention techniques, on the other hand, serve the purpose of developing interventions to diagnose and treat the disease itself. Interventions may include the use of diagnostic screening measures or early disease diagnosis and medical management. Lastly, tertiary prevention methods focus on reducing complications and adverse health effects from those already infected with the disease.²⁵

Research studies on STDs, do exist, targeting secondary screening programs and tertiary interventions for treatment, management, and follow-up. For instance, it has been shown that incorporating secondary prevention, such as Chlamydia screening methods, decreases the prevalence of Chlamydia and reduces the incidence of complications such as PID by nearly 60%.²⁶ In addition, Chlamydia screening greatly eases the financial burden and long-term health consequences of sexually transmitted diseases.^{21,26,27} Therefore, the necessity of targeting high-risk patients and incorporating early screening and treatment modalities have been widely demonstrated. However, there is limited research available targeting primary prevention strategies such as STD prevention education for early adolescent through high-school age children in the US. Current trends in

Chlamydia clearly demonstrate the need for a higher focus on primary prevention strategies.

STD Barriers and Education

Research indicates that a greater foundation on STD education is desperately needed.²⁸⁻³⁰ In order to successfully implement solutions aimed at reducing Chlamydia and preventing STDs, barriers need to be identified. Although many states require some form of STD education in the public school system, uniformity is lacking in regard to its emphasis and specific content, mostly stressing abstinence only.³¹ Barriers in the academic realm can present when adversaries of STD education endorse negativity and immorality concerning matters such as sexual intercourse. In addition, disease prevention information is sometimes removed from the curricula based on the premise that discussing certain subjects will promote sexually active behavior.³² Given the rates of Chlamydia in adolescent females and the rising trends of STDs, national standardization of STD education would be optimal.

In 2004, Mayaud and Mabey reviewed the existence of STDs and HIV in developing countries and identified the urgent need to develop new interventions which target existing barriers to STD prevention.²⁹ They also sought to develop more STD control programs.²⁹ Furthermore, Mayaud and Mabey determined that in order for sexually active adolescents to make autonomous decisions on preserving sexual health, it was imperative that they be offered specific and essential instructional information.²⁹ Conclusions to this study suggested that future studies should focus on the improvement of sexual health in education programs.³⁰

Research has also shown that young adolescents are not the only ones who could benefit from STD prevention education. A study conducted in California high schools revealed that fewer than half of the instructors received formal STD training.³³ Results from another study surprisingly suggested that pediatricians should be targeted for STD education regarding treatment recommendations for sexual partners.³⁴ The study concluded that repeat Chlamydia infection frequently goes undetected from the lack of re-screening or reporting by healthcare providers. The study further suggested that adolescent case management and partner notification could possibly decrease the incidence of STD re-infection.³⁴ Because previous studies have shown that Chlamydia or STD re-infection frequently stems from untreated male partners, the CDC now recommends re-screening infected patients three months after initial treatment and again within 12 months of the initial infection.²⁰ This demonstrates one major reason why it is important to afford STD education to both males and females and that it is also essential to keep healthcare providers

up-to-date and committed to executing current screening, treatment, and follow-up guidelines.

Nonetheless, even the most superlative health promotion education needs to be kept up-to-date by incorporating some regular evaluation and revision methodology. In fact, numerous professions necessitate mandatory refresher courses in order to maintain minimum competency levels and uphold national credentialing standards. Even health care providers are held to strict renewal guidelines evidenced by the mandatory compilation of continuing education hours. For example, fundamental health topics are regularly reinforced via remedial courses taken by health care professionals within licensure renewal periods. Such courses include subjects pertaining to Medical Errors, Domestic Violence, and HIV/AIDS prevention. These are courses that must be repeated within each sequential licensure renewal period.³⁵ Therefore, reinforcing STD prevention knowledge by incorporating regularly scheduled STD prevention updates seems to be a reasonable approach for effective STD prevention outcomes in adolescents.

STD Stigma & Sexual Assault

Combating the stigma associated with Chlamydia and other STD diagnoses is another immense challenge that comes to the forefront when seeking new and more effective intervention strategies. To illustrate this point, the results of one meta-analysis found several basic components associated with patients seeking STD screening and treatment.³⁶ Phenomena such as the condition being common and treatable were noted along with the assurance of confidentiality and the understanding that an asymptomatic condition could lead to serious health consequences. These phenomena were all key factors in the likelihood of patients seeking STD health-related treatment.³⁶ The study illustrated how empowering patients with the concept of responsible behavior would facilitate compliance for STD screening.³⁶ In addition, it was determined that if societal attitudes would normalize and de-stigmatize sexually transmitted health conditions, women would seek out treatment from health care providers sooner and more frequently.

Negatively-charged societal attitudes toward individuals with STDs can affect subsequent health seeking behavior.³⁷ An adverse finding was confirmed in a study that identified the variable of shame as a factor in the experience of pursuing STD-related care. This study revealed that the existing negative societal stigma toward STDs was found to be a compelling barrier to sexual health care management. The study also emphasized the necessity of resolving barriers to STD-related care by redefining social norms of healthy sexual behavior, by making individual

behavior changes, and by improving availability of screening and treatment services.³⁷

Sexual activity can also occur nonconsensually. Situations involving sexual assault can result in unprotected sexual contact and STD exposure. According to the Michigan Coalition Against Domestic and Sexual Violence, young adolescents are at highest risk for sexual assault.³⁸ In addition, a survey studying factors relating to the violence against women, it was shown that among those women who have reported rape in their lifetime, 21.6% were under the age of 12 and 32.4% were age 12 to 17.³⁹ Teenage sexual assault reports have clearly demonstrated³⁹ the fact that adolescent females are at highest risk for contracting STDs including Chlamydia.⁴⁰ It stands to reason that protecting sexual health among victims of sexual assault remains paramount. It is therefore, important for health care providers to ensure that STD information, education and treatment options are readily available.

Implications for Clinical Practice

Significance of Wellness Care Education

It is widely recognized through clinical research that the sexual and reproductive health of adolescent females can become compromised and at higher risk for contracting STDs.⁴⁰ Unfortunately, limited research exists evaluating STD prevention in the form of educational programs for young adolescent children. It is crucial to target and educate children before they reach high-risk ages which highlight the most vulnerable periods for concern. Merely following the current STD prevention guidelines has not abated the devastating upheaval in teen sexual health. While it remains important for health care providers to embrace current standards set forth by the CDC and the USPSTF, time is of the essence to substantiate additional primary prevention strategies.

Martiniuk et al³⁰ were on the right track with initiating more responsible sexual education programs but their efforts need to be expanded upon, standardized and disseminated for young adolescents. Therefore, this article proposes a national, standardized primary prevention overview for STD prevention education starting with young adolescents offered through wellness care education in the public school system (see Fig. 3). Subsequently, outcome evaluations on such a program can be obtained by monitoring CDC statistics on STD trends and rates in the adolescent population.

Early screening measures and treatment recommendations, though effective, are only part of the solution. Strong societal barriers associated with negative STD stigma can only be bypassed by using a more comprehensive aphorism suggested by *wellness care education*. The STD segment of wellness

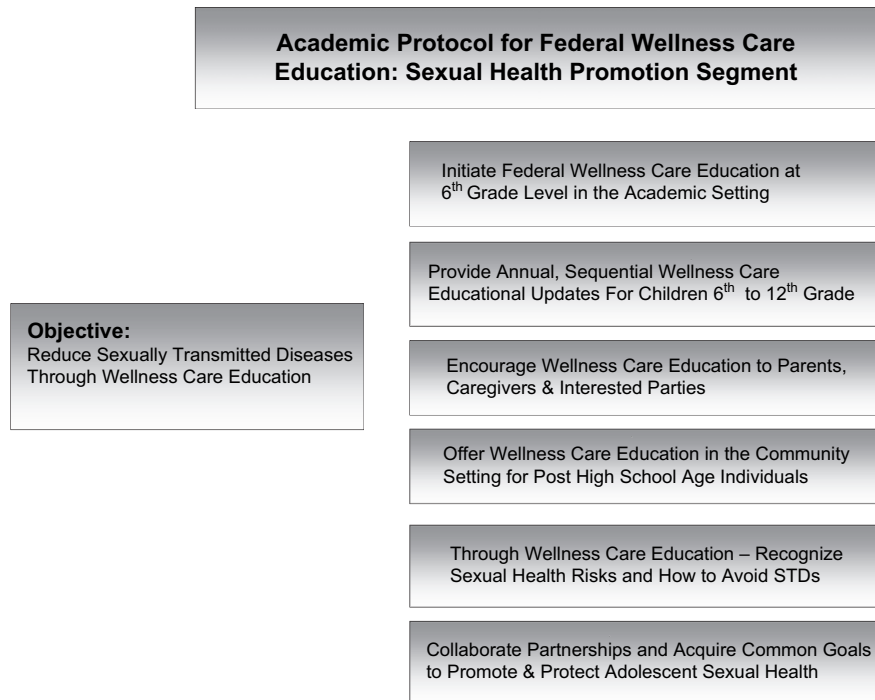


Fig. 3. Suggestions to promote and protect adolescent sexual health.

care education serves as a blueprint for disease prevention and sexual health promotion in the adolescent population. Similarly, the STD segment is also an essential subpart in helping to protect the overall health of adolescents. This educational strategy fosters a highly positive nurturing environment contrary to the taboo, negatively stigmatized STD perceptions revealed in previous research. By amalgamating this primary prevention strategy into the fundamental structure of the academic curriculum, it is possible to strive for optimal sexual teen health and reduce Chlamydia and STD rates in adolescents.

STD Prevention Education Segment

Health care providers and influential parties need to proceed with care and precision in constructing specifics for the STD segment of wellness care education. Upholding current treatment guidelines are essential. With assiduous practice, services such as optimal screening and re-screening measures, counseling, disease management, and follow-up are more likely to succeed. It is hard to deny the necessity of generating additional primary STD prevention strategies for which current research clearly demonstrates the need.^{28–30}

Targeting young adolescents engaging in wellness care education must include a highly positive emphasis on sexual health promotion and STD prevention. This age group approaches the highest-risk period for contracting Chlamydia and other STDs,^{1,2,4} which is why this group must be educated before they become sexually active. Though raising greater STD

awareness and minimizing negative STD stigma and bias are sound measures for promoting the reduction of sexually transmitted diseases, pioneering campaigns on Chlamydia and STD prevention are somewhat challenging tasks, given its long-standing status. It will take the voice of exceptionally dedicated individuals from every angle of the professional spectrum to raise ample awareness by offering their endorsement for incisive primary STD prevention strategies. Finally, a sobering reminder is revealed with the magnitude of Chlamydia infection rates and the subsequent health complications suffered by the adolescent female population.^{1,2,4}

Considerations for Clinicians

With the challenge of incorporating a nationally standardized wellness care program, clinicians must adopt a comprehensive, collaborative, and impartial methodology. Moreover, the concentration of the entire professional community is fundamentally significant when seeking out solutions for this highly complex sexually transmitted disease arena. Health care providers assume an especially delicate position when caring for adolescents with STDs. They must remain cognizant of sensitive issues when dealing with parents and caregivers of STD infected adolescents. Similarly, emotions of all parties can escalate resulting in extremely polarized views. Interference stemming from bias related to sexual practices or sexual health, whether it is with patients or health care providers, can hinder delivery of appropriate counseling or clinical care.⁴¹

Therefore, this implication is another pertinent consideration for clinicians and educators to keep at the forefront when engaging in STD prevention education. By keeping biases in check, there is a lower chance of having a negative impact, whether in the school system or the clinical setting.

Additional considerations center on the following: understanding the prevalence of disease in a certain locality; assessing the number of risk markers; considering the community setting to determine the best possible screening techniques; collaborating with local health authorities to determine patient population and best screening strategy; testing partners of infected patients and treating presumptively; astutely assessing suggestive findings on physical exams for STDs such as discharge, cervical erythema, and friability; providing confirmatory testing in settings with low population prevalence; and being sensitive to the impact that an STD diagnosis may have on a couple.⁸

Execution of STD Protocol

Successful execution of an STD segment for wellness care education in young adolescents means finding effective solutions after summoning the alliance of health providers, educators, and community officials needed to launch this standardized plan. This concept is best expressed in the following statement from the Institute of Medicine's Summary Report⁴² (1997) on sexually transmitted diseases:

To successfully prevent STDs, many stakeholders need to redefine their mission, refocus their efforts, modify how they deliver services, and accept new responsibilities. In this process, strong leadership, innovative thinking, partnerships, and adequate resources will be required. The additional investment required to effectively prevent STDs may be considerable, but it is negligible when compared with the likely return on the investment. The process of preventing STDs must be a collaborative one. No one agency, organization, or sector can effectively do it alone; all members of the community must do their part. A successful national initiative to confront and prevent STDs requires widespread public awareness and participation and bold national leadership from the highest levels.

Clearly, standardizing this educational strategy is concomitantly offered to supplement the currently accepted secondary and tertiary STD prevention guidelines by the CDC and the USPSTF. Initially, the responsibility of enhancing greater sexual health awareness and staying vigilant with the STD disease burden lies with health care providers and nurse educators who communicate with patients, families, community and public health employees, school officials,

legislators and policy makers. STD prevention education specifically benefits vulnerable populations such as early, mid and late adolescents.

By empowering professional partnerships on the local, state, and national level, STD prevention introduced through wellness care education has the potential to be integrated into the public school system beginning with children entering early adolescence. This mechanism to reduce STDs in the adolescent population is an optimal approach toward overall health promotion. For the purposes of this STD prevention educational plan, children entering the sixth grade level are targeted in launching this effort. Furthermore, through wellness care education, annual, sequential STD prevention updates would be fundamentally reinforced throughout high school.

Conclusions

Once awareness on Chlamydia and STD prevention have been rekindled, active participants can commit and collaborate by working toward solutions for this public health problem. Subsequently, this supplementary primary educational intervention can have a cascading effect on reducing the overall rate of Chlamydia in adolescent females. Previous research and the CDC's statistical data have clearly shown that the Chlamydia and STD prevalence in young adolescent females is alarming. Thus, modifiable risk factors and supplementary, primary interventions which are less commonly engaged in need to be considered without with haste. By engaging in these strategies and by using open-communication with teens, health care providers can initiate the wellness care education plan to include STD prevention and sexual health promotion for school and community educators. In this way, formal STD prevention and sexual health promotion training can ensue as a first step toward the integration of a nationally standardized STD curriculum through wellness care education.

In addition, it is vital to espouse more primary prevention strategies for Chlamydia and other STDs in order to make greater headway in protecting the most highly vulnerable population at risk. Adopting this educational plan into the academic arena is a superlative expansion based on previous research and currently escalating trends in adolescents.

In conclusion, offering adequate education prior to patients entering high-risk ages for sexual contact and STD exposure is a key factor in diverting this escalating health trend. Perpetuating wellness care education on the national level and maintaining open-communication between health care providers, educators, and the community as a whole, may help reduce societal barriers and the forbidden nature of discussing

Chlamydia and other STD infections. Wellness care education can serve a dual purpose in creating an optimal environment for overall health promotion as well as STD prevention. In addition, highlighting the early adolescent age group for STD prevention education is most favorable. Targeting barriers, diffusing moral biases, and reducing STD-related stigmas are optimal goals to improve the incessant sexually transmitted disease trends. By empowering colleagues, researchers, officials and other associated professionals, additional primary intervention strategies in the form of wellness care education can be created. Reducing the overall STD burden and curtailing the unsettling prevalence of Chlamydia is a mission worthy of our commitment and greatest effort.

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