Universal Screening for Sexually Transmitted Infections among Asymptomatic Adolescents in an Urban Emergency Department: High Acceptance but Low Prevalence of Infection

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Objectives To evaluate acceptance of sexually transmitted infection (STI) screening and measure STI prevalence in an asymptomatic adolescent emergency department (ED) population.

Study design This was a prospectively enrolled cross-sectional study of 14- to 21-year-old patients who sought care at an urban pediatric ED with non-STI related complaints. Participants completed a computer-assisted questionnaire to collect demographic and behavioral data and were asked to provide a urine sample to screen for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infection. We calculated STI screening acceptance and STI prevalence. We used logistic regression to identify factors associated with screening acceptance and presence of infection.

Results Of 553 enrolled patients, 326 (59.0%) agreed to be screened for STIs. STI screening acceptability was associated with having public health insurance (aOR 1.7; 1.1, 2.5) and being sexually active (sexually active but denying high risk activity [aOR 1.7; 1.1, 2.5]; sexually active and reporting high risk activity [aOR 2.6; 1.5, 4.6]). Sixteen patients (4.9%; 95% CI 2.6, 7.3) had an asymptomatic STI. High-risk sexual behavior (aOR 7.2; 1.4, 37.7) and preferential use of the ED rather than primary care for acute medical needs (aOR 4.0; 1.3, 12.3) were associated with STI.

Conclusions STI screening is acceptable to adolescents in the ED, especially among those who declare sexual experience. Overall, there was a low prevalence of asymptomatic STI. Risk of STI was higher among youth engaging in high-risk sexual behavior and those relying on the ED for acute health care access. Targeted screening interventions may be more efficient than universal screening for STI detection in the ED. *(J Pediatr 2016;171:128-32)*.

Adolescents have the highest rates of sexually transmitted infections (STIs) of any age group and comprise 9 million of the 19 million new cases of STIs each year.[1] Many STIs are asymptomatic and may result in significant morbidity, including pelvic inflammatory disease, ectopic pregnancy, increased susceptibility to HIV, and infertility.[2] For these reasons, the Healthy People 2020 objectives identify as a national priority addressing the STI epidemic with a specific focus on STI reduction in adolescents.[3] The American Academy of Pediatrics[4] (AAP), Centers for Disease Control and Prevention[2] (CDC), and the US Preventative Services Task Force[5] all recommend at least annual STI screening among sexually active females. The AAP[4] and CDC[2] also recommend at least annual STI screening for sexually active males in settings with high prevalence rates. Despite these recommendations, the majority of adolescents have never been screened for STIs.[6]

Poor access to primary care may be an important factor[7-9]; more than one-third of adolescents cannot identify a source of primary care.[10-13] Emergency departments (EDs) are a key point of access to care for many adolescents, as they account for almost 15 million ED visits annually.[14-17] Because the ED often serves as a safety-net for high risk and vulnerable populations, the ED may provide a strategic venue for asymptomatic STI screening. Although the CDC recommends universal screening for HIV in EDs nationally,[18] there are no current recommendations for STI screening in EDs. Therefore, the goal of this study was to evaluate the acceptability of STI screening and measure the prevalence of asymptomatic STI in a population of adolescents seeking care in an urban pediatric ED.

Methods

We performed a prospective, cross-sectional study between December 2013 and July 2014, enrolling a convenience sample of adolescents who presented to the

AAP	American Academy of Pediatrics
CDC	Centers for Disease Control and Prevention
ED	Emergency department
PCP	Primary care provider
STI	Sexually transmitted infection

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Supported by the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (K23HD070910 [to M.G.] and the National Institutes of Health National Center for Advancing Translational Sciences (Institutional Pilot Award UL1TR000075 [to M.G.]). The authors declare no conflicts of interest.

http://dx.doi.org/10.1016/j.jpeds.2016.01.019

Children's National Health System ED in Washington, DC, with non-STI-related chief complaints. The hospital is a free-standing, urban, tertiary care pediatric academic center located in a city with the highest rates of STIs nationally[19] and with annual ED visits of approximately 90 000. This study was approved by the Institutional Review Board of our hospital.

Males and females aged 14- to 21-years were eligible for study participation. Because informed consent was required, we excluded patients who were critically ill, were developmentally delayed, presented with altered mental status, were in police custody, or were non-English speaking. We also excluded patients if they presented after an acute sexual assault or with a chief complaint that was potentially related to an STI. Exclusionary chief complaints included lower abdominal pain, dysuria, vaginal bleeding, vaginal discharge, anogenital lesions, and/or pain for females; dysuria, anogenital lesions, and penile pain or discharge for males. Additionally, we excluded patients presenting specifically for STI testing or treatment. Participants were identified as eligible for participation after being triaged and after discussion of inclusion and exclusion criteria with the clinical team. Patients were then confidentially approached by research staff, asked to participate, and if they agreed, asked to provide informed consent. Because adolescents are allowed to consent for sexual health services in our state, a waiver of parental consent was granted by our Institutional Review Board.

Enrolled patients completed a validated computer-assisted survey through LimeSurvey software (LimeSurvey: An Open Source Survey Tool, ver. 2; Hamburg, Germany) with survey items including questions about sexual experience, history of STIs and prior testing, and demographic information. Participants were also asked to provide a confidential phone number for follow-up of positive results. Participants who agreed to STI screening were tested for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* using urine-based polymerase chain reaction (Abbott RealTime PCR; Abbot Park, Illinois). All positive results were reported to the patient and treatment was coordinated by the principal investigator. Patients were contacted again within 2 weeks after result notification to determine whether they received treatment as prescribed.

Statistical Analyses

The primary objectives of this study were to determine the acceptability of urine-based STI screening and to calculate the prevalence of STIs in a population of asymptomatic adolescents seen in an urban pediatric ED. We also measured the association of calculated STI screening acceptability and STI prevalence with reported sexual risk behaviors. Subpopulations included patients who reported being sexually experienced and those who reported high risk sexual behavior. We defined high risk sexual behavior as lack of condom use during last sexual intercourse and/or identification of >1 sexual partner in the last 3 months.[2] We calculated the prevalence of positive *C trachomatis* and *N gonorrhoeae* tests with 95% CI. Our secondary objectives included identifying factors associated with acceptance of STI screening as well as factors associated with presence of an STI. Based on prior data, correlates of interest included age, race/ethnicity, insurance status, and sexual behavior.[20] We also sought to evaluate whether identification of a primary care provider (PCP) or preferential use of the ED vs primary care or health clinic for acute medical needs were associated with STI screening acceptance and STI.[12] We performed bivariable logistic regression to identify associations between demographic and behavioral data and STI screening acceptability as well as STI outcomes. Covariates with P values <.2 in bivariable logistic regression were included in our multivariable logistic regression models. To account for patients who declined STI screening in the calculation of STI prevalence, we conducted a sensitivity analysis in which we assumed that all patients who declined STI screening would have tested negative for *N gonorrhoeae*/*C trachomatis* if screened.

Results

A total of 553 adolescents were enrolled in this study. The study sample was composed of largely non-Hispanic Black patients insured via public health insurance, and who identified a PCP. Approximately one-half of the study population reported being sexually experienced, and almost 20% disclosed high risk sexual behaviors (**Table I**).

STI Screening Acceptability

Of the 553 adolescents enrolled, 326 (59.0%, 95% CI 54.8%, 63.1%) agreed to be screened for STIs. Adolescents who agreed to STI screening were significantly older (16.4 years vs 15.8 years; $P < .001$) and were less likely to have private insurance (23.6% vs 35.7%; $P = .002$). There were no differences in gender, race/ethnicity, PCP identification, or reported preferential use of the ED for acute medical needs between those who agreed and those who declined urine STI screening.

Patients who were sexually active were more likely to accept STI screening than those who denied sexual activity (69.7% vs 49.1%, $P < .001$) (**Table I**). In a multivariable model that included age, gender, insurance status, preferential use of the ED when sick, and sexual experience, factors associated with STI testing included governmental insurance and sexual experience (**Table II**).

Of the 227 patients who declined STI testing, the reasons for refusal included sexual inexperience (64.8%, n = 147), not perceiving themselves to be at risk for an STI (10.1%, n = 23), STI tested within the past year (5.3%, n = 12%), and prefer not to provide a reason (19.8%, n = 45). No patient declined STI testing because of confidentiality concerns. Of the 80 patients who were sexually active who declined STI screening, the most common reasons for refusal were that they were not currently sexually active (17.5%), did not perceive themselves to be at risk (46.3%), recently were tested (21.3%), other (8.8%), or preferred not to provide a reason (6.3%).