Original Study

Impact of Post-visit Contact on Emergency Department Utilization for Adolescent Women with a Sexually Transmitted Infection

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A B S T R A C T

Study Objectives: To understand Emergency Department (ED) utilization patterns for women who received sexually transmitted infection (STI) testing and explore the impact of post-visit telephone contact on future ED visits.
Design, Setting, Participants: We performed a secondary analysis on a prospectively collected dataset of ED patients ages 14-21 years at a children's hospital.
Interventions and Main Outcome Measures: The dataset documented initial and return visits, STI results, race, age and post-visit contact success (telephone contact ≤7 days of visit). Logistic regression was performed identifying variables that predicted a return visit to the ED, a return visit with STI testing, and subsequent positive STI results.
Results: Of 922 women with STI testing at their initial ED visit, 216 (23%) were STI positive. One-third (315/922) returned to the ED, 15% (141/922) returned and had STI testing, and 4% (38/922) had a subsequent STI. Of 216 STI-positive women, 59% were successfully contacted. Of those who returned to the ED, age ≥ 18 and Black race were associated with increased STI testing at a subsequent visit. Successful contact reduced the likelihood of STI testing at a subsequent ED visit (OR 0.28, 95% CI 0.01-0.8), and ED empiric antibiotic treatment had no effect on subsequent STI testing.
Conclusion: Contacting women with STI results and counseling them regarding safe sex behaviors may reduce the number of ED patients who return with symptoms or a new exposure necessitating STI testing. The high STI prevalence and frequent return rate suggest that ED interventions are needed.
Key Words: Adolescents, Sexually transmitted infections, Health care seeking behavior, Emergency department

Introduction

There is a national epidemic of sexually transmitted infections (STI) among adolescents.[1] In greater Cincinnati, the rates of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) per 100,000 population is higher than that seen in other, comparable urban cities.[1] Further, STI prevelance in the emergency department (ED) at our institution is 5-10 fold higher than national rates.[1,2] At our institution's ED, approximately 100 women are tested monthly for STIs and approximately 22% tested are positive for at least 1 curable STI (CT, GC, or trichomoniasis vaginalis (TV)).[3] Thus, we expect that strategies to improve STI care in our ED will have a significant impact on our community's STI epidemic.

Previous literature demonstrates that adolescents are likely to use a hospital ED for primary care services related to sexual and reproductive health such as STI diagnosis and treatment, yet they continue to receive suboptimal care.[4] Some women with STIs remain untreated due to the lack of effective follow-up.[5] Even young women who receive treatment are at high risk for re-infection due to the lack of effective communication regarding their positive STI result and short-term prevention counseling.[6] However, clinical practice in our ED was similar to that of others: notify patients with an STI only if they were not treated at their visit.[5] In qualitative interviews, ED personnel at our institution cited time constraints, the 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.[7] In our prior work, we showed that adolescent women were more likely to engage in safer sexual behaviors after being notified of a positive STI result, whereas empiric treatment at the visit did not impact their behavior.[8] We hypothesized that contacting all patients with a positive STI test would not only provide an opportunity for awareness of test results and prevention counseling, but may also impact future ED utilization by decreasing the need for ED return visits with STI testing. We anticipate that demonstrating this impact would increase

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provider and institutional support for our endeavors to improve post-visit STI care.

Our aims were: (1) to understand the pattern of ED utilization for adolescent women who had STI testing at an initial ED visit and (2) to determine if the previously implemented interventions to improve STI post-visit contact in the ED had an impact on the number of future STI related ED visits.

Materials and Methods

Study Design, Setting, and Population

This was a retrospective analysis of data that were prospectively collected for a quality improvement (QI) project, which is fully described in our prior work.[3] This data was obtained in a busy, urban ED with a high volume of adolescent visits and a high prevalence of STIs. We identified a cohort of all female patients ages 14-21 who were tested for STIs in the ED between January and October 2009. The decision to perform ED STI testing was at the discretion of the providing physician. However, routine screening and tests of cure are not routinely done in our ED. Instead, testing is performed among symptomatic patients, patients who identify new STI exposures, or at specific patient request. This database was part of a previous Institutional Review Board (IRB) approved study and this current study was designated as exempt by the IRB and thus the requirement for written informed consent was waived.

Study Protocol

In a previous QI project, we instituted a series of interventions aimed at improving post ED visit patient contact among patients with a positive STI result. The QI project database was constructed by prospectively recording a medical record number, demographic information (age and race), mode of STI testing (NAAT using urine or cervical swabs for GC/CT and vaginal swabs for wet prep direct microscopy, trich culture or trich antigen testing), STI test results and subsequent visits and testing during the study time period. Results were coded as positive if a CT, GC, or TV test was positive, and negative if all tests were negative. For women who were STI positive, we prospectively recorded whether they were treated at the initial ED visit (defined as receiving appropriate antibiotics in the ED or a written prescription upon discharge) and whether or not they were successfully contacted within 7 days of the ED visit. The initial quality improvement study included periods of both unidirectional (the ED contacted the patients), and bidirectional (patients can also contact the ED) contact methods.[3] During the study period, the nurse practitioner attempted to contact all patients testing positive for STIs, regardless of whether or not they received empiric treatment at the ED visit. The nurse developed a treatment plan for each patient who was positive and not initially treated at the ED visit. She also discussed the importance of short term abstinence, partner notification, testing and treatment and future safe sex behaviors. Successful contact was defined as a documented telephone voice to voice conversation within 7 days of an ED visit. After conclusion of the QI portion of the study, medical record numbers were replaced to generate an anonymized data set that linked initial and follow-up visits.

Outcomes

The key outcome measures included: (1) the proportion of adolescent women who returned to the ED for a subsequent visit, (2) of those who returned, the proportion who were STI tested based on clinical symptomatology, STI exposure or patient request, and (3) of those who were retested, the proportion who were STI positive.

Data Analysis

Descriptive statistics were used to determine the pattern of visits for women with STI testing in the ED during the study period. Chi-square analyses were conducted initially to determine which variables (race, age, initial STI result, post-visit contact success, and treatment status) were related to our 3 outcomes. Variables with significance levels of $P < .1$, and the clinically important variable of a positive STI test at baseline were candidates for the multivariate logistic regression model. To attempt to reduce collinearity, we performed backward stepwise regression to develop the final multivariate regression model.

Results

During the 10-month study interval, 922 women aged 14-21 years visited the ED and had STI testing. Self-reported race included 71% black, 24.6% white, and 4.4% other. Fig. 1 shows the utilization patterns of women in the study, with branch points denoting the STI test results and contact. At the first visit, 216 (23.4%) women tested positive, and 127 (58.8%) of these were successfully contacted within 7 days. Contact status on 9 patients was unknown, but their return ED visit and STI testing status was recorded and included in the overall data. As seen in Table 1, the proportion of adolescents who returned to the ED (outcome 1) was 34% (315/922). Most made only 1 return visit, but 67 (21% of returners) made 2-4 visits, and 4 women returned >4 times in 10 months. The proportion who had a return visit with STI testing (outcome 2) was 15% (141/922). Of those who returned, 45% (141/315) were retested. The proportion who had a repeat positive STI test result (outcome 3) was 4.1% (38/922). Of those who returned, 28% (38/141) had a repeat positive STI test result.

In Table 2 we show the factors associated with repeat STI testing for women who made a return visit to the ED (n = 315). Chi-square testing showed that compared to those without STI testing, those for whom STI testing was performed at a subsequent visit (ie, patients who were symptomatic, those for whom there was a concern for a new STI exposure, or those who requested STI testing) were significantly more likely to be Black (89% vs. 77%, $P = .008$) and ≥ age 18 (49.6% vs. 33%, $P = .003$). In the multivariable LR analysis, age ≥ 18 years (OR 1.7, CI 1.05-2.8) and Black race (OR 2.3, CI 1.1-4.5) were each associated with an increased