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ORIGINAL RESEARCH ARTICLE

Adequacy of testing, empiric treatment, and referral for adult male emergency department patients with possible chlamydia and/or gonorrhoea urethritis

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Summary: This study evaluated the adequacy of testing, empiric treatment and referral for further evaluation of adult male emergency department (ED) patients with possible chlamydia and/or gonorrhoea urethritis. Of 968 adult male ED patients, 84% were tested for chlamydia and gonorrhoea, 16% for HIV and 27% for syphilis; 92% received empiric treatment for chlamydia and gonorrhoea and 71% were referred for further evaluation; of those tested, 29% were infected with chlamydia, gonorrhoea or both; and 3% of those tested had a positive syphilis test. The results of logistic regression modelling indicated that testing, treatment and referral were not related to a history of sexual contact with someone known to have a sexually transmitted disease or to the patient's ultimate diagnosis of a laboratory-confirmed infection. Compliance with Centers for Disease Control and Prevention (CDC) recommendations for chlamydia and gonorrhoea testing and treatment regimens was high, but was poor for HIV testing. More explicit guidance from CDC regarding syphilis testing and referral for further evaluation is needed.

Keywords: chlamydia, gonorrhoea, sexually transmitted diseases, emergency medicine, male, urethritis

INTRODUCTION

Since 1993, the Centers for Disease Control and Prevention (CDC) has issued guidelines on testing, treatment and referral for further evaluation for patients with possible or confirmed sexually transmitted infections (STIs)/diseases (STDs), including men with possible chlamydia and/or gonorrhoea urethritis.[1–4] CDC recommends testing for chlamydia and gonorrhoea for these patients to determine the specific cause of the infection – even if empiric treatment is initiated – so that accurate reporting of these infections can be made to state health departments and because a specific diagnosis 'may improve (treatment) compliance and partner notification.'[2,3] CDC also recommends that these patients should be offered testing for HIV.[2,3] CDC recommends clinicians should consider empiric treatment for both chlamydia and gonorrhoea if the patient's sexual partner(s) have these infections or if the patient has symptoms of these infections, particularly when compliance with treatment and follow-up of testing results is not assured or the prevalence of these infections in the surrounding community is high.

CDC STD guidelines do not address routine testing for syphilis or referrals for further evaluation among male patients with possible chlamydia and/or gonorrhoea urethritis. The US Public Health Task Force and the Advisory Committee for HIV and STD Prevention recommended in 1996 and 1998, respectively, that 'serologic screening for syphilis should be conducted in high-risk persons.'[5,6] High-risk persons include inmates, illicit drug users, those with multiple sexual partners and those who exchange sex for money or drugs. However, like the CDC, the task force did not specifically recommend routine testing for syphilis for patients presenting with a possible STD.

Emergency departments (EDs) frequently evaluate adult male patients who present with signs or symptoms of chlamydia and/or gonorrhoea urethritis or with a possible exposure to these infections. A previous study by Kane *et al.*[7] observed shortcomings in one ED's compliance with CDC recommendations regarding STD testing and treatment among male and female patients. They noted that testing for chlamydia and gonorrhoea were jointly performed for 79% of patients with urethritis and that fewer than one-third of patients received the correct antibiotic regimens against chlamydia or gonorrhoea. The study did not address HIV or syphilis testing.

In this investigation, we aimed to evaluate compliance with CDC recommendations regarding testing and empiric treatment for men who present to the ED with possible chlamydia or gonorrhoea urethritis. We also examined how frequently these patients were tested for syphilis in the ED and were referred for further evaluation. We were particularly interested in knowing whether patients who reported sexual contact with someone known to have chlamydia or gonorrhoea and whether patients who were ultimately found to have a laboratory-confirmed positive chlamydia and/or gonorrhoea test were more likely than other patients to be tested, empirically

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treated and referred for further evaluation. Our hypothesis was that ED clinicians might believe that those with sexual contact with persons infected with chlamydia and/or gonorrhoea are at a higher risk of infection from chlamydia, gonorrhoea, HIV and syphilis, and therefore the ED clinician might be prompted to test, treat or refer these patients more often than other patients. Likewise, as a measure of the effectiveness of ED care, we were curious if patients who did demonstrate an infection were more likely to receive the appropriate tests, treatment and referrals compared with those who did not ultimately demonstrate an infection.

METHODS

Study design, setting and population

We conducted a retrospective study involving a medical record review of adult male patients (≥age 18 years), who were considered by ED clinicians possibly to have chlamydia or gonorrhoea urethritis. We searched for all adult male patients who visited an adult, urban, northeastern United States, academic ED (>75,000 ED visits/year) during January 1998–December 2004. This study period spans the month the CDC STD treatment guidelines were updated (January 1998) through its 2002 revision.[2,3] During the time of this study, there were no HIV screening programmes conducted at this ED and rapid HIV testing was not yet available. By 2002 at this ED, urine testing for chlamydia and gonorrhoea became the standard, although urethral swabs could still be obtained. The hospital's institutional review board approved the study.

Study protocol

We searched for adult male patients that the ED clinicians believed might have chlamydia or gonorrhoea urethritis or at least might have been exposed to these infections. We purposely included asymptomatic and symptomatic patients in our study as this better represents the spectrum of patients evaluated and treated in EDs with possible chlamydia or gonorrhoea urethritis. Asymptomatic patients included patients who did not have symptoms of chlamydia or gonorrhoea. Among these patients, some reported sexual contact with someone they knew had a STD (were notified of this by the sexual partner or a medical agency) and the remainder did not know or it was not recorded in the medical record if they had sexual contact with someone known to have an STD. A patient visit was included in this study if the medical record indicated that the ED clinician was considering or established a diagnosis of chlamydia or gonorrhoea urethritis, the patient presented with signs or symptoms of chlamydia or gonorrhoea urethritis, and/or the patient had sexual contact with someone known to have chlamydia or gonorrhoea. For patients who presented more than once to the ED for the same complaint in a four-week period, only the first visit was included in the study.

Hospital and ED clinician billing computerized databases were searched using International Classification of Disease, Ninth Revision, Clinical Modification (Department of Health and Human Services, 6th Edition, 2001) (ICD-9) codes. These codes were for chlamydia (099.41, 099.50, 099.51, 099.52, 099.55), gonorrhoea (098.0, V01.6), non-gonococcal urethritis (099.40, 099.49), other venereal disease (099.9, 099.8) and urethritis (597.80). The databases were searched for 'all diagnosis codes', that is, if a possible chlamydia or gonorrhoea infection was diagnosed during an ED visit in the context of another medical condition, the search would uncover that visit.

Measurements

The medical record review and data extraction were performed by the primary (an emergency medicine physician and researcher) and secondary author (a certified research assistant) of the study. These two authors developed a standardized form together and case definition with input from other authors of the study. The primary and secondary authors developed a protocol for case identification. These authors jointly performed a pilot review of the medical records and modified the form based upon the observations on what type and form of data could be collected. Afterwards, the two authors jointly reviewed 100 medical records for the study to ensure they were extracting data in a similar fashion. The primary author monitored the data collection process by reviewing all data forms and directly reviewing the medical record of any forms with unclear or discrepant data points. The primary author served as the final arbiter of data that were ambiguous, missing or unknown. The primary and secondary authors were not blinded to the purpose of the study. Missing data were not imputed.

We reviewed the medical records and extracted the following data and recorded it on a standardized form: patient age, race, type of medical insurance, signs and symptoms of a possible chlamydia or gonorrhoea infection (dysuria, discharge or penile pain), STD contact history, tests performed (chlamydia, gonorrhoea, HIV and syphilis), test results, antibiotics administered and referrals for follow-up. At this ED, the 'T system' was used for medical records (T-system, Inc. Dallas, TX, USA). There are 'T-sheets' specifically for male genitourinary complaints. The test results for all patients were confirmed through inquiry of the hospital's laboratory database by the secondary author.

Data analysis

Data from the forms were entered into an Epi Info 2002 (Centers for Disease Control and Prevention, Atlanta, GA, USA) database created by the investigators. Two operators independently entered every form, and then performed a data comparison analysis to verify that all forms were correctly entered. Incorrect entries were corrected, and subsequent analyses were performed on this verified database. All analyses were performed using STATA 9.2 (Stata Corporation, College Station, TX, USA).

Summary statistics were calculated for the demographic characteristics, STD sexual contact history, signs and symptoms of possible chlamydia and/or gonorrhoea urethritis, laboratory tests performed and the results, empiric antibiotic treatment for chlamydia and/or gonorrhoea and referrals for further evaluation. For the outcomes of proportions of patients tested, treated and referred, 95% confidence intervals (CIs) were calculated for the point estimates. Because CDC recommends testing and empiric treatment for both chlamydia and gonorrhoea (designated hereafter as 'chlamydia/gonorrhoea'), we evaluated compliance with testing and treatment for either and both of these organisms. Usage of chlamydia/gonorrhoea, HIV, and syphilis testing were compared using two-sample

tests of binomial proportions. Patients were classified as having their HIV status addressed if they were tested in the ED, were referred for HIV testing or were noted as being tested recently. Antibiotics prescribed for empiric treatment were compared with the list of medications recommended by the CDC at the time of each patient's ED visit.[2,3]

The proportions of patients undergoing testing, empiric treatment for chlamydia and/or gonorrhoea, and for whom referral was recommended were stratified by patient STD contact history and their chlamydia and/or gonorrhoea laboratory test results. Univariable logistic regression analyses were performed to compare the usage of testing, empiric treatment for chlamydia and/or gonorrhoea, and referrals for evaluation by patient STD contact history and results of chlamydia and/or gonorrhoea testing. The goal of these analyses was to determine whether patients who presented with known exposures to chlamydia and/or gonorrhoea and those ultimately found to have a laboratory-confirmed positive chlamydia and/or gonorrhoea test were more likely than other patients to be tested, empirically treated and referred for further evaluation. Separate logistic regression models were created to determine the odds of (1) undergoing testing for chlamydia/gonorrhoea, HIV and syphilis; and (2) being empirically treated for chlamydia/gonorrhoea for (a) patients with a reported STD contact and (b) those who ultimately had laboratory-confirmed chlamydia and/or gonorrhoea urethritis, compared with other patients. Known chlamydia sexual contact was chosen as the reference group for the reported STD contact analyses because known sexual contact with chlamydia was reported more frequently than with gonorrhoea. Absence of infection was chosen as the reference group for comparing groups by laboratory-confirmed infection to see if those with an infection or those not tested for an infection had a greater odds of being tested, empirically treated or referred for further evaluation. Odds ratios with corresponding 95% CIs were estimated. For all analyses, differences were considered statistically significant at the $\alpha = 0.05$ level.

RESULTS

Patient profiles

From the ICD-9 code search, 1218 ED visits were identified and 96% could be located for review. Of the 1166 visits reviewed, 971 were visits for possible chlamydia or gonorrhoea urethritis. The remaining 195 visits were for other STDs, non-STD-related conditions or were follow-up visits for the same condition. The results of chlamydia and gonorrhoea testing were not available for three patients, so these were excluded from the analyses. The median age of the 968 patients in the study was 29 years (range: 18–77 years); 48% were black, 27% were white, 15% were Hispanic and 10% were of another race/ethnicity; 52% had no health-care insurance, 23% had governmental insurance (Medicaid and/or Medicare) and 25% had private health-care insurance.

In regards to clinical presentation, 42% of the 968 patients had discharge and dysuria, 16% had discharge only, 24% had dysuria only, 2% had penile pain only and 16% had no symptoms. More than a quarter of patients (26%) reported sexual contact with someone known to have a STD, and in specific, 12% reported sexual contact with someone known to have chlamydia and/or gonorrhoea, 9% with someone known to have chlamydia, 2% with someone known to have gonorrhoea, 0.2% with someone known to have chlamydia and gonorrhoea and 10% reported sexual contact with someone known to have a STD but did not know the type of the infection.

Chlamydia, gonorrhoea and syphilis testing and addressing HIV status

Of the 968 patients, 84% (82–86%) were tested for chlamydia/gonorrhoea, 1% (0.8–2%) were tested for chlamydia only, 1% (0.6–2%) were tested for gonorrhoea only and 13% (11–16%) did not undergo testing for chlamydia or gonorrhoea. Of the 838 patients who underwent testing for chlamydia, gonorrhoea, or both, 29% (26–32%) were infected with either chlamydia, gonorrhoea, or with both; 14% (12–16%) were infected with chlamydia only, 12% (10–15%) with gonorrhoea only; and 3% (2–5%) with both. Of the 968 patients, 27% (24–30%) were tested for syphilis, and of the 258 tested, 3% (1–6%) had a positive syphilis test. Of the 968 patients, 15% (13–17%) were referred for outpatient follow-up HIV testing, 0.7% (0.3–1%) had recently been tested for HIV and 0.2% (0.02–0.7%) were tested in the ED. Of the two patients tested for HIV in the ED, both had a negative test. Of the 968 patients, 6% (5–8%) underwent chlamydia/gonorrhoea and syphilis testing and had their HIV status addressed; 14% (12–16%) underwent chlamydia/gonorrhoea testing and had their HIV status addressed; and 25% (22–27%) underwent chlamydia/gonorrhoea and syphilis testing.

Table 1 provides the proportions of patients tested for chlamydia and/or gonorrhoea, for syphilis and whose HIV status was addressed. Among all patients, the percentage tested for chlamydia and/or gonorrhoea was greater than those whose HIV status was addressed ($P < 0.0001$) and greater than those who were tested for syphilis ($P < 0.0001$). The percentage of patients tested for syphilis was greater than those whose HIV status was addressed ($P < 0.0001$).

Table 1 provides the percentage of patients tested for chlamydia and/or gonorrhoea, for syphilis, and who had their HIV status addressed, as stratified by reported sexual contact with someone known to have an STD and by the results of their chlamydia and/or gonorrhoea test results. As shown in logistic regression analyses (Table 2), patients who reported a chlamydia exposure were more likely to have their HIV status addressed than those who did not report an STD sexual contact. However, all other patients with a known STD exposure were not more likely to be tested for chlamydia/gonorrhoea and syphilis or have their HIV status addressed. Presence of laboratory-confirmed chlamydia and/or gonorrhoea infection was not associated with greater odds of syphilis testing or having HIV status addressed.

Chlamydia and gonorrhoea empiric treatment

Of all 968 patients with possible chlamydia and/or gonorrhoea urethritis, 91% (89–93%) were prescribed at least one of the CDC-recommended or alternative antibiotics for empiric treatment of chlamydia or gonorrhoea. Of those prescribed at least one of the CDC recommended or alternative antibiotics, 89% (87–91%) were prescribed a CDC-recommended or alternative two-drug regimen for empiric treatment for both chlamydia and gonorrhoea, while 11% (9–13%) were prescribed only one of the recommended or alternative medications. Of all patients receiving empiric treatment, 97% (96–98%) were treated in the ED and 3% (2–4%) were not treated in the ED

Table 1 **Testing, empiric treatment and referrals for further evaluation by STD contact history and testing results**

		Testing			CDC-recommended empiric treatment			
	No.	Chlamydia and/or gonorrhoea* (%)	HIV status addressed (%)	Syphilis (%)	Chlamydia (%)	Gonorrhoea (%)	Both (%)	Patient referred for further evaluation (%)
All patients	*968*	87	16	27	87	86	81	71
Known STD sexual contact†								
Known chlamydia sexual contact	88	78	23	23	93	77	74	65
Known gonorrhoea sexual contact	22	96	27	36	86	100	86	68
STD sexual contact, but type unknown	135	82	18	27	76	74	71	70
No reported/no recorded STD sexual contact	721	85	14	27	88	89	84	72
Final laboratory testing results								
Chlamydia infected	116	NA	16	26	91	90	84	66
Gonorrhoea infected	103	NA	23	29	95	98	93	69
Chlamydia and gonorrhoea infected	27	NA	11	26	93	96	89	63
No chlamydia or gonorrhoea infection	618	NA	16	30	87	86	82	74
Not tested for chlamydia or gonorrhoea	104	NA	11	4	73	72	63	64

STD = sexually transmitted disease; CDC = Centers for Disease Control and Prevention; NA = not available
*Testing for chlamydia, gonorrhoea or both infections
†Excludes two patients whose STD contact had chlamydia and gonorrhoea. Both were tested for chlamydia and gonorrhoea, one was referred for HIV testing but neither was tested for syphilis

with a CDC-recommended or alternative regimen but were given a prescription.

Table 1 indicates the percentage of patients empirically treated with a CDC-recommended or alternative antibiotic for chlamydia, gonorrhoea, or both infections by their STD sexual contact history and final chlamydia and/or gonorrhoea laboratory test results. As shown in the logistic regression analysis (Table 2), empiric treatment for both chlamydia and

Table 2 **Logistic regression analysis of testing, empiric treatment and referral for further evaluation**

	Testing			CDC-recommended empiric treatment			Patient referred for further evaluation
n = 968	Chlamydia and gonorrhoea* OR (95% CI)	HIV status addressed OR (95% CI)	Syphilis OR (95% CI)	Chlamydia OR (95% CI)	Gonorrhoea OR (95% CI)	Both OR (95% CI)	OR (95% CI)
Known STD sexual contact†							
Known chlamydia sexual contact	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Known gonorrhoea sexual contact	0.7 (0.4–1.1)	1.8 (1.1–3.1)	0.8 (0.5–1.3)	1.9 (0.8–4.5)	0.4 (0.2–0.7)	0.5 (0.3–0.9)	0.7 (0.5–1.1)
STD sexual contact, but type unknown	3.8 (0.5–28.7)	2.3 (0.9–6.0)	1.5 (0.6–3.7)	0.9 (0.3–3.0)	∞	1.2 (0.4–4.2)	0.8 (0.3–2.1)
No reported/no recorded STD sexual contact	0.8 (0.5–1.4)	1.3 (0.8–2.2)	1.0 (0.7–1.5)	0.5 (0.3–0.7)	0.3 (0.2–0.5)	0.5 (0.3–0.7)	0.9 (0.6–1.3)
Final laboratory testing results							
No chlamydia or gonorrhoea infection	NA	Ref	Ref	Ref	Ref	Ref	Ref
Not tested for chlamydia/ gonorrhoea	NA	0.6 (0.3–1.3)	0.1 (0.03–0.3)	0.4 (0.3–0.7)	0.4 (0.3–0.7)	0.4 (0.2–0.6)	0.6 (0.4–1.0)
Chlamydia infected	NA	1.0 (0.6–1.7)	0.8 (0.5–1.2)	1.5 (0.8–2.9)	1.4 (0.8–2.7)	1.1 (0.7–2.0)	0.7 (0.4–1.0)
Gonorrhoea infected	NA	1.6 (1.0–2.7)	0.9 (0.6–1.5)	3.0 (1.2–7.7)	8.4 (2.0–34.6)	3.1 (1.4–6.9)	0.8 (0.5–1.2)
Chlamydia and gonorrhoea infected	NA	0.7 (0.2–2.3)	0.8 (0.3–1.9)	1.9 (0.5–8.3)	4.3 (0.6–32.2)	1.8 (0.5–6.1)	0.6 (0.3–1.3)

STD = sexually transmitted disease; OR = odds ratio; CI = confidence interval; NA = not applicable
*Outcome modelled was testing for both chlamydia and gonorrhoea versus testing for one of or neither of these organisms
†Excludes two patients whose STD contact had chlamydia and gonorrhoea. Both were tested for chlamydia and gonorrhoea, one was referred for HIV testing but neither was tested for syphilis

gonorrhoea was greater for those without a reported STD contact than those with a chlamydia or other STD sexual contact. Patients with laboratory-confirmed gonorrhoea were more likely to receive empiric treatment, but those with chlamydia or with both chlamydia and gonorrhoea were not more likely to be treated than those without an infection. Those not tested for chlamydia/gonorrhoea had greater odds of being empirically treated than those not infected with but were tested for these organisms.

Referrals for further evaluation

Of the 968 patients with possible chlamydia and/or gonorrhoea urethritis, 30% (27–32%) were referred for further evaluation to a primary care clinic; 23% (20–26%) to the state STD clinic, 12% (10–14%) to their primary care clinician and 7% (5–9%) to the hospital urology clinic. Twenty-nine percent (26–32%) were not referred for further evaluation. Table 1 reveals the proportion of patients referred for further evaluation by their STD sexual contact history and final chlamydia and/or gonorrhoea laboratory results. As demonstrated in the logistic regression analysis (Table 2), there was no association between referral for further evaluation and reported STD sexual contact or presence of a laboratory-confirmed infection.

DISCUSSION

The findings of this study demonstrate a need for improvement in the evaluation and management of adult male patients diagnosed in the ED with possible chlamydia and/or gonorrhoea urethritis. Compliance with CDC recommendations regarding testing for chlamydia and gonorrhoea was high; however, 16% of patients did not undergo CDC-recommended testing for both these organisms. Although the reasons for non-compliance with CDC recommendations could not be evaluated in this study, it is possible that ED clinicians were unaware of CDC recommendations and rationale for testing for both organisms despite empiric treatment. In contrast, compliance with CDC recommendations regarding HIV testing was quite poor. Fewer than 16% of these patients were tested, asked about recent testing or referred for HIV testing. Of concern, HIV testing was not greater for those ultimately confirmed to have a chlamydia and/or gonorrhoea infection. Traditional barriers to HIV testing, such as requirements to obtain written informed consent, staff needed to provide education and counselling, and time needed to perform and obtain results for standard/conventional HIV testing, might be overcome with the recent CDC recommendations on how to streamline HIV testing[8] and the greater availability of rapid HIV testing. Educational campaigns to ED clinicians might help improve compliance with testing for chlamydia, gonorrhoea and HIV.

In the absence of specific CDC recommendations regarding routine syphilis testing for patients with possible chlamydia/gonorrhoea urethritis, the proportion of patients tested for syphilis was low. Nevertheless, the proportion tested for syphilis was 1.7-fold greater than the proportion who had their HIV status addressed. Given that 3% of patients tested for syphilis had a positive test, the yield for syphilis testing might in fact be high enough to recommend routine syphilis testing for male patients presenting to EDs with possible chlamydia and/or gonorrhoea urethritis. Previous researchers have also noted relatively high proportions of ED patients with undiagnosed syphilis infections.[9–15] CDC and other researchers should investigate whether routine screening for syphilis in EDs among male patients with suspected STDs should be recommended.

The vast majority of male ED patients with possible chlamydia and/or gonorrhoea urethritis were empirically treated for these organisms, even though only 29% of those tested ultimately showed laboratory evidence of one or both of these infections. Compliance with CDC-recommended regimens was high; however, some patients did not receive CDC-recommended adequate antibiotic coverage for both infections. It cannot be known from these data why the ED clinicians began empiric treatment for such a high percentage of patients. By CDC guidelines, empiric treatment should be considered when the prevalence of infection in the community is high, compliance with treatment is not assured and after exposures to known or suspected chlamydia and/or gonorrhoea-infected sources.[2,3] Because most of the cases did not involve exposures to known infected individuals and empiric treatment was not consistently associated with sexual contact status, then presumably ED clinicians were concerned about treatment compliance since the prevalence of these infections in the community was not known. Better methods of determining which patients should receive empiric antibiotics in the ED are needed to more effectively and efficiently target antibiotic usage for those in whom treatment is ultimately necessary.

CDC STD guidelines do not mandate referral for further evaluation for adult male patients with possible chlamydia and/or gonorrhoea urethritis, except in situations when re-testing is recommended.[2,3] In the absence of this standard, it is clear that not all patients are encouraged to seek follow-up. As a result, 29% of patients did not have an opportunity to receive their final test results, be tested for HIV, undergo STD risk reduction counselling, get vaccinated for hepatitis or receive related treatments. Further, patients at highest risk or with a confirmed infection were not more likely to be instructed to seek further evaluation than other patients. In future guidelines, CDC should specifically instruct ED clinicians to ensure referral for further evaluation of patients with possible chlamydia and/or gonorrhoea urethritis so they can receive these services.

Limitations

There are a number of limitations in our study. First, although we had a large sample size, our data involved a single ED that may not be representative of practices in other EDs nationwide. In addition, we included only men and therefore the usage of testing, treatment and referral of women at our site is not known. Second, the ICD-9 code search might not have identified all patients with a visit for a possible infection. Third, our study was retrospective and involved a medical record review. As such, not all medical records included complete data and ED clinicians might not have recorded all elements of the patient encounter, particularly STD, sexual contact history. The true frequency by which HIV testing was addressed and patients were referred for further evaluation was probably underestimated. Fourth, the incubation period of these infections might be longer than the time elapsed from sexual exposure to ED presentation. As a result, the prevalence of these infections might have been underestimated.

CONCLUSIONS

Compliance with CDC recommendations for testing for chlamydia and gonorrhoea was good, although not optimal, but compliance with HIV testing recommendations was quite poor. Testing for syphilis testing, although not recommended by CDC, exceeded HIV testing and had a 3% yield of positive test results. The vast majority of patients were empirically treated for chlamydia and/or gonorrhoea, even though only 29% of those tested were infected with either or both of these organisms. Testing and treatment did not appear to be greater for those presumably at higher risk of infection and those ultimately confirmed to have these infections. Additional direction from the CDC regarding syphilis testing and appropriate referrals for male patients with possible chlamydia and/or gonorrhoea urethritis is needed.

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