Rapid Screening and Treatment for Sexually Transmitted Diseases in Arrestees: A Feasible Control Measure


Introduction

In 1992, 60% of the men and 52% of the women arrested in metropolitan New Orleans tested positive for drug use.1 Of all drugs detected, cocaine was most prevalent in both men (49%) and women (44%). Because drug use is a risk factor for sexually transmitted diseases,23 people charged with criminal offenses are at high risk for these diseases.4±6 Arrestees also are likely to have inadequate access to health care services.7 The National Commission on Correctional Health Care recommends screening arrestees for sexually transmitted diseases within 14 days of incarceration; however, most are released within a few days after booking.

Screening for syphilis with the rapid plasma reagin test takes 15 to 20 minutes and is useful in jail settings.9 The urine leukocyte esterase test is a rapid, noninvasive screening test used in men as a marker for infections such as chlamydia or gonorrhea.10 The sensitivity and specificity rates of the leukocyte esterase test in asymptomatic men are 31% to 100% and 83% to 97%, respectively.11±15 We examined the feasibility of instituting these screening tests at the time of booking and providing immediate treatment as a means of sexually transmitted disease control among arrestees brought to a county jail.

Methods

The Jefferson Parish Correctional Center is one of two major jails serving the metropolitan New Orleans area. A program of screening and treatment for sexually transmitted diseases among newly arrested persons was established on March 15, 1993. This study included data collected from interviews and testing of arrestees. Arrestees brought to this jail are held in an intake/booking area for up to 72 hours, after which they are incarcerated, released, or transferred to another facility. Between 7 AM and 2 PM Monday through Friday, we attempted to interview all persons booked and offer them testing and treatment for syphilis and (for male arrestees) urethritis. Those consenting to an interview and at least one screening test were included in the study. Arrestees booked more than once were included in the study on each visit.

Questions asked of participants concerned previous sexually transmitted diseases, current sexually transmitted disease symptoms, condom use at last sexual encounter, number of different sex partners in the prior 30 days, and cocaine use. Participants were screened for syphilis with a qualitative rapid plasma reagin test; confirmatory testing was performed on positive samples with venereal disease research laboratory tests and tests assessing microhemaglutination for Treponema pallidum. Participants with positive rapid plasma reagin tests and no history of previous treatment for syphilis were treated...
with benzathine penicillin; persons allergic to penicillin were given tetracycline. Those who reported previous treatment for syphilis were not given antibiotics pending confirmatory test results and searches of the state syphilis registry.

An arrestee was considered to have untreated syphilis if she or he had all of the following: (1) a positive rapid plasma reagin test, (2) a positive microhemagglutination test, (3) a venereal disease research laboratory titer of at least 1:1, and (4) a venereal disease research laboratory titer at least fourfold higher than any available previous titer (or, if a result was not in the file but the arrestee reported a history of syphilis, a titer of at least 1:4).

Unspun first-void urine specimens from male arrestees were analyzed with the leukocyte esterase test (Multistik 10SG, Ames Division, Miles Laboratories, Elkhart, Ind.). Results were read by visual inspection of the manufacturer’s color scale 2 minutes after sampling. Male arrestees with a test result at the trace, 1+, 2+, or 3+ level were considered to be infected with Chlamydia trachomatis or Neisseria gonorrhoeae, and they were immediately given a 400-mg tablet of cefixime and begun on a 7-day course of 100-mg tablets of doxycycline to be taken twice daily. Throughout the study, urethral samples were taken from male participants with positive leukocyte esterase test results and analyzed with the DNA probe test (Gen-Probe PACE 2) to confirm infection with C trachomatis or N gonorrhoeae. During one 2-week period in April 1993, male participants were screened with the leukocyte esterase test and the DNA probe test to assess the sensitivity, specificity, and positive predictive value of the former.

To assess representativeness, we collected demographic information on all persons arrested during November 1993, including those booked and released on weekdays between 2 PM and 7 AM and on weekends.

As a means of characterizing access to health care, arrestees who entered the screening and treatment program from September 19 to October 31, 1994, were asked to complete a brief questionnaire about their health insurance and the availability of health care providers.

Epi Info software (Centers for Disease Control and Prevention, Atlanta, Ga.) was used for analysis of all data. Risk ratios and Taylor series confidence limits were used to assess predictors of syphilis and urethritis.

Results

From March to November 1993, 5495 arrestees participated in the study, and 644 (12%) entered the study on two or more occasions. During November 1993, there were 633 participants and 955 nonparticipants. Nonparticipants and participants were equally likely to be male (82% vs 78%; P = .08), and they were of approximately the same mean age (30.2 vs 30.5 years); however, participants were more likely to be Black (68% vs 57%; P < .0001).

As just indicated, the mean age of the 5495 participants was 30 years (range = 13 to 76 years); 175 (3%) reported currently having symptoms of a sexually transmitted disease. Table 1 shows other characteristics of the arrestees in this study. Twenty-one female arrestees were identified, either by self-report or by booking charge, as practicing prostitution.

Of the 5495 participants, 4757 (87%) were tested for syphilis. Reasons for no or incomplete testing included refusal by the arrestee (n = 600), security and logistical problems in the jail (n = 127), and hemolysis of the blood sample (n = 11). In comparison with arrestees not tested for syphilis (n = 738), those tested were more likely to be male, more likely to report a previous sexually transmitted disease, and more likely to report at least two sex partners (P < .0001). Of these 4757 participants, 313 (7%) had a positive rapid plasma reagin test result. After history of prior treatment had been considered, a record search had been performed, and confirmatory test results had been obtained, untreated syphilis was diagnosed in 82 (1.7%) of the 4757 persons tested. Relative to male participants with a negative leukocyte esterase test result, male participants with a positive result were more likely to have untreated syphilis (2.9% vs 1.3%; risk ratio [RR] = 2.3, P = .008). Of the 82 persons with a new case of syphilis, 48 (59%) were treated before leaving the jail.

Of 4597 male arrestees, 4174 (91%) were tested for urethritis via the leukocyte esterase test. Reasons for no or incomplete urine testing included refusal by the arrestee (n = 103) and security and logistical problems in the jail (n = 320). In comparison with the male participants not tested (n = 423), those tested were more likely to report at least two sex partners (P < .05). Leukocyte esterase test results were positive (trace level or higher) for 541 (13%) male arrestees. Male participants with symptoms of urethritis were more likely than those without symptoms to have a positive leukocyte esterase test result (57% vs 12%; RR = 4.9, P < .0001); however, 88% of male participants with a positive result reported no symptoms of urethritis.

Leukocyte esterase test and DNA probe test results were available for 124 asymptomatic male arrestees screened during a 2-week period in April 1993. The prevalence of C trachomatis or N gonorrhoeae, according to DNA probe, was 6% (7/124). The leukocyte esterase test had a sensitivity of 57% (4/7), a specificity of 85% (99/117), and a positive predictive value of 18% (4/22).

Of the 300 arrestees completing the questionnaire on access to health care, 193 (64%) had no medical insurance, 30 (10%) were on Medicaid, 53 (18%) had private insurance, and 24 (8%) did not know what type of insurance they had; 181 (60%) had seen a health care provider in the past year, and 75 (25%) had seen one in the last month. The hospital emergency room was the last visited health care provider for 109 (36%) arrestees. In this group, the 32 arrestees who had either syphilis or urethritis were nearly twice as likely as uninfected arrestees to have used a hospital emergency room at their last medical visit (56% vs 34%; RR = 1.7, P = .02).

Discussion

This program demonstrates that rapid screening and treatment of arrestees can be institutionalized in a county jail. The data show that arrestees are a population at high risk for sexually transmitted diseases and in need of such screening and treatment programs. Because improved sexually transmitted disease control reduces HIV infection rates, increased availability of screening and treatment in jails is likely to decrease the burden of HIV and other sexually transmitted diseases in the community. In addition, improvements in timeliness of treatment are needed and should be coordinated with security issues to ensure that all infected individuals are treated prior to release.

Although many variables were associated with either syphilis or a positive leukocyte esterase test result, screening women for syphilis was particularly worthwhile. First, female syphilis rates were higher than male rates. Second, several of the female participants were identified as...
practicing prostitution, making them more likely to sustain transmission of syphilis and other sexually transmitted diseases in the community. Finally, screening and treating women who are pregnant or who may become pregnant should help prevent congenital syphilis. In the future, technological advances in urine testing (e.g., ligase chain techniques) may allow rapid screening and treatment for chlamydia and gonorrhea in women.17,18

In this study, the leukocyte esterase test had a sensitivity of 57%, which indicates that almost half of all chlamydia and gonorrhea infections in these arrestees were not detected. Although we did not use cell culture as the reference test, the sensitivity and specificity rates of the leukocyte esterase test revealed in this study are comparable to those reported elsewhere.11-15

Only 18% of the positive leukocyte esterase test results were confirmed as C. trachomatis or N. gonorrhoeae by the DNA probe test, probably in part because about half of all nongonococcal urethritis is caused by organisms other than C. trachomatis.19 A positive leukocyte esterase test result may also reflect causes other than sexually transmitted diseases, particularly in older men. Nevertheless, many arrestees are likely to be given antibiotics in the absence of infection.

Although the leukocyte esterase test is less accurate than the DNA probe or cell culture,20-22 we believe, as do others,14,23 that empirical treatment in asymptomatic at-risk persons should be considered on the basis of results of this test alone when follow-up evaluation and confirmatory testing are not practical. Other urine-based tests (e.g., enzyme immunoassays24 and polymerase chain reaction techniques25) may also be useful in jail settings.
Several arrestees in this study did not have medical insurance, and, among those with sexually transmitted diseases, many had used hospital emergency rooms at their last medical visit, which may indicate that they do not use traditional health care sites for screening and other preventive services. Thus, the program is probably reaching persons who have sexually transmitted diseases and would otherwise remain untreated.

Given the large number of individuals who are brought into the criminal justice system, shortfalls in public health care budgets, and difficulties in attracting high-risk individuals to traditional health care sites, rapid screening and treatment programs in jail settings are feasible and should be considered in areas with high sexually transmitted disease rates.

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References