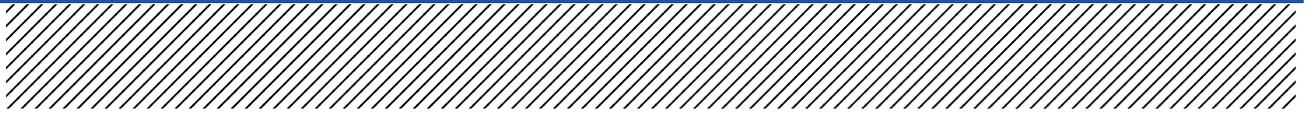


# Poster Abstracts





## “Getting Burned” and Getting Care: Observations of High-Risk Youth Concerning STD Health Seeking Behavior

**S Koester and C Christiansen, Urban Links; S Bull and C Reitmeijer, Denver Public Health, Denver, CO**

**Background and Rationale:** Designing interventions for high risk adolescents requires a better understanding of sexual networks and social support networks, as well as adolescents’ views on STDs and access to health care.

**Objectives:** To learn about the social context of health care seeking and STD prevention among inner-city youth; to determine from whom youth obtain information about STDs; and to understand circumstances in which youth would seek care.

**Methods:** Open-ended qualitative interviews with inner-city youth focused on sexual/social networks and health care seeking behavior.

**Results:** 18 interviews (24 target) have been completed. To date, participants include: 12 females and 6 males; 9 African American, 4 Latino, 2 Native American and 3 White participants. Ages ranged from 15 to 24. 5 of those interviewed had history of an STD.

**Predominant themes:** Although youth were favorable toward peer STD education models, they reported that if they suspected an STD they would primarily seek the advice of an adult family member.

(1) Avoiding pregnancy was of equal or more importance than STD prevention, suggesting that combining these messages may increase their effectiveness.

(2) Taking precautions to avoid an STD or revealing they had an STD was dependent upon the nature of their relationship with a sex partner.

(3) Both males and females placed the responsibility for becoming infected with an STD on their sex partner.

**Conclusions:** Interviews elicited information-nation pertinent to STD intervention design. Youth preferred talking with an adult family member if they suspected they had contracted an STD. Avoiding pregnancy appears a highly significant motivation for engaging in protective sex. The nature of a sexual relationship was significant in decisions to use protection or to reveal one’s STD status.

## Behavior Change through Teen-led Street Outreach, Springfield, MA 1994-1997.

**S Hubbard and the Springfield Adolescent Health STD Project, Springfield Community Health Network Area; N Bums, Brightwood Health Center, Springfield, MA; T Glynn, Springfield Health Department; M Whelan and P Etkind, MA. Department of Public Health; d Buchanan, UMASS School of Public Health.**

**Background and Rationale:** The IOM report stresses the need to develop preventive interventions and health promotion programs for adolescents and disenfranchised communities. The minority youth of Springfield have the highest rates of STD in Massachusetts.

**Objectives:** To foster a teen-developed and teen-led outreach and education intervention to promote risk-reducing behaviors among the teens.

**Methods:** Using a variety of educational modalities and questionnaires they developed, teens aimed their outreach activities at three groups: Teens, to teach about STDs, risks and clinical services; clinicians, to teach them how to improve their interactions and credibility with teens; and parents, to teach them how to improve communications with teens regarding sex, sexuality, and STDs.

**Results:** The impact of this project has been measures in three ways to date. Health seeking behaviors of teens has increased dramatically at the Brightwood Health Center. Brightwood’s STD clinic sees approximately 2,500 visits/year. This denominator hasn’t changed, yet visits from teens increased from 60 in 1994 (pre-project) to 457 (18.5% of all visits) in 1997 (peak of 650 in 1996). Rates per 100,000 population of STD among 15-19 year olds have changed in Springfield since 1994 62% (syphilis), +153% (gc) and +157% (ct) compared to - 57%, -14%, and -15% statewide. Interviews with the Health Center’s clinicians have shown an increase in their ease in working with teens.

**Conclusions:** An outreach project marked by collaboration between local community groups, state and local health authorities, and a School of Public health, and owned/directed by the population at greatest risk, has shown a dramatic increase in health-seeking behaviors, and improvements in health care delivery in a very high risk community, and serves as a model for replication.

## An Evaluation of Adolescent Knowledge of Sexually Transmitted Infections (STDs)

**L Clark, M Jackson, L Taylor; The Children's Hospital of Philadelphia, University of Pennsylvania School of Medicine, University of Pennsylvania Center of Excellence on Minority Health, Philadelphia, PA**

**Background and Rationale:** The Guidelines for Comprehensive Sexuality Education published by the Sexuality Information Council of the United States (SIECUS) recommends that sexual health instruction include education about sexually transmitted diseases (STDs).

**Objectives:** To assess basic adolescent knowledge about STDs. To determine the correlates of high STD knowledge in adolescents.

**Methods:** Adolescents found in waiting areas in a children's hospital were approached by trained peer interviewers and asked to participate in a short (< 5 minute) STD knowledge assessment. The adolescent did not have to be a patient in order to participate in the study. Questions asked included: demographic information, past education about STDs, what are the 8 major STDs, Which STDs are curable, which STDs are incurable, and which STD they believed was most prevalent in both adults and teens in the Philadelphia area.

**Results:** On average, the 409 teen participants named 3.58  $\pm$  1.81 [range -1 to 8] STDs. The mean incurable STD score was 1.27  $\pm$  1.07 [range -2 to 4]; mean curable STD score was 1.48  $\pm$  1.39 [range -3 to 4]. The frequency of STDs listed among the 8 major STDs were: HIV (90.6%), Gonorrhea (77.2%), Syphilis (66%), HSV (58.3%), Chlamydia (54.4%), HPV (21%), Trichomonas (22.3%), and HBV (14.4%). Self-perception of STD knowledge was positively correlated with STD knowledge scores. No correlation was found between gender, race, insurance type, prior Children's Hospital use and STD knowledge scores. STD knowledge scores were only slightly correlated with increasing age. The STD believed to be most prevalent in adults and teens in the Philadelphia area was HIV infection (46%).

**Conclusions:** Although adolescents receive education about STDs from many sources, generally their knowledge is only cursory. The emphasis placed on HIV prevention seems to have fostered a belief in teens that HIV is the most prevalent infection in Philadelphia. We must attempt to improve the education teens receive about the STDs for which they are at highest risk.

## "From Clinic to Community: Using Sexual Health Technology to Reach High-Risk Youth"

**M Krempasky, D Coleman, and K Dorian, Columbus Health Department, Columbus, OH**

**Background and Rationale:** Reaching youth at high risk for STDs is a major sexual health priority. Youth in juvenile detention centers (JDC) report a high level of sexual activity and do not routinely seek STD services. Recent advances in non-invasive STD testing have made it possible to expand our outreach in non-medical settings to include ligase chain reaction (LCR) testing of urine for chlamydia and gonorrhea.

**Objectives:** To establish a community-based pilot program for STD screening of JDC using urine LCR testing; To determine the need for continuing services based upon youth acceptance, positivity rates, ability to treat and offer partner follow-up.

**Methods:** In late 1997, the Columbus Health Department Sexual Health Team began offering JDC on-site STD services through a collaboration with the Franklin County Correctional System. Client-specific sexual health information and non-invasive LCR testing is provided in a nonthreatening, one-to-one manner with the youth. The team returns in one week to provide additional information, results, and treatment (single oral dose of Azithromycin), as necessary.

**Results:** Of 207 adolescents tested, 41 (20%) were positive for chlamydia or gonorrhea or both. A prevalence of chlamydia or gonorrhea or both was 18% in males, 26% in females, 19% in both blacks and whites, and 30% in the 15-16 age group. Of the youth testing positive, 70% reported no symptoms. LCR testing and single dose treatment was readily accepted by this population.

**Conclusions:** JDC youth have been very receptive to STD information, non-invasive LCR testing, and single dose treatment. The data confirm a high STD incidence in the adolescent JDC population despite the availability of on-site traditional STD medical services. Continued and expanded collaboration is warranted with all organizations serving sexually active youth, many of whom are likely asymptomatic, to provide accessible sexual health education and noninvasive screening.

## "PROM KIS - A High-School-Based Program to Promote Healthful Decision-Making on Prom Night"

**J Whetsel, M Headlee, K Koechlin, and J Finley, Columbus Health Department Sexual Health Program, Columbus, Ohio**

**Background and Rationale:** The Centers for Disease Control and Prevention states that although HIV prevention information has been widely disseminated in U.S. schools, improvement is needed. A unique and informative strategy provided a community agency the opportunity to implement a comprehensive sexual health program for adolescents in a high school, a setting ordinarily resistant to such programs.

**Objectives:** To provide information on HIV and STDs to students and faculty; To conduct activities that build self-esteem and also communication between students, teachers, and parents; To conduct activities that help students learn the life skills necessary to prevent HIV/STD transmission; To provide students and faculty with community resources.

**Method:** Two urban high schools were selected by willingness to participate. A survey was administered to both during the week before prom. School A participated in the Prom Keep It Safe (KIS) Program: a three-part intervention that included information about HIV/STDs, skills for refusing or delaying unsafe behavior, and disease prevention methods. School B received no intervention. Both schools completed a post-prom survey.

**Results:** The program is being evaluated. The authors will provide (1) a summary of data collected in the surveys; (2) comparison of the pre- and post-prom surveys between schools; (3) overview of steps taken to implement a school-based program by a community agency; and (4) recommendations for future programming.

**Conclusion:** Collaboration between community agencies and public schools is both possible and beneficial.

## Youth United Through Health Education (The YUTHE Project): A Community-Based Peer-Led STD Prevention Program

**J Ellen, Division of Adolescent Medicine, Department of Pediatrics, University of California, San Francisco, J McCright and E. Davis, STD Prevention and Control Program, San Francisco Department of Public Health**

**Objectives and Rationale:** The YUTHE program is a one and half year old peer-led community-based program focused on reducing the incidence of HIV and STDs among African American adolescents in the Bayview-Hunters Point section of San Francisco. The objectives of this program are (1) to encourage adolescents to seek comprehensive STD/HIV services (e.g., testing and early treatment); (2) to insure that the referral sites delivery high quality confidential comprehensive adolescent health care including urine-based STD testing; and (3) to reduce the prevalence of STDs and HIV among the so-called "core populations" (e.g., drug dealers and their clients) in the target adolescents' community.

**Methods:** The target population is African American adolescents, 14-19 years old, who reside in the Bayview-Hunters Point section of San Francisco. The program involves peer street outreach, a small media/social marketing campaign, and community mobilization. The program also conducts repeated street-based STD testing of "core populations."

**Results:** To date the program has conducted a community-based telephone survey assessing the health needs of the community; established community and youth advisory boards; developed several role model stories illustrating the importance of STD testing; conducted street-based outreach during which educational messages, condoms, bleach, and role model stories were distributed, and referrals to local STD health care services were made; and organized a community event intended to mobilize the committee around the need for STD testing. The program has just begun to evaluate the effects of the outreach encounters on utilization of STD health care services. In addition, the program has established a regular monthly street-based STD testing program targeted at drug dealers and their clients.

**Conclusion:** To the extent that this program is demonstrated to be cost-effective, it represents an innovative approach to STD control and prevention that it is based on the latest in prevention sciences, does not create a new infrastructure, and uses a comprehensive approach to STD and HIV prevention.

## The Psychosocial and Service Needs of STD Clinic Patients

**MC Burke, P Etkind and W Dumas, MA Department of Public Health, Division of STD Prevention G Baral, Boston University School of Social Work**

**Background and Rationale:** Emergence of new and more effective behavioral interventions requires that we assess the potential for integration of such interventions into the STD clinic setting. Development of appropriate and effective interventions must be based on assessment of the psychosocial and service needs of the clients as well as on the program capability.

**Objectives:** Assess psychosocial service needs and interests of STD clinic clients. Identify target group for delivery of service.

**Methods:** Interview with clinic and field staff and clients at six clinics. Incentives to clients for completion of interview. Graduate student in Social Work assisted in design psychosocial needs assessment, conducted interviews, evaluated results. Pilot study, sample of 50, completed spring 1998. Instrument to be evaluated/revised, additional surveys fall of 1998.

**Results:** Clinic and STD Division field staff felt women had acute need for counseling. 75% of clients expressed interest in longer term (3-5 visit) one-on-one counseling, preferably on-site, however referrals were also acceptable. Smaller number expressed interest in group counseling or educational interventions. Majority (72%) clients interested in counseling were women. Of these women, most (63%) previously received counseling, and 41% stated counseling had been useful. However only 28% felt it had been useful in changing sexual or drug use behavior. Women interested in counseling reported a high incidence of sexual abuse and partner violence. Clients described emotions contributing to and resulting from STD exposure.

**Conclusion:** Initial results indicate strong need and interest for expanded counseling and other psychosocial interventions, particularly among women who have a history of sexual abuse and partner violence. Clients indicated counseling would help address emotional needs and help develop skills to manage their sexual health.

## Acceptance of Street-Intercept Syphilis testing by Members of a High-Prevalence Community

**J Baseman, MW Ross, L Leonard, University of Texas, School of Public Health, Houston**

**Background & Rationale:** To eliminate syphilis, screening must increase in communities that have a high prevalence of disease. Despite the decrease in primary and secondary (P&S) syphilis cases in Houston, TX, over the last 6 years, the incidence of late latent syphilis has remained stable. This suggests that the majority of P&S syphilis cases was missed during the peak of the epidemic. Only an estimated 10% of new cases were identified during the P&S stage of infection. Although data from a behavioral survey conducted in two Houston zip code areas in 1996 revealed that people believe syphilis to be a problem, feel that getting tested is important, and know where to obtain testing services, few community members intended to get screened within a month of being surveyed.

**Objectives:** To measure the prevalence of acceptance of street-intercept syphilis screening tests; to identify reasons for refusal of screening tests; and to establish upon what demographic, knowledge-based, and behavioral variables acceptors and refusers differ.

**Methods:** 800 individuals in 2 Houston communities defined by zip code were invited to give blood samples for syphilis screening tests as part of a street-intercept behavioral survey conducted by an outreach worker in various localities within the zip code area.

**Results:** Reports will include the prevalence of acceptance of syphilis screening tests, identification of principal reasons for refusal, and differentiation between acceptors and refusers of screening on various independent variables.

**Conclusions:** These data will elucidate barriers to syphilis screening, will be used to evaluate the potential benefits of street-based screening, and will help describe the perception of screening by those who are less likely to be screened at usual testing sites such as STD clinics.

## Determinants of HIV Transmission in High-Risk Women: The Partner Selection Criteria Study

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Houston Department of Health & Human Services

**Background and Rationale:** Women represent 13% of all reported AIDS cases nationwide, and are experiencing a more rapid increase in AIDS incidence than males. From 1992-1994, the most frequent mode of transmission for females was heterosexual, followed by injection drug use (IDU). Twenty five percent of all reported female AIDS cases fell under the “No Identifiable Risk” (NIR) category during this time. The CDC only accepts “heterosexual” as a mode of transmission if the woman’s sex partner is a member of a risk group. Therefore, a much of the NIR group actually falls into the heterosexual transmission category.

**Objectives:** 1) To describe and quantify circumstances under which a high risk woman selects a specific partner and characteristics of the selected partner; 2) describe and quantify the process of decision making of “safe sex practices” [or the absence thereof]; 3) identify individual characteristics of the woman and her HIV status.

**Conclusion:** Women attending STD clinics were often aware of the risks for HIV transmission but this knowledge did not correlate to direct reduction of risky behavior. If a woman felt that consistent condom use was important she was likely to practice consistent condom use, to provide condoms and to refuse sex if her partner failed to use a condom. Women were likely to engage in unprotected sex even knowing that their partner’s life style was associated with HIV/STD. Reducing risky behavior is a factor of knowledge and the cognitive recognition that engaging in risky behavior could have negative health implications. A woman who is cognitively aware that HIV infection is likely to occur to her by participating in certain behaviors is more likely to practice consistent condom use.

## Independent Variables Associated with A Self-Perceived Risk for HIV by Persons Attending an STD Clinic

**MT Hernandez, CK Kent, and WP Gibson, STD**  
Prevention and Control, San Francisco Department of Public Health

**Background and Rationale:** People’s perception of their risk for HIV has been identified as an important belief supporting their adoption of risk-reduction behaviors. The factors influencing the perception of risk have not been well documented.

**Objectives:** To analyze the interaction between different demographic, behavioral, and attitudinal variables with the perception of no HIV risk.

**Methods:** Patients attending the San Francisco City Clinic were asked to fill out the 96 Knowledge, Attitudes, Beliefs, and Behaviors (KABB). The measured outcome was no perceived risk for HIV. Multivariate analysis (logistic regression) was used to build the model.

**Results:** The predictors of patients’ lack of perception of their risk for HIV in the heterosexual population (n=902) were a history of fewer STDs (OR 4.17, CI 1.82 to 9.59), no alcohol use at last intercourse (OR 2.21, CI 1.42 to 3.46), birth outside the US (OR 1.92, CI 1.33 to 2.78), belief that main partner was not having sex with someone else (OR 1.82, CI 1.31 to 2.53), annual income less than \$10,000 (OR 1.73, CI 1.23 to 2.38), belief that partners were not likely to be HIV infected (OR 1.72, CI 1.09 to 2.71). The two predictors of no perception of risk by homosexual males were the belief that the main partner was not having sex with someone else (OR 2.65, CI 1.34 to 5.24), and the belief that the partners were not likely to be HIV infected (OR 2.21 CI 1.18 to 4.14).

**Conclusions:** Heterosexuals’ perception of no risk is associated with low-risk behavior, the belief in their having no-risk partners, income, and country of birth. Homosexuals’ perception of zero risk was associated only with a belief in having no-risk partners.

## Chlamydia Screening Criteria: Evaluation of Options

**L Webster-Dicker, DM Mosure, WC Levine, Centers for Disease Control and Prevention, Atlanta, GA and Regional Infertility Prevention Programs**

**Background and Rationale:** Genital Chlamydia trachomatis infection is the most prevalent bacterial STD in the U.S. Screening women for chlamydia is a critical component of prevention programs since many infections are persistent and asymptomatic. In 1993, CDC suggested guidelines for screening that included testing all women < age 20 years or who have clinical findings suggestive of chlamydia or have multiple or new sex partners. CDC further suggested that local screening sites develop their own criteria.

**Objectives:** To evaluate and compare screening criteria for chlamydia infection currently being used, and to assess the performance of standard criteria in different geographic areas.

**Methods:** We assessed the sensitivity of regional criteria and the proportion of women screened in publicly funded family planning clinics in 3 Public Health Service regions (Region III, 1994, Region VIII, 1994-96, Region X, 1995-96) by year; this analysis included the results of 51,854 tests for chlamydial infection.

**Results:** The sensitivity of the regional criteria for chlamydia infection ranged from 63%-99% and required testing 42%-87% of all women. The regional criteria varied by age cut-off, clinical findings, and the reported sexual behaviors. Standard criteria for screening for chlamydial infection that included testing all women < 25 years plus those who had mucopurulent cervicitis, cervical friability, pelvic inflammatory disease, or new or multiple sex partners, performed consistently across regions. On average, these criteria identified 91% of all infections (range 87%-95%) and required testing 75% of all women (range 71%-77%).

**Conclusions:** Compared with other screening criteria for chlamydial infection, the standard criteria listed above identified a high percentage of infections while screening a relatively low proportion of women. These criteria may be useful for providers who are unable to develop locally derived criteria for screening for genital C. trachomatis infections.

## Statewide Survey of Chlamydia Screening Practices for Adolescent and Young Adult Women in Colorado

**K Gershman, Colorado Department of Public Health and Environment; K Torkko, University of Colorado Health Sciences Center, Denver, CO**

**Background and Rationale:** Information is limited on chlamydia screening practices of primary care providers for young women, especially in the private sector. Better knowledge of such practices may identify provider informational needs for improving chlamydia control.

**Objectives:** To determine statewide chlamydia screening practices of adolescent and young adult women's primary care providers in Colorado; to determine correlates of inadequate screening for chlamydia.

**Methods:** Professional society or state licensing lists were obtained for Obstetrician and Gynecologists, Family Practitioners, Pediatricians, Internists, Nurse Practitioners, and Physician Assistants. A 25% systematic sample was taken from each list to obtain the total survey size of 1200. A second survey will be mailed to non-respondents to the first mailing. The survey includes questions on demographics, professional training, practice characteristics, sexual history taking, chlamydia screening practices, STD prevention, partner management, screening of males. Questions address adolescents and young adult women (ages 20-34) separately.

**Results:** Surveys are being mailed in late June or early July. Data will be analyzed in August or September. The main outcome measures will be the proportions of providers performing adequate chlamydia screening for adolescents and for young adult women based on CDC guidelines. Correlates of adequate/inadequate screening practices will be identified. The survey also will determine which primary care providers are visited by adolescent women.

**Conclusions:** Pending (see Results)

## The Rapid Test Paradox: When Fewer Cases Detected Leads to More Cases Treated—A Decision Analysis of Tests for Chlamydia trachomatis

**T Gift and W Kassler, Centers for Disease Control and Prevention (CDC), Atlanta, GA; M Pate and E Hook, University of Alabama at Birmingham (UAB), Birmingham, AL and Jefferson County Department of Health**

**Background and Rationale.** Screening tests for detection of Chlamydia trachomatis include those processed in laboratories and those designed to be processed at the point of care. The latter tests can yield results at the time of the initial patient visit, but most available lab-processed tests have greater sensitivity. In settings where a non-negligible proportion of patients fail to return for treatment following positive test results, the less-sensitive rapid tests could lead to the treatment of more patients and be more cost-effective by preventing cases of pelvic inflammatory disease and its sequelae.

**Objectives.** To determine the situations, if any, in which a rapid test might be more cost-effective and treat more infections than lab-based tests.

**Methods.** A decision analysis framework was used to compare one point-of-care test (the Biostar Chlamydia OIA ) with two lab-based tests (cell culture and the polymerase chain reaction [PCR] assay), accounting for variables including prevalence, test sensitivity and specificity, the probability of developing pelvic inflammatory disease following treated and untreated chlamydial infections, and the likelihood that patients would wait for rapid test results or return to the facility for treatment.

**Results.** A two-test algorithm of the rapid test followed by a PCR test on those initially testing negative identified and treated the greatest number of chlamydial infections and was the most cost-effective at all prevalences above 9%. The rapid test treated more cases of infection than the PCR alone if the return rate was 64% or less.

**Conclusions.** In settings where patient return for treatment is a problem, point-of-care tests contribute significantly to the detection and treatment of chlamydial infections among women.

## Canvassing for Chlamydia Using a Urine Based Test

**LE Asbel, L Chatmon, B Clothier, S Dyer, R Fedders, M Frost, V Gabe-Lee, M Goldberg, J Goode, J McLaughlin, K Nixon, F Roldan, Philadelphia Department of Public Health, PA**

**Background and Rationale:** In Philadelphia, chlamydia prevalence is highest in 15-24 year olds, with rates highest among minority, medically underserved populations. Prevention of complications of chlamydia depends on identifying cases who may avoid conventional screening efforts. We developed and evaluated a unique door-to-door canvassing program in Public Housing Developments to obtain urine specimens for the detection of chlamydia and gonorrhea.

**Objectives:** 1) Determine the positivity rate in this population; 2) Evaluate the acceptability of this program for identification of STDS; 3) evaluate our ability to get positive patients identified and their partners treated.

**Methods:** One week prior to testing, informational materials were distributed explaining the program. A team visited each site, explained the activity and offered urine screening for chlamydia and gonorrhea. Reason for refusal was recorded for persons ages 15-24. Urine specimens were tested for chlamydia and gonorrhea by LCR. Persons with positive test results were contacted and offered treatment and partner follow-up.

**Results:** Of 600 people screened, 44 (7.3%) were positive for chlamydia, gonorrhea or both; 7.7% of the women and 6.9% of the men were infected. In our target age group, 52% of people offered testing agreed to screening. Of the 44 infected patients, 43 have been treated; 81 % were treated within 14 days of test.

**Conclusions:** Screening of this population was well received and led to the treatment of a significant number of people who might have avoided conventional screening. The high rate of infection in both sexes suggests that in order to curb the spread of disease and impact on outcomes, enhanced screening of male and female at risk asymptomatic populations will need to occur. Innovative methods such as this may be needed to accomplish this.

## Chlamydia Demonstration Project in the U.S. Virgin Islands

**M Reyes and S Phillips, U.S. Virgin Islands Department of Health**

**Background and Rationale:** The U.S. Virgin Islands consists of four islands - St. Thomas, St. Croix, St. Johns, and Water Island, with a combined population of 101,809, and about 25% are living in poverty. While the U.S. Virgin Islands has the lowest reported rate of chlamydia for all of the USA (only 11 cases were reported in 1996), it has the highest rate of chlamydia among female Job Corps applicants in the USA and territories, with a rate of 18.4% for women ages 16-24. Under reporting and lack of screening has prevented the U.S. Virgin Islands from obtaining prevalence data that clearly demonstrates the burden of disease.

**Objectives:** With the \$10,000 in infertility prevention service delivery funding received from CDC for 1998, the U.S. Virgin Islands decided to partner with the New Jersey Department of Health, Public Health Laboratory to establish baseline Chlamydia and Gonorrhea prevalence data for women attending the family planning and STD clinics on St. Thomas, St. Croix, and St. Johns.

**Methods:** After receiving training on specimen collection and data reporting, on April 8, 1998 STD and family planning providers on St. Thomas, St. Croix, and St. Johns began screening all women entering a family planning or STD clinic for an annual or initial visit. Women testing positive for chlamydia and/or gonorrhea were treated according to protocol. Women presenting with symptoms were tested and treated presumptively. Partners of infected women were referred to an STD clinic for screening and treatment. Over a six to eight month period, an estimated 1,000 women are expected to be tested for chlamydia and gonorrhea.

**Results:** At the end of the first eight weeks of screening, 266 women were tested. Preliminary data shows an 18-20% prevalence rate in the St. Croix family planning and STD clinics, 11 % in St. Johns family planning clinics, and 12% in St. Thomas family planning and STD clinics. More definitive data will be presented at the STD Prevention Conference.

**Conclusions:** The U.S. Virgin Islands has one of the highest rates of chlamydia in the United States and territories. Lack of sufficient funds makes it difficult for the U.S. Virgin Islands Health Department to screen and treat all the women in need of services, resulting in unnecessarily high levels of disease. Disease prevalence is highest in St. Croix where chlamydia screening has not previously been available.

## Initiative to Reduce Chlamydia in Native Americans - Montana

**B Desonia, S Klein, H McCaffrey, T Peterson, Montana Department of Public Health and Human Services (DPHHS), Helena, Montana; R Harding, Billings Area Office, Indian Health Service (IHS), Billings, Montana; L Shelby, R Pachecho, IHS Headquarters Epidemiology Branch, Albuquerque, New Mexico.**

**Background and Rationale:** Chlamydia rates remain higher in Native Americans (Montana's largest minority) than in the population as a whole (628/100,000 vs. 152/100,000). Many factors, including access to STD screening services and lack of knowledge of STDs and of effective partner management are addressed to reduce chlamydia infections in Native Americans in a rural state. This was an innovation/expansion quality award.

**Objectives:** To implement a multifaceted initiative between March-December 1998 including the use of Ligase Chain Reaction urine testing to expand client screening and testing of contacts; To train clinical staff members to improve STD treatment and partner management; To give regular feedback to partners about their progress; To run a media campaign to market clinic services and to increase awareness of STDs; To modify data collection form to improve data base and improve utilization of IHS azithromycin program.

**Methods:** In cooperation with the Billings Area IHS, IHS Headquarters Epidemiology Branch and six Montana tribes and one urban Indian clinic, implement a public information campaign designed to increase knowledge and awareness of STDs and services; provide project orientation to each tribe/urban Indian clinic; reimburse the laboratory cost for LCR testing of clients screened off-site and for contacts to positive cases identified; provide clinical/disease intervention training; and distribute culturally appropriate pamphlets, posters.

**Results:** By the December STD conference, there will be an evaluation of chlamydia rates (which should increase), STD knowledge and awareness, partner management indices, and training. Overall positivity rates have increased from 4.5% in Jan-Feb to 6.1% in Apr-May. Screening in a non-traditional setting yielded 12/125 or 9.6% positivity.

**Conclusions:** As chlamydia morbidity levels off, we must develop new strategies and partnerships with organizations in selective settings. Other conclusions will be made following analysis of data.

## Re-examining the Prevalence of Chlamydia trachomatis Infection among Men Who Have Sex with Men (MSM) with Urethritis: Implications for STD Policy and HIV Prevention Activities

**J Flood, EL Ciemins, H Shaw, S Rowniak, CK Kent, San Francisco Department of Public Health, STD Control and Prevention; J Moncada, J Schachter, UCSE, Department of Laboratory Medicine, San Francisco, CA**

**Background and Rationale:** Over the past decade, chlamydia control in San Francisco has focused on preventing serious complications in women. Since prior studies indicated that chlamydia infection was minimal in MSM, rank ordering of resources resulted in the absence of screening and a policy of empiric treatment for chlamydia in MSM with urethritis without diagnostic testing. Recent evidence that inflammatory STDs enhance the transmission of HIV prompted re-examination of this policy, given the high prevalence of HIV infection in MSM in San Francisco.

**Objective:** To assess the need for changing of testing protocols, chlamydia prevalence was measured in MSM with nongonococcal and gonococcal urethritis.

**Methods:** From 3/97-12/97, consecutive male patients with urethritis at the San Francisco public STD clinic were tested for chlamydia, using urine-based LCR and for GC using urethral culture. Urethritis was defined as >4 WBCs/hpf on urethral gram stain.

**Results:** Urethritis was diagnosed in 825 men; 614 (74%) heterosexuals (MSW), and 211 (26%) MSM. 647 (78.4%) had NGU, and 178 (21.6%) had GC. While the isolation of GC was strikingly similar for MSM and for MSW (50.6% and 49.4%), chlamydial co-infection was slightly higher in MSW than in MSM with gonococcal urethritis: 18.2% vs. 15.6%, respectively. Of those with NGU, 24.1% of MSW vs. 21.5% of MSM had chlamydia diagnoses. Young age was the best predictor of chlamydial infection in MSM and in MSW.

**Conclusions:** Chlamydial infection was substantial in MSM with urethritis and was similar to rates in MSW. Testing for chlamydia should be conducted in MSM with urethritis to provide timely identification of infection and to enhance treatment compliance and partner notification efforts to prevent the spread of HIV.

## Male Chlamydia Urine-Screening Project

**N DeArmitt, CDC/Allegheny County Health Department, Pittsburgh; H Wiesenfeld, Magee Womens Hospital, Pittsburgh; B Dixon and W Smith, Allegheny County Health Department, Pittsburgh**

**Background and Rationale:** Chlamydia is the most reported sexually transmitted disease in Allegheny County, PA and the nation. Few males undergo screening for chlamydia because of the invasive nature of the procedure, which has hampered control efforts.

**Objectives:** To determine whether males would more readily accept testing if a non-invasive procedure were used; To determine the morbidity rate in males since males are rarely screened for chlamydia.

**Method:** 296 males between 13 and 30 were enrolled from the Allegheny County Jail (284) and from 2 regional drug rehabilitation centers. An outreach worker gave an informative presentation and asked for volunteers to be tested. Each participant signed a consent form and filled out a questionnaire. A urine sample was obtained and assayed by polymerase chain reaction for Chlamydia trachomatis.

**Results:** Twenty males tested positive for chlamydia (6.8%). Of those infected, 75% were asymptomatic, while 81% of uninfected males were asymptomatic. Of infected males, 60% reported no sexual activity in the preceding 3 months, and 80% had not undergone STD testing in the previous 12 months. Ninety-four percent of all participants said that they would undergo screening more frequently if urine testing were available.

**Conclusions:** Urine screening of at-risk males improves their willingness to accept screening and confirms males who are infected may be asymptomatic.

## High Prevalence of Chlamydia (Ct) Infection Among High School Students Screened a Single Time as Compared to Repeatedly Tested Students

**M Nsuami, D Cohen, B Brooks and D Martin, LSU Medical Center, New Orleans, LA**

**Background and Rationale:** Chlamydia trachomatis, the most common cause of STDs among adolescents, is mostly asymptomatic. Case detection is a key step for improved control strategies.

**Objective:** To compare Ct prevalence among students screened only once and those screened more than once during a 3-year school-based Ct control program.

**Methods:** Students having parental consent in three New Orleans high schools were screened for Ct (urine LCR) in 1995-96, 1996-97 and 1997-98, regardless of sexual activity. Screenings were offered in two rounds each of the first two years, in one round the third year. Ct infection was treated with 1g Azithromycin p.o. In students tested more than once, prevalence is calculated for the first time they were tested and compared to the prevalence for students tested only once.

**Results:** Overall, 37.9% (1034/2729) of students screened were tested only once and 62.1% (1695/2729) were tested more than once. In boys tested more than once, 25/936 (2.7%) were infected with Ct the first time they were tested vs. 34/494 (6.9%) infected for those tested only once ( $p=.0001$ ). In girls tested more than once, 65/755 (8.6%) were infected the first time they were tested vs. 59/540 (10.9%) infected for those tested only once ( $p=.16$ ).

**Conclusions:** Boys tested once have significantly higher rates of Ct than those tested more than once. No significant differences were found among girls. This suggests that boys not tested are at higher risk for STD than those tested and our findings underestimate the true burden of disease. Over time, the availability of screening reaches higher proportions of the school population. Regular and repeated screening is necessary to reach more high risk students.

## Risk-Based Criteria for Screening Asymptomatic Men for Chlamydia trachomatis Infection: Findings from a Sexually Transmitted Disease Clinic with Universal Testing

**R Barrow, K Mertz, D Mosure, M Sternberg, and W Levine, Centers for Disease Control and Prevention; E Beatty, Ohio Health Department, Columbus**

**Background and Rationale:** Chlamydial infection, a major cause of pelvic inflammatory disease in women, often leads to infertility and chronic pelvic pain. Although national guidelines for screening women were published in 1993, no screening criteria exist for men. Male infections are easily transmitted to women and are asymptomatic in approximately 25% of cases. Newly available urine tests (an alternative to urethral swabs), have increased interest in screening men.

**Methods:** To develop criteria for screening asymptomatic men attending sexually transmitted disease (STD) clinics, we analyzed data from Columbus, Ohio, where from 1992 to 1993, 15,381 urethral specimens from all male STD clinic patients were tested for chlamydia by culture or by nucleic acid probe assay. After excluding 10,584 patients who would have been treated presumptively based on symptoms or signs of urethritis, or having a sex partner with chlamydia or gonorrhea, we used logistic regression to identify variables associated with chlamydia in the 4,797 other men.

**Results:** Chlamydia prevalence in men without criteria for presumptive treatment was 1.3% (63/4797). By multivariate analysis, those men were more likely to have infection if they were <30 years old (odds ratio [OR]=2.7; 95% confidence interval [CI]=1.4-5.2), had had more than one sex partner in the preceding month (OR=2.5; CI=1.5-4.1), or were a sex partner of a syphilis patient (OR=10.3; CI=2.3-47.1). Prevalence in patients with one or more of those risk factors was 1.7% compared with 0.3% for those with none. Screening the 73% of men who met these criteria would have detected 93% of infections.

**Conclusion:** In STD clinics, use of risk-based chlamydia screening criteria for asymptomatic men may help to identify low-risk patients who do not need testing.

## Implementing and Evaluating an Enhanced Project for Incarcerated Female Adolescents with STDS: Lessons and Results from Project YES!

**K Bernstein, M Boudov, R Davis, M Miller, I Dyer, G Richwald, Los Angeles County Sexually Transmitted Disease Program; BE Collins, University of California, Los Angeles; R Morris, Los Angeles County Juvenile Court Health Services**

**Background and Rationale:** Among females ages 9-18 incarcerated in Los Angeles County juvenile halls, 18% test positive for chlamydia and 4% for gonorrhea upon arrest. In an effort to lower the risk of re-infection among this population, the L.A. County STD Program initiated Project YES! in April 1996 with Enhanced Project funding from CDC DSTD.

**Objectives:** To describe behavioral and environmental risk factors among STD-infected adolescent female detainees; to assess the feasibility of implementing intensive risk reduction counseling and follow-up services for this population; and to evaluate the impact of such services on participants' knowledge, attitudes, behaviors and re-infection rates.

**Methods:** Adolescent female detainees diagnosed with chlamydia, gonorrhea or syphilis are linked with a Project YES! case manager who provides individualized STD education and risk reduction counseling during incarceration. Case managers maintain contact with clients in the community for six months after release from custody, to provide support for STD-related behavior change and link clients with needed community services. To evaluate the project's impact, project clients and a randomly selected control group receive an extensive risk assessment interview at entry and are re-interviewed and re-tested for STDs at 6 months following release.

**Results:** Approximately 550 girls have received project services. Participants report an average age at first sex of 13.6 and a median of 4 lifetime sex partners. Nearly 40% have been pregnant and 24% use alcohol or marijuana daily. Results from the project's impact evaluation will be presented, including within-group and between-group comparisons of STD-related knowledge, attitudes, risk behaviors, and re-infection rates.

**Conclusions:** The feasibility and effectiveness of providing individualized STD risk reduction counseling and follow-up services to incarcerated female adolescents will be discussed.

## Ct and GC Screening Results From the Cook County Juvenile Temporary Detention Center (CCJTDC)

**A Evens and D Broussard, Chicago Department of Public Health, Chicago, Illinois**

**Background and Rationale:** Corrections settings, particularly juvenile facilities, provide STD prevention programs with opportunities to provide services to high-risk, under-served individuals. Screening of detainees at juvenile facilities is an important strategy in controlling STDs.

**Objectives:** To provide gonorrhea and chlamydia screening through urine-based testing to high-risk adolescents; To ensure prompt STD treatment; To assess the feasibility of replicating this project in other settings.

**Methods.** The program provides CCJTDC with laboratory testing and supplies and with disease intervention specialists (DIS) to help collect specimens. The state laboratory performs testing on collected specimens using Ligase Chain Reaction (LCR) technology within four days. Adolescents who are positive and who remain in the facility are provided with one-dose treatment; those who have left are followed by DIS in the field.

**Results.** In the first month, 593 adolescents were screened. Five percent of the boys were positive for gonorrhea, and 15% were positive for chlamydia. Twenty percent of the girls were positive for gonorrhea, and 30% were positive for chlamydia. Results will be presented for the first six months of the project and on the productivity of field follow-up for those adolescents released without treatment.

**Conclusions.** Conclusions will be made around the effectiveness of this project and its feasibility for implementation in similar settings by other programs.

## The County Jail: Community-Based Prevention Opportunities for Persons at Risk for STD/HIV

**M Whelan, G Coman, P Briggs, Massachusetts**  
**Division of STD Prevention: T Conklin, P**  
**Rachford, Hampden County Correctional Center.**

**Background and Rationale:** In Hampden County, MA, 75% of the jail population reside in the 3 poorest neighborhoods of the county. One percent of these neighborhoods' population is in the jail at any given time, and 4% pass through every year.

**Objectives:** To assess the sensitivity of syphilis surveillance of inmates admitted to a county jail within 24 hours of admission.

**Methods:** For a three-month period, the nurse responsible for medical intake completed a questionnaire to identify all new admissions and subsequently checked against the computerized intake records to determine who had been tested for syphilis and when. The State STD Laboratory performed all the syphilis tests, which included qualitative and quantitative RPR and confirmatory MHA-TP as necessary. Inmates with positive tests were checked against the syphilis registry for treatment and titer history. New presumptive cases were immediately called to the DIS for treatment and investigation.

**Results:** During the survey period, 1,508 inmates were admitted, of whom, 1472 inmates (97.6%) were screened for syphilis; 99% of those specimens were obtained within 24 hours of admission. Of the 1472 specimens, 1389 tested negative on their qualitative RPR, 42 (2.9%) tested positive, and 31 specimens were unsatisfactory. Of the 42 RPR reactive specimens, 25 were confirmed by MHA-TP. Three new cases of infectious syphilis were identified by the DIS, and they were treated within 24 hours of test results.

**Conclusion:** Syphilis screening at admission in the county jail is a most efficient method to promote syphilis elimination and community-based disease intervention for difficult-to-reach-at-risk populations.

## Case Detection and Prevalence Monitoring of Chlamydia and Gonorrhea in a Juvenile Custody Facility

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**California Department of Health Services STD**  
**Control Branch; JA Zertuche, Alameda County**  
**Health Care Services Agency, CA**

**Background and Rationale:** Young persons detained in juvenile corrections facilities have high rates of STDs. Urine-based methods for the detecting of chlamydia and gonorrhea have produced opportunities to expand screening to this high-risk population who may not be using STD services.

**Objectives:** To assess the utility of urine-based screening in a juvenile detention center; To analyze prevalence monitoring data to identify youth at high risk for chlamydia and gonorrhea.

**Methods:** A screening project was launched at the Alameda County Juvenile Justice Center as part of the California Infertility Prevention Project. Urine samples from the young persons were tested for chlamydia and gonorrhea using the Abbott ligase chain reaction (LCR) assay. Most of the specimens were obtained immediately after intake.

**Results:** From September 1996 - March 1998, 7,466 young persons were tested (6,228 males, 1,172 females); 302 chlamydial infections and 85 gonorrhea cases were diagnosed. Prevalence of chlamydia and gonorrhea among females was 9.2% and 3.1%, respectively, and 3.1% and 0.8% in males.

### Prevalence of chlamydia by age and sex

Age	10-14 yrs		15 yrs		16 yrs		17 yrs		18 yrs	
	n	Prev	n	Prev	n	Prev	n	Prev	n	Prev
Females	266	9.7%	261	11.1%	280	8.6%	276	9.1%	33	6.1%
Males	1254	1.9%	1242	2.6%	1631	3.4%	1646	4.0%	318	4.7%

Cases of chlamydia reported from this facility tripled after implementation of the screening project, while gonorrhea cases doubled. Over 90% of these cases did not report related symptoms. 35% of the youth stated they had no other source of health care, and fewer than half had seen a clinician in the preceding year.

**Conclusions:** Juvenile custody facilities can serve as important sites for case detection and treatment. Because many inmates are released before their routine medical examination, prevalence estimates based on early screening are more valid and identify cases that would otherwise go undetected and untreated.

## The Psychosocial and Service Needs of Women Seen in a Prison-based STD Clinic

**MC Burke, P Etkind, Massachusetts Department of Public Health, V Cram, Correctional Medical Services, G Baral, Boston University School of Social Work**

**Background and Rational:** High prevalence of STDs among incarcerated women has been well documented. It is critical to identify psychosocial and environmental factors contributing to risk as well as to identify the social supports/ interventions that could promote healthier outcomes.

**Objectives:** To look at factors contributing to risk; identify factors, which have helped change risk behavior in the past; engage inmates in identifying what they believe would help them either during incarceration or after release. This assessment will then be used to improve services at a prison based STD clinic

**Methods:** Two pilot versions of a self-administered survey/needs assessment developed and implemented. A third version is currently being administered through interview, thus reducing concern regarding literacy among this population.

**Results:** Outstanding result from pilots: 67% of respondents had history of sexual violence; majority (58%) before 18 years and 50% before 10 years. Questions regarding abuse expanded; questions regarding other parental/caretaker violence added. Majority experienced environmental barriers to health when not in prison, including limited access to needed medical and drug treatment; other factors such as lack of employment, housing and other supports will also be identified in the final version. Questions asking inmates to describe services currently used to increase linkage and coordination and what other supports/interventions they would find helpful were added to final version. Results available fall 1998.

**Conclusion:** Factors associated with risk in this population, particularly the role of violence in these womens' lives should be looked at more carefully as well as other environmental risks. Women can be engaged in the process of identifying needed supports/interventions both during their care within the clinic and outside the prison system.

## Screening and Treatment for Syphilis Among Prison Arrestees: Usefulness for Surveillance and Disease Control

**R Kahn, Centers for Disease Control and Prevention, Atlanta, Georgia; D Scholl, School of Veterinary Medicine, Louisiana State University; P Kissinger, School of Public Health and Tropical Medicine, Tulane University; TA Farley, Louisiana Office of Public Health**

**Background and Rationale:** The recent epidemic of syphilis in Louisiana (1986-1994) stimulated initiation of a mass syphilis screening program at the East Baton Rouge Parish Prison.

**Objectives:** To compare trends in syphilis prevalence among arrestees to community prevalence and to identify high-risk groups based on booking charge.

**Methods:** The rapid plasma reagin test was used to screen and presumptively treat arrestees upon admittance into the prison from July 1994 through December of 1997. Booking charge risks were established by a nested case-control study of 76 cases and 225 controls.

**Results:** Of 41454 arrestees, 31250 (75%) were screened through the program and 467 (1.4%) had untreated syphilis. The syphilis prevalence was higher among females (2.8%) than males (1.1%), and was higher among Blacks than Whites (1.7% vs. 0.7%). Assuming that persons with unknown stage of disease had the same distribution of stage as those whose stage was known, the prevalence of primary and secondary decreased from 0.29% in 1994 to 0.018% in 1997, during this time community rates decreased from 64 cases per 100,000 to 11 cases per 100,000. Previous incarceration was associated with syphilis in females (OR:3.4, 95%CI 1.2-9.7). Felony theft was associated in males (7.9, 95%CI 1.7-40.5)

**Conclusions:** Screening and treatment of syphilis in arrestees is a productive public health intervention. Monitoring of primary and secondary syphilis prevalence in jail populations is a useful method for monitoring community rates. Associations of booking charge with syphilis infection suggest target groups for intervention programs.

## Behavioral STD/HIV Risk Reduction for Adolescent Male Offenders: Project WORD

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**Background and Rationale:** Several behavioral HIV intervention studies have been conducted with adolescents in the past decade, with each producing increases in condom use or delayed sexual debut. However, to date, there have been no published STD / HIV intervention studies targeting incarcerated youth.

**Objective:** To evaluate the effectiveness of a behavioral STD / HIV intervention in changing sexual risk behaviors of adolescent male offenders.

**Methods:** Participants were 428 male juvenile offenders entering a state reformatory. Participants were randomly assigned to either a 6-session anger management (AM) intervention or a 6-session sexual risk-reduction skills-training (ST) intervention. Interviews were conducted before and immediately following the intervention and included cognitive mediating measures such as AIDS knowledge, condom attitudes, self-efficacy, and perceived risk. Participant sexual behavior was assessed at baseline and six months following release.

**Results:** Ninety percent of participants were retained at six-month follow-up. There were no differences between groups on attrition rate or source. Preliminary analyses found no between- group differences on demographic or outcome measures at baseline. Post-intervention, ST participants reported significantly higher levels of AIDS knowledge and condom use self-efficacy, more positive attitudes about condoms and demonstrated significantly greater condom use skill compared to AM participants. There were no between-group differences on sexual risk behaviors six months after the intervention, but there were significant decreases in sexual risk behaviors in both groups at the 6-month follow-up assessment.

**Conclusions:** These findings indicate that skill-based sexual risk-reduction programs are effective in increasing male juvenile offenders' level of AIDS knowledge, positive attitudes about condoms, condom use self-efficacy and skills. More intensive interventions may be needed to change the sexual risk behaviors of young male offenders.

## Assessment of STD Services in U.S. City and County Jails, 1997

M Parece, G Herrera, R Voigt, S Middlekauff, Centers for Disease Control and Prevention, Atlanta, GA

**Background and Rationale:** The total number of arrests in 1995 reached more than 15 million. Studies have shown that sexually transmitted disease (STD) rates are higher in incarcerated populations than in the general population.

**Objective:** To assess STD testing and treatment policies and practices in jails.

**Methods:** The survey was developed and administered in July, 1997 to 92 counties. Counties included in the assessment were selected based on the following criteria: counties with cities greater than 200,000, and counties reporting more than 40 cases of primary and secondary syphilis in 1996. State STD program managers completed the assessment in collaboration with health departments and the main jail facilities in the selected counties.

**Results:** Response rate was 96% (88/92) for completion of at least one assessment for a total of 115 city and county jails. Sixty-nine (60%) facilities used public providers and 46 (40%) facilities used private providers for health services. Most facilities (66%) had a policy for STD screening based on symptoms or by arrestee request, and in these facilities, less than 6% of arrestees were actually tested. Less than half of the facilities had a policy offering routine testing regardless of symptoms and in these facilities fewer than 50% of the arrestees were actually tested. Compared to private providers, public providers were more likely to test arrestees for STDs. One half of arrestees were released within 48 hours after intake into the facility while 48% of facilities did not have STD testing results until after 48 hours.

**Conclusion:** Most facilities had a policy for STD screening based on symptoms or by arrestee request. Most arrestees were released before 48 hours and STD results in many facilities were unavailable before release. Treatment of persons after release is labor intensive, lengthy, and often unsuccessful. This represents a missed opportunity for STD control and prevention. A comprehensive STD control and prevention strategy should consider correctional facilities as an important setting for STD public health intervention where routine rapid STD screening and treatment on-site could be implemented.

## Cost of Preventing STDs and HIV through Counseling: Results from a Randomized Trial (Project RESPECT)

**ML Kamb, W Kassler, TA Peterman, J Zenilman, 2 GA Bolan, 3 J. Rogers, 4 F Rhodes, 5 JM Douglas, 6 Project RESPECT Study Group. CDC, Atlanta; Baltimore City Health Dept; San Francisco Health Dept; New Jersey Health Dept; Long Beach Health Dept./California State Univ; Colorado Dept. of Health & Environment/Denver Public Health**

**Background and Rationale:** A multi-center randomized trial evaluating HIV counseling found that, compared with informational messages typical of current practice, 2 different counseling interventions reduced high-risk behaviors and prevented new STDs.

**Objectives:** To compare costs and effectiveness of 3 face-to-face (individual) intervention strategies, Enhanced Counseling, Brief Counseling, and Didactic Messages.

**Methods:** 4328 heterosexual patients from 5 urban STD clinics were followed for 12 months after assignment to 1) Didactic Messages (2 messages with a clinician; total, 10 minutes); 2) Brief Counseling (2 sessions with a counselor; total, 40 minutes); or 3) Enhanced Counseling (4 sessions with a counselor; total 200 minutes). We measured new STDs (gonorrhea, chlamydia, syphilis, HIV) and intervention costs (overhead, personnel, materials, participant costs). Assuming HIV cases were averted at the same rate as STDs, we conducted an incremental cost-effectiveness analysis from a societal perspective using a one year time frame.

**Results:** After 12 months, compared with Didactic Messages, 19% fewer patients in Brief Counseling and further, 3% fewer in Enhanced Counseling had new STDs. We found 5 new HIV cases in patients in Didactic Messages, thus estimate 1 case of HIV prevented in each counseling intervention.

**Conclusions:** Brief Counseling, if adopted, could prevent 20% of new STDs at \$304 per case prevented and (we estimate) 20% of new HIV infections at \$12,098 per case prevented. Compared to direct medical costs of STD and HIV, this is a small investment. Enhanced Counseling may be slightly more effective but at a much greater cost.

## Direct Medical Costs of Syphilis in the United States: The Potential for a Cost-Saving National Elimination Program

**Chesson HW, Rein D, Kassler WJ, Irwin KL, Carande-Kulis V, Schmid, GP. CDC, Atlanta, Georgia. Pinkerton SD, Center for AIDS Intervention Research, Milwaukee, Wisconsin.**

**Background:** One way to advocate for a national syphilis elimination program is to weigh the direct medical costs of syphilis against potential program costs.

**Objective:** To estimate the direct medical costs of syphilis and to estimate the level of spending at which a ten-year syphilis elimination program would be cost-saving.

**Methods:** We estimated three components of direct medical costs of syphilis: adult syphilis costs, congenital syphilis costs, and HIV costs attributable to syphilis (syphilis may facilitate HIV transmission). The per-case cost of syphilis in adults is based on a decision tree analysis, using physician fee schedules for cost information. Total annual costs were calculated by applying per-case cost estimates to case numbers reported to CDC in 1996. To calculate congenital syphilis costs, we applied 1996 case numbers to published per-case cost estimates (adjusted for inflation). We developed a simplified transmission model to estimate the annual number of HIV transmissions attributable to syphilis and applied this estimate to published, per-case (discounted) lifetime medical care costs of HIV infection.

**Results:** Annual costs, 1996 cases (preliminary results):

Adult syph: 31,574 cases x \$1,386 per case (includes potential sequelae costs) = \$43.8 mill.

Congenital syph: 1,181 cases x \$4,997 per case = \$5.9 mill.

Syphilis-related HIV infections: 1,089 cases x \$195,188 per case = \$212.6 mill.

Total annual direct medical costs: \$262.3 million

\*includes potential sequelae costs

**Conclusions:** A five-year, \$50 million per year national syphilis elimination program would likely pay for itself in averted medical costs of syphilis and syphilis-attributable HIV transmissions.

## Cost-Effectiveness of Partner Notification and Counseling and Testing: A Decision Analysis

**B Varghese and T Peterman, Centers for Disease Control and Prevention, Atlanta, GA**

**Background and Rationale:** Studies suggest that both partner notification (PN) and counseling and testing (CT) are effective HIV prevention strategies. However, few cost-effectiveness studies have been done.

**Objective:** To evaluate the cost-effectiveness of PN and CT compared with no-intervention option in preventing future HIV infections.

**Method:** Decision trees were developed to analyze societal and provider perspectives. Assumptions for CT were: HIV prevalence 1.6%; return for posttest counseling (PC) (if HIV positive 80%, if HIV negative 60%); risk of HIV transmission (no PC 3.5%, with PC 3.5%); risk of acquiring infection (no PC 0.34%, with PC 0.26%). **CT cost estimates were:** HIV positive patient (no PC \$90, with PC \$129); HIV negative patient (no PC \$25, with PC \$41). For PN, assumptions were: 0.6 partners found/tested per index patient; HIV prevalence in partners 20%; risk of HIV transmission from index patient or infected partner to uninfected partner (as above, with PC of uninfected partner, 1.7%). Program cost estimates: \$439 to find/test a partner; costs of CT (as above). Lifetime treatment cost of HIV, \$100,000. Sensitivity analysis of probability estimates also was done.

**Results:** For a cohort of 10,000 individuals, CT prevents 7 HIV infections and saves society \$360,000. PN for the 128 index patients screened by CT, prevents 1 HIV infection and saves an additional \$100,000. Excluding the medical cost of HIV and patient time, the provider cost per case prevented was \$33,000 for CT and \$28,000 for PN. The most sensitive assumptions in our model are HIV prevalence, likelihood of transmission, and the treatment cost of HIV.

**Conclusion:** CT has a documented prevention benefit and is cost-effective. With CT in place, PN can be added to prevent HIV transmission and PN is very cost effective in preventing HIV transmission.

## Cost Comparison of Alternatively Structured STD and HIV Prevention Programs in the U.S.

**J Spencer and G Schmid, Centers for Disease Control and Prevention, Atlanta, GA**

**Background and Rationale:** The contribution of Sexually Transmitted Diseases (STDs) to the transmission of HIV infection has been well documented. This implies that there should be coordination among STD and HIV programs. However, we do not know what the optimal administrative structures and implementation mechanisms should be. In the U.S., these structures vary widely from state to state. In evaluating alternative administrative structures, two things need to be considered; cost and effectiveness. This study addressed only cost considerations.

**Objective:** To describe the costs and services of HIV and STD programs with a variety of administrative infrastructures.

**Methods:** A 30-item survey of the 50 state and 9 major city health departments, covering: costs; number of clinics supported; management structure; number and training of personnel; and clinic services offered.

**Results:** Thirty state and large city health jurisdictions have combined HIV and STD prevention programs. Reported reasons for combined programs included: increased efficiency of program delivery (35%), more efficient use of limited funds (20%), better communication (28%), and other (17%). Reasons for remaining separate included: fear of loss of program identity (32%), local political considerations (20%), resource restrictions (21%), different target groups (11%), and other (16%). Separate programs generally duplicated management, fiscal, scientific and clinical staff and did not share clinic facilities. STD clinics almost always offered HIV testing/counseling services; HIV testing sites were less likely to offer STD services. Follow-up HIV counseling services were generally more complete in stand alone HIV clinics.

**Conclusions:** The epidemiology and social context of STD and HIV infection varies across the U.S. Coordinating or combining HIV and STD prevention programs when these factors indicate it is appropriate may offer cost savings. Choice of administrative structure should take into consideration the local epidemiology and socio-political context.

## HIV/STD Prevention in Primary Care: Effects of a Comprehensive Intervention with Providers

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**Background and Rationale:** Primary care providers miss many opportunities to assess patients for risk of HIV/STD and counsel them about prevention.

**Objective:** To compare the following among primary care providers before and after a clinical intervention: self-reported knowledge, attitudes, beliefs, self-efficacy, practice supports, and barriers related to assessment and counseling of patients about HIV/STD risk.

**Methods:** One-group pre/post test study carried out in two primary care clinics of a large Pacific Northwest managed care organization. Subjects included all physicians, physician assistants, nurse practitioners, registered nurses, and social workers. The intervention included training, clarification of provider/staff roles, access to tools and materials, and reminders. Outcomes were measured by written pre/post provider surveys administered 12 months apart.

**Results:** Response rate was 47/48 or 98%. Knowledge, fairly high at baseline, showed little change at followup. Provider attitudes at followup were more favorable to HIV/STD risk assessment and counseling. Confidence in the overall effectiveness of provider efforts to reduce patients' HIV/STD risk behaviors improved significantly. However, confidence in reducing risk among specific populations was low at both baseline and followup. Provider confidence and comfort in performing assessment and counseling tasks varied at baseline, and, for most, did not increase significantly at followup. Confidence in counseling gay men improved, as did perceptions of supports in the practice setting (e.g. access to pamphlets). Lack of time and other issues taking precedence were important barriers to HIV/STD risk assessment and prevention counseling.

**Conclusions:** This comprehensive clinical intervention had an impact on factors which can motivate and enable primary care providers to increase assessment and counseling of patients about HIV/STD risk. Provider confidence and comfort in performing these activities improved less than expected.

## Chlamydia Screening Practices of Primary Care Physicians.

**RL Cook, MR Ashton, S Scholle, Center for Research on Health Care., The University of Pittsburgh, Pittsburgh PA; HC Wiesenfeld, T Zamborsky, MJ Krohn, Department of Obstetrics, Gynecology and Reproductive Sciences, The University of Pittsburgh, Pittsburgh, PA.**

**Background and Rationale:** Many primary care physicians do not follow recommended guidelines for chlamydia screening.

**Objective:** To determine physician and practice characteristics associated with adherence to guidelines for chlamydia screening.

**Methods:** Surveys were mailed to a stratified random sample of 1600 Pennsylvania physicians. Survey items assessed provider demographics, attitudes, knowledge, and practice characteristics, and inquired about management of several clinical scenarios, including an asymptomatic sexually active 19-year-old female having a routine gynecologic examination.

**Results:** Preliminary analysis revealed that only 32% of physicians would screen the symptomatic young woman for chlamydia. Pediatricians and internists were more likely to screen than family physicians and obstetrician/gynecologists. Across all specialty groups, physicians were significantly more likely to screen for chlamydia if they were female (43% vs. 21%), age <40 (42% vs. 26%), believed screening can prevent PID (55% vs 15%), believed chlamydia increases HIV risk (35% vs 24%), felt responsible for their patients' STD services (40% vs 22%), practiced in a metropolitan area (46% vs. 25%), or if >20% of their patients were black (49 vs. 24%). Physicians were less likely to screen if they believed chlamydia was too uncommon (9% vs. 55%) or thought <50% of their 18-year-old female patients were sexually active (15% vs 35%). All comparisons were significant at  $p < 0.05$ . 76% of clinicians reported they would more likely screen for chlamydia if an accurate urine test were available.

**Conclusions:** A majority of primary care physicians would not perform chlamydia screening on a sexually active young woman during routine gynecologic examinations. Strategies to increase screening rates may include increasing awareness of chlamydia screening benefits, targeting information to specific types of providers, and increasing availability of noninvasive test options.

## Missed Opportunities for Sexually Transmitted Diseases Prevention during Routine Medical Checkups: Results of the 1994 US National Health Interview Survey

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**Background and Rationale:** Although STDs cause tremendous health and economic burdens in our society, public awareness and knowledge regarding STDs remains poor. To examine missed opportunities for STDs prevention, diagnosis, and treatment, we investigated how frequently US adults reported being asked about STDs by their providers during routine medical checkups.

**Methods.** We analyzed the responses of 15,687 adults aged 18-64 years participating in the 1994 US National Health Interview Survey (NHIS), a population-based household survey. We used a logistic model to determine factors independently associated with being asked about STDs by their providers during the checkup.

**Results.** 43% (95% CI 0.6%) of respondents reported having a routine medical checkup within the past year, and 27% (95% CI 0.7%) reported that their providers asked them about STDs during the checkup. Of the 6792 who reported at least one routine checkup within the past year, persons were significantly more likely ( $p < .05$ ) to be asked by their providers about STDs if they were male, black, young (18-34 years) rather than old (35-64 years), resided in the West, or had HMO, public, or no medical care coverage rather than fee-for-service (FFS) coverage.

**Conclusions.** Only about one quarter of US adults reported being asked by their providers about STDs during routine checkups. Some groups at high risk for STDs and their most serious sequelae, including young women, are less likely to be queried about STDs. Persons presenting for routine medical care can be counseled about their risks, screened for asymptomatic disease, and if infected can be treated. Routine checkups in which these issues are not discussed represent missed opportunity for STD prevention. Interventions are needed at both the patient, provider, and health system levels to increase the frequency of routine checkups that address STD-related issue.

## Management of Sexually Transmitted Diseases by Primary Care Physicians

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**Background and Rationale:** STD-related health care is delivered by clinicians in many clinical settings; therefore there may be a wide variation in the management of individuals with sexually transmitted diseases.

**Objectives:** To evaluate the quality of health care delivered by primary care physicians to individuals at risk for sexually transmitted diseases.

**Methods:** Surveys were mailed to a randomly selected sample of 1600 physicians in Pennsylvania, including family physicians, internists, obstetrician/gynecologists, and pediatricians. Physicians indicated their management of several clinical scenarios reflecting common STD-related problems. Information was gathered on provider demographics, practice characteristics, and attitudes towards STD issues. Care was considered appropriate if the answers were consistent with standard of care and the CDC STD treatment guidelines.

**Results:** Preliminary results indicate that only 53% reported appropriate management for the different STD scenarios. Internists were more likely to answer correctly than physicians from other specialties (66% vs 50%,  $p < 0.05$ ). Physicians were significantly more likely to report appropriate STD management if they were less than 40 years old (67% vs 46%,  $p < 0.01$ ) or female (61% vs 46%,  $p < 0.05$ ). Incorrect STD management was more common among physicians who were unfamiliar with the CDC STD treatment guidelines and among those who believed that chlamydia was uncommon in their adolescent population. Adequacy of care was not associated with reported quality of STD training in medical school or residency, or in practice characteristics (urban vs rural, insurance or racial breakdown of patients).

**Conclusions:** Only one-half of physicians reported appropriate STD care delivered to at-risk women. Physicians who were younger or who were female were more likely to report appropriate care. Improved efforts to inform physicians who treat patients at-risk for STDs are greatly needed.

## Use of Health Care Facilities by People with STD in Massachusetts, 1987-1996

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**Background and Rationale:** In Massachusetts, two-thirds of STDs are reported from the private sector. Understanding the patterns of use of such health care facilities would assist in resource allocation as well as planning education and interventions.

**Objective:** To track the pattern of the use of health care facilities by people reported with STD.

**Methods:** A person-based case registry was created from incident-based report of STD for 1987 through 1996. The source of each reported case of STD was tabulated for people in specific birth cohorts with single as well as for those with multiple reports of STDs.

**Results:** There was little difference in health care facility used by people with first reported STD. 63% were reported by non-public providers, while 62% of those who ultimately had more than one reported STD were first reported from such providers. Among those with multiple STDs, use of private health care declined with each subsequent infection (2=55%; 3=40%; and >4=36%). Use of public clinics increased correspondingly (2=28%; 3 and greater= 39%). Those whose initial STD was reported from an emergency department increasingly went to public clinics. When stratifying by gender and disease, differences in the pattern of health care providers occur with subsequent STD reports.

**Conclusions:** The use of health care facilities by people reported with STDs is important to plan educational programs and allocating resources. The range of STD care provided by private MDs needs to be assessed. In addition to usual medical education, providers need to be aware of characteristics of those individuals who are more likely to have subsequent STDs, the importance of taking social and sexual histories, and the role of the public health departments.

## Expanding Role of Staff Conducting STD Intervention in California

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**Background and Rationale:** Many STD programs are facing staff and resource restructuring owing to reduced resources for public health and to changes in the health care delivery system. Anecdotal reports suggest that STD disease intervention staff (DIS) often have expanded their job functions beyond ordinary STD case management and field investigation. These changes have not been systematically documented, yet they may have a major effect on the direction and effectiveness of STD prevention and control.

**Objectives:** To document the current job activities of STD DIS and to obtain information to ensure that recruitment and training of DIS personnel meet current job demands.

**Methods:** After collaboration between local, state, and federal entities, a survey instrument was field-tested and revised. During August-September 1998, the anonymous, self-administered survey was distributed to STD DIS in all counties (n=57) in California. Survey questions addressed the time spent with specific job tasks, relevant training received, and perceived need for additional training. Completed surveys were mailed directly to the California STD/HIV Prevention Training Center.

**Results:** Data presented will include analysis of time spent on specific tasks related to the following categories: STD Clinic Support, STD Case Management, HIV/AIDS, Surveillance and Screening, Community Outreach Education, Research, and Program Support. Analysis of training needs will include topics such as Domestic Violence, Program Planning and Evaluation, Grant Writing, Community Assessment, Health Communication, and Managed Care Basics.

**Conclusions:** Survey data document the expanding role of STD DIS in an era of shrinking resources. The results provide critical information for planning STD programs, the recruitment and training of staff, and resource allocation. This survey may serve as a training needs assessment tool for other states and localities wishing to implement strategic planning.

## STDs in an Inner-city Emergency Department

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**Background and Rationale:** In conjunction with a lack of primary and preventive care, many patients are treated in emergency departments for sexually transmitted diseases (STDs). There is very little information regarding the effectiveness of diagnosis and treatment of STDs in the emergency department, as many patients are difficult to reach for follow-up counseling and test results.

**Objectives:** To characterize the descriptive epidemiology of patients accessing the Johns Hopkins Emergency Department (ED) for treatment of STDs to develop clinical pathways.

**Methods:** This prospective case series enrolled 100 patients treated in the Johns Hopkins ED. Cases were identified on the basis of triage records and physical exams. Those patients with symptoms consistent with a possible STD diagnosis, STD-related diagnosis, or STD contact, age 17 and older, were asked to participate. Patients were interviewed to collect information on potential barriers to accessing appropriate health care.

**Results:** 98% of patients approached agreed to participate. Two-thirds were female. Not surprisingly, women were statistically significantly more likely than men to have health insurance, medical assistance, and regular source of health care. 78 patients had previously accessed the Johns Hopkins ED, with median time since last use 3-6 months. 75 patients were aware of the Baltimore Health Department STD clinics. Frequently cited reasons for not using the clinics included "didn't need to", "didn't want to", "clinic closed", "didn't know about it". Intravenous drug use (IVDU) was associated with a 5.3 increase in odds of delaying treatment 2 or more weeks after onset of symptoms ( $p=.038$ ). Effort to self-treat was associated with a 3.2 increase in the odds of delaying treatment ( $p=.015$ ). Past year history of STD was associated with a .36 decrease in the odds of self-treating ( $p=.059$ ). Female sex was associated with a 3.5 increase in the odds of self-treatment ( $p=.028$ ).

**Conclusion:** This study identifies several potential barriers to appropriate health care access and utilization. This study emphasizes the need for basic personal health education, as well as promotion of community health care resources. This study also identifies the ED as a potential source of intervention for more comprehensive health care, screening for other illnesses, and entry into the health care system, in an often difficult to reach patient population.

## Differences in the Quality of Care in Categorical Public STD Clinics and Adult Care Clinics Run by the Health Department and by Community Clinics

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**Background and Rationale:** Following major reorganization of health department services in Los Angeles County beginning in 1995, a study comparing the quality of STD services in three settings was funded by CDC. Settings included 1) traditional dedicated STD clinics, 2) adult care clinics (family planning and adult walk-in) offered by the health department, and 3) adult care clinics provided by community clinics under new public-private partnerships partially funded by the health department. This study was the first in the United States to examine the effect on quality of care (QOC) when STD services are shifted from dedicated public clinics.

**Objectives:** To compare the QOC in dedicated STD clinics operated directly by the health department with STD care in non-dedicated adult clinics operated by either the health department or community clinics.

**Methods:** Thirty-two STD process-of-care criteria, developed by nine national experts through a modified Delphi method, were used to analyze QOC in 579 patients' charts from the three settings.

**Results:** All three settings performed weakly in recording a sexual history, taking a history of STDs, and examining the oropharynx, although the STD clinics did significantly better than either adult clinic type ( $p<.001$ ). In selection of patients for STD testing, perinatal examination, health information, and mandated disease reporting, the STD clinics performed well, while the adult clinics performed weakly ( $p<.001$ ).

**Conclusions:** Findings suggest that reducing or eliminating categorical public STD clinics and offering services primarily in general adult or primary care clinics may result in a significantly negative effect on QOC. Further research is needed to examine why major differences exist, and strategies must be developed to address deficiencies in STD services in non-categorical STD clinics.

## Program Review: A Quality Assurance Tool

**H Beidinger, Chicago Department of Public Health, Chicago, IL**

**Background and Rationale:** The primary goal of the STD/HIV program is prevention. The program's grant objectives and disease intervention activities reflect that goal. The program needs to maintain consistency and accountability to program operation guidelines and protocols in order to meet our program goals.

**Objectives:** To create and implement a quality assurance tool to evaluate consistency and accountability to program operation guidelines and protocols.

**Methods:** The operational management team developed an assurance tool called the program review. The tool reviews supervisory activities as it relates to their field staff, and it reviews field staff activities. The program review has four major components (1) Case management and interviews, (2) Audits, (3) Field Activity, and (4) Physical Surroundings and Record Maintenance. The program review was introduced and discussed with each on-site supervisor. A program review is conducted quarterly at each clinic site. The operations management team conducts the program review. The review includes specific examples of areas of weakness and strength. Recommendations are made. After completing the written documentation, the team member presents the findings to the on-site supervisor and to the operations manager.

**Results:** The program review has significantly improved the standardization of program guidelines and protocols. At its inception, only one of the sites passed the program review. During first quarter 1998, five of the six sites passed the review. In addition, each supervisor has become keenly aware of program requirements, objectives, and goals as they relates to the program's grants and disease intervention activities.

**Conclusions:** The program review is a valuable tool in standardizing and evaluating the consistency and accountability to the program's guidelines and protocols.

## A Profile of Patients at STD Clinics in Reference to the Communities They Live In

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**Background Rationale:** The IOM (1997) concluded that STDs have serious health and economic consequences. It is important that local areas with relatively high rates of STDs know more about STD patients and how they compare with others in to their community, so as to encourage people to seek treatment for STDs.

**Objectives:** To profile characteristics and efforts to get medical treatment of STD patients from two health department clinics in two localities.

**Methods:** During 1997, identical random-digit-dial (RDD) surveys of 18 to 50-year-old residents of Bronx (n=414), and Erie (n=405), NY were conducted to assess the relationship between community contextual measures and clinic patient measures. Data for clinic populations in same areas as the telephone survey were based on 95 face-to-face interviews in an STD clinic in Erie and 100 interviews of clinic patients in an STD clinic in the Bronx.

**Results:** Men accounted for 68% of the clients who were interviewed in the Erie STD clinic and 59% in the Bronx clinic. With regard to the Erie clinic patients (<30-years-old), 36.4% had household incomes of less than 10,000 dollars per year in comparison to 32.1% for the larger community (<30-years-old); 49% currently had health insurance in comparison to 81%; and 30% described their neighborhood as unsafe in comparison to 12%. For the Bronx clinic patients (<30-years-old), 21% had incomes < 10,000 in comparison to 29% of the larger community (<30-years-old); 38% had health insurance in comparison to 63%; and 36% described their neighborhood as unsafe in comparison to 16%. 36% of all Erie clinic patients came to the clinic because they had symptoms, with the men waiting a median of 3 days (mean=8) before coming to the clinic and women a median of 4 days (mean=18). For the Bronx, 33% had symptoms, with the men waiting a median of 7 days (mean=30) and the women a median of 3 days (mean=7).

**Conclusion:** A striking difference between Erie and Bronx STD clinic patients and their community in general was the greater proportion who said their neighborhood was unsafe. Although about the same number of clinic patients went to the clinic because of symptoms, there was variation in how long men and women in Erie and Bronx delayed seeking treatment.

## Contemporary Epidemiology of *N. gonorrhoeae* (GC) and *C. trachomatis* (CT) Urethral Infections in Men Presenting to an Urban STD Clinic

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**Background and Rationale:** The prevalence and risk factors associated with GC and CT infection in men are subject to change with the use of more sensitive diagnostics, new antibiotics, and community screening.

**Objectives:** To describe the current prevalence and risk factors associated with GC and CT infection in men seeking health care at an STD clinic.

**Methods:** A retrospective analysis was performed on 6,042 visits by men presenting to DMHC with a new problem in 1996 who had both a urethral GC culture and urine CT PCR performed.

**Results:** GC was detected at 390 (6.5%) of visits in 370 men and was associated with younger age, black race, contact with GC, multiple recent sex partners, and history of GC. Of men with GC, 85% reported urethral discharge, and 61% experienced dysuria.

CT was detected at 666 (11.0%) of visits in 646 men and was associated with younger age, heterosexual preference, and contact with any STD. White and Hispanic men were less likely to be infected with CT than were black men. Of men infected with CT, only 41% reported urethral discharge, and 34% complained of dysuria. Men  $\leq$  19 years were more frequently asymptomatic than men over 20 (GC 21% vs. 9.8%,  $p < 0.05$ ; CT 62% vs. 44.4%,  $p < 0.001$ ).

CT, detected in 24% of NGU cases and 19% of GC cases, was more common in younger, non-white, and heterosexual men.

**Conclusions:** Adolescent males are more commonly infected with GC and CT and tend to be asymptomatic. CT continues to play a significant role in the etiology of NGU and in coinfection with GC.

## High Prevalence of Treatable Sexually Transmitted Diseases (STDs) Detected by Patient-Obtained Vaginal Swabs

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**Background and Rationale:** Efforts to control STDs in adolescents are increasingly utilizing interventions performed in outreach and non-clinical settings. Performing the usual genitourinary evaluation for STDs in such situations is difficult.

**Objective:** To ascertain the acceptability and prevalence of testing for 3 readily treatable STDs (gonorrhea, chlamydia, and trichomoniasis) using patient-obtained vaginal swabs in African-American females 14-18 years of age participating in a behavioral intervention trial to reduce risk for STDs, HIV, and pregnancy.

**Methods.** LCR testing for *N. gonorrhoeae* and *C. trachomatis*, and culture for *T. vaginalis* using the In Pouch TV tests on vaginal swabs obtained by study participants.

**Results.** All study participants were offered their choice of STD screening in the context of an ordinary pelvic examination or by using self-obtained vaginal swabs. All participants chose self-administered vaginal swabs. Of 305 participants evaluated at their initial study visit, 26.4% were found to be infected with one or more treatable STDs (6.2% *N. gonorrhoeae*, 17.6% *C. trachomatis* and 12.7% *T. vaginalis*).

**Conclusions:** Using new technologies such as LCR and the In Pouch TV test, STDs can be readily detected in non-clinical settings using self-obtained vaginal swabs to provide new opportunities for efforts to control STDs.

Withdrawn

## Gen-Probe Pace 2 vs. Amplified Testing For the Detection Of Chlamydia trachomatis In A Public Health Setting

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**Background and Rationale:** The availability of amplified techniques for detecting Chlamydia trachomatis infections raises questions about the utility of these assays as replacements for current tests in public health screening programs and about the testing niche for this technology in the public health setting.

**Objectives:** To evaluate the amplified tests; To compare amplified test performance to that of the Gen-Probe Pace 2C test; To evaluate the adaptability of the methods and workflow to the public health setting.

**Methods:** The Bureau of Laboratories compared the performance of the Pace 2, non-amplified assay for the detection of C. trachomatis with the Abbott LCR and Gen-Probe TMA amplified assays for the detection of C. trachomatis. Specimens were submitted by STD, Family Planning and Prenatal Public Health Clinics within Florida.

**Results:** Of 1204 specimens tested using both Pace 2C and LCR assays, 72 specimens were LCR positive, Pace 2C negative. The LCR sensitivity and specificity were 99.3% and 99.5% compared with 55.6% and 100% for the Pace 2C. Of 300 specimens tested using both Pace 2 and TMA assays, 16 specimens were TMA positive, Pace 2C negative. The TMA sensitivity and specificity were 100% and 99.62% compared with 66.7% and 100% for the Pace 2C.

**Conclusions:** The difference between amplified and non-amplified assays can be attributed to increased sensitivity in amplified methods. Heightened sensitivity in these amplified assays increases the capability for detecting Chlamydia in low level infections and from specimens that are inadequate for Pace 2 or other non-amplified methods. The amplified assays have the potential to significantly improve the diagnosis and treatment of Chlamydia trachomatis infections and to effect better control of this important sexually transmitted infection.

## Can the Sensitivity of Chlamydia Testing be Increased by Selective Retesting of Negative Pace2TM Specimens with the AMP-CTTM Assay?

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**Background and Rationale:** Amplified testing for *C. trachomatis* provides a significant improvement in sensitivity but at a considerable increase in cost. Can this method be applied selectively in a public health laboratory setting to maximize benefits while controlling costs?

**Objectives:** To compare the sensitivity of Pace2TM testing for *C. trachomatis* to AMP-CTTM; To determine whether there is a “gray-zone” of negative Pace2TM results containing a disproportionate number of true-positive specimens.

**Methods:** In accordance with IRB protocols, two endocervical specimens were obtained from women attending an STD clinic. Specimens were randomized for either Pace2TM or AMP-CTTM testing. Specimens prepared for amplified testing also were analyzed by the Pace2TM system to determine whether this non-standard treatment of specimens would provide valid results while permitting re-testing by AMP-CTTM. The range of negative Pace2TM results were reviewed to determine whether a gray-zone exists for cost-effective, amplified re-testing.

**Results:** 128/1194 specimens were positive by AMP-CTTM, and 99/1194 were positive by Pace2TM. Assuming 95% sensitivity for AMP-CTTM, Pace2TM is 73% sensitive. Specimens prepared for AMP-CTTM gave comparable or better Pace2TM results — fewer inconclusives, higher average positivity, sensitivity improved to 77%. These specimens exhibited a modest gray zone — 19% of the undetected positives could be identified by AMP-CTTM testing the top 6.5% of the Pace2TM negatives, improving sensitivity to 80%.

**Conclusions:** The sensitivity of Pace2TM testing can be increase from 73% to 80% by preparing all specimens for AMP-CT TM (additional \$1.00/specimen) and by repeat testing the top 6.5% of negative Pace2TM specimens (\$4.50/assay). This sensitivity is in accord with current guidelines of the Region V Infertility Prevention Project, but falls short of the potential of universal amplified testing.

## Evaluation of the BDProbeTecTM ET Assay for *N. gonorrhoeae* and *C. trachomatis* Diagnosis Using Urine or Swab Specimens.

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**Background and Rationale:** Infections due to *Neisseria gonorrhoeae* (GC) and *Chlamydia trachomatis* (CT) are the two most common reportable infections in the US. Non-culture tests for these pathogens have many advantages for clinicians.

**Objective:** To evaluate the performance of a new, molecular-based simultaneous amplification and detection system employing Strand Displacement Amplification™ for GC and CT diagnosis. Methods: Urine and swab specimens from males and females attending an STD clinic were evaluated in comparison to culture for each pathogen. Discrepancies between BDProbeTec™ ET and culture results were resolved using Abbott LCR testing for both pathogens and DFA analysis for chlamydia.

**Results:** Data are currently available for the first 72 of 150 patients to be enrolled in this pilot study. The BDProbeTec™ ET sensitivity using both swab and urine specimens was 100% for gonorrhea diagnosis, with a specificity of 99.1%. For CT, the BDProbeTec™ ET assay detected more infections than standard cell culture (16 for BDProbeTec™ ET vs 12 for culture) and yielded a resolved (using DFA and LCR testing) sensitivity of 94.1% (specificity 96.7%). Data will be presented for the entire study.

**Conclusions:** The BDProbeTec™ ET Assay for diagnosis for GC and CT infection is a promising method for STD diagnosis using either urine or genital swab specimens.

## The Digene Hybrid Capture Assay, A New Urine Based Assay for Detection of *Neisseria gonorrhoeae* and *Chlamydia trachomatis* in Men

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**Background and Rationale:** Although males are essential contributors to STD morbidity, screening for asymptomatic infections is rarely performed. Furthermore, the need to obtain urethral swab specimens for gonorrhea and chlamydial diagnosis is uncomfortable, providing a disincentive to reproductive health seeking by at-risk males.

**Objective:** The Digene Hybrid Capture II test (HCII) for detection of *N. Gonorrhoeae* (GC) and *C. Trachomatis* (CT) from a single cervical specimen is an accurate tool for STD diagnosis in females. We evaluated the HCII for GC and CT diagnosis in 592 men attending an STD clinic using voided urine specimens, comparing the HCII to both Ligase Chain Reaction (LCR) performed on these same urine specimens and to culture performed on urethral swabs.

**Method:** Cultures were performed for GC using selective media, and cell culture was used for CT isolation. The HCII and LCR assays were performed on urine collection subsequent to swab specimens. For these analysis, participants with either a positive culture or both HCII and LCR positive assays were considered to be infected with the pathogen of interest (GC and/or CT).

**Results:** Of 592 patients evaluated, 283 had symptoms of urethritis. Overall, the sensitivities of culture, HCII and LCR, for detection of either pathogen were 84.8%, 91.%, and 97.0%. Separately, sensitivities for *C. trachomatis* diagnosis were: culture (66.7%), HCII (89.2%), LCR (96.7%) and specificities were 100%, 98.7%, and 98.1% respectively. For *N. Gonorrhoeae* diagnosis sensitivities were: culture (93.3%), HCII (93.3%), LCR (98.1%), and specificities were 100%, 98.2%, and 94.5%, respectively.

**Conclusion:** The Digene Hybrid Capture II test is a sensitive replacement method for culture diagnosis of GC and CT infection in men.

## Increasing STD Reporting Compliance By Laboratories - Chicago 1998

**C Culler, Chicago Department of Public Health, Chicago, IL; S Holmes, Illinois Department of Public Health, Springfield, IL**

**Background and Rationale:** Laboratories and physicians in Chicago are required by law to report STDs. Efforts to increase overall reporting have focused on laboratories that are required to submit an STD report form every week.

**Objectives:** To increase STD reporting in general and laboratory reporting specifically.

**Methods:** Chicago laboratories were telephoned to determine which were performing STD testing. In August of 1997, an information packet explaining reporting requirements and containing report forms was sent. This mailing was followed by one or more phone calls to each facility. Reporting compliance was monitored using an Access database.

**Results:** 42 of the 54 labs contacted were performing tests for STDs. Reporting during the month of September 1997 was used as baseline. 168 total reports were expected for that month (4 weeks times 42 labs), and 62 (36.9 %) reports were received. 21 (50 %) laboratories reported in September, and 3 (7 %) submitted correct reports for each week of the month. In March of 1998, 6 months after baseline, 140 (83.33 %) of the 168 expected reports were received, an increase of 125 %. 39 laboratories reported (92.85 %), and 19 (45.23 %) submitted correct reports for each week of March. The total number of STD infections reported increased by 35 % from September to March. Continued increases in laboratory reporting are expected as a result of this project and will be monitored.

**Conclusion:** An inexpensive project involving only phone calls and the mailing of informative material can improve laboratory reporting compliance. STD Surveillance personnel can now use physician information gained from more comprehensive laboratory reporting to begin a similar project to improve reporting by health care providers.

## Confirmation of the Proper Collection Procedure for Chlamydia Testing

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**Background and Rationale:** Poor collection of endocervical specimens has been associated with false-negative results for detection of *C. trachomatis*. Adequately collected specimens contain squamocolumnar junction cells.

**Objectives:** To perform cytologic evaluation to determine the quality of the specimens using a Diff-Quik stain and to correlate the presence or absence of columnar cells with the Gen Probe results.

**Methods:** The Gen Probe methodology is used for collection (first swab removes excess mucus then discarded; the second swab used for collection of specimens). The second swab is rolled across a slide then inserted in the transport tube, then both are submitted for testing. The smear is stained and examined for columnar cells. The transport tube is tested for Chlamydia by the Pace 2 Chlamydia methodology. A specimen was considered adequate if it contained at least 1-50 columnar cells or greater than 100 RBCs per field.

**Results:** From October 1995 to April 1998 we examined 2094 specimens:

Ct negative - columnar cells present = 1773 (85% TN)  
Ct negative - no columnar cells present = 159 (8%)  
Ct positive - columnar cells present = 150 (7% TP)  
Ct positive - no columnar cells present = 12\*

\*Improper collection

**Conclusion:** The results support the correlation between positive results and the presence or absence of columnar cells. Furthermore, the results demonstrate that this technique can be used to determine if specimen collection is adequate. Variations in specimen quality as well as sensitivity of the diagnostic test have a greater impact on determining the prevalence of *C. Trachomatis* in a population.

## Comparison of Slides Prepared for the Thinprep Pap Test To Conventional Smears for Detection of Chlamydia Trachomatis by DFA: A Multicenter Study

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**Background and Rationale:** Specimens collected for The ThinPrep Pap Test (TPPT) can be used to test for Human Papillomavirus. This study demonstrates the additional benefit of concurrent testing for Chlamydia trachomatis from the same liquid based specimen as that collected for TPPT.

**Objective:** To compare the direct fluorescence assay (DFA) for Chlamydia performed on cells collected and processed using the ThinPrep monolayer method to the conventional DFA smear (CV).

**Methods:** Exfoliated cervical cells were collected directly into a liquid preservative by the standard procedure for TPPT. An endocervical specimen was then collected from the same patient with a Dacron swab for the CV preparation. At each of three respective sites, slides prepared by the ThinPrep Processor (TP) and its CV counterpart were processed for DFA (Bartels, Inc.) and read by the same observer in a concealed fashion. Swabs used to prepare the CV slide were frozen in transport media for discrepant analysis by the GenProbe Pace 2C assay.

**Results:** Of the 580 satisfactory cases evaluated among all of the sites, 40 (6.9%) were concordant positive for both preparations. The discordant rate was 1.9% (11/580). The overall prevalence was 8.1% (47/580) by the conventional DFA method. Treatment of the data using McNemar's two-tailed test ( $p=0.05$ ) indicated the DFA results of the TP and CV preparations were not statistically different. Gen-Probe Pace 2 resolution of the, 7 TP-/CV+ and 4 TP+/CVdiscordant cases resulted in confirmation of 8 of the CV results and 3 of the TP results.

**Conclusions:** Liquid-based collection of exfoliated cervical cells could afford the option of testing for Chlamydia from the same specimen as that used for the Pap test. Single sample collection would offer the benefits of office convenience and improved testing compliance.

## Detection of Chlamydia trachomatis and Neisseria gonorrhoeae by the Hybrid Capture II and PACE 2 Tests from the Same Cervical Swab Specimen.

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**Background and Rationale:** The Digene Hybrid Capture II (HC II) CT/GC Test is a new signal amplification-based test for the detection of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) from cervical specimens.

**Objectives:** The HC II CT/GC Test requires the use of a special cone-shaped brush for endocervical specimen collection. We have developed a protocol for HC II testing of specimens collected for the GenProbe PACE System to enable comparisons of the two tests.

**Methods:** Specimens in GenProbe PACE transport media were tested by the PACE 2 system at two clinical sites, then blindly tested by HC II. Discrepant specimens were adjudicated by PCR, and the result common to two of the three testing methods (HC II, PACE 2, and PCR) was defined as the consensus result.

**Results:** The overall percentage of agreement between the two testing methods was 99.1% (1746/1761) for CT and 99.7% (1743/1749) for GC. Overall, the sensitivity of the HC II Test compared to the consensus result was 100% (74/74; 95% CI= 95.1-100) for CT and 100% (31/31; 95% CI= 88.8-100) for GC, with a specificity of 99.8% (1683/1687; 95% CI= 99.4-99.9) for CT and 99.7% (1714/1719; 95% CI= 99.7-99.9) for GC. The sensitivity of the PACE 2 system compared to the consensus result was 86.5% (64/74; 95% CI= 76.6-93.3) for CT and 87.1% (27/31; 95% CI= 70.2-96.4) for GC, while the specificity was 99.9% (1686/1687; 95% CI= 99.7-100) for CT and 100% (1719/1719; 95% CI= 99.8-100) for GC.

**Conclusions:** The HC II CT/GC Test can use specimens collected in GenProbe PACE transport media, and HC II appears to have a greater sensitivity and equivalent specificity for CT and GC detection than PACE 2.

## Detection of Chlamydia trachomatis by the Hybrid Capture II Test Using Cervical Specimens Collected in PreservCyt solution

**TC Wright, Jr., College of Physicians and Surgeons of Columbia University, New York; KJ Modarress, AP Cullen, AT Lirincz, Digene Corporation, Silver Spring, Maryland**

**Background and Rationale:** The Digene Hybrid Capture II (HC II) Test is a new signal amplification-based test for detecting Chlamydia trachomatis (CT). The same cervical specimen also can be analyzed for Neisseria gonorrhoeae and human papillomavirus (HPV).

**Objectives:** To adapt a protocol for HC II HPV testing of specimens collected into Cytoc's PreservCyt (PC) solution to CT detection from PC.

**Methods:** Endocervical specimens were obtained from each patient, placed in GenProbe transport media and tested by the PACE 2 System. An additional specimen also was collected into PreservCyt, and the cells were collected by centrifugation. The PC specimens were blindly tested by HC II without knowledge of the corresponding PACE 2 result. Upon completion of HC II and PACE 2 testing, discrepant specimens were adjudicated by PCR, and the final true result was assumed to be represented by the two tests that agreed (consensus result).

**Results:** The percentage agreement between HC II and PACE 2 was 96.9% (156/161; 95% CI= 92.9-99.0). The sensitivity of the HC II Test compared with the consensus result was 100% (14/14; 95% CI= 76.8-100), with a specificity of 100% (147/147; 95% CI= 97.5-100). The sensitivity of the PACE 2 system compared with the consensus result was 64.3% (9/14; 95% CI= 35.1-87.2), while the specificity was 100% (147/147; 95% CI= 97.5-100).

**Conclusions:** CT can be detected by the HC II Test, using specimens collected in PreservCyt with an apparent greater sensitivity than the PACE 2 system. Thus, multiple tests (Pap smear, HPV, CT) can be performed from a single specimen, decreasing the need to recall the patient to the physician's office for additional testing.

## Comparison of the Digene Hybrid Capture II CT-ID Test for Detecting *Chlamydia trachomatis* from Cervical and Self-obtained Vaginal Specimens with Abbott Ligase Chain Reaction (LCR).

GL Ridgway and A Robinson, University College London Hospitals, London, England; P Davies, Molecular Diagnostics, London, England; A Cullen and AL Digene Corporation, Silver Spring, MD

**Background and Rationale:** Application of the signal-amplification-based Hybrid Capture II (HCII) technology to the detection of *Chlamydia trachomatis* (CT) DNA from self-obtained vaginal specimens (sov) could provide sensitive, specific, simple, and cost-effective nucleic-acid probe detection of CT without a clinic visit.

**Objectives:** To evaluate the performance of the Digene HCII CT-ID Tests for detecting CT from cervical and sov in comparison with LCR.

**Methods:** Approximately 500 women at risk for CT infection will be enrolled. Two cervical and two physician-obtained vaginal specimens will be obtained from each participant. One of each paired specimen will be processed for HCII; the other for LCR, with collection order randomized for the two tests. Specimens found discrepant between the test methods will be resolved by DFA and PCR, as appropriate.

**Results:** As of September 1998, 91 patients had been tested, with a CT prevalence of 12.1% at the cervix by LCR. Preliminary HCII sensitivity and specificity compared to LCR at the cervix were 100% and 97.5%, respectively. Using all available test results, an infection status for each patient was derived. Compared to that status, HCII and LCR had the same sensitivity (91.7%) and similar specificities, for all sample types. Sov gave 96.7% and 97.8% agreement to cervical results for HCII and LCR, respectively.

**Conclusions:** The Digene HCII CT-ID Test appears to have comparable sensitivity and specificity to LCR from cervical specimens. Overall results from sov specimens correlate well with those obtained from cervical specimens for both HCII and LCR.

## Stability Study on Specimens Mailed to a State Laboratory and Tested with the Gen-Probe Pace 2 Assay for Chlamydia.

E Parker, A Wozniak, C Beckham, Bureau of Laboratories, Department of Health and Environmental Control, Columbia, SC; D Roberts, Preventive Health Services, Columbia, SC; S White, Trident Public Health District, Charleston, SC

**Background and Rationale:** Specimens to be tested for chlamydia at the South Carolina Bureau of Laboratories are shipped from various clinics throughout the state. Samples sent by U.S. Mail may not arrive in the laboratory for six or seven days and are exposed to unknown environmental conditions such as heat or cold.

**Objectives:** To compare the results of specimens received by courier with duplicate specimens transported by U.S. Mail.

**Methods:** 1,017 sexually active women under the age of twenty-four were screened for chlamydia at health department clinics during the summer months of 1996. Two swabs were collected from each woman using Gen-Probe Pace Specimen Collection Kit protocol. The swab collected first was sent by courier for the first 500 clients and by mail for the last 500 clients. A temperature indicator from 3M was included in all of the mailing containers to display the approximate time the temperature exceeded 31.0 Centigrade. Samples with positive screening test results were tested with the Pace 2 Chlamydia Trachomatis Probe Competition Assay Kit. At the conclusion of the study, any sample with discrepant results was retested by the Roche PCR procedure.

**Results:** Of the 1,017 women enrolled in the study, 27 were deleted, 88 tested positive, and 891 samples tested negative on both samples. Eleven duplicate specimens (1.1%) had discordant results.

**Conclusions:** Courier and mailed results agreed on 99% of the specimens. Nine of the ten discordant specimens determined to be positive by PCR were positive on the mailed specimen. In this study, the elevated temperature and extended shipping time did not result in a loss of sensitivity in the Gen-Probe test.

## Evaluation of a Community-level Intervention for STD/HIV Prevention Using Behavioral and Biomedical Outcomes

CA Rietmeijer, SS Bull, CG Ortiz, T LeRoux, SA Montstream-Quas, JM Douglas, Denver Public Health, Denver, CO

**Background and Rationale:** Since 1994, the Youth in Action program has targeted high-risk urban minority youth in Denver through a network of 65 volunteers who are trained to inform their peers about STD and HIV prevention. In addition, volunteers refer their peers for comprehensive, clinic-based STD screening, and community-based urine chlamydia screening.

**Objectives:** To evaluate the effects and outcomes of the Youth in Action program using behavioral and biomedical outcomes.

**Methods:** During the 4th year of the program, a 70-item, in-depth, interviewer-administered survey was conducted in conjunction with urine chlamydia screening. The survey included questions on demographics, exposure to the program, general and STD-related health seeking behaviors, sexual risk behaviors, and condom use.

**Results:** Of 277 persons who underwent urine chlamydia screening during the evaluation period, 221 (80%) completed the questionnaire. Overall, 51% reported exposure to the project. In multivariate analysis, exposure to the programs was associated with recruitment in street settings (OR 3.9, 95% C.I. 2.2- 7.6), a previous urine test through the program (OR 3.0, 95% C.I. 1.7-5.6), and absence of chlamydia on screening (OR 3.8, 95% C.I. 1.4-10.4). In a subsequent exploratory multivariate analysis, fewer sexual partners in the previous 12 months (OR 1.1, 95% C.I. 1.0-1.3) and exposure to the program (OR 4.4, 95% C.I. 1.6-11.9) were significantly associated with absence of chlamydia infection.

**Conclusions:** Although exposure to the Youth in Action program appears to be associated with lower rates of chlamydia infection, our evaluation was neither designed nor suited to prove a causative relationship. Nonetheless, our experience shows that biomedical markers can be obtained and can be useful in the evaluation of STD prevention programs in non-clinical settings.

## An Evaluation of Community-based Chlamydia Screening Programs in New York City.

T Cherneskie, I Weisfuse, New York City Department of Health; H Isenberg, Long Island Jewish Medical Center, NY, NY

**Background and Rationale:** The development of urine-based chlamydia detection methods offers unprecedented opportunities to expand existing screening efforts to non-traditional medical and community settings.

**Objectives:** To pilot urine-based screening programs in the Bronx by collaborating with four community health centers; To determine the feasibility and effectiveness of screening programs that utilize Ligase Chain Reaction urine-based testing in non-STD clinic medical settings in an area of high chlamydia morbidity.

**Methods:** Screening was offered to all clients or patients of four clinics in the Bronx, including a community college and a high school health center; a school health clinic; and a mobile family planning medical unit.

**Results:** Three months of preliminary data with a total of 268 participants reveals an overall prevalence of 9%. Site-specific rates included: 6.8% in students attending the community college; 9.6 at the school-based clinic; 11.8 at school health clinic; and 12% on the mobile medical unit. The strongest predictors of chlamydia positivity appear to be 'age less than 20 years' (OR, 3.66; p-value 0.003), a 'history of STD treatment' (OR, 3.0; 0.025), and, in women, 'never having had a Pap smear' (OR, 5.4; 0.002). Presence of symptoms, number of recent partners and measures of condom use appeared to be poor predictors of chlamydial infection in these populations.

**Conclusions:** Chlamydia screening programs utilizing urine LCR in non-traditional medical settings are a feasible means of successfully providing STD services to high-prevalence populations. Such programs can and should be developed through continuing collaboration between local public health agencies and community medical providers, especially those serving adolescent populations.

## Evaluation of Community-based Interventions to Reduce Low Income, African-American Women's Risk of STDs

**J St. Lawrence, T Wilson, G Eldridge, T Brasfield, C Little, M Shelby, and R O'Bannon, Jackson State University, Centers for Disease Control and Prevention, State University of New York Health Science Center at Brooklyn**

**Methods:** A community-based sample of low income African-American women (n=332) participated in one of three theoretically-driven experimental interventions based on either the theory of gender and power, social learning theory, or cognitive behavioral theory. Intervention outcomes were compared against a waiting list control condition from baseline to postintervention. Women in the three experimental interventions also completed 6- and 12-month follow-up assessments over the year following the interventions.

**Objective:** To develop and evaluate risk reduction models' effectiveness in motivating health promotion behavior of low income African-American women.

**Results:** Women in the three experimental interventions showed differential changes based on their experimental condition on cognitive indices assessing knowledge and attitudes and on skill acquisition measures assessing partner negotiation skills, correct condom application, selection of a water-based lubricant, and information-provision to their social networks, while control participants were unchanged on any measure. Women in all three experimental conditions increased condom use relative to the waiting list control group from 37% of intercourse occasions at baseline to 44% at post-intervention and there were no differences between the experimental interventions. Women who participated in one of the theoretically-grounded interventions continued to increase condom use over the following year (54% of intercourse occasions by six month follow-up and 49% after twelve months). Women entering new relationships reported significantly higher condom use than women who remained in ongoing relationships.

**Conclusions:** The findings suggest that the intervention models, each of which has proven effective with women who engage in high risk behavior, are also helpful increasing self-protective behavior of women who do not personally engage in high risk lifestyles, but may be insufficient to promote satisfactory levels of precautionary behavior for women in established relationships for whom risk is primarily derived from the extra-relationship behavior of their partners.

## Chlamydia Prevention by Design: A Condom Package Art Contest for Teens and Young Adults

**C Khanlian, N Casas, J McAvoy, T O'Connor, M Fites Seigle, California Family Health Council; K Bernstein, R Bergstresser, R Davis, GA Richwald, Los Angeles County Sexually Transmitted Disease (STD) Program**

**Background and Rationale:** Although teens and young adults are at highest risk for contracting chlamydia infections, awareness of chlamydia and consistent use of condoms among this age group are low. Innovative, youth-centered prevention efforts are needed.

**Objectives:** To actively involve teens and young adults in chlamydia prevention efforts through participation in a condom cover art contest; and to increase chlamydia awareness and condom use among teens and young adults through distribution of winning design covers containing condoms and chlamydia information.

**Methods:** The Los Angeles County Infertility Prevention Project, a collaboration between California Family Health Council and the Los Angeles County STD Program, is sponsoring a condom package art contest in the summer of 1998 for teens and young adults ages 24 and under. Entry forms, which contain facts about chlamydia in addition to contest information, are being distributed through schools, family planning and STD clinics, juvenile detention centers, teenfriendly businesses and other youth-serving community organizations. Six winning art designs will be printed in full color on 160,000 covers containing a condom, instructions for use, and chlamydia information. The condom packages will be distributed state-wide through youth-serving agencies. A sample of teens and young adults receiving the condom art packages will be surveyed to determine the impact of the contest on chlamydia awareness and condom use.

**Results:** The winning condom package design submissions will be displayed, in addition to information on the number of submissions received, the age of participants, and results from the survey of condom art package recipients.

**Conclusions:** Conclusions will be presented on the feasibility and effectiveness of art contests for the promotion of condom use and chlamydia awareness among youth.

## Media is the Message: Key Strategies for Local STD Prevention Health Communications

**J Baeumier, H Rotblatt, K Bernstein, R Davis, GA Richwald, Los Angeles County Sexually Transmitted Disease Program**

**Background and Rationale:** Effective health communications are a critical component of local STD control efforts. Appropriate communications are essential to 1) increase STD awareness and promote prevention behavior and clinical services for the general public and specific high-risk communities, 2) educate health professionals, 3) encourage open discussion of sexual issues, and 4) increase awareness of STD policy issues.

**Objectives:** To identify media opportunities and develop effective STD health communications using established media and program-created tools.

**Methods:** Over the past two years, the LAC STD Program has expanded use of both mass media and targeted communications. This included establishing relationships with media organizations; capturing media interest through media packets, pitch letters, and press releases; and capitalizing on current events to create media opportunities. The STD Program has also created its own communications tools.

**Results:** The STD Program has successfully used media to promote STD awareness and services, and focus attention on policy issues. Efforts included 1) appearing on talk radio, TV news, and public affairs programs, 2) using the L.A. Times' regular "Health" section as a vehicle for STD education, 3) using well-publicized entertainment programming such as "Mrs. Evers' Boys" as opportunities for editorials on syphilis elimination and other policy matters, 4) generating press coverage through press conferences and special events, 5) promoting chlamydia PSAs on local television and radio, and 6) acting as consultants to the local and national entertainment industry. The STD Program also publishes two newsletters, one for school health teachers and nurses, and one for health care providers. An STD Program web site is currently in production.

**Conclusions:** Examples of successful media materials and strategies for effectively using media will be presented.

## How the News Media Frames the Discourse on Sexually Transmitted Diseases

**A Davidson and L Wallack, University of California, Berkeley**

**Background and Rationale:** The role of the news media in setting the public and policy agendas is well documented. Limited public discussion surrounding STDs raises questions regarding how the news media influences the range of solutions to this problem. This is the first content analysis of STDs in the news media. The purpose of this study is to understand how STDs are discussed and who is discussing them.

**Objectives:** To evaluate the content of discourse on STDs in the news media and to analyze the way that STDs and their related issues are framed by the news media.

**Methods:** This study analyzed references to STDs in articles, editorials, opinion/op-ed pieces, and letters to the editor in nine major national newspapers and in television news clips that appeared from January 1, 1998 through June 30, 1998. HIV was included in the analysis only if mentioned in relationship to other STDs.

**Results:** Pending (Impressionistic results indicated that hepatitis is a large issue but that its link to sexual transmission is minimized. Although STDs were incidentally mentioned in all articles in the sample, STDs as a primary focus in news stories was also minimal.)

**Conclusions:** Pending

## "You Mean I'll Have this Virus for the Rest of My Life?": HPV from the Individual [Patient] Perspective

**S Chapman, M Glover, A Mathews, American Social Health Association**

**Background and Rationale:** Each year, 750,000 individuals are diagnosed with the human papillomavirus (HPV). This virus, often asymptomatic, has been linked to cervical cancer and broken relationships. There is no cure for HPV and prevention options are limited. Each year, tens of thousands of individuals call the CDC National STD Hotline (NSTDH) to discuss HPV.

**Objectives:** To understand the special issues surrounding HPV and to explore dilemmas individuals face in trying to understand and live with this virus.

**Methods:** Prior to 1998, telephone staff routinely logged details about the content of each call immediately after the call was over, using computer-assisted technology. Beginning in May of 1998, telephone staff use a similar process with a more detailed logging instrument, but on a systematic random sample of calls.

**Results:** During 1997, the NSTDH logged 33,533 calls which focused on HPV (16% of all calls). One-third of these calls came from males. Analysis of HPV-related calls logged during May 1998 (n=298) showed that calls tended to cover more topics and were significantly longer than non-HPV related calls (5.63 to 3.87 minutes,  $p < .001$ ). Telephone staff reported on specific challenges to health counseling on this viral STD, particularly communication issues related to the high prevalence of the virus and the low risk for complications.

**Conclusions:** Although the medical implications of HPV for most patients are minimal, women with cervical HPV need to understand the importance of regular Pap smears to monitor the infection. Providing perspective on HPV, an often confusing and frightening virus, is vital for proper management.

## Using the Telephone to Reach and Teach the American Public: Experiences of the CDC National STD Hotline

**M Glover, S Scott, S Chapman, American Social Health Association**

**Background and Rationale:** The CDC Sexually Transmitted Diseases Hotline (NSTDH) provides accessible STD education to all segments of American society, recognizing the need for an anonymous telephone service in a society which still stigmatizes STDs. All Information Specialists (ISs) are paid staff members, and participate in a 25-hour training program. The NSTDH uses a computerized referral database containing 4,131 national, state and local organizations.

**Objectives:** To better understand the STD education needs of the American public and to explore the challenges in STD counseling on primary and secondary prevention.

**Methods:** In 1997, ISs routinely logged details about the content of each call immediately after the call was over using computer-assisted technology. Qualitative data were collected via call logs and staff interviews.

**Results:** In 1997, the NSTDH answered over 220,000 calls from the American public. That year, staff sent 97,572 publications to 33,528 callers and provided approximately 77,000 personalized referrals for needed services. The majority of callers discussed a personal concern, but a higher percentage of females than males also discussed partners (24.4% vs. 16%, respectively). Most calls averaged about 3 minutes, but herpes and HPV calls were significantly longer at almost six minutes. Many calls are laced with anxiety due to very personal dilemmas such as suspicions of infidelity, fear of transmission to loved ones, secret sexual activity, and the complexity of transmission/prevention of viral STDs.

**Conclusions:** Telephone hotlines provide direct education on primary and secondary prevention as well as a critical link between the American public and public health services. Important opportunities exist for collaboration between public health organizations and accessible national hotlines.

## Missed Opportunities to Prevent Hepatitis B Infection among Young Men Who Have Sex with Men

**D MacKellar, LA Valleroy, G Secura, CDC, Atlanta, Georgia; Young Men's Survey (YMS) Research Team: Baltimore, MD; Dallas, TX; Miami, FL; Los Angeles, CA; New York, NY; Oakland, CA; San Francisco, CA; San Jose, CA; Seattle, WA**

**Background and Rationale:** Hepatitis B immunization coverage of adults at high risk for hepatitis B virus (HBV) infection has not been well characterized.

**Objectives:** To report hepatitis B immunization coverage and correlates of immunization for young men who have sex with men (MSM) sampled in 9 metropolitan areas (sites) in the United States from 1994-1998.

**Methods:** YMS is a community-based, probability survey of MSM aged 15-22 years who attend public venues (e.g., dance clubs, bars, restaurants). Participants are asked whether they have ever been vaccinated against HBV, and they provide specimens tested for anti-HBs, anti-HBc, and HBsAg.

**Results:** Of 2782 young MSM sampled, 8% (site range 2%-32%) had been immunized against HBV; 14% (range 10%-20%) had serologic evidence of HBV infection; and 79% (range 58%-85%) were susceptible to HBV. In a logistic regression model adjusting for site, younger age ( $p=.006$ ), being in school ( $p=.002$ ), having a regular source of health care ( $p=.010$ ), having been HIV tested ( $p=.004$ ), and being "out" about having sex with men ( $p=.033$ ) were correlated with immunization. Of the MSM who reported having never been vaccinated, 75% (range 48%-84%) were unaware of HBV vaccine; only 8% (range 5%-16%) perceived themselves to be at low risk for hepatitis B. Of susceptible MSM, 89% (range 82%-96%) reported having a regular source of health care.

**Conclusion:** Hepatitis B immunization coverage is very low for young MSM sampled in 9 metropolitan areas. Health-care providers should intensify their efforts to identify and vaccinate susceptible MSM against HBV.

## HBV Immunization Acceptance Issues

**J Dickes, R Kee, Y Winston, Chicago Department of Public Health; G Zimet, Indiana University School of Medicine**

**Background and Rationale:** Little is known about psychosocial determinants of acceptance by STD clinic patients.

**Objectives:** To explore knowledge, attitudes, and beliefs about HBV immunization acceptance issues among STD patients.

**Methods:** 44 urban STD clinic subjects participated either in focus groups or in individual interviews, which were tape-recorded and transcribed for analysis. 57% of subjects were male, 95% African-American, and they ranged in age from 18 to 44 years (mean = 28). Subjects were interviewed about vaccination and HBV and were offered HBV immunization during their visit.

**Results:** 34% of the subjects thought that immunization involved treatment rather than disease prevention. 45% expressed a dislike for needles or injection of substances into their bodies 50% expressed concern about possible side effects, and 36% indicated a distrust of the medical or research communities. 41% were interested in receiving the first HBV vaccine injection; however, 27% actually received the injection. Of the six who changed their minds, 1 refused to sign the medical consent and the other 5 did not want to wait. Of the 12 subjects who received the vaccine, principal reasons for acceptance were perceiving HBV infection as a serious medical condition and the desire to maintain health. Of the 32 subjects refusing vaccination, reasons included previously infected/received vaccination 12%; vaccination was not necessary 38%; fear of needles or shots 9%; possible side effects 22%; and the 6 who changed their minds (19%).

**Conclusions:** These STD clinic patients lacked knowledge about HBV immunization and about immunization in general. Several issues were identified as significant barriers to vaccine acceptance. In order to achieve successful HBV immunization programs these kinds of concerns will need to be understood and effectively addressed.

## Alphabet Soup: STD Clinic Patients' Confusion about Hepatitis B Infection

**G Zimet, Section of Adolescent Medicine, Indiana University School of Medicine, Indianapolis, Indiana; J Dickes, Y Winston, R Kee, Chicago Department of Health, Chicago, Illinois**

**Background and Rationale:** Urban STD clinic patients are at high risk for hepatitis B virus (HBV) infection, yet relatively few receive HBV immunization even when offered free of charge. However, little is known regarding these patients' knowledge and understanding of HBV infection.

**Objectives:** To comprehensively assess STD clinic patients' knowledge and beliefs about HBV infection.

**Methods:** 20 urban STD clinic patients participated in in-depth, semi-structured individual interviews that focused on knowledge of HBV as a sexually transmitted infection (STI) and on general knowledge and understanding HBV infection, including transmission, symptoms, and morbidity. Half the subjects were female; all were black and they ranged in age from 18 to 44 years (mean = 28).

**Results:** When asked to name all STI they could think of, only 3 subjects recalled HBV, although two others mentioned hepatitis without specifying the type. However, 2 subjects mentioned hepatitis A as an STI. Confusion regarding the different types of hepatitis persisted throughout several of the interviews. When asked about HBV, 4 subjects said that they had never heard of it. Of those familiar with HBV, confusion about major modes of transmission, symptoms of infections, and morbidity associated with infection were common.

**Conclusions:** Awareness of hepatitis B as a prevalent STI was limited in these STD clinic patients. It is possible that lack of understanding about susceptibility to infection and potential severity of HBV may limit acceptability of HBV immunization. Further research may help to specifically define associations of attitudes and knowledge with vaccine acceptance, thus identifying possible targets for interventions to increase immunization rates. Hepatitis Vaccination in a Busy Inner City STD Clinic

## Hepatitis Vaccination in a Busy Inner City STD Clinic

**L Asbel, V Hodges, E Abakporo, M Goldberg, Philadelphia Department of Public Health, PA**

**Background and Rationale:** Surveillance data suggests that a significant percentage of patients presenting with acute Hepatitis B have previously been treated for an STD. In 1995 PDPH STD clinic instituted limited Hepatitis B vaccination; in November 1998 we expanded vaccination to all non-immunized patients. A letter reminder system for vaccination was implemented to improve vaccine series completion.

**Objectives:** To evaluate the feasibility of broad based Hepatitis B vaccination in a busy inner city STD clinic, and determine adherence in this population to the vaccination series.

**Methods:** Patients were offered vaccination along with basic information about Hepatitis B and the vaccine. Patients who accepted vaccination were given follow-up appointments and sent to the social work office where additional information was given. Importance of completion of the series was reemphasized. The patients filled out two self addressed envelopes which were arranged by date; letters were mailed prior to scheduled follow up.

**Results:** Since initiation, 3286 patients received the first of the vaccinations series, including 2609 given since the program was expanded. Currently, 2954 patients are eligible to have received 2 vaccinations and 1449 are eligible to have completed the series. Of the eligible patients 1300 (44%) have had 2 vaccinations and 249 (17%) have completed the series.

**Conclusion:** Despite historically poor follow up in this population, a significant portion of patients returned for second and third immunizations with a low labor intensive follow up method. Further analysis of the data will need to follow to determine if there is a specific subset of the population that is unlikely to return. This may lead to development of another intervention to improve adherence with the full vaccination series.

## Interrelationships between HIV and Syphilis in South Carolina: Reexamined

**V Andrews, T Stephens, J Gibson, South Carolina**  
**Department of Health and Environmental Control, Columbia, SC**

**Background and Rationale:** South Carolina data collected from 1986-1994 presented at the 1994 STD conference showed that 4.5% of syphilis cases became coinfecting with HIV while 7.9% of HIV cases became coinfecting with syphilis. The relative risk of syphilis given HIV diagnosis was 2.1. Coinfecting individuals were similar to individuals with only syphilis in terms of race and age but were more likely to be from urban areas and to be males. Primary and secondary syphilis increased in 1991 and since has decreased 75% (from 42.9/100,000 in 1991 to 10.9/100,000 in 1996).

**Objectives:** To examine trends in HIV/syphilis coinfection since 1986. Has the demographic distribution changed with the decline in syphilis rates? Has there been a change in the relative percentage individuals coinfecting by type of syphilis? What is the current relative risk of syphilis infection in HIV-positive individuals compared with individuals not infected with HIV?

**Methods:** Surveillance files for syphilis and HIV/AIDS were linked using a pre-defined algorithm. Linkage quality will be manually assessed at each stage of the linkage. The resulting linked file will be analyzed using SAS (Statistical Analysis System).

**Results:** Preliminary analysis shows that the demographic distribution of coinfecting individuals compared with those with syphilis remains unchanged. Coinfecting individuals were more than three times as likely to have been in jail.

**Conclusions:** Despite a drastic decrease in syphilis infection since 1991, the rates of coinfection with HIV as compared with syphilis only have not changed.

## STD Screening in HIV Early Intervention Programs (EIP): Is There a Role for Universal Screening?

**H. Calvet, King-Drew Medical Center, Los Angeles, CA; D Owens-Collins and N De Augustine, Long Beach Department of Health and Human Services, Long Beach, CA; G Bolan, California Department of Health Services, Sacramento, CA**

**Background and Rationale:** The inflammatory STDs, gonorrhea (GC) and Chlamydia trachomatis (CT) have been shown to increase the amount of HIV in seminal plasma, presumably leading to increased risk of sexual transmission of HIV. Recent recommendations have suggested STD screening should be performed in all HIV-infected patients in order to control sexual transmission of HIV, but the prevalence of these infections in this population is unknown. Highly sensitive urine-based amplified nucleic acid testing, such as ligase chain reaction (LCR), allows easy detection of these infections.

**Objectives:** To determine the prevalence of and risk factors for urethral gonorrhea and Chlamydia infection in a male HIV-infected population.

**Methods:** Beginning in February 1998, all new male clients enrolling in the Early Intervention Program (EIP) HIV Clinic in Long Beach, California, are being screened for gonorrhea and Chlamydia infection using urine LCR. Additional data being collected includes demographic variables, sexual behaviors, and history of substance use, which will be correlated with infections identified.

**Results:** From February 18 to June 15, 1998, 42 out of 42 new male patients were screened for GC and CT infection, and all the specimens were negative (0%, 0 - 6.7%, 95% confidence interval). Screening is ongoing and further data will be presented. In comparison, the prevalence of GC and CT infections in men screened at the Public Health STD clinic in Long Beach from January to March 1998 were 3% and 5%, respectively.

**Conclusions:** Preliminary results indicate that the rate of infection in this population is low. It is unclear if universal screening of a HW-infected population will be cost-effective, but further study is needed.

## Characteristics of Individuals with AIDS and Reported STDs (AIDS/STD)

**Y Tang, L Gurland, M Whelan, P Etkind and A DeMaria, Bureau of Communicable Disease Control, Massachusetts Department of Public Health (MDPH)**

**Background and Rationale:** Matching HIV/AIDS case registries with STD records allows exploration of demographic and risk characteristics of individuals with HIV infection who are reported with STDs before and/or after AIDS diagnosis.

**Objectives:** To examine demographic and risk behavior characteristics of AIDS/STD cases and to compare AIDS/STD cases to AIDS cases without reported STD (AIDSw/oSTD) and STD cases who have not been reported with AIDS (STDw/oAIDS).

**Methods:** The MDPH AIDS Case Registry through 3/98 (n=13,092) was matched to a STD surveillance person-based database for the period 1987-1997 (n=124,391) using a multistep algorithm

**Results:** 1043 confirmed AIDS/STD were obtained. 790 (76%) had only one STD. 101 (9.7%) had at least one STD >30 d. after AIDS diagnosis. AIDS/STD HIV risk behaviors: MSM 30%, IDU 42%, MSM/IDU 4% and heterosexual 13%. AIDS/STD cases were more likely to be IDU and heterosexual than AIDSw/oSTD. AIDS cases with multiple STD were more likely to have heterosexual risk. AIDS with multiple STD were more likely to be female. Female AIDS/STD cases had HIV risk ascribed to IDU (66%) and heterosexual transmission (25%), but were more likely to have IDU ascribed than female AIDSw/oSTD. Men with AIDS multiple STD were less likely to be MSM than men with AIDSw/oSTD but AIDS/STD cases with STD reported after AIDS were more likely to have MSM risk than those without STD after AIDS. Further correlates, including disease-specific associations, of AIDS/STD will be reported.

**Conclusions:** Matched HIV/AIDS and STD databases can be powerful for assessing correlates of highest risk for coinfection; provide information for prevention; and explore potential misclassification of risk from with hierarchical approaches. While sexual behavior patterns after knowledge of HIV infection are difficult to assess, STD after AIDS diagnosis provides a surrogate measure in a population at highest risk.

## STD and HIV- Exploring the Connection

**L Hubbert and K Miscavist, Missouri Health Department, Kansas City, MO**

**Background and Rationale:** The risk of having coinfection of STD and HIV raises questions regarding behavioral changes, risk reduction, and proper screening techniques for those individuals who fall within this category. We have discovered a need to combine the two data systems for epidemiological purposes so one can conduct systematic analysis of coinfections more efficiently and effectively.

**Objectives:** To compare and analyze confirmed coinfection of STD and HIV among persons in the Kansas City, Missouri metro area.

**Methods:** People with confirmed cases of HIV and STD in 96-97 were placed into a data set. Several calculations were examined to determine the greatest risk, and areas of highest concentration for coinfection. Sex and race were also considered for determining the prevalence of coinfection.

**Results:** We observed supportive information in our study of coinfection in Kansas City, Missouri. We found that of the 42 people in our group, 74% are male and 26% are female. The male population shows considerably higher coinfection rates than females. The HIV risk category found coinfection rates for men at 74% among MSM (male sex male). 12.9% unknown risk, IV drug users and MSW/IVDU are both 6%. The females in our group are more evenly distributed among the risk groups. The racial distribution found the majority of coinfection among Blacks.

**Conclusion:** HIV-STD coinfections in Kansas City show strong, links to gender, race, and risk factors. This study offers new insight to the management and counseling for reporting sites in Kansas City. Reporting sites need to take more of a combined effort to look at STDs and HIV together. Risk management and education must work together to stop the spread of this deadly combination.

## Statewide Estimates of HIV Seroincidence in Patients Attending Louisiana STD Clinics, 1996-1997

**J Hanson, T Farley, Louisiana Office of Public Health, New Orleans, LA**

**Background and Rationale:** Estimates of HIV seroincidence ascertained from STD clinic populations can provide valuable insight into current HIV transmission patterns. Given the often prohibitive expense of obtaining these estimates, valid measures of HIV incidence derived from routinely collected data are needed.

**Objectives:** To estimate and characterize HIV seroincidence among patients attending Louisiana STD clinics; and to investigate changing HIV transmission patterns.

**Methods:** Individuals repeatedly confidentially tested for HIV between 1996 and 1997 were identified using the statewide HIV Counseling and Testing database. Seroincidence rates were calculated by selected characteristics for those clients with at least one testing episode in an any of 86 STD clinics statewide. New seroconverters were compared with prevalent positives tested during the same time period.

**Results:** Of 5018 individuals repeatedly tested for HIV, seventeen (17) had documented HIV- I seroconversion. Overall HIV incidence was 0.419 / 100 person-years (py). Incidence was higher in females than in males (.463)/100 py vs. .357/100 py, respectively). The highest rates of seroconversion were observed in MSM, those with partners at risk of infection, those reporting multiple partners and inconsistent condom use. When compared to prevalent positives, seroconverters were more likely to be female, younger, and to report multiple partners and sex while using non-injecting drugs.

**Conclusions:** In Louisiana STD clinics, females and MSM are currently at particularly high risk for HIV infection. Examining repeat confidential HIV testers in STD clinic settings can provide reasonable measures of HIV seroincidence. Despite some limitations, this method is a useful surveillance tool to track the HIV/AIDS epidemic.

## Utilization of Voluntary HIV Counseling and Testing (VCT) in the Public STD Clinics of Louisiana

**SE Hassig<sup>1</sup> and M Ludwick<sup>2</sup>, 1 Tulane University School of Public Health and Tropical Medicine, 2 Louisiana Office of Public Health, New Orleans**

**Background and Rationale:** Persons with other STDs are known to be at increased risk for infection with HIV. Offering VCT to clients at public STD clinics in LA provides an opportunity to reach, identify, and refer clients to HIV-related services.

**Objectives:** Describe the population accepting VCT in STD clinics, and factors associated with their return for results and post-test counseling.

**Methods:** Data from the Office of Public Health of LA (1990-1996) were used for this analysis. Items describing demographic characteristics, risk behaviors, reasons for, and results of HIV testing, as well as participation in post-test counseling were available. Bi- and multi-variate analyses were conducted using SAS.

**Results:** More than 140,000 VCT sessions were initiated in LA during the study period. The number of VCT sessions conducted in STD clinics in LA peaked in 1992, gradually declining to August. The percentage testing positive for HIV has remained generally stable over time, averaging 1.4%. The proportion of persons returning for their results has increased significantly over time, from 14% in 1990 to 40% in 1996. The volume of testing and the return rate varies by region of the state, with the majority of tests conducted in the New Orleans area clinics, but with significantly higher rates of return in several of the out-lying regions of the state. The association of gender and ethnicity with seropositivity and return rates in this population has varied throughout the study period.

**Conclusions:** While reasons for non-return are not available, the expanded use of rapid tests, a risk assessment screening tool and other measures are all strategies that would help increase the efficiency of VCT in a largely male STD clinic population.

## Factors Associated with Incidence of Sexually Transmitted Diseases among HIV Infected Women including Prophylaxis with Macrolides

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**Background and Rationale:** HIV-infected individuals with sexually transmitted diseases are more likely to transmit HIV

**Objectives:** To calculate incidence densities and determine factors associated with acquiring three incident STDs.

**Methods:** Women (N=1026) who attended the HIV Outpatient Program (HOP) from November 1990 through May 1998 were included in the study. Women were followed for incident STDs from their first visit to the clinic until death, loss to follow-up, or the study end. Incidence density rates for three STDs (N. gonorrhoea, C. trachomatis, and syphilis) were calculated. Cox proportional hazards analysis was used to determine factors predictive of acquiring an incident STD.

**Results:** Overall, 230 (22.4%) contracted an incident STD during the study period. Of the 389 incident cases, 80 (20.6%) were attributable to gonorrhoea, 139 (35.7%) to syphilis, and 170 (43.7%) to chlamydia. The STD incidence density rate for the entire population was 0.81 per 100-person months. The mean time to acquiring an incident STD was 30.8 months (range: 12-86 months). In Cox regression analysis factors associated with an incident STD were: age less than 22 years (hazard ratio (HR)=1.93; 95% confidence interval (CI), 1.20-3.09) and non-white race (HR=2.17; 95% CI, 1.273.69). Staging of HIV disease (i.e., CD4 cell count and presence of an opportunistic process) was not associated with an incident STD. Among persons eligible for prophylaxis for mycobacterium avium complex (MAC), 40.6% were receiving either clarithromycin or azithromycin. Those who were receiving MAC prophylaxis were no less likely to acquire an STD than those who were not (54.1% vs. 38.8% p >0.07)

**Conclusions:** These findings corroborate past studies which have demonstrated the susceptibility minorities, particularly young women, to incident STD infections. Prophylaxis against opportunistic infections with macrolides was not associated with a significant reduction in STD incidence.

## Linking the HARS and STD-MIS Databases or AIDS and Primary and Secondary Syphilis Co-infection in Connecticut 1987-1993

**K. Carley, J Davis, F Pectorius, Connecticut Dept of Public Health, Hartford, CT**

**Background and Rationale:** Some individuals continue to practice high-risk sexual behaviors after being diagnosed with HIV/AIDS or a sexually transmitted disease.

**Objective:** To pilot test a method to estimate the extent of continued high-risk sexual behavior of adults (persons 18 years old and older) diagnosed with AIDS in Connecticut.

**Methods:** In this pilot study, the 1987-1993 Connecticut primary and secondary syphilis cohorts in the STD-MIS were linked to the Connecticut AIDS (HARS) database (reported AIDS cases through 6/30/97) using CDC-provided software. Cases common to both the STD-MIS syphilis database and the HARS database were identified, and demographic variables were analyzed. Since HIV infection in adults is not a reportable disease in Connecticut, this study was limited only to those diagnosed with CDC-defined AIDS.

**Results:** 234 persons were identified as being in both databases, representing an HIV/syphilis co-infection prevalence of about 2.6% of the total reported AIDS cases (234/9125). The prevalence of AIDS in the year-specific syphilis cohorts ranged from 3.5% to 7.7%, with the prevalence of AIDS in the combined syphilis cohorts being 6.0% (234/3913). We estimate that 36% of the co-infected individuals were diagnosed with syphilis after being diagnosed with HIV. The demographics of the co-infected group more closely approximated that of the total Connecticut syphilis cohort than that of the Connecticut AIDS cohort. Overall, 44% of the co-infected group were females (compared to 24% of AIDS cases), and 65% were black, not Hispanic (compared to 40% of AIDS cases). The predominant risk or mode of transmission for HIV/AIDS in the co-infected group was injection drug use (65%).

**Conclusions:** Our estimates show that high-risk sexual behavior does continue in at least a small percentage of persons diagnosed with HIV/AIDS. Since the link chosen for this pilot was diagnosis with primary or secondary syphilis (rather than a more common STD, such as gonorrhoea or chlamydia), our model probably under-estimates the actual level of high-risk behavior.

## Functional Specifications for Model STD Information System (MSIS)

**M Cicchinelli, Centers for Disease Control and Prevention, Atlanta, GA; D Haik, TRW**

**Background and Rationale:** STD project areas need information on basic and requisite functionality for an information system focusing on and designed for collecting STD data. Many STD programs are now involved in state and local MIS integration but lack the skills to communicate effectively with software developers in these critical areas.

**Objectives:** To generate a document that defines requirements at the functional level for a Model STD Information System (MSIS); To facilitate communication between the following groups in the design process: Non-technical Subject matter Experts (SMEs) and end users; Development technical team; STD project management staff

**Methods:** Joint Application Requirements (JAR) process was followed with Subject Matter Experts (SMEs) skilled in field work, program management, and information systems development specific to STD work. The JAR leader served to facilitate and to integrate the requirements into a document in the standard format for System Development Life Cycle (SDLC) methodology.

**Results and Conclusion:** The Functional Requirements Document for MSIS was generated to supply a basic definition for the initial requirements phase in the SDLC, for a data management system. MSIS was to fulfill the needs of a typical STD control system, facilitating data collection, analysis, interpretation, and dissemination. Information in each session was divided into four divisions of work: Surveillance, Intervention, Clinic Operations, and Program Management. The posters will highlight specifics from that document.

## Applying Prevention Principles to the Year 2000 Computer Problem

**RA Greenberg, and GA Richwald, Los Angeles County Sexually Transmitted Disease Program ; J Green, Los Angeles County, University of Southern California Medical Center**

**Background and Rationale:** As the new millennium approaches, concern over Year 2000 computer system compliance increases. 'Non-compliant' systems will corrupt all date/time specific data, therefore disease control programs that rely on accurate data to conduct surveillance, case management, and other activities must begin now to address these issues. Specifically, non-compliant systems will automatically 'roll back' to calendar year 1900 and incorrectly record data relevant to 'today's date', such as birthdates and dates of laboratory reports and case management activities. Analyses based on this data such as age specific morbidity rates, and the ability to compare and merge data between systems will also be corrupted.

**Objectives:** To examine the implications of Year 2000 non-compliance for STD control programs and describe measures taken by the LAC STD Program to assess and respond to these issues.

**Methods:** The STD Program developed and implemented a Year 2000 systems assessment plan for personal, network and surveillance related hardware and software.

**Results:** A total of 70% (165) computers and one file server failed testing. Some systems can be made compliant through software upgrades; others must be completely replaced. Costs associated with correction are estimated at \$350,000. A corrective action plan, which included an internal contingency plan and a plan for agencies the STD Program shares data with, was developed and implemented.

**Conclusions:** Unaddressed, the Year 2000 computer problem will adversely affect disease control programs' surveillance and operations activities due to non-compliant systems within and outside the program. Careful and timely assessment, planning and resource allocation can mitigate these problems. The impact of Year 2000 compliance issues as well as the STD Program's plan, progress and recommendations will be discussed.

## Conversion from Hard-Copy to Automated Reporting of Sexually Transmitted Disease Surveillance Data

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**Background and Rationale:** Historically, states have reported STDs to CDC on several standardized forms that are key-punched, edited, and appended to national databases. A long-term objective is to replace this hardcopy form-based system with one in which projects submit weekly line-listed STD surveillance data electronically to CDC's National Electronic Telecommunications System for Surveillance System (NETSS).

**Objective:** To compare five process elements in the current STD and NETSS data systems; To examine the progress of the conversion process from hard-copy to automated STD surveillance reporting; To provide examples of more comprehensive analyses that will be available through NETSS reporting.

**Methods:** The STD and NETSS data collection systems are compared on five elements: 1) transmission method; 2) data format and variables available; 3) data quality-review methods; 4) reports generated; and 5) types of analyses performed. States have submitted hard-copy STD case counts to DSTD since 1963 and electronically to NETSS since as early as 1991. As part of the conversion process solely to NETSS, DSTD data managers monitor case counts, percentage of unknown and invalid responses in both systems. Projects are able to discontinue hard-copy reporting to DSTD at a time when NETSS reporting includes the data elements required to produce recurrent surveillance reports and when case counts from both systems are in agreement. States are classified based on how they currently submit data to NETSS.

**Results:** To date, 21 states have been able to discontinue hard-copy STD reporting. Another 17 states submit line-listed data and are either comparing their NETSS and STD hard-copy data or are unable to submit minimum data fields required to produce surveillance reports. The remainder of the states submit only aggregate counts of STDs or send mixed types of records for different diseases. Comparisons of key system processes and examples of improved analyses show the benefits of NETSS.

**Conclusions:** Conversion of all states to NETSS reporting will improve the timeliness and comprehensiveness of data analyses that are needed for effective STD surveillance.

## Evolving Foci in STD Research, Program, and Policy: An Analysis of National STD Conference Content

**CV Gavin and SO Aral,** Centers for Disease Control and Prevention, Atlanta, GA

**Background:** The National STD Prevention Conference focuses on sexually transmitted disease prevention, and offers an opportunity for researchers, health care providers, and policy makers to share their current work. The conference abstracts constitute a database which may be evaluated to describe patterns and trends in a wide range of STD prevention work done in the U.S.

**Objectives:** To describe the content, coverage, methodology, and foci of STD work presented at the 1996 and 1998 National STD Conferences. To describe differences between 1996 and 1998 in conference content, coverage, methodology, and foci of STD work. To identify research, program and policy gaps, and future directions based on the above.

**Methods:** We reviewed 133 abstracts presented at the 1996 National STD Prevention Conference. Abstract summary forms were used to categorize each abstract by primary focus, age of population, gender of population, population characteristics, settings, methods, level of intervention, and STD/complications. Abstracts for the 1998 National STD Prevention Conference will be assessed similarly.

**Results:** Most abstracts focused on health services [32%], closely followed by behavioral issues [28%]; and 23% addressed other topics (e.g., prevalence monitoring, information systems). Adolescents were specifically addressed in 14% of abstracts, and 10% covered adults. Thirty-five percent covered female study participants and 18% specified males. Seven percent mentioned participation of African Americans, 2% mentioned Whites, and 1% mentioned Latinos. STD clinics accounted for 25% of study sites. Twenty-five percent were observational studies, 4% were experimental studies, 4% were program evaluation and 5% had a community level intervention. Thirty-two percent addressed STDs generally. The STDs addressed specifically included chlamydia [28%], syphilis [22%], gonorrhea [10.5%], and herpes [4.5%].

**Conclusions:** These data suggest that health services and behavioral issues are the primary focus for STD prevention research. Populations covered most frequently were adolescents, African Americans, and females. Many did not contain specific information regarding study settings and methods that would have made this effort a more precise and accurate inventory of current work. The development and implementation of a structured abstract format may help provide more complete information. Analysis of 1998 abstracts will help the STD field understand changes in STD research and programs as well as gaps for exploration in the future.

## Measuring Perceived Barriers to Condom Use: Psychometric Evaluation of a Condom Barriers Scale

**J St. Lawrence, CDC, Atlanta; A Chapdelaine, R O'Bannon, III, T Brasfield, & G Eldridge, Jackson State University, Jackson, MS; J Devieux, Meharry Medical College, Nashville**

**Background:** There has previously been no theoretical model of health behavior which can measure psychometric properties.

**Objective:** To develop a psychometrically sound instrument measuring perceived condom use barriers, a theoretical construct in health behavior models.

**Methods:** Three studies developed and evaluated an instrument measuring perceived barriers to condom use. Study 1 (N=178) reduced the number of items and assessed the instrument's factor structure, internal consistency, and convergent validity. In Study 2, the instrument was administered to a cross validation sample (N=278). Confirmatory factor analysis and internal consistency were computed and construct, criterion, and discriminant validity were assessed. In Study 3 (N=30), temporal stability was evaluated.

**Results:** Study 1: Four factors emerged consistent with item development (motivational barriers, partner barriers, negative effect on sexual experience, and access/availability barriers). Item analyses reduced the original 42 items to 29. Cronbach's alpha for the scale as a whole was (.94). Subscale coefficients ranged from .78 - .90. Study 2: The scale achieved an alpha of .92 and individual subscales ranged from .70 to .86. The CBS was negatively correlated with the Attitudes toward Prevention Scale as were each of the 4 subscales. Total CBS score was negatively correlated with knowledge and evidenced a negative correlation with the % of intercourse occasions in the past 2 months that were condom-protected. Study 3: Test-Retest Reliability. Stability was highest for the total score ( $r = .86$ ). Moderate to high temporal stability was present for the subscales ( $.70 = .86$ ).

**Conclusions:** The instrument appears to have sound psychometric properties and can be used to measure a key construct in prevailing theoretical models of health behavior.

## Uncertainty in Cost-Effectiveness Analyses: A Comparison of Confidence Interval Estimation Methods

**AP Johnson-Masotti and SD Pinkerton, Center for AIDS Intervention Research, Medical College of Wisconsin, Milwaukee; D Lairson, LA Aday, and L Franzini, School of Public Health, University of Texas, Houston.**

**Background and Rationale:** Recently, attention has focused on statistical methods addressing uncertainty in cost-effectiveness (CE) analyses, especially developing methods to estimate confidence intervals around the CE ratio.

**Objectives:** To compare two statistical approaches (Taylor and Fieller) to estimating confidence intervals (CIs) around the cost-effectiveness (CE) ratio; To match those results to the characteristics of a data set from the National AIDS Demonstration Research (NADR) project

**Methods:** A Monte Carlo simulation was conducted for hypothetical CE data sets with diverse characteristics. Those results were matched to the characteristics of NADR data. The main performance criterion in the simulation study was the percentage of times the estimated CIs contained the "true" CE ratio (specified a priori). A secondary criterion was the average width of the CIs that each method generated.

**Results:** Simulation results indicated that, in general, when the correlation of costs and effects were negative or were equal to zero, the CIs estimated by using the Taylor method were wider and contained the true CE more often than did those obtained by using the Fieller method, but the opposite was true when the correlation was positive and the coefficient of variation of effectiveness was equal to 30%. When applied to the NADR data set, the Taylor method produced narrower confidence intervals for both the sex and drug risk indices; the difference in confidence interval widths was quite small for the drug risk index, but not for the sex risk index.

**Conclusions:** Overall, there was little difference between the methods in the evaluation of uncertainty. It might therefore be preferable to apply the simpler Taylor series method in this case.

## Beliefs and Intentions of African American Adolescent Male Athletes Regarding Partner Notification of STDs

**J Wiltshire, MK Oh, R Feinstein, University of Alabama at Birmingham, Birmingham, AL**

**Background and Rationale:** Partner Notification (PN), a proven public health strategy in adult STD control programs, remains under-utilized and inadequately explored for adolescents. The emergence of STDs as a serious health threat to adolescents demonstrates the need to explore every STD prevention strategy.

**Objectives:** To examine intent to notify sex contacts and to determine the factors influential in PN by African American adolescent males.

**Methods:** A self-administered survey was completed by student athletes during a pre-participation physical examination. The questionnaire assessed STD knowledge, beliefs, health care barriers, and intentions to notify partners.

**Results:** Of 508 participants, 73% were sexually active; 25% had a “passing” STD knowledge score (11/15 correct STD questions). Although 92% responded that it was “very important” to tell partners of STD status, only 20% thought that it would be easy to do so. Eighty-five percent of athletes “intended to inform” all partners. However, only 58% reported it “very likely” that they would inform steady partners, and only 37% would inform casual partners. Of the athletes, only 51% thought treatment of an STD important. Less than half of the athletes thought that an STD was a serious threat to their own health or their partners’ health (43% and 45%, respectively), and 25% reported it “easy” to get confidential treatment.

**Conclusion:** African American Adolescent males do not perceive STDs as a serious health threat. The majority are not likely to inform their partners, particularly casual partners.

## Partner Notification - Can a Client-centered Approach Increase the Number of Partners Seeking Treatment?

**M Michel, T Farley, M McKeown, Office of Public Health, New Orleans, Louisiana**

**Background and Rationale:** Partner treatment is crucial in reducing STD morbidity. Current partner notification methods are either ineffective or costly. An all inclusive booklet which is issued to patients for distribution to partners could provide an inexpensive and effective tool for increasing the number of partners seeking treatment.

**Objective:** To determine the effect of client distributed partner notification booklets on the number of partners seeking treatment.

**Methods:** Partner notification booklets were distributed in two intervention parishes by various health care providers to patients with suspected or confirmed gonorrhea or chlamydia. Public STD clinic medical records were reviewed to identify the purpose of the visit for persons seeking care in the intervention and control parishes.

**Results:** 1150 referral booklets were given to 24 providers in the two intervention parishes. In the three months before booklet distribution 232 patients were seen at public STD clinics in the intervention parishes. 70 (30%) reported a partner with a STD. In the initial three months of the study, the number of patients seen at these clinics decreased to 176. 63 (36%) reported a partner with a STD. Among males in the intervention parishes, the percent of patients who were partners showed an increase (53 % vs 41 %,  $p=0.11$ ) which was not statistically significant. In the control parish, the percent of patients who had a partner with a STD remained unchanged in these two time periods (32% versus 30% overall, 46% vs 48% for males).

**Conclusions:** Preliminary data suggests the distribution of partner referral booklets may have increased the number of males seeking care for STDs. A complete analysis of the six-month trial will be presented at the conference.

## Sexually Transmitted Disease and Family Planning: A Model for Integrating Services

**T Bell, STD Program, Alaska Department of Health, Anchorage; K Lahdenpera, Family Planning Program, Municipality of Anchorage, Department of Health & Human Services, Anchorage, AK**

**Background & Rationale:** In 1989, the FP staff of the Municipality of Anchorage (MOA) noted an increase in STDs in their clients. The clinic had the highest positivity rate in chlamydia (10% in 1990) for Region X (AK, WA, OR, and ID). At the same time, members of the STD staff were aware of a large number of women who were not receiving annual cervical cancer screening or family planning services. There was a sense of urgency to integrate FP services with the department's STD Clinic. Both clinics responded to the changing health care environment by developing a team management model for integrated services between the two programs.

**Objective:** To integrate Reproductive Health and STD Clinical Services to provide comprehensive services to better meet client needs.

**Method:** Advanced Nurse Practitioners and Public health Nurses from both the STD Clinic and Family Planning Clinic were cross-trained in each specialty through December 1998. All new personnel will receive this training, which includes STD treatment protocols and family planning birth control methods. High-risk individuals were screened for chlamydia in both clinics. Data were collected in both clinics which was followed by cross-training of both staffs in 1998. To further accomplish this integration process, the clinical protocols, procedure manuals, and medical record forms are being standardized. The medical records have been integrated and are in a central medical records room. Client registration has been centralized.

**Results:** There was an increase in the number of clients receiving FP services and STD screening or treatment or both. The positivity rate for chlamydia in the FP clinic dropped from 10% in 1990 to 3.0% in 1997 and in the STD Clinic from 10% in 1993 to 5.7% in 1997. The number of cervical cytologies collected in the STD clinic increased from zero in 1993 to 77 in 1997, and the number of family planning annual or initial exams increased from zero in 1993 to 60 during the same time period.

**Conclusion:** Integration of STD and FP services provided improved service to clients in both clinics, with increased numbers of clients comprehensive FP services and STD screening or treatment.

## The Ohio Sexual Health Coalition: Local Health Department Partners in Prevention and Problem Solving

**D Coleman, Columbus Health Department; Akron, Allen County, Canton, Cincinnati, Cleveland, Columbus, Combined Health District Montgomery County, Toledo, Wayne County and Youngstown Health Departments; Ohio Sex Health Coalition Members.**

**Background and Rationale:** Local health departments (lhd) providing STD services share many of the same issues and challenges yet function in virtual isolation from each other. This results in duplication of resources that could be shared, a lack of colleague support and missed opportunities for the infusion of new ideas and energy. In 1997 through the urging of lhd, the Ohio legislature funded STD services for the first time. This funding provided an incentive for lhd to work together to document the impact of this support. ,

**Objectives:** To establish a statewide forum for lhd STD staff to network, share resources, problem solve, and collaborate on projects.

**Methods:** A letter of inquiry was sent to the largest health departments in Ohio to determine their interest in meeting their colleagues and sharing information. Based upon the enthusiastic responses, the Ohio Sexual Health Coalition was formed. The first few meetings were spent sharing resources, learning about each others' services and problem solving. Several departments have joined in a collaborative effort to offer urine screening for adolescents in juvenile detention centers. The group has worked collectively to communicate the need for local input into state health department decisions and met with our colleagues in family planning to strengthen our partnerships.

**Results:** Over 45 individuals representing 10 lhd now participate in the coalition. Members include MDs, RNs, lab managers, administrators, and counselors. Networking and consultation extend beyond the meetings and a statewide collaborative project has been undertaken. Forms, brochures, and procedures have been shared. Results from the adolescent initiative will be shared to lobby for continued state funding.

**Conclusions:** An interdisciplinary statewide coalition of lhd sexual health professionals provides an important opportunity for group problem solving, joint initiatives and networking.

## Evaluating the Regional Approach to Infertility Prevention: New Partners in Prevention

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**Background and Rationale:** The regional approach to infertility prevention, a collaborative effort aimed at preventing STD-related infertility, has been used in the U.S. since 1988. This approach develops systematic, region-wide collaborations among STD, family planning, and public health laboratory programs to maximize disease prevention efforts. Historically, STD and family planning programs have approached STD prevention from different perspectives.

**Objective:** To describe the positive and negative features that determine the effectiveness of the regional approach.

**Methods:** To identify critical features of each region's operations, we used an adapted version of the RECAST methodology (Goodman et al., 1997), a process evaluation framework developed to evaluate the National Cancer Institute's Data-based Intervention Research program. Through document review, one-on-one open-ended interviews with key informants (regional coordinators and representatives from STD, family planning, and laboratory projects), and examination of data systems and regional accomplishments, we identified and categorized critical program features.

**Results:** Based on preliminary data, key informants identified successful collaborative efforts including standardized screening protocols, studies to improve lab specimen collection techniques, multi disciplinary committee meetings to establish regional data reporting requirements, and overall satisfaction with the synergistic approach to formulating a regional system.

**Conclusions:** Multi-disciplinary committees with common goals and clear communication appear to enhance infertility prevention efforts at the regional level. Lessons learned from the regional approach to infertility prevention may be applied to regional efforts to combat other public health problems.

## Initiating Contraceptive Care in an STD Clinic Setting

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**Background and Rationale:** Women attending STD clinics are at high risk for unintended pregnancy and STD, but STD clinics focus mainly on STD treatment and prevention.

**Objectives:** To compare a clinic-initiated contraceptive program to the usual referral model to assess whether initiation of effective contraceptive services can be integrated into an STD clinic setting; whether women who begin contraceptive services in the STD clinic can be effectively transitioned into primary care; whether an enhanced contraceptive program reduces HIV prevention efforts; and whether the rate of unintended pregnancies is reduced.

**Methods:** Women attending an urban STD clinic, not pregnant, and using either no contraception or only condoms, are randomly assigned to either an intervention or control group. Intervention group receives enhanced contraceptive counseling, STD treatment, provision of contraception, and referral to a primary care provider (PCP). Control group receives STD treatment, one month's supply of condoms with foam, and information on the location of PCPs. Both groups are followed 4, 8, and 12 months after enrollment.

**Results:** To date, of 1001 eligible patients, 464 (46%) have enrolled. Enrollment was highest among young patients (70% < 24 yrs vs. 30% > 25 yrs), and similar among ethnic groups (whites 37%, blacks 27%, and Hispanics 32%). At enrollment, 62% described a past STD, 62% had an STD diagnosis as the reason for the visit, 44% reported sex with > 1 partner during the previous 4 months, and 25% reported no condom use. No difference was seen demographically between participants and refusers. Of enrolled participants, eligible for follow-up, 186 of 359 (52%) returned at 4 months, 108 of 241 (45%) at 8 months, and 56 of 136 (41%) at 12 months.

**Conclusions:** High-risk STD clinic patients will participate in a STD clinic-initiated trial to assess strategies to lower unintended pregnancies.

## Challenges in Evaluating STD Clinical Training: The Validity of Self-Assessment of Clinical Skills

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**Denver, Colorado**

**Background and Rationale:** Denver's STD/HIV Prevention Training Center offers clinical training to improve the delivery of STD services. To measure effectiveness, trainers collect self-reported skill assessments from each trainee before and after training. Skill improvement is the primary desired outcome, but validity of self reports is a concern. The literature suggests that validity can be demonstrated by using other supposedly more objective measures. In an attempt to validate the self-reports of skill, clinic preceptors completed the same skill assessment for each trainee.

**Objectives:** To explore the extent to which the preceptors' observations correlated with, and therefore validated, trainees' self-assessments of their clinical skills.

**Methods:** Using Kendall tau-b correlations, we compared 35 trainee post-course and preceptor assessments of trainees' abilities in each of 27 skills, rated poor, fair, good, or very good or excellent, during courses between October 1997 and April 1998.

**(Preliminary) Results:** Both assessments gave only the highest ratings to initial-contact skills (introduction, assessing reason for visit). For six other skills, primarily those associated with vaginal exams, we found statistically significant correlations, all positive and ranging from 0.335 to 0.604. For some skills, the number of "not applicable" (trainee) or "not observed" (preceptor) responses so diminished the sample size that meaningful correlations were impossible. Preceptors nearly always rated trainees' skills higher than did trainees (percentage of very good or excellent, one-tailed paired t-test,  $p < 0.0001$ ).

**Conclusions:** For at least some clinical skills, preceptor observations moderately confirmed trainees' self-assessments of clinical proficiency. The lack of significant correlations for the remaining skills may reflect the small sample of trainees or may indicate a true lack of validity. As data continue to accumulate, we shall continue to assess validity of self-reports of clinical skill.

## Structural Barriers to Implementing STD-related Clinical Skills

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**Background and Rationale:** The Denver STD/HIV Prevention Training Center uses didactic and hands-on clinical methods to train clinicians to diagnose, treat, and manage STDs. Evaluation of long-term effectiveness includes identifying structural barriers in clinical settings that might inhibit the implementation of knowledge and skills acquired during training. Once identified, training may be designed to address some of these barriers.

**Objectives:** To identify and describe structural barriers to optimal clinical assessment, treatment, and management of STDs.

**Methods:** 135 out of 139 health care providers, who attended a 3- or 5-day clinical STD training course between September 1995 and April 1997, were contacted by mail or by telephone six months after training. They were asked to complete a structured survey assessing retained knowledge and skills, long-term benefits of training, and barriers to clinical performance. Frequencies of responses to structured questions were calculated, and responses to open-ended questions were coded, categorized, and added to a priori barriers.

**Results:** 58 of the 135 students contacted (43%) responded to questions concerning barriers to clinical performance of STD-related skills and knowledge. Demographics of respondents were not significantly different from those who did not respond. Of those responding, 58% reported experiencing at least one structural barrier in the clinical setting that inhibited their assessment of patients for possible STDs. The most frequently reported barriers were inadequate staffing (32%), lack of proper equipment (38%), and lack of laboratory support (26%).

**Conclusions:** There are structural barriers in the clinical setting that may inhibit the implementation of knowledge and skills acquired during training. Further research is needed to measure the effects of structural barriers on the performance of STD-related clinical skills and knowledge.

## Characteristics and Practice Patterns of Participants in the National STD/HIV Prevention Training Network's "STD Intensive" course

**J Ellen, University of California, San Francisco and J Douglas, Denver Department of Public Health and Hospitals, in conjunction with the Evaluation Committee of the National STD/HIV Prevention Training Center Network**

**Background and Rationale:** A goal of the CDC-funded STD/HIV Prevention Training Centers (PTC) is to improve the management of STDs by informing practicing clinicians. To this end, each PTC offers a course titled the "STD Intensive," which last one week and consists of a series of standardized, didactic sessions, case-based discussions, and a clinical practicum focused on the diagnosis and management of STDs.

**Objective:** To determine the characteristics and STD-related practice patterns of clinicians participating in the "STD Intensive" course.

**Methods:** Participants completed a self-administered survey at the beginning of the courses between October 1997 and December 1997. During that time, eight different PTCs conducted an "STD Intensive" course for 185 different individuals. Only data collected from participants who reported being a practicing clinician are presented below.

**Results:** Eighty-eight clinicians participated in the course at one of the PTC sites; 15% of the participants were male. Twenty-one percent of participants worked in a publicly funded STD or general medical clinic; 13% in a college-, university-, or school-based clinic; 11% in a family planning clinic (public or private); 17% in a private practice; 2% in a free-standing managed care clinic; and 23% in other types of clinics, including those affiliated with corrections facilities or the Indian Health Service. Twenty percent of participants were either MDs or DOs, - 3% were physician assistants; 25% were registered nurses; and 46% were either nurse practitioners or nurse midwives. Of participants who provided care to women (n=88), 56% and 51% always or usually screened asymptomatic women with a new sex partner in the last three months for gonorrhea and chlamydia, respectively. Of participants who provided care to men (n=66), 45% and 38% always or usually screened asymptomatic men with a new sex partner in the last three months, for gonorrhea and chlamydia, respectively. Of the participants who diagnosed at least one case of either gonorrhea or chlamydia (n=49), only 15% reported not making an attempt in every instance to have sex partners treated.

**Conclusions:** The participants in the "STD Intensive Course" are varied with respect to clinical setting and occupation. Few clinicians in managed care organizations participated in the course. Participants did not screen all patients with a new sex partner. Further data are needed to determine barriers to participating in the "STD Intensive" course and whether participation in the course influences practice patterns.

## Assessing the Validity of a Clinical Skills Self-Assessment in a Clinical Training Program

**T Hogan, A Rompalo, P Smith, Baltimore STD/HIV Prevention Training Center (PTC); Baltimore, MD; S Ratelle, K Hopkins, STD/HIV Prevention Training Center (PTC) of New England Boston, MA**

**Background & Rationale:** Since 1996, the National Network of STD/HIV Prevention Training Centers has been developing standardized knowledge and skills evaluation on instruments for the basic clinical training course offered at each of the ten centers. At least 50% of the time spent in these courses must be experiential in nature, i.e., observing clinic protocol, then performing clinical examinations and laboratory identification. Efforts to develop a valid evaluation of the skills component of the training course have proven to be elusive. Obstacles include creating an instrument that adequately correlates the student self-assessment ("subjective") with the preceptor assessment ("objective"), overcoming the problem of inter-rater reliability and designing a skills inventory instrument for the preceptor which defines what constitutes poor to excellent performance along a Lichert scale of 1 to 5.

**Objectives:** To develop a method to correlate the clinical skills self-assessment with the preceptor assessment and determine the validity of the self-assessment for rating clinical skills.

**Methods:** Both the Baltimore and New England PTCs contract with gynecologic teaching associates (GTA) to teach the pelvic examination. We propose to choose one clinician (preceptor) to observe the class participants during this segment. Using the PTC instruments designed for the clinical skills self-assessment and the preceptor assessment, we will compare the results of the rating for 6 elements of the instrument specific for the female examination. Each PTC will conduct 3 classes through October 1998, with an anticipated enrollment of 48 class participants.

**Results:** Results will be presented after analysis of data collected through October 1998.

**Conclusions:** Pending

## Coordination, Marketing, Delivery, and Evaluation of National Satellite Broadcasts: A Model Developed by the National Network of STD/HIV Prevention Training Centers (PTC)

**LK Mason, Denver STD/HIV PTC, Denver, CO; JM Marrazzo, Seattle STD/HIV PTC, Seattle, WA**

**Background and rationale:** In 1995, CDC instructed the STD/HIV Prevention Training Centers (PTC) to develop distance learning methods for health care providers across the country.

**Objectives:** To describe (1) collaborative efforts of the PTC to provide satellite broadcasts; (2) course participants; and (3) participants' evaluation of broadcasts.

**Methods:** In 1996, the Distance Learning Committee of the National Network of STD/HIV PTC outlined a curriculum for four biannual national satellite broadcasts. These included "Update on Viral STDs: HSV and HPV," 3/20/97; "Caring for Adolescents with STDs," 10/9/97; "Caring for Women with Vaginal Infections," 3/12/98; and "Caring for Women: Management and Prevention of Cervicitis and PID," planned 10/7/98. Presentations stressed case-based formats and interactive question and answer sessions. Marketing and extensive downlink infrastructures were developed. Learning objectives were identified. Standardized questionnaires elicited participants' demographics, program evaluations, perceived pre- and post-course self-assessment, and participants' opinions about broadcast quality, course materials, organization, future topic and length preferences, and interest and capability in distance learning modalities.

**Results:** 9,963 participants submitted evaluations for the first two broadcasts (4,886 on 3/12/97, and 5,077 on 10/9/97). Of those, 40% were RNs, 15% nurse practitioners, 13% health educators, counselors or DIS, and 8% were physicians. 25% worked in managed care and 20% in private settings. 79% of participants provide direct clinical care for patients with, or at risk for, STD. Participants perceived improvement from low-medium (pre-course) to medium-high (post-course) for all skills identified.

**Conclusions:** Satellite broadcast technology is an extremely effective method of providing STD/HIV training to a large national audience in rural and urban settings. Cost-effectiveness of delivery is optimized by establishing local downlink networks, providing early notification of upcoming broadcasts to allow time for optimal participation, and sharing tasks of broadcast production and evaluation between centers.

## Chlamydia and Gonorrhea Prevention Practices: Evaluation and Comparison of Physician, Nurse Practitioner, and Registered Nurse Clinical Assessment and Disease Management

**K Schmitt, M Simmons, J Dettis, D Thompson, J Wroten, Florida Department of Health, Tallahassee, FL**

**Background and Rationale:** The objective of the Florida Chlamydia Prevention Project is to screen for, diagnose, and treat young women with chlamydia in order to prevent sequelae of infertility and low birth weight. A question of keen interest to public health is how well clinicians actually diagnose and manage this prevalent infection following training sessions.

**Objectives:** To examine practices of different groups of clinicians previously trained as part of the chlamydia prevention project, related to diagnosis, and treatment of chlamydia and gonorrhea; and to compare symptoms, signs, presumptive treatments and microscopy findings associated with subsequent laboratory test results.

**Methods:** This is a retrospective study conducted with univariate and multivariate analyses of a population-based sample (19,000 chlamydia prevention project records) using linked laboratory tests, and case reports. We plan to complete backwards stepwise logistic regression analysis for variables associated with presumptive diagnosis and treatment of chlamydial and gonorrheal infections.

**Results:** Of non-pregnant women, 30% diagnosed with mucopurulent cervicitis; 42% with a friable cervix and 12% with cervical motion tenderness were not provided with treatment at the time of their visit. Another disturbing finding was that wet mounts were often not performed when the physical exam revealed signs of infection. Comparison of clinical performance among different groups of providers is pending completion of the analyses.

**Conclusions:** Disturbing quality of care issues were identified among those with a diagnosis and signs of infection on physical exam on the day of the visit and delays were apparent in presumptive treatment. Translation of knowledge acquired during training into consistent clinical practices may contribute to variability of providers working in reproductive health settings.

## STDs: Forging Meaningful Partnerships in Diagnosis, Treatment, and Case Management: A Series of One-day Seminars Presented throughout Kansas.

**J Scott and L Murphy, Kansas Department of Health and Environment, STD Section, Topeka, Kansas**

**Background and Rationale:** Numerous requests from public and private health care providers were received by Disease Intervention Specialists, seeking comprehensive sexually transmitted disease (STD) case management training. Previously, the state STD control program had not been a primary provider of formal STD training for health care practitioners. A training needs survey was distributed to health care providers at the 1997 annual Kansas Family Planning Conference. Results of the survey need to be addressed such as diagnosis, treatment, and case management of STDs. Area Health Education Centers (AHECs) were commissioned as collaborators to help plan and develop the continuing education classes.

**Objectives:** To provide participants with accurate information on transmission, clinical presentation, diagnosis, and treatment of bacterial STDs in order to provide timely and effective case management; To provide participants with a programmatic overview of the state STD control program that would enhance collaboration between public and private providers.

**Methods:** A six-hour continuing education class was presented statewide in five geographic regions over a two-week period in September 1997.

**Results:** Over 270 health care providers attended the classes. Evaluations of the course indicated that the needs of the participants had been met or exceeded.

**Conclusions:** By responding to the requests for specific training needs of health care providers, increased collaboration between public and private health care providers and the state STD control program was realized owing to the success of the first training sessions, additional requests have been made for future courses relating to STD control, specifically contact tracing, partner notification, and viral STDs.

## Houston's Black Market: The Predictors and Economics of Exchanges of Sex for Money or Drugs

**J Baseman, MW Ross, L Leonard, University of Texas, School of Public Health, Houston**

**Background & Rationale:** Since the beginning of the crack epidemic that hit U.S. cities during the 1980s, crack use has been associated with high-risk sexual activity, including prostitution. Despite the elastic nature of demand for sex services, the inelastic nature (with regard to both price and income) of the demand for crack propagates sex for drugs exchanges. The persistence of drug use and prostitution in urban populations has deleterious effects on efforts to contain the spread of STDs within communities that are at the highest risk for infection.

**Objectives:** To explore the relation between drug use and the buying and selling of sex services in 2 Houston communities.

**Methods:** 800 residents of 2 Houston zip code areas were asked to participate in street-intercept interviews to obtain information on demographics, knowledge about syphilis, sex, and drug use.

**Results:** 50% of women and 21% of men had ever traded sex for money or drugs, and 58% of men and 20% of women had ever bought sex. 49% of women and 24% of men who had ever used drugs indicated crack as their drug of choice. Crack use significantly predicted the trading of sex for money or drugs by both men and women. Income distributions were typical of sex exchanges buyers of sex were better off than sellers. Sellers of sex were more likely to have had new partners, and were less likely to have used condoms at their last sexual encounters than those who had never sold sex.

**Conclusions:** The data are suggestive of a black market for the exchange of sex for drugs or money. The existence of such a market facilitates the spread of STDs in high-risk communities.

## Prevalence of Gonococcal and Chlamydial Infections in Commercial Sex Workers in a Peruvian Amazon City

**N Jordan, M Paris, T Castellanos, S Vermund, and EW Hook, III, University of Alabama at Birmingham; E Gotuzzo and C Caceres, Universidad Peruana Cayetano Heredia, Lima Peru; J Aramburu, and G Gyzueta, Region de Salud, Loreto (Iquitos) Peru**

**Background and Rationale:** Iquitos, Peru, a densely populated port city housing both a large military base and a booming tourist industry, provides a thriving market for commercial sex and, consequently, it provides fertile ground for the spread of sexually transmitted disease (STD). Therefore, STD prevention and control programs targeting commercial sex workers (CSWs) could prove highly effective.

**Objectives:** To characterize the prevalence of gonococcal and chlamydial infections in CSWs; To correlate those findings with social or behavioral characteristics; To identify appropriate intervention strategies.

**Methods:** CSWs, recruited through street and brothel outreach, were administered questionnaires. Urine specimens were collected for gonorrhea and chlamydia testing using ligase chain reaction assays.

**Results:** Twenty-eight percent of CSWs were positive for chlamydia (22%) or gonorrhea (14%). Registered CSWs were more likely to have worked more than five years ( $p=0.03$ ), to report ten or more partners ( $p=0.002$ ), and to work in brothels ( $p<0.001$ ). Significant associations also were noted between infection status and age, with adolescents at increased risk (odds ratio [OR]=4.13,  $p=0.001$ ) and duration of employment, with those employed less than five years at increased risk (OR=3.72,  $p=0.04$ ). The latter association, however, was due to age. Also, most CSWs believed themselves to be at no or at low risk or didn't know their risk for gonococcal infection (30%/12%, and 25%, respectively) or AIDS (25%/8%, and 35%, respectively), with 11% perceiving AIDS as more of a threat. Recent antibiotic use (41% use within the last month) and other factors under study appeared to have no association with prevalence of infection.

**Conclusions:** High infection rates, lack of knowledge regarding STD/HIV risk assessment, and other high-risk behavior prevalent in this population stress the need for immediate STD intervention. The study further suggests that informational and risk assessment programs and risk-reduction interventions could be quite successful.

Withdrawn

## The Sexual Internet: A Newly Emerging Risk Environment

**M McFarlane, Centers for Disease Control and Prevention, Atlanta, GA**

**Background and Rationale:** Just as ‘cruising the bars’ has long been a method of seeking sexual contact, ‘cruising the internet’ has become a popular form of meeting potential sex partners, making the internet an unexplored, newly emerging risk environment, as well as a potential venue for behavioral interventions. Various internet venues (e.g., chat rooms) provide an excellent means of initiating sexual contact without initial face-to-face interaction. Journalistic reports and small-scale projects suggest that the incidence of internet-initiated sexual activity is very high; furthermore, there is some suggestion that internet-initiated sexual activities comprise riskier sexual behaviors than non-internet-initiated sexual activity.

**Objectives:** To describe current, continuing research efforts to understand this newly emerging risk environment.

**Methods:** This is a descriptive study of internet-initiated sexual contact. Analysis occurs at two levels: first internet sex venues are described in terms of typical content of discussions, number and characteristics of visitors to the venue, type of sexual activity being sought in the venue, and estimated rate of sexual contact of visitors to the venue. At the second level, internet users seeking sex are interviewed regarding internet- and non-internet-initiated sexual behavior; STD/HIV history and risk behaviors; access to and use of medical treatment; motivation to initiate sexual contact on the internet; and knowledge, attitudes, perceptions, and behaviors surrounding the risk of injury or disease stemming from this type of contact.

**Results and Conclusions:** Results from both levels of analysis will be presented. Conclusions will be drawn regarding the nature of the internet as a newly emerging risk environment and as a potential venue for behavioral interventions to prevent the spread of STD/HIV.

## Practice Patterns of Sexual History Taking and HIV Risk Assessment: A Survey of 199 Clinicians in New England Attending a Skills Building Workshop

**S Ratelle, R Aird, W Dumas, M Whelan, P Etkind, Massachusetts Department of Public Health**

**Background and Rationale:** Professional organizations recommend that sexual history taking be part of routine clinical practice yet a recent survey of women indicated that only 36% were asked about their sexual activity.

**Objectives:** To assess the level of comfort in taking a sexual history, and HIV counseling and testing practices among primary care clinicians attending a skills building workshop on the topic.

**Methods:** Clinicians were asked to anonymously complete a written questionnaire before attending the workshops.

**Results:** 27% of respondents were physicians. 62% of respondents stated that they see 2-5 “at risk” patients per day. Only a third provided routine HIV risk assessment. Half of the respondents stated that they were very comfortable in discussing HIV risk behavior. Topics identified as most challenging to address were specific sexual behaviors for women who have sex with women (33.6%) and men who have sex with men (31.1%). The decision to recommend HIV testing was based on the client’s request (38%) and HIV risk behavior profile (38%). Nearly one third of clinicians stated that they give positive HIV test results over the phone about 25% of the time, while over 40% gave negative results 25% or more of the time. The decision to provide HIV test results over the phone was prompted by client request (18.6%) or the fact that the test was negative (17%).

**Conclusion:** More skills building training efforts are needed to increase the level of comfort among clinicians in taking a sexual history, particularly in assessing sexual behaviors in lesbians and gay men, and to improve HIV pre/post test counseling. Because this was a self selected group of individuals interested in learning more about the topic, routine HIV risk assessment may occur even less frequently in the general population of primary care givers.

## Surveillance for Pelvic Inflammatory Disease in Anchorage, Alaska: 1994 and 1995

SA Jones, M Beller, D Ingle, and D Fridley, Section of Epidemiology, Alaska Department of Health and Social Services, Anchorage

**Background and Rationale:** Pelvic inflammatory disease (PID) is a major cause of infertility in American women. One important measure of the effectiveness of any sexually transmitted disease prevention program is the rate of occurrence of PID.

**Objectives:** To evaluate the usefulness of reviewing medical records for identifying PID in Anchorage, Alaska.

**Methods:** We reviewed medical records of patients seen in Anchorage during 1994 or 1995 at three hospitals, at a multi facility urgent care center, and at a large family practice clinic. Charts of patients with an International Classification of Disease, Ninth Revision (ICD-9), diagnostic code 098 - 098.89, 0614 - 0614.9, or 0615 - 0615.9 were identified and abstracted. An illness was considered confirmed PID if it met the CDC surveillance definition of PID.

**Results:** Of 679 records identified, 597 (88%) were located and reviewed; of those, 289 either had a clinical diagnosis of PID (198), met the definition of a confirmed case (18), or both (73). ICD-9 code 0614.9 (unspecified inflammatory disease of female pelvic organs and tissues) had a sensitivity of 79% (229/289) and a specificity of 91% (281/308). The sensitivity of other ICD-9 codes was low, ranging from 1% to 35%. Of 263 evaluable records with PID, 181 (69%) did not have a treatment regimen recommended by the 1993 CDC treatment guidelines. There were 83 cases of laboratory confirmed gonococcal PID; 72 (87%) were reported to public health.

**Conclusions:** Medical record review can successfully identify PID cases, but no single ICD-9 code detected more than 79% of cases. Health care providers frequently treated PID with regimens that were not recommended by CDC. The proportion of confirmed gonococcal infections that were reported to public health was high.

## Trends in Pelvic Inflammatory Disease Hospitalizations and Ambulatory Visits, 1980-1996

M Y Sutton, A Zaidi, M Sternberg, and M St. Louis, Centers for Disease Control and Prevention, Atlanta, Georgia

**Background and Rationale:** Pelvic inflammatory disease (PID), a serious sequela of some sexually transmitted infections, is a major cause of morbidity in the US. Although a steady decline in hospitalized patients with PID has been documented over the past two decades, it is not known whether this reflects a true decrease in the total number of PID cases or an association with a presumed concurrent increase in ambulatory diagnosis and treatment of PID.

**Objectives:** To describe the estimated trends in incidence of diagnosed of PID in hospital and ambulatory settings.

**Methods:** Estimates from three National Center for Health Statistics (NCHS) surveys (National Hospital Discharge Survey (NHDS), National Hospital Ambulatory Medical Care Survey for Outpatient Departments and Emergency Rooms (NHAMCS-OPD and NHAMCS-ER), and National Ambulatory Medical Care Survey (NAMCS)) for 1980-1996 will be reviewed. Data from the National Disease and Therapeutic Index (NDTI) for physician office visits will be reviewed for comparison estimates. The main outcome measure will be the incidence of PID (defined by the appropriate ICD-9 codes) diagnosed and treated in hospital and ambulatory settings.

**Results:** Although the estimated number of hospitalized patients with PID has declined by 67% from 1981 (289,086 cases) through 1996 (96,000 cases), the estimated number of cases of PID diagnosed in physicians' offices (NDTI data) has shown no significant change during that same time period (283,375 cases in 1981 and 285,000 cases in 1996). NAMCS and NHAMCS data are consistently available for only 1992-1996 and do not yet show any particular trend for PID diagnoses in outpatient departments or emergency rooms.

**Conclusions:** Estimates of patients hospitalized with PID continue to decline. However, no concurrent increase in ambulatory cases of PID can be documented by reviewing available data sets. The overall decline in PID may be due to a concurrent decline in etiologic infections, such as gonorrhea. Until a more accurate surveillance system is instituted for PID, the above data sets should continue to be used for PID trend estimates.

## Use of Surveillance Systems to Estimate Incidence of STDs in HIV-infected Persons

**SJ Posner and TA Farley, Louisiana Office of Public Health**

**Background and Rationale:** The presence of other STDS greatly increases HIV infectiousness for HIV-infected persons.

**Objectives:** To estimate the incidence of common, curable STDS in persons previously known to be infected with HIV; To characterize HIV-infected persons who develop new STDS; To estimate the attributable risk of HIV transmission associated with STDS.

**Methods:** The Louisiana STD registry was matched to the state HIV/AIDS surveillance registry using probabilistic algorithms for years 1993 through 1997. Of these adults identified with HIV infection during or after 1993, we calculated the cumulative incidence for primary and secondary syphilis, gonorrhea, and chlamydia diagnosed at least 3 months after initial HIV detection.

**Results:** The mean observation time after HIV detection was 1.7 years for both males and females. Preliminary results show that the cumulative incidence per 1,000 males and females respectively were for primary or secondary syphilis 3.7 and 4.9; gonorrhea: 18.2 and 31.6; chlamydia: 3.1 and 41.3. Univariate analyses indicated that persons with these STDS after HIV detection were more likely to be female, African-American, under age 25, heterosexual as their primary exposure category, and to have a history of STDS before HIV detection and less baseline immunosuppression. We shall present detailed univariate, stratified, and multivariate analyses showing each STD's incidence relative to demographic group, HIV exposure category, STD history, and baseline immunosuppression. We shall estimate also the attributable risks of HIV transmission from these persons associated with STDS occurring after HIV diagnosis.

**Conclusions:** The underdiagnosis and underreporting of STD tend to minimize incidence estimates from surveillance data; nonetheless, STDS are common in persons with HIV. HIV-infected persons continue to practice unprotected sex enough to warrant routine STD screening and treatment.

## Human Papillomavirus, Chlamydia trachomatis and Cervical Dysplasia Prevalence along the Arizona-Sonora Border

**L Ortega, B Djambazov, B England, Arizona Department of Health Services; A Giuliano, J Guernsey de Zapien, University of Arizona; JL Navarro, Secretaria de Salud Publica de Sonora, Mexico; C Denman, El Colegio de Sonora, Mexico**

**Background and Rationale:** Research with overlapping concerns and subject populations is often planned and conducted separately by agencies that do not know each others' plans. In this instance, three separate studies had been planned by three institutions spanning two countries to study prevalence of HPV and chlamydial infection and cervical cancer. Collaborative efforts through the Arizona-Sonora Binational Technical Team have instead resulted in a jointly conducted study.

**Objectives:** Determine the prevalence and risk factors for HPV infection, chlamydial infection and cervical cancer in sexually active females living along the Arizona-Sonora border region.

**Methods:** Approximately 1200 healthy, reproductive-age women from each side of the border attending health clinics for routine gynecological care were recruited. Participants underwent laboratory screening tests for HPV and chlamydia and a pap smear, and were asked to complete a risk-factor questionnaire.

**Results:** Preliminary results for chlamydia infection, based on 1191 laboratory reports, show a positive rate of 2.3% for Arizona participants versus 4% in Sonora. Based on 797 specimens tested for HPV, the overall positive rate is 19% in Arizona and 16.3% in Sonora.

**Conclusions:** Multiple studies may be combined to facilitate data collection and maximize the usefulness of the information. Results of this study provide extremely useful information about the border population, enabling both state and local health authorities to effectively direct their prevention strategies.

## Profiles of People with Multiple STDs in Massachusetts, 1987-1996

**P Etkind, M Whelan, Y Tang, G Coman and A DeMaria, Massachusetts Department of Public Health, Jamaica Plain, MA**

**Background and Rationale:** People with multiple, recurrent STDs are in need of more intensive prevention interventions. An ability to profile who is at greater risk of having more than one STD would be valuable for developing and guiding prevention resources.

**Objectives:** To use the STD case registry to look for correlates of multiple STDs in individuals.

**Methods:** The STD case registry of 1/1/87 through 12/31/96 was re-oriented from incident-based to person-based. Matching algorithms were used to eliminate duplicate entries.

**Results:** People with >1 reported of STD over the ten year period were more likely to be younger at the time of first STD, have chlamydia or gonorrhea, be African-American, and be female than individuals with only one STD. Thirty-five percent of those with multiple records had chlamydia only, while another 28% of people with multiple STDs had chlamydia and gonorrhea. Of those whose first infection was chlamydia, 74% had subsequent infections of chlamydia only, while another 24% subsequently had at least one GC infection. Of those whose first infection was GC, 56% had subsequent infections with GC only, while another 36% subsequently had at least one chlamydia infection. Of those whose first infection was syphilis, only 18% had subsequent syphilis infection only. Instead, 45% subsequently had at least one GC infection and 28% subsequently had at least one Chlamydia infection.

**Conclusions:** Being young, female and a member of a minority group at time of first STD is associated with a higher risk of contracting subsequent STDs. More intensive interventions are needed for such individuals. The need for linkages with coordinated services is particularly acute in order to adequately serve their needs and prevent additional disease in this very vulnerable group.

## Socio-Demographic Factors Associated With Changes in Gonorrhea Rates in the United States - 1986 to 1992

**A Zaidi, R Roegner, W Levine, Centers for Disease Control and Prevention, Atlanta, Georgia.**

**Background and Rationale:** Gonorrhea rates in the United States have been declining since 1976. The magnitude of this decline has varied geographically.

**Objectives:** To explore the associations of economic and socio-demographic factors with the percentage of change in gonorrhea incidence rates at the city level, and to generate hypotheses on factors that may influence changes in gonorrhea rates.

**Methods:** Gonorrhea rates (per 100,000 population) for 63 cities with > 200,000 population were calculated from cases reported to the CDC in 1986 and 1992. Percentage change in rates from 1986 to 1992 was calculated for each city. Data for 46 economic and socio-demographic factors for 1990-1992 were obtained from the US Census Bureau. Pearson's correlation coefficients were calculated to assess associations between these variables and the percentage change in gonorrhea rates. A multiple regression model with percentage change in gonorrhea rates as dependent variable and with economic and socio-demographic factors as independent variables was built to find factors associated with the percent changes in rates.

**Results:** Twenty-one of the 46 socio-demographic and economic variables were significantly ( $p < 0.05$ ) associated with the percentage change in gonorrhea rates. In the multivariate regression model, six factors accounted for 66% of the variation. Percentage of housing units with more than one person per room and percentage of female householders with children were positively associated with the percent decline in gonorrhea rates, while male-to-female ratio, percentage of black population, percent female householders below poverty level and unemployment rate were negatively associated.

**Conclusions:** Socio-demographic and economic factors were highly correlated with the percent change in gonorrhea rates among large US cities. Identification of factors representing modifiable health determinants may help in improving interventions for gonorrhea control.

## Neurosyphilis in the Era of HIV Infection: A Review of Cases in Boston 1986-1993

**S Ratelle, P Etkind, Massachusetts Department of Public Health; R Barrow, M Warwick, University of Massachusetts Medical Center Preventive Medicine Residency Program; H Hayden, Carney Hospital Preventive Medicine Residency Program**

**Background and Rationale:** Reports of early neurosyphilis manifestations and apparent treatment failures in HIV-infected persons prompted us to investigate cases of neurosyphilis hospitalized during a period of increased syphilis and (estimated) HIV infection rates.

**Objective:** To examine the clinical manifestations, laboratory presentations, HIV status, and syphilis treatment history for patients hospitalized with a neurosyphilis diagnosis from 1986 to 1993.

**Methods:** Records with a hospital discharge diagnosis code consistent with a neurosyphilis diagnosis from three Boston hospitals were reviewed. Neurosyphilis was defined by a positive nontreponemal and treponemal serologic test, and a positive CSF-VDRL.

**Results:** 52 patients hospitalized with a neurosyphilis diagnosis had a CSF evaluation performed. 30 patients had a positive VDRL: 12 were HIV-positive, 12 were HIV-negative, and 6 had an unknown HIV status. Patients with a positive CSF-VDRL tended to be younger, have a higher median nontreponemal serologic titer (1:128 vs 1:16) and higher mean number of CSF leukocytes (38 vs 8 WBC/mm<sup>3</sup>,  $p < 0.05$ ) than those with a negative CSF-VDRL. Compared to HIV-negative patients, HIV-positive patients with confirmed neurosyphilis tended to be younger (37 vs 45,  $p = 0.09$ ) and to present with symptoms of early neurosyphilis (75% vs 25%,  $p < 0.05$ ). Among the patients with a negative CSF-VDRL, 40% had a CSF leukocyte count  $> 5$  WBC/mm<sup>3</sup>.

**Conclusions:** Although limited by the small numbers, this study suggests that cases of neurosyphilis confirmed by a positive CSF-VDRL present with high nontreponemal serologic titer. HIV-positive patients were more likely to present with manifestations of early neurosyphilis. A significant number of patients treated for neurosyphilis had a negative CSF-VDRL with a cell count  $> 5$ , reflecting the lack of sensitivity of the CSF-VDRL as a diagnostic tool particularly for late neurosyphilis.

## Syphilis in Houston, Texas: Risk Factors for Transmission in STD Clinics

**BC Boyett and N Islam, Houston Department of Health & Human Services; LY Hwang and JMH Risser, The University of Texas School of Public Health, Houston, Texas**

**Background and Rationale:** Although treatment is available, syphilis rates have risen in the 1980s and 1990s from the previous all-time low rates seen in the 1950s and 1960s.

**Objective:** To assess the odds of infection with syphilis among individuals with certain sexual and drug related risk factors for STDs.

**Methods:** Data collected from two STD clinics in Houston, Texas, by the City of Houston HIV Serosurveillance Project from 1993-1997 were analyzed for this study. Syphilis was diagnosed with reactive RPR and confirmed by reactive MHA-TP. Bivariate odds ratios were calculated for syphilis with heterosexuals as the referent group for several risk groups. Multivariate odds ratios were then calculated for risk variables meeting qualifying criteria for further analysis.

**Results:** Data on 34,786 individuals were analyzed for this study, with an overall prevalence of syphilis of 7.8%. Compared to heterosexuals, female intravenous drug users (IDUs) were at increased odds for syphilis infection (Odds Ratio [OR]=2.63; 95% Confidence Interval [CI]: 1.96, 3.53;  $p < 0.001$ ), as were male IDUs (OR=1.55; 95% CI: 1.05, 2.29;  $p = 0.026$ ) and female partners of IDUs (OR=1.60; 95% CI: 1.06, 2.41;  $p = 0.027$ ). Increased odds for syphilis infection were also found among individuals over age 30 (OR=2.12-5 95% CI: 1.92, 2.33;  $p < 0.001$ ), females (OR=1.77; 95% CI: 1.60, 1.96;  $p < 0.001$ ), and HIV positive individuals (OR=2.58; 95% CI: 2.03, 3.28;  $p < 0.001$ ).

**Conclusions:** Intravenous drug use appears to play a key role in the odds of syphilis infection; however, sexual behaviors linked to drug use are a more likely cause of infection than drug use alone. Individuals with HIV also appear to be a group that should be targeted for syphilis prevention education.

## The Acceptability and Behavioral Effect of Antibiotic Prophylaxis for Syphilis

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**Background and Rationale:** Innovative approaches are needed to control anticipated outbreaks of syphilis. Antibiotic prophylaxis of core transmitters has theoretical benefits but may not be acceptable to the community or may cause adverse behavioral consequences.

**Objectives:** To assess the acceptability and behavioral effects of providing antibiotic prophylaxis to persons likely to acquire and transmit syphilis.

**Methods:** As part of a community-based STD screening and treatment program, persons from high-incidence neighborhoods who reported high-risk sexual behavior were offered either one dose of intramuscular benzathine penicillin or three biweekly doses of oral azithromycin (1.0 gm), together with single doses of oral antibiotics to prevent gonorrhea and chlamydia. Participants were contacted one month and four months after enrollment to assess side effects, sexual behavior, and STD acquisition.

**Results:** To date, 65 persons have been initially offered antibiotic prophylaxis, and 43 (66%) agreed to participate. Of those, four were excluded on further interview, and 39 were enrolled, of whom 28 (72%) chose intramuscular and 11 (28%) chose oral antibiotics. Twenty-three (59%) participants were located for follow-up visits. Half of those receiving intramuscular penicillin reported buttock soreness, and approximately 25% in both groups reported transient diarrhea and abdominal pain. From enrollment to the four-month follow-up there was a decline in the percentage reporting two or more sex partners in the previous month (from 73% to 48%,  $p=.09$ ) and a stable percentage reporting condom use at the last sex (68% vs. 74%); none developed gonorrhea, chlamydia or syphilis.

**Conclusions:** Antibiotic prophylaxis for syphilis prevention is acceptable to persons at risk and is not associated with reported increases in sexual risk-taking. Larger demonstration projects of antibiotic prophylaxis should be undertaken.

## Syphilis Elimination Planning in Los Angeles County

**GA Richwald, AM Lawrence, K Kenney, J Bacumler, J Pannor, Los Angeles County Sexually Transmitted Disease Program, CA**

**Background and Rationale:** Currently, LA County, as well as much of the nation, is approaching its lowest level of syphilis ever reported. Rates of primary and secondary syphilis reported to the LA County STD Program decreased more than 600% from 1991-1996. However, elevated rates of syphilis have persisted in 7 of the County's 25 health districts (population 2.2 million) where the reported primary and secondary syphilis rates are between 4.5 and 19.4/100,000 population. This is considerably higher than the revised Healthy People 2000 Objective (4/100,000). In addition, African-American residents remain disproportionately burdened with a rate over 14 times that of Whites and 8 times that of Latinos.

**Objectives:** To develop and implement a plan for the elimination of domestic transmission of syphilis in LA County.

**Methods:** Throughout the past year, the STD Program identified essential components required to develop, implement and evaluate an effective syphilis elimination program. These components were classified as those that could be initiated using existing resources, those requiring reallocation of resources, and those needing new funding.

**Results:** A three part plan for syphilis elimination in LA County was completed in January 1998. The key elements are: 1) improved syphilis case management and disease management activities, 2) expanded active surveillance activities in the County jail system, and depending on the results, expanded jail screening, and 3) mobilization of key community leaders and organizations, including churches, to help communicate the value of eliminating syphilis and to address distrust of the health department by members of affected communities.

**Conclusions:** Methodology used in developing syphilis elimination plans, specific components identified, and results of initial activities will be discussed.

## Community Perceptions and Trust of Public Health Services and Syphilis Prevention Programs in Baton Rouge, Louisiana

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**Background and Rationale:** The recent syphilis epidemics in Louisiana occurred predominantly among poor African-Americans who may distrust public health agencies and prevention efforts.

**Objectives:** To determine community perceptions regarding trust and use of public health clinics, assess whether or not race of provider is of importance to persons at risk for syphilis, and assess willingness to participate in syphilis screening and antibiotic prophylaxis.

**Methods:** We conducted in-depth qualitative interviews with 18 formal and informal community leaders and 38 community members at risk for syphilis and quantitative surveys with 75 persons with early syphilis, 53 of their sexual contacts and 125 neighborhood controls.

**Results:** Qualitative interviews found high levels of trust in and use of public health providers. Race was not a factor when choosing health care providers. Respondents frequently proposed programs that brought services directly to neighborhoods where STD rates are high. Respondents favored a mobile health van for providing over a bar or home setting. Quantitative surveys found that over 80% of respondents in all groups trusted public health clinics "very much." Seventy-seven percent of cases, 91% of sexual contacts and 80% of controls said they would use a mobile health van that came into their neighborhood for STD screening. Fifty-eight percent of cases, 61% of contacts and 66% of controls said they would take a pill for antibiotic prophylaxis for syphilis. Similarly, 55% of cases, 48% of contacts and 50% of controls said they would take an injection for antibiotic prophylaxis.

**Conclusions:** Community members trust local health departments and providers, are not concerned with race of health providers and are supportive of community-based STD screening and antibiotic prophylaxis.

## Primary and Secondary Syphilis in Urban and Rural Areas of the United States, 1990-1997

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**Background and Rationale:** Reported rates of primary and secondary (P&S) syphilis have declined 84% in recent years (20.3 cases per 100,000 persons in 1990 to 3.2 in 1997). The 1997 rate is now below 4 cases per 100,000 persons.

**Objective:** To examine the patterns of P&S syphilis rates within the U.S. in urban and in rural areas and by geographic region for the years 1990-97.

**Methods:** Aggregate county-specific case report data on P&S syphilis are submitted monthly by state health departments (via Form CDC-73. 998) to the Centers for Disease Control and Prevention (CDC). The P&S syphilis case report data were summarized using urban-rural continuum codes for metro and nonmetro counties that were developed by (USDA) and incorporated OMB official metro status based on the results of the 1990 Population Census. These county-specific USDA codes were used to place counties into four urban-rural categories. For each of the years from 1990 to 1997, crude rates were calculated using 1990 Census population estimates and postcensus population estimates for 1991-1996. Rates for 1997 were based on population estimates for 1996. All rates were reported per 100,000 persons.

**Results:** From 1990 to 1997, the rate of P&S syphilis declined 86% (from 23.6 per 100,000 to 3.3 per 100,000) in counties classified as urban, 79% (from 9.7 to 2.0) in peri-urban counties, 73% (from 9.5 to 2.6) in peri-rural counties, and 82% (from 6.7 to 1.2) in rural counties. During 1990, 1991, and 1992, the highest rates (38.6 to 23.7) occurred in urban areas of the South. For 1993-1996, the highest rates were found in those Southern counties classified as peri-rural (21.1 to 9.7). In 1997, urban areas of the South again had the highest rate (7.3). Within the South, rural counties had the lowest rates. However, these rates were many times greater than the rates found for rural areas of the other regions, and at times were greater than the rates of urban areas outside of the South. In the West, Midwest, and Northeast, the highest rates were typically found in urban metro counties, and the lowest rates in rural counties.

**Conclusions:** Further reductions in syphilis will require prevention and control efforts focused on the South in general, and on urban areas of the Northeast, Midwest, and West.

## Molecular Subtyping of *Treponema pallidum*: Does it help the Epidemiological Assessment of Increasing syphilis in Maricopa County, Arizona?

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**Background and Rationale:** In 1997, Maricopa County reported 118 cases of primary and secondary (P&S) syphilis, a 33% increase over 1996 and a 174% increase over 1995 reported cases. The incidence of reported P&S syphilis in 1994 was 1.2 per 100,000 persons and has steadily risen to the present rate of 4.3 per 100,000. In March 1998, CDC was invited to assist the county and state staff members with the investigation of this increase in syphilis cases. As part of this field investigation, we used a newly developed method which allows molecular subtyping of *Treponema pallidum* strains. To date, no such subtyping scheme exists to support epidemiologic investigations in the US. This technique can be helpful in differentiating a large number of treponemal strains and tracing case-pairs during syphilis epidemics.

**Objectives:** To determine whether the strain typing would assist in determining patterns of person-to-person spread of syphilis and aid prevention efforts.

**Methods:** In the context of the epi-aid investigation, genital or serum specimens were obtained from consenting adult patients with confirmed primary and secondary syphilis seen at the STD clinic in Maricopa County. Specimens positive for *T. pallidum* DNA in a screening assay then underwent molecular subtyping based on repeat arp sequences and an RFLP digest of the tpr gene.

**Results:** To date, a total of 12 genitourinary and whole blood samples have been obtained from Maricopa County. Three unrelated genital specimens have been positive for *T. pallidum* DNA and are typable. However, specimen collection is continuing and more DNA-positive specimens are needed before this process can be used to make a statement about the molecular epidemiology of syphilis in Maricopa County.

**Conclusions:** Although molecular subtyping of *T. pallidum* during epidemics can greatly contribute to our knowledge of a particular area's molecular epidemiology, more aggressive specimen collection and transport techniques will have to be instituted if this technique will be able to add timely information that can help with local prevention efforts in Maricopa County.

