



National Institute for
Occupational
Safety and Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati OH 45226-1998
December 8, 2006
HETA 2004-0236

Peter R. Kerndt, MD, M.P.H.
Director of Sexually Transmitted Diseases
Los Angeles County Department of Health Services
2615 S. Grand Avenue, Room 500
Los Angeles, California 90007

Dear Dr. Kerndt:

This is the final letter from the technical assistance conducted by the National Institute for Occupational Safety and Health (NIOSH) Health Hazard Evaluation Program. This letter includes no new information concerning the 2004 outbreak of human immunodeficiency virus (HIV) among adult entertainment workers; all results have already been shared with you in the joint MMWR dated September 23, 2005, and in the materials from the PowerPoint presentations we have sent you in the past. We have added as references two recent papers concerning oral transmission of bacterial sexually transmitted diseases. Due to the ongoing concern regarding the safety of performers in the adult film industry (AFI) and our recent conversations, we believe that this letter will be useful for those interested in obtaining more information about this technical assistance.

The Los Angeles County Department of Health Services (LACDHS) had been investigating sexually transmitted diseases among workers in the AFI, and requested NIOSH technical assistance to evaluate worker health and safety in this industry following four work-related HIV infections among AFI performers in April 2004. NIOSH agreed to provide the LACDHS with recommendations addressing occupational health and safety in the AFI.

On May 18-19, 2004, a team including two physicians, Bruce Bernard, MD, MPH, from the Centers for Disease Control and Prevention (CDC)/NIOSH and John T. Brooks, MD, from the National Center for HIV/AIDS, STD, and TB Prevention (NCHSTP), Division of HIV/AIDS Prevention (DHAP), Epidemiology Branch, Clinical Epidemiology Team, and Mr. Everett Lehman, then Chief of the NIOSH HIV Prevention Program made a site visit to LACDHS. The site visit began with an opening conference, attended by representatives of the LACDHS: the City of Los Angeles Epidemiologist, Stephen Simon, J.D., AIDS Coordinator, City of Los Angeles; and Eugene Murphy, CIH, Senior Industrial Hygienist, California Department of Industrial Relations, Division of Occupational Safety & Health (Cal/OSHA), and the CDC investigators. We provided information concerning the CDC/NIOSH Hazard Evaluation and Technical Assistance Program and discussed the recent cluster of HIV infections in the AFI, sexually transmitted diseases (STDs) in the industry, as well as other health and safety issues in this industry. Following the open conference, we met with several independent producers and

DEC 11 2006

AFI performers, as well as talent agents for the industry in several focus groups that were set up by the LACDHS.

Background

Since 1995, the LACDHS STD program has provided guidance on specific clinical health issues (e.g., STD prevention and treatment guidelines) related to the adult film industry through a variety of means. This activity has included technical assistance to a private, not-for-profit clinic, the Adult Industry Medical Health Care Foundation Clinic (AIM Clinic). The AIM Clinic provides the majority of the sexually transmitted disease health screening for workers in the AFI. This clinic diagnoses and treats STDs and tests for HIV infection using molecular methods (polymerase chain reaction, aka PCR). Other services provided by AIM include contact tracing, education, test of cure, and clinical follow-up. Notably, performers in the heterosexual adult film industry are required by most producers to participate in a monthly testing service provided by the AIM Clinic for urogenital *Chlamydia* and *N. gonorrhoeae* infections as well as HIV infections.

In April 2004, the LACDHS initiated an investigation of a cluster of HIV transmissions resulting from workplace exposure in the heterosexual AFI. Complete details of this investigation and its findings have been published (MMWR 54(37): 923-6, 2005). LACDHS assisted with partner elicitation and notification, and medical referral for newly infected individuals. Pursuant to a request by the LACDHS, on June 4, 2004, Cal/OSHA also opened an investigation into the recent incidents of presumed workplace infection with HIV. LACDHS also sought technical assistance from CDC/NIOSH to investigate workplace hazards in this industry and to make recommendations regarding workplace health and safety for production workers.

The LACDHS worked with Cal/OSHA and NIOSH representatives to develop a model Exposure Control Plan (ECP). An ECP is required under the Cal/OSHA Bloodborne Pathogens Standard if employees have occupational exposure to blood or other potentially infectious materials. The major requirements of this standard include controlling exposures, identifying proper personal protective equipment, making hepatitis B vaccine available, proper handling of confidential medical records, providing written procedures for exposure incidents, and employee training. Cal/OSHA developed a webpage: [<http://www.dir.ca.gov/DOSH/AdultFilmIndustry.html>] to provide assistance to AFI workers.

Adult Industry Medical Health Care Foundation Clinic

During the time of our site visit, AIM used Healthcare Clinical Laboratories, Inc. to test venous blood samples for HIV using a PCR test for HIV DNA (i.e., viral load)¹ manufactured by

¹ Viral load testing is not a currently FDA-approved method for diagnosis of HIV infection. AIM uses a PCR-based method because it can detect virus before seroconversion, thus reducing the “window period” between infection and diagnosis. PCR methods can be prone to false positives. Depending on the test method used, PCR may not detect equally all subtypes of HIV-1, although in this investigation infection was caused by a subtype B

Page 3 – Dr. Peter R. Kerndt

Roche Diagnostics and urine for *Chlamydia* and *N. gonorrhoeae* infection by ligase chain reaction. Oropharyngeal and rectal specimens were not tested. AIM also provided testing and treatment services for other STDs (e.g., syphilis, trichomoniasis, herpes simplex viruses [HSV] infection, and genital warts), vaccination against hepatitis A and B, and gynecological care for women including Pap smears. AIM also provided a fee-for-service counseling service on risk reduction and early symptoms of STD infection, and provided an instructional video to all clients that addressed aspects of STD and HIV transmission unique to the adult film industry. Performers bore the cost of all diagnostic testing, treatment, and other services provided by AIM.

LACDHS reported to us that the AIM Clinic documented 200 cases of infection with *N. gonorrhoeae* and 31 cases of syphilis among its patients in 2004; presumably all were AFI personnel. In 2005, 931 STD infections were reported among 750 individuals testing at AIM. Overall, 21% were repeated infections, with 33% *Chlamydia* infections, 41% *N. gonorrhoeae* infections and 25.4% co-infections with *Chlamydia* and *N. gonorrhoeae*. Two-thirds of infections occurred in females (68%).

Film Production Process

Production of adult films takes place in a variety of locations: film studios, private residences, or public settings. Los Angeles County requires a permit for any filming activity, but estimates are that less than 15% of adult film shoots obtain permits. Producers planning a film contact talent agents to identify and recruit performers. Performers may also be hired directly by producers. Managers negotiate the terms of employment before performers go to a shoot: the specific work (i.e., sexual interactions), the role and expectations for each performer, and payment. At the shoot, it is routine for performers to share their monthly STD and HIV test results among one another. Producers often but inconsistently check performers' test results prior to the shoot.

Performers may decline to perform at their own discretion based on their level of comfort with other performers' test results (e.g., tests are greater than one month old). They may also decline to perform if the work proposed at the shoot is not as previously arranged with their manager (for instance, a producer requests an anal scene in place of a vaginal scene). Performers are typically paid \$400–\$1000¹ per shoot. A small number of performers are salaried employees working exclusively for a particular producer, but most performers work on a job-to-job basis, analogous to stunt performers in mainstream film production.

Condom Use during Filming

According to persons we interviewed, condom use was low in heterosexual adult films. Anecdotally, fewer than 20% of penile-anal and penile-vaginal penetrations are performed with condoms. In 2004, only two of the approximately AFI 200 producers required condom use for penile-anal and penile-vaginal penetration. The AIM clinic director speculated that condom use

virus, for the method was optimized.

was around 18%. Condoms or other barriers (e.g., dental dams) are rarely if ever used during episodes of oral-genital contact. A small number of studios (estimated two to five) require the use of condoms for all penile-anal and penile-vaginal sexual interactions. For the remainder of the studios, condom use for filming any sexual interaction is left to the discretion of the producer and/or performers involved.

In our interviews, we were informed that most producers do not have performers wear condoms during filming, because the condom-free films sell much better to distributors and retail outlets than those whose performers use condoms. Those few production companies that are “condom-only” already have extensive, well-established distribution and retail networks. We were also informed that moderate and smaller-sized producers are likely aware of the need to use condoms to prevent transmission of undisclosed/undetected disease, but do not want to risk the loss of market share by having their performers use condoms. Efforts to form a trade association that could set industry-wide standards for adult film production, such as the routine use of condoms, have not been successful. Efforts of the performers to organize into a bargaining unit have also not been successful.

The performers and managers we interviewed mentioned that there is a lot of pressure placed on performers at the worksite by the managers, film production crew, and other performers to work without consideration of workplace or personal safety. For performers who will work only with condoms, there is a large pool of other performers willing to accept the increased risk of working without condoms. Of particular concern, those work activities that pose the greatest risk of HIV and STD transmission (e.g., penile-anal sexual interaction) are also the activities for which the greatest wages are offered. One producer reported that for riskier acts it was not uncommon to use coercion with some of the performers (with the threat of their not being able to work in the industry again unless the riskier acts are performed), and because of financial need of the performers, they comply.

Discussion and Conclusions

Adult film performers are paid to engage in prolonged and repeated sexual acts with multiple sexual partners over short periods of time. This work places them at risk for HIV and STDs due to potential exposure to bloodborne pathogens. Unprotected sex acts (without barriers such as condoms) increase the risk of transmitting and of acquiring STDs and HIV. Riskier sexual acts (e.g., double-anal sex), have further increased the risk for HIV infection because of the possibility of mucosal tears in the recipient. The recent HIV transmissions in the adult film industry emphasize the need for a more stringent preventive industry approach to worker health and safety.

Oral-genital sexual contact can transmit STDs, including HIV. Recently, CDC has reemphasized this risk with reports of outbreaks of primary and secondary syphilis acquired through oral sex.² STDs in the oral cavity may be asymptomatic or subclinical; infected persons may not be aware of their infection and can spread it to others during oral sex.^{3,4} In view of the widespread practice of unprotected oral sex among AFI performers, this is an

important potential route of transmission for sexual pathogens. Although the risk for HIV transmission through oral sex is lower than the risk through anal or vaginal sex, AFI personnel might incorrectly consider unprotected oral sex (i.e., without a condom) to be a safe, no-risk sexual practice and adopt oral sex as a replacement for higher-risk behaviors. Oral sex, however, is not a risk-free sexual practice.

As demonstrated by the 2004 incidents of HIV transmission in the industry, screening alone is not an adequate means of preventing workplace transmission of HIV or other STDs. The current practice of requiring performers to pay for their own work-related HIV and STD testing and treatment poses an important potential impediment to seeking and accessing these services.

RECOMMENDATIONS

- 1) There is a need to develop, implement, and maintain a written health and safety program at each film production worksite. The program should be available for employees and independent contractors to read prior to performing in adult film productions. The written program should also be kept at the talent agency, production agency, and directors' and producers' offices used by the film production unit.
 - The program should include the names and contact information of the managers and supervisors who have the responsibility for implementing and maintaining the health and safety program at the worksite.
 - The program needs to be designed for primary prevention (i.e., to prevent exposure) – to promote health and safety at the film sites.
 - The program should include education of producers, employees, and independent contractors in the necessity of barrier use, specifically, condom use; as well as ways to improve condom negotiation skills among the employees and independent contractors, so that the requirement to use condoms is put into practice.
- 2) An orientation to safety and health policies and procedures at the AFI worksite should be provided to new employees and newly hired independent contractors, with written documentation that training has taken place. Verification that experienced employees and contractors have received health and safety training or have received a review of major health and safety issues within the past 30 days should also be kept in a log at the worksite. The serious nature of HIV illness and STDs that has been documented in the industry and the specific sexual acts that put workers at risk for these illnesses in the AFI industry necessitate such frequent training. Periodic training related to sexually transmitted diseases should be available to all AFI workers and staff in the AFI.
- 3) Production companies should provide periodic worker training on a regular basis for AFI personnel that covers topics of worker health and safety. This HIV outbreak has shown that it is inadequate to depend on the good will of non-profit clinics to have periodic voluntary training for health and safety purposes. The training should cover specific topics that have been identified by LACDHS as causing or likely to cause STDs, other workplace issues involved, and record keeping, as appropriate.

- 4) Managers, production company owners, and production supervisors need to protect workers from infectious diseases, including HIV, hepatitis B and hepatitis C, which can be transmitted through exposure to blood and other potentially infectious materials. CDC/NIOSH has adopted the concept of *universal precautions*.⁵ This is an approach to infection control that assumes that the blood, body fluids, and tissues of all persons are potentially infectious. Therefore, precautions to prevent exposure are used universally without regard to source. These measures would include:
 - Safe sex techniques that should be promoted by employers involved in the AFI industry include the following:
 - Avoidance of the riskier sexual behavior involving multiple partners (i.e., double anal penetration)
 - Simulation of sex acts using acting, production and post-production techniques (editing, digital imaging)
 - Ejaculation outside the partner(s) body, away from mucous membrane areas
 - Required use of barriers, which protect the partner from contact with semen, vaginal fluids, mucous membranes, fecal material, etc. Examples of barriers include condoms and dental dams. (Condoms and dental dams can also be considered personal protective equipment for the partner who uses them.)
 - Condoms and lubricant should be available at no cost to the employees and must be able to be used without fear of reprisal or penalty.
- 5) Employers need to ensure that AFI performers who may be exposed to blood, semen, vaginal fluid or other potentially infectious material (OPIM.) have received appropriate immunization (i.e., hepatitis A and B), or, if they have not received immunization, they need to provide them at no cost to employees. For the hepatitis A and B vaccine series, performers must receive the required number of shots, with proof, to ensure the employee has developed a strong enough immune response to protect against infection. Scheduled immunizations and procedures to be followed are those latest recommended by the CDC (<http://www.cdc.gov/ncidod/diseases/hepatitis/b/factvax.htm>).
- 6) AFI performers who have potential occupational exposure to infectious agents in the workplace should be provided appropriate STD testing at no cost to the performers.
- 7) If an employee has unprotected contact with someone else's blood, semen, vaginal fluid, or OPIM, the employer must provide him/her with a medical follow-up pertaining to the exposure at no cost to the employee.
- 8) If the infectious source individual consents to medical evaluation, he or she can be tested, and the results can be disclosed to the exposed employee, but the exposed employee must be informed of requirements to keep the source person's identity and infection status confidential.
- 9) AFI film sites must have available the most up-to-date drug regimen and recommendations from the Public Health Service to reduce the risk for HIV transmission after occupational exposure to HIV-infected blood. A kit containing a 4-day supply of medications should be available on-site for use by film personnel (see Appendix A regarding On-site Designee). [<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm>]
- 10) Post contact information regarding OSHA (Cal/OSHA in this case) with regards to worksite health and safety issues or concerns at every AFI worksite.

- 11) Contact information for company management responsible for health and safety should be made available to all workers at an AFI worksite.
- 12) A Medical Surveillance Program
 - Updated information on sexually communicable diseases should be made available to employees. This information should be consistent with CDC guidelines and cover the following aspects: a) transmission, b) symptoms, c) treatment, d) prevention, and e) possible sequelae from treated and untreated infections.
 - Biological monitoring for appropriate STDs based on CDC guidelines for high risk populations should be performed on workers who are expected to engage in direct sexual contact. Monitoring should be done for each worker prior to engaging in work involving any known direct sexual contact in the adult film industry for the first time and then on a regular basis. All STD/HIV specimens should be prepared and tested at a CDC-certified laboratory. Worker notification of results should take place.
 - Confidentiality of workers results should be maintained as provided for by the Health Insurance Portability and Accountability Act (HIPAA).
 - Health care providers, including the nurses and physicians, whether contractors or employees of the AFI production companies, should be trained in the early recognition, evaluation, treatment, and prevention of STDs, record keeping requirements, and physical assessment of employees.
 - Health care staff trained should perform periodic workplace walk-through assessments of established production companies and remain knowledgeable about operations, new risks, and changes in the industry. These observations should be documented and reviewed with the lead physician.
 - Surveillance should be performed to identify high-risk behaviors and condom use among the AFI personnel. Currently, this system has been set up through the non-profit clinic. Health care staff can provide input in the design and operation of a surveillance system for STDs and can help identify high-risk practices and procedures.
 - Production supervisors should be responsible for entering the appropriate information onto the OSHA forms, and management must ensure that those responsible for the record keeping must be appropriately and adequately trained on OSHA's record keeping requirements.
 - Evaluation of the medical management program should be performed on a periodic basis (at least annually). The goal should be to ensure that the program is effective and that changes in treatment protocols are incorporated.
- 13) Workers should be encouraged to report work-related concerns without repercussions from management. Incurring penalties for reporting work-related concerns discourages reporting of symptoms and is illegal. Early reporting allows intervention measures to be implemented before the effects of a job problem worsen.
- 14) AFI production companies must continue to comply with the Americans with Disabilities Act, with relevant state laws, and all other Federal laws prohibiting discrimination.

- 15) Production companies should expand opportunities for workers to participate in decision making regarding health and safety issues. This could include modifying the work to make it less risky to their health, supervisory training to develop a consultative style of supervision, and establishing problem solving approaches and activities.
- 16) A review of current health and safety policies in the national and international AFI industry should take place, and should include all of the various industry, employee, policy and public health organizations, and representatives that have a role in these issues.

This letter serves as a final report and concludes this technical assistance to the LACDHS. We would like to thank John Brooks, M.D., from the National Center for HIV/Acquired Immunodeficiency Disease Syndrome, Viral Hepatitis, STD, and Tuberculosis Prevention for his review of this letter for technical accuracy regarding STD and HIV diagnosis and treatment. We recommend sharing this letter with your adult film industry contacts, both managers and employees, including the employees working as independent contractors.

Thank you for your cooperation with this evaluation. If you have any questions, please do not hesitate to contact Bruce Bernard at 513-841-4589.

Sincerely yours,



Bruce P. Bernard, MD, MPH
Chief Medical Officer
Hazard Evaluations and Technical
Assistance Branch
Division of Surveillance, Hazard
Evaluations and Field Studies

DEC 11 2006

Appendix A

Onsite Designee to Handle Chemoprophylaxis Kit

An Onsite Designee should be identified by each film company. The onsite designees are required to ensure that all recommendations are met. Their responsibilities include ensuring that:

A "chemoprophylaxis kit" is readily available when filming is performed that may result in employee exposure to a bloodborne pathogen. The Onsite Designee should maintain oversight of the chemoprophylaxis kit.

Condoms, dams, and other barrier devices are available on site, in good condition, and are used by employees.

Employees are trained in the proper use of condoms and disposal of contaminated waste.

All employees who may have potential exposure to bloodborne pathogens are identified to the Onsite Designee. Employees must be identified prior to any potential exposures.

Employees report and timely follow-up with qualified medical personnel regarding all exposures to blood and OPIM.

Employees make timely contact with the appropriate medical personnel (e.g., contractor) who will provide counseling and testing to potentially exposed workers.

Information and general training is provided annually to all employees who may be occupationally exposed. This includes, at a minimum, the relevant information contained in the OSHA bloodborne pathogens standard; the current Public Health Service policy for chemoprophylaxis after occupational exposure to HIV; and the protocol for handling an exposure incident. Copies of the written material will be provided to the employees.

Current recordkeeping requirements (29 CFR 1904) are met.

All necessary contracts to perform counseling and testing following an occupational exposure incident are developed and overseen.

Workplace Controls

When potential exposure to bloodborne pathogens exists, universal precautions will be used. To protect AFI workers from STDs, a safe working environment must be provided. These procedures equate with the concept of universal precautions in the film setting.

The following control methods are recommended by NIOSH to minimize exposure:

Engineering Controls

Engineering controls are primary barriers that isolate or remove the hazard from the workplace. Engineering controls include simulation of sex acts using acting, production, and post-production techniques (e.g., editing, digital imaging; condoms and barriers, such as dental dams.)

Personal Protective Equipment

All personal protective equipment (PPE) needed to perform an employee's work duties should be provided by the producers at no cost to the employee. PPE is specialized equipment (e.g., condoms or dental dams) that is worn by an employee to place a barrier between the employee and any potentially infectious materials to which he/she may be exposed. PPE is required to be worn whenever exposure to blood or body fluids is possible. The protective equipment will be considered appropriate only if it does not permit OPIM to pass through or reach the employee's clothing, skin, eyes, mouth, or mucous membranes under normal conditions of use and for the duration of time for which the protective equipment will be used.

Work Practice Controls

Work practice controls reduce the potential of exposure by altering the manner in which a task is performed (e.g., frequent hand washing). Work practice controls often stipulate the standard operating procedures for how engineering controls and PPE are to be used to control exposures as identified below:

Contaminated material should be handled in accordance with procedures for the disposal of regulated waste.

All clothing, linen, or materials that become wet with potentially infectious material should be removed immediately or as soon as feasible.

All contaminated clothing, linen, or material should be placed in the appropriate designated area or container for storage, cleaning, decontamination, or disposal.

Housekeeping

The worksite must be maintained in a clean and sanitary manner. HIV and HBV are lipophilic viruses and consequently susceptible to a variety of disinfectants. A 1:10 solution of 5.25% sodium hypochlorite (household bleach) is recommended for disinfection of spills. A contact time of at least 10 minutes is needed to ensure adequate disinfection. Decontamination will be accomplished utilizing the procedures identified below in the section on "Decontamination and Spill Clean-Up."

All contaminated work surfaces, tools, objects, etc. will be decontaminated immediately or as soon as feasible after any spill of blood or other potentially infectious materials. The bleach solution or disinfectant must be left in contact with the contaminated work surfaces, tools, object or potentially infectious materials for at least 10 minutes before cleaning.

Equipment that may be contaminated with blood or other potentially infectious materials will be decontaminated before servicing or use.

Decontamination and Spill Clean-Up

All work surfaces and equipment that come into contact with body fluids or any potentially infectious materials must be disinfected daily, upon completion of work, with an appropriate disinfectant. Additionally, work surfaces and equipment must be disinfected after any overt spill. Work surfaces should be covered with plastic-backed absorbent toweling to facilitate clean-up and reduce production of aerosols as a result of a spill. Spills should be cleaned up by personnel familiar with the procedures outlined below. Janitorial staff is authorized to clean up potentially infectious materials only if they receive the appropriate training.

The following procedure should be used when dealing with contaminated waste:

- Wear the appropriate personal protective equipment (e.g., gloves, laboratory coat).
- When collecting materials for disposal, if household bleach is used for decontamination, utility gloves (e.g., gloves made from natural rubber, neoprene, nitrile, or polyvinyl chloride) should be worn due to the corrosive effect of bleach on latex gloves.

Properly dispose of contaminated waste.

Laundry

Although linen soiled with body fluids has been identified as a source of pathogenic microorganisms, the actual risk of disease transmission from soiled linen is negligible. However, due to the potential exposure to chemicals as well as infectious agents on the laundry, it is recommended that employees who may directly handle laundry wear utility gloves. Laundry contaminated with blood or other potentially infectious material should be handled as little as possible and (1) disposed of as infectious waste, (2) autoclaved prior to being placed with the laundry, or (3) sprayed with a 1:10 dilution of household bleach prior to being placed in the laundry bag.

Commercial laundry facilities often use water temperatures of at least 160°F and 50–150 parts per million (ppm) of chlorine bleach to remove significant quantities of microorganisms from large quantities of grossly contaminated linen. Studies have shown that a satisfactory reduction of microbial contamination can be achieved at water temperatures lower than 160°F if laundry chemicals suitable for low-temperature washing are used at proper use concentrations. Thus, all

normal washing and drying cycles including "hot" or "cold" cycles can be used if instructions of the manufacturers of the machine and the detergent or wash additive are followed closely.

Hazard Communication

Potentially infectious waste will be labeled with the universal biohazard symbol or will be red in color.

Regulated waste should be placed in containers that are:

- Closable.
- Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping.
- Labeled or color coded in accordance with the OSHA standard.
- Closed before removal to prevent spillage or protrusion of contents during handling, storage, transport or shipping. If outside contamination of the regulated waste occurs, it should be placed in a second container that is similarly constructed as the primary container.

References

-
1. Los Angeles Economic Development Corporation, [2004].
 2. Ciesielski C, Tabidze I, Brown C [2004]. Transmission of primary and secondary syphilis by oral sex, Chicago, Illinois, 1998–2002. *MMWR* 53(41): 966-8.
 3. Morris SR, Klausner JD, Buchbinder SP, Wheeler SL, Koblin B, Coates T, Chesney M, Colfax GN [2006]. Prevalence and incidence of pharyngeal gonorrhea in a longitudinal sample of men who have sex with men: the EXPLORE study. *Clin Infect Dis*. Nov 15;43(10):1284-1289.
 4. Geisler WM, Yu S, Hook EW [2005]. Chlamydial and gonococcal infection in men without polymorphonuclear leukocytes on gram stain: implications for diagnostic approach and management. *Sex Trans Dis* Oct;32(10):630-4.
 5. CDC HIV/AIDS Recommendations and Guidelines [<http://www.cdc.gov/hiv/resources/guidelines/index.htm>], accessed November 28, 2006