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## Using the Internet for Partner Notification of Sexually Transmitted Diseases — Los Angeles County, California, 2003

An estimated one third of Internet visits by persons aged  $\geq 18$  years are to sexually oriented websites, chat rooms, and news groups that enable users to view sexual images or participate in online discussions of a sexual nature (1). Although so-called “virtual sex” carries no risk for transmission of sexually transmitted diseases (STDs), including human immunodeficiency virus (HIV), use of the Internet to find partners for actual sexual activity does carry such risk (2). During 2001–2003, of 759 men who have sex with men (MSM) and who had early syphilis, 172 (23%) reported using the Internet to meet sex partners (Los Angeles County Department of Health Services [LACDHS], unpublished data, 2003). Because the Internet enables sex partners to maintain anonymity by withholding identifying information (e.g., full name, address, and place of employment), it poses challenges for public health authorities (3). Use of the Internet by public health authorities to notify sex partners of persons with STDs has been reported previously (2). This report describes two cases in Los Angeles County (LAC), California, in which public health officials used the Internet to notify partners who were otherwise anonymous. Local public health authorities might develop similar strategies to use the Internet to reduce transmission of STDs.

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a teacher appears."*

Chinese Proverb

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LACDHS reviewed disease intervention specialist (DIS) interview records to identify cases of online partner notification. Subsequent interviews with DIS personnel were conducted to determine the degree of partner follow-up and testing.

## Case Reports

**Case 1.** In December 2002, an LAC resident aged 32 years visited his physician for a routine follow-up of his HIV infection, which was diagnosed in 1997. The patient had a rash and reported influenza-like symptoms 1 week before and subsequently tested positive for syphilis. In February 2003, LACDHS interviewed the patient by telephone about his sexual contacts. The patient reported 134 male sex partners, all of whom he met via the Internet during a 6-month period; 29 were repeat sex partners. He also stated that he never used condoms. The index patient provided 111 e-mail addresses and 23 telephone numbers to facilitate contact tracing and sex partner notification. First and last names were provided for eight contacts. LACDHS sent an e-mail message to all 111 sex partners, alerting them to an urgent health matter and requesting that they call the telephone number provided as soon as possible. The message concluded with a confidentiality notice. Of 111 persons who received e-mail messages, 29 (26%) persons responded and were contacted.

**Case 2.** In January 2003, an LAC resident aged 31 years sought medical attention at an emergency department after noticing a rash on his body. He received a diagnosis of scabies and was administered treatment; most of the rash resolved. However, a palmar/plantar rash persisted, and the patient tested positive for syphilis on March 3. In March, LACDHS interviewed the patient, who reported that he met 16 male sex partners over the Internet during his infectious period. He was asked to send his contacts an e-mail message about his infection. Subsequently, he provided LACDHS with 16 e-mail addresses and copies of 13 e-mail messages that he had sent to his sex partners, notifying them of their exposure to syphilis and the health department's efforts to contact them. Seven of the 13 persons replied and made arrangements to be tested for syphilis.

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**Editorial Note:** Partner notification is a process whereby sex partners of patients (index patients) who have an STD or HIV diagnosed are informed of their exposure to infection and the

need to seek medical evaluation (4). The goals are to reduce the spread of STDs and HIV and to prevent reinfection of the index patient. Usually these goals are accomplished by provider referral or patient referral. Provider referral is a confidential process by which public health authorities request names and identifying information about sex partners from the index patient to notify those persons of their exposure. Patient referral is a process by which partners are notified by the index patient without the assistance of public health personnel. These methods have changed little since the 1960s.

As the cases described in this report indicate, the Internet presents new challenges and opportunities for STD and HIV prevention and control. Using the Internet to meet sex partners can be a sexual risk-taking behavior (3,5). Persons seeking testing at a municipal HIV-counseling and -testing site who sought Internet sex partners reported a high level of sexual risk-taking behavior; compared with non-Internet sex seekers, Internet sex seekers were more likely to be MSM and to have more previous STDs, more partners, more anal sex, and more sexual exposure to partners known to be HIV-positive (3). In a case involving seven persons with syphilis who met through an Internet chat room, the local health department worked with a marketing firm to enter the Internet chat room and send electronic messages to hundreds of users about the syphilis cluster (5). As a result, the local health department was able to notify and evaluate approximately 40% of named sex partners. A case-control study demonstrated a statistically significant association between Internet use and acquisition of syphilis in this population (5).

The cases described in this report indicate that public health departments can use the same technology that facilitates dissemination of STDs to prevent and control STDs. In addition, case 2 indicates that involvement of the index patient in partner notification via e-mail can improve partner response rates. In a separate evaluation of instant messaging (i.e., messages sent to a person logged into a chat room), nearly 50% of all persons contacted via this method by the health department responded and were evaluated for syphilis (K. Myers, LACDHS, personal communication, 2003).

Further study is needed to determine the most effective method of using the Internet as a means of partner notification and evaluation. However, personalized messages, messages sent from an e-mail provider or within an Internet service provider (ISP), and message headers referencing a health matter might be more likely to be read than general messages that are not personalized or do not reference a specific health matter (K. Myers, LACDHS, personal communication, 2003). The same confidentiality rules apply to messages sent online

as to those sent via telephone or mail; for this reason, discreet, urgent messages are most effective. Although online referral makes ensuring the confidentiality of the contact more difficult, it is an efficient method for establishing initial contact with an otherwise inaccessible person and allows subsequent communication to occur.

Public health authorities should develop strategies to use the Internet to reduce transmission of STDs. Suggested practices for online partner notification have been published (2). Other strategies include 1) providing health education and prevention messages on websites that are frequently visited by MSM via pop-up ads and links to websites offering information on STD-testing sites, STDs, and partner referral; 2) making health educators available in chat rooms to answer health-related questions; and 3) offering online test-result reporting, which might increase testing for HIV and STDs by preserving anonymity and decreasing the lag period from test to result.

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## Fatal Case of Unsuspected Pertussis Diagnosed from a Blood Culture — Minnesota, 2003

Pertussis (i.e., whooping cough) is a prolonged cough illness caused by the bacteria *Bordetella pertussis* and associated typically with an inspiratory “whoop,” paroxysmal cough, and posttussive vomiting. *B. pertussis* can cause severe illness or death, especially in infants who have not completed their pertussis vaccination series. Adolescents (i.e., persons aged 13–17 years), adults, and recently vaccinated persons often report atypical symptoms, resulting in delay of recognition and creation of infectious reservoirs for further transmission. In 2003, the Minnesota Department of Health (MDH) investigated a fatal case of unsuspected *B. pertussis* infection in an elderly adult. This report summarizes the case investigation, which documents the rare isolation of *B. pertussis* from blood and

underscores the need for clinicians to consider pertussis infection in adolescents and adults who have a prolonged cough illness.

In February 2003, a woman aged 82 years on immunosuppressive medications for multiple myeloma was admitted to a local hospital for control of pain from vertebral compression fractures. A chest radiograph revealed a nodular infiltrate, which was thought to be a residual finding from pneumonia diagnosed in early January. Two days after hospitalization, the patient had a cough; rales were observed on lung examination. She remained afebrile and was discharged to a nursing care facility. The patient's cough worsened; she had a fever of 102.2° F (39° C) and labored respirations that required rehospitalization and mechanical ventilation. On readmission, a chest radiograph revealed diffuse left-lung infiltrates. She was placed on multiple nonmacrolide broad spectrum antibiotics but had hypotension and a sepsis-like syndrome. Respiratory support was withdrawn, and the patient died.

During her rehospitalization, tests for *Legionella* spp. and influenza A and B were negative. Gram stain of tracheal secretions showed gram-negative bacilli and white blood cells; the culture was negative. Blood cultures revealed gram-negative bacilli, but further identification of the pathogen by routine culture media was unsuccessful. *B. pertussis* was identified after a special culture medium containing charcoal and sheep blood was used. Because infection with *B. pertussis* was not suspected originally, no nasopharyngeal (NP) specimen was obtained for *B. pertussis* isolation.

The patient had lived with her daughter, a high-school nurse, who reported having an intermittent, nonproductive cough for approximately 1 month preceding her mother's illness. Her cough changed to a pertussis-like, paroxysmal cough approximately the same time as her mother's cough onset. By the time the patient's *B. pertussis* results were known, the daughter was asymptomatic and therefore was not tested. She reported no contact with students with pertussis-like symptoms.

A contact investigation identified 47 persons who were exposed to the index patient. Exposure was defined as  $\geq 10$  hours per week of close (i.e., <3 feet or “arms length”) contact with the patient while she was symptomatic or direct face-to-face contact during an episode of coughing or sneezing, regardless of duration. NP specimens were obtained from exposed persons if they reported having a cough illness  $\leq 20$  days after their last exposure to the patient. Two (12%) of 17 exposed family members reported cough illness and had NP specimens tested; one tested positive for *B. pertussis* by culture and polymerase chain reaction (PCR). Ten (34%) of 29 exposed nursing home staff reported cough illness and were