

Sexually Transmitted Diseases in Travelers

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Prevention of sexually transmitted diseases (STDs) is a low priority among travel clinic services, despite increasing evidence that travelers have an increased risk of acquiring such infections. A proportion of 5%–50% of short-term travelers engage in casual sex while abroad, and this rate is even higher among long-term travelers. Few publications are available on STD preventive interventions among travelers. Education and counseling are recognized as key components of risk reduction. New efforts should be put forth with regard to identifying effective tools to promote safer sexual behaviors and to reduce the spread of infection by promoting condom use. Travelers at increased risk should be identified for targeted interventions; research to validate proposed markers of increased risk is prospectively needed. Hepatitis B infection is the only STD that is preventable by vaccination. The feasibility and cost-effectiveness of STD screening in travelers after exposure is a virtually unexplored field, though it may represent an important component of STD control strategies in developed countries.

Sexually transmitted diseases (STDs) are responsible for a variety of acute and chronic medical problems. These include lower and upper genital tract infections, their complications in women (pelvic inflammatory disease, infertility, ectopic pregnancy, and chronic pelvic pain), chronic liver diseases and cancer caused by hepatitis B (HBV) and C infection, genital cancer due to several types of papillomavirus, and AIDS, caused by HIV. In addition, the role of several STDs in amplifying the risk of acquisition or transmission of HIV itself is fully recognized [1], making prevention of infection with STDs a mainstay of HIV-AIDS prevention.

Travel interferes with human sexual practices by splitting fixed sexual partnerships and removing social taboos that may inhibit sexual freedom. Increased sexual promiscuity and casual sexual relationships are likely to occur during travel because people have the opportunity to escape standardized behaviors commonly regarded as acceptable by their society.

Each year, 1 billion passengers travel by air, and over 50 million people from industrialized countries visit the developing world [2]. Despite increasing evidence of significant risk among travelers, STD prevention has a low profile among travel clinic practices. This review will focus on the risk of STDs and

discuss strategies to minimize them. We have used the term “sexually transmitted disease” to identify not only a condition of overt, symptomatic disease but also a state of subclinical infection, a frequent result of acquisition of pathogens that are transmitted sexually.

SEXUALLY TRANSMITTED INFECTION RISK BEHAVIOR

Sexual behaviors (either adopted or intended) of travelers have been the object of several studies. Intended sexual behaviors were studied in a cross-sectional survey of Australians seeking pretravel medical advice before a trip to Thailand [3]. Although the subjects studied were not obviously sex tourists, 66% of the 213 interviewed people reported plans or hopes to have sexual contact during their trip. Many more studies have assessed adopted sexual behaviors after travel (table 1). Up to one-quarter of female charter tourists and interrail travelers from Sweden experienced one sexual contact with a previously unknown partner, although only 2% of such women had >1 such sexual experience [4]. A postal questionnaire survey was conducted among randomly selected individuals who had registered at a semirural general medical clinic in Nottingham, United Kingdom. Of the 354 subjects who reported travel abroad in the last year, 5% had a sexual relationship during their last trip, and less than one-third used condoms always [5]. Of 757 attendants of the hospital for tropical diseases in London during 1991–1992, 18.6% reported having sex with new partners during their most recent trip, and condoms

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Table 1. Studies of casual sexual exposure (CSE) among short-term travelers.

Location [study]	Population	Sex (sexual orientation)	Age, y	Percentage with CSE
Sweden [4]	Charter tourists	100% F	25 (mean)	25
Nottingham, UK [5]	Semirural population	41% M	16–40	5
London [6]	Hospital attendants	46% M	30 (mean)	18.6
Switzerland [7]	Tourists to tropical destinations	—	—	30
Switzerland [8]	Tourists to tropical destinations	—	—	51
London [9]	GUM attendants	M (heterosexual)	18–64	51
London [9]	GUM attendants	M (homosexual)	19–47	36
London [9]	GUM attendants	F	—	20
Bergen, Norway [10]	Patients with sexually transmitted diseases	—	—	41

NOTE. F, female; GUM, genitourinary medicine; M, male; UK, United Kingdom.

were used irregularly or never by 64% [6]. In questionnaire studies of Swiss tourists who visited tropical countries, 30% [7] and 51% of the subjects [8] reported casual sexual contacts during the vacation period, and 38% of these contacts were unprotected [8]. The rate of people who reported having engaged in casual sex with natives while on vacation is higher in studies of STD clinic attendees. Among 243 genitourinary medicine attendants in London, the rate of sexual exposure abroad was 51% among heterosexual men, 36% among homosexual men, and 20% among women [9]. Among STD clinic patients in Bergen, Norway, in 1989, 41% reported casual sexual contacts abroad in the previous 5 years, which mainly occurred in Europe [10]. Most were men who reported having engaged in sex with female sex workers; consistent condom use was low, particularly after alcohol use [10].

Casual sex occurs even more frequently among long-term overseas travelers. Most available observations on this category refer to personnel of voluntary organizations employed in countries of the tropical belt. About 60% of 1080 American Peace Corps volunteers reported sexual relationships with at least 1 new partner during the stay abroad [11]. About 40% of them had a local partner, and only one-third of them reported condom use. Expatriate residents who are in southern countries for long periods of time are also likely to be at increased risk of infection with an STD, but data are scarce. More than 50% of Belgian expatriates in central Africa reported having extramarital sex, and one-third reported regular contacts with commercial sex workers [12]. Of 1968 Dutch expatriates and their family members who were interviewed by means of questionnaire returning from at least 6 months in sub-Saharan Africa, 7.9% of the men and 2.1% of the women had lived with an African partner. Of the same group, 30.7% of men and 13.1% of women reported heterosexual contacts with other partners, and fewer than one-quarter of both sexes reported regular condom use [13]. Finally, high rates of STD exposure are well documented among military personnel stationed abroad [14].

The term “sex tourist” is used to identify travelers who make trips with the intention to visit an area in which sex is for sale. An increased demand for sex by tourists often matches an increased offer of sexual services at destination sites, and prostitution with foreigners represents, in many low-income countries, a way to increase national revenues and to allow individuals to contribute significantly to their family’s survival. Sex tourism has traditionally been concentrated in relatively few places. Thailand has been a sex tourism destination for Japanese, European, American, and Australian travelers [15] because of its large number of sex workers. Knowledge of the pattern and frequency of infection with STDs in important tourist spots may be helpful in managing STDs that occur in travelers to those destinations.

FACTORS ASSOCIATED WITH INCREASED EXPOSURE

Objective criteria that can identify high-risk travelers would be helpful to organize preventive interventions. In the Nottingham study, several factors were associated with a higher frequency of casual sexual intercourse abroad, including male sex, single status, age of <20 years, traveling without a partner, having had ≥ 2 sexual partners in the previous 2 years, being a casual user of illicit drugs, or being an abuser of alcohol [5]. Practicing casual sex in the home country has been independently associated to casual sex abroad. Swiss tourists who reported casual sexual contact during their last travel experience were 11 times more likely to practice casual sex at home and twice as likely to use condoms compared with those who did not have casual sex [8]. Those who had visited the same destination more than twice were also more likely to engage in casual sex abroad with locals (8% vs. 4%; $P = .003$) [8]. Casual sex abroad among Swedish women was associated with several behavioral characteristics: earlier coiarche, higher number of lifetime partners, more frequent alcohol abuse, and more frequent extramarital sex [16].

Young age and single marital status were independent risk factors for contacts with female commercial sex workers among Dutch soldiers in Cambodia [14]. Regular use of condom among American Peace Corps volunteers was inversely associated with alcohol abuse among male volunteers and inversely associated with the number of new partners among female volunteers [11]. Protective measures were adopted by those who mostly needed them, possibly because of a higher level of awareness of the risks of sexual exposure.

SEXUALLY TRANSMITTED INFECTION RISK AMONG TRAVELERS

There is little documented information on STD incidence among travelers. Hawkes et al. [6] reported that 5.7% of returning travelers at the Hospital for Tropical Diseases in London contracted a sexually transmitted infection (STI) during their most recent travel experience. In a genitourinary medicine clinic in London, the incidence of STDs among people with a recent history of travel was similar to that of people who did not travel at all (19% vs. 23%). In that study, the maximum attributable fraction of new STDs that could be the result of a new partnership abroad was 12% [17].

At the individual level, STD risk in travelers is the result of the product of the rate of partner exchange by the prevalence of STD in the contact population in the destination country. The latter factor is influenced by the heterogeneous distribution of STDs in the world. Worldwide estimated incidence rates of curable STDs in 1995 were 150 million and 65 million cases in southeast Asia and sub-Saharan Africa, respectively, compared with 14 million and 16 million in North America and Europe, respectively [18]. In a recently proposed model for the interpretation of phase-specific STI epidemiology based on the dynamic interplay among pathogens, human behaviors, and control efforts [19], resource-poor countries almost invariably lie in the hyperendemic phase, which implies high rates in the general population. However, specific subpopulations of core transmitters may present much higher STI incidence and prevalence rates. As a result, information on the number of STD cases per 100,000 population in a given country may be of limited value for those who travel. In general terms, travelers who have sexual interactions with core groups of efficient transmitters (such as commercial sex workers) in areas where STDs are hyperendemic may have exceedingly high risks of acquisition of an STD.

BIOLOGICAL MARKERS OF IMPORTED STDs

The pattern of chemosensitivity of *Neisseria gonorrhoeae* varies in different geographical areas. The high frequency and increasing prevalence of antimicrobial resistance of *N. gonorrhoeae* in Africa is well documented [20]. The proportion of quinolone-resistant

gonococci increased significantly in the western Pacific region defined by the World Health Organization [21]. In Australia, Europe, and the United States, travelers with gonorrhea are recognized as a group that is at an increased risk of drug-resistant infection. Most quinolone-resistant gonococci that were isolated in Sidney, Australia, in 1991–1995 were from travelers returning from the Philippines and other Asian destinations [22]. In London, one study has shown that, although foreign travel did not appear to be an important factor in the acquisition of gonorrhea (only 8% of total cases were acquired abroad), antibiotic resistance among gonococcal isolates was strongly linked to the acquisition of infection overseas [23]. In particular, the only ciprofloxacin-resistant isolate was imported into the United Kingdom from Russia.

The high frequency of antimicrobial resistance of *N. gonorrhoeae* in travelers has 2 major implications. At the individual level, the area of infection must be considered when choosing the appropriate treatment for gonorrhea. At the public health level, it is essential to recognize and eliminate the infection from travelers and their contacts as early as possible, because the spread of resistant strains of *N. gonorrhoeae* has the potential to substantially reduce the effectiveness of gonorrhea treatment regimens.

PREVENTION AND CONTROL

Travelers are an important target for STD control programs. Classically, primary prevention is based on information, education, and condom promotion, whereas prevention of sequelae and complications (as well as further transmission of the infection) is achieved by means of early recognition of the infection and its effective treatment. Primary prevention represents the only effective option for many viral STDs that are presently incurable (including HIV, HBV, herpes simplex virus, and human papillomavirus infections).

Celibacy and sexual monogamy with a known partner are the best preventive options. When these cannot be accepted by the traveler, safer-sex practices must be recommended, including the limitation of the number of new sexual partners and the consistent and proper use of latex condoms during sexual activity. Correct condom use should be explained and, if possible, demonstrated. The female condom, which is less known and less widely available, but which is as effective as the male condom, can be proposed as an alternative. Spermicides, such as nonoxynol-9, have shown in vitro activity against *N. gonorrhoeae*, herpes simplex, and HIV, but they do not effectively prevent HIV transmission and in fact may increase the risk of transmission [24].

Counseling aims at facilitating modifications of behaviors as a consequence of the new knowledge. In the questionnaire survey reported by Gillies et al. [5], most people who had sexual

intercourse abroad with a new partner were carrying condoms, but more than half “forgot” to use them at least once. In the study reported by Gagneux et al. [8], the majority of Swiss travelers stated at the time of departure that they would use condoms during casual sex, but the proportion of subjects who later reported condom use was significantly lower. Counseling should focus on the nature and consequences of STDs, ways to prevent them, and factors that may prevent the adoption of safe behaviors (including alcohol and drug use). The nature of genital symptoms should be illustrated to travelers who are at an increased risk to support correct health behaviors either during travel or on return.

STD preventive interventions need to be delivered at appropriate sites. Informative leaflets can be distributed to travelers at the airport; however, there is evidence that leaflets are consulted significantly more frequently by subjects who will thereafter practice casual sex during travel compared with those who will not [8]. As an alternative, STD prevention can be integrated into travel medicine clinic services. However, there are no published examples of effective education and counseling interventions for short-term travelers. Indeed, the capacity and willingness of travel medicine personnel to engage in education and counseling activities for STD risk reduction is questioned and should be the object of further research. Education and counseling should target the subgroup of travelers who are actually likely to engage in risky behaviors, because pretravel face-to-face education of all travelers is not feasible and, in many instances, is not necessary. There are indications that travelers at increased risk may be identified by means of surrogate markers of sexual promiscuity: travelers who are male, unmarried, young in age, who are traveling alone, who travel to recurrent destinations [25], and who have a history of casual sex at home [8] and alcohol use [26]. However, further prospective research on the predictive value of the above markers is required.

There is some evidence of effective interventions in long-term travelers. The Peace Corps volunteers who served in Africa in the second half of the 1980s received intensive education and counseling on HIV and its specific health risks. Between 1986 and 1989, the rate of all reported STD infections in such volunteers in Africa fell from 131 to 68 per 1000 population per year. Of 282 volunteers deployed in Zaire during 1985–1988, none displayed seroconversion for HIV, and the seroprevalence of any markers for HBV was similar to that of healthy Americans who were matched for age [27].

VACCINES AND CHEMOPROPHYLAXIS FOR STI AGENTS

There are no currently available vaccines for STDs, with the exception of those for HBV. The risk of acute HBV infection in travelers is estimated as 8–24 per 10,000 population per

month, with a case fatality rate of 16–48 per million population per month [28]. Candidates for HBV vaccination among attendees of travel clinics are frequent travelers, sex tourists, and military and nongovernment organization employees. The combined hepatitis A–HBV vaccine may be particularly suitable for travelers who need both vaccines. HBV vaccination should always be coupled with education to strengthen the concept that other STDs, like HIV, are not preventable in the same way.

Chemoprophylactic use of antibiotics, before or immediately after sexual intercourse, is not recommended and should be discouraged. The use of chemoprophylaxis would confer a false and dangerous sense of protection, especially because chemoprophylaxis provides no protection against viral agents.

Candidal vaginitis is not usually a true STD. However, recurrent candidal vulvovaginitis is a medical problem for some women. It has been reported that travel may trigger candida recurrences [29]. Women with known problems of recurrent candidal vulvovaginitis may have increased problems in warm and humid tropical environments and should carry therapeutic drugs that may be used in case infection develops. In this setting, oral regimens are preferable, for cosmetic reasons, to vaginal creams. Male partners of women with recurrent vulvovaginal candidiasis may experience increased frequency of sexually transmitted episodes of candidal balanitis.

EARLY DIAGNOSIS AND CURE

The incubation periods of STDs may vary considerably. *N. gonorrhoeae* has a short incubation period, and the association between recent travel and the development of genital signs is usually easy to recognize. Other conditions, such as *Chlamydia trachomatis* infection, may remain asymptomatic for long periods of time, and the link with travel abroad may be missed. For viral infections such as HIV, herpes simplex virus, or human papillomavirus virus, recognition of the association with travel may be even more difficult. Some infections that may be acquired abroad are unknown or rare in Western countries, and, therefore, they may go undiagnosed or may be treated inappropriately by physicians who are unfamiliar with them. Treatment of STDs should be of high quality and carefully standardized on the basis of available guidelines [30].

Travelers who have developed genital symptoms and obtained care during travel should be encouraged to seek medical attention in their home country to define whether optimal care practices were followed and to provide screening for possible concomitant asymptomatic infections.

Screening of asymptomatic travelers who had casual sex abroad should also be encouraged. Subjects who report consistent condom use should still be offered screening because the capacity of individual travelers to judge the appropriateness of condom use has never been investigated. The appropriate

timing of screening is unknown. For *Chlamydia* and gonococcal infections, early diagnostic tests would be desirable, whereas for viral infections, screening should be conducted a few months after travel. Which STDs should be the objects of screening cannot be stated on the basis of evidence-based research results. However, it seems reasonable to search for antibodies to HIV, HBV, and syphilis on serum samples and to detect *C. trachomatis* and *N. gonorrhoeae* nucleic acids by PCR techniques on urine samples.

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