Personal screening for HIV in developing countries

Mastro and colleagues' report of female-to-male transmission of HIV-1 in Thailand shows again that surprises should be expected with human immunodeficiency virus (HIV) - on the basis of a statistical analysis of young Thai military conscripts, Mastro et al reported that HIV is 30-50 times more infectious for female-to-male transmission than previously estimated. Although reasons remain elusive, they proposed that the higher transmission probability is consistent with national epidemiological patterns of HIV infection. Similar uncertainty over HIV being faced by investigators in Thailand was also voiced in a recent survey of 150 top AIDS researchers. They noted that new knowledge about HIV is often at odds with old assumptions. This realisation should also hold true for public health professionals, in their attempt to control the HIV epidemic. Rather than assume that the correct path is known, health officials should remain open to new thoughts and new programmes. Encouraging voluntary and anonymous testing for HIV in the privacy of the home is one such new approach.

Prevention of HIV transmission

For people in developing countries, there are three main ways to prevent HIV transmission from an infected partner. The first is to assume that all sexual partners might be infected and use condoms with every penetrative sexual event. With a slippage and breakage rate of 10%, the risk reduction associated with universal condom use would be near 90%, although others have estimated condom effectiveness to be nearer 70%. The promise of such a striking reduction in virus transmission has made condoms the intervention method of choice of the World Health Organisation (WHO) and other international organisations. The second approach being discussed by many workers is a vaccine, which has not yet been developed. Even if such a vaccine becomes available, the effectiveness probably would range from 60% shown for the cholera vaccine to 95% for the measles vaccine. A third method that holds great promise is voluntary home testing.* Depending on the sensitivity of the test and the length of the
vinemic but antibody-negative window period, such testing might reduce risk by 95-99% if people use the information to avoid intercourse with an infected partner. Persons who both test their sexual partner and use condoms would have the lowest risk.

Home testing for HIV infection
Now that tests are available to accurately detect HIV antibodies in saliva, the next step is for AIDS clinics to provide counseling to people who recommend testing of blood donations to avoid transmission, and suggests ways to reduce risk of screening of in-developing countries. The development of similar low-cost testing strategies should be encouraged in the prevention of spread from an infected sexual partner. Technology already exists to obtain saliva specimens at home with special collection devices. With additional changes in the marketplace, people could send numbered specimens to a local laboratory and receive the results anonymously within a few days. If cost is reasonable, the screening test could be widely sold in the private sector in a distribution network similar to that for condoms — pharmacies, food stores, or medical clinics.

Home testing by its nature would be voluntary and anonymous. Rather than demanding that saliva be evaluated as a diagnostic medium for HIV infection, simple saliva tests should be viewed as screening measures for individuals to identify if they or their sexual partners are probably HIV infected. If the saliva test is positive, subjects should be encouraged to go to a medical practitioner for confirmatory testing with blood. Once self-screening is widely being practiced, medical personnel would spend less of their time with HIV-negative persons (ie, the worried well). Home testing would eliminate the need for transportation to health facilities and labour-intensive pretreatment counseling sessions — two components that add greatly to the cost and inconvenience of testing in many developing countries. Instead, health officials could spend more of their scarce resources on people who are actually infected with HIV to diagnose the illness and counselling about treatment and care options, and ways to limit transmission.

HIV in Thailand
Thailand is facing a major HIV epidemic, which is well documented by an innovative sentinel surveillance program and by the volunetary and non-voluntary assistance, the epidemic has continued to confound experts with its persistently rising prevalence in most sentinel groups. The prevalence of infection in lower-class sex workers has risen strikingly from about 5% in June, 1989, to over 30% in June, 1990. The rate has been equally alarming among males at sexually transmitted disease (STD) clinics and higher-class sex workers, rising from a low of 1-2% to a high of 8-10%, during 1989-93. Finally, the most frightening increase of all has occurred in women at antenatal clinics who showed a low prevalence of 0.1% in June, 1989, and 4 years later are edging towards 2% (information from the Division of Epidemiology, Thai Ministry of Public Health). Other recent studies of young men entering the military in the northern region of Thailand have reported HIV prevalence of 12-15%, supporting the notion that the epidemic is gaining momentum and that existing control strategies are not successful, most notably in the general population.

The rapid expansion of the epidemic has occurred at a time when Thailand has substantial funding and technical assistance to support control efforts. Funds have come from the active national economy and from international donor agencies. Like most government health agencies, the Thai have followed the HIV control suggestions of WHO and various non-governmental organizations — namely, screening of blood, promoting early treatment of sexually transmitted diseases, health education of the public — about ways to prevent HIV transmission, sterilisation of blood injecting equipment, and promotion and sale of contraceptive condoms, especially to commercial sex workers. The testing of people for HIV antibodies was not judged a desirable option in Thailand, but it is done in a small way by some insurance companies, private practitioners, and a few anonymous testing centers run by the Red Cross and other organizations. As a result, most Thai citizens, like most populations in developing countries, have no way of knowing whether they or their sexual partners are infected with the virus.

Transmission in couples
If infection with the HIV-1 strain reported by Mastro and associates10 occurs before marriage in Thailand, the susceptible partner will soon become infected. On the assumption of a transmission probability of 0.031 per coital every, 91 coital events per year, 5% condom use, and a condom slipage or breakage rate of 1%, there is a 91% chance that the sexual partner will be infected during the first year of marriage. Of course, steps can be taken to avoid becoming infected. In view of present policies, couples in Thailand will probably be unaware of each other's HIV infection status. Thus condoms can be recommended for every coital act. Most married Thais, however, do not favour this approach. Only 5% of Thais married couples use condoms on a regular basis (information from the Thai Red Cross and Chalalongsorn University), suggesting that condoms are viewed as both a hindrance to concepion and an unnecessary intrusion into the intimacy of marriage.

If infenepive HIV home tests are available, the couple has another option. They could screen each other for the presence of HIV antibodies and then act on the findings. A screening test should be an important component of partner selection so that marriage can start as a union between two uninfectected persons. Such screening would prevent men from marrying HIV-infected women who return home after spending several years as a commercial sex worker. It would also prevent women from marrying men who have experimented in their youth with illicit intravenous drugs, anal intercourse with other men, or the services of prostitutes.

Once married, a monogamous woman faces the danger of being infected by her promiscous or drug-using husband. If he shows signs or symptoms of an STD or fresh needle-marks, she could again quickly screen him at home for HIV or she could insist he always use a condom for sexual intercourse. It is also possible that the act of testing makes both partners more aware that either might become infected and, thus, view more favourably the practice of monogamy.

Conclusions
What is evident from the dramatic emergence of the HIV epidemic is that people in Thailand, as in other developing countries facing such epidemics, have few alternatives other than premarital screening and monogamy for saving their country from social and economic disaster. It is time to
reconsider old ideas and questionable assumptions about what will and will not work. It is time for public health officials in developing countries to join with the private sector and evaluate the cost and effectiveness of home testing for HIV infection.

References