

Status and Trend of HIV-1 Infection and AIDS in Taiwan, December, 1991

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At no other time in the history of medicine has so much academic progress been made in so short a time on so complicated a challenge as acquired immunodeficiency syndrome (AIDS). However, the incidence of the disease continues to escalate worldwide, despite major efforts to contain the problem. Particularly worrying is the alarming increase in prevalence of infection with human immunodeficiency virus type 1 (HIV-1) in some areas among certain risk groups. In Asia, rate as high as 40% have been reported in intravenous drug abusers (IVDAs).¹ Many studies suggest a levelling off in the rates of new patients with AIDS (PWAs) among homosexuals, but pessimists feel that this is merely a reflection of the effect of antiviral therapy.

In late December 1984 an American clinically evident AIDS transiting Taiwan triggered the first concern here over this fatal disease.² The first case of autopsy-proven AIDS in a native Chinese was officially reported in February 1986.³ A preliminary serological study conducted during 1985-1986 revealed that individuals infected with HIV-1 included only homosexuals and hemophiliacs

SUMMARY From May 1, 1985 to December 31, 1991, a total of 4,962,707 serum samples from 8 population groups in Taiwan were tested for anti-human immunodeficiency virus type 1 (anti-HIV-1). In total, 256 samples were seropositive; of these individuals, 43 developed acquired immunodeficiency syndrome (AIDS): 29 were homosexuals; 5 were hemophiliacs; 8 were heterosexuals and 1 was of unknown risk. Although the prevalence of HIV-1 infection and AIDS remains low compared with other countries, since 1988 the increase has been rapid. Before 1977 the majority were homosexuals and hemophiliacs; thereafter the risk groups diversified, with a trend away from homosexuals and hemophiliacs towards heterosexuals and intravenous drug abusers (IVDAs). A few patients have caused serious social problems for the public, health care workers and families. Active community efforts are needed to achieve future success in the control of HIV-1 infection and AIDS in Taiwan.

in Taiwan.⁴ Currently public concern about the status of HIV-1 infection and the trend of the spread of AIDS in Taiwan is great. This report summarizes published and unpublished official information on the current status of HIV-1 infection and AIDS in Taiwan.

MATERIALS AND METHODS

From May 1, 1985 through December 31, 1991, a total of 4,962,707 serum samples were collected from 8 population groups (Table 1).

Anti-HIV-1 antibodies were screened with enzyme-linked immunosorbent assays (ELISA) from five different manufacturers: Abbott, Electro-Nucleonics, Litton, Pasteur

and Wellcome. The ELISA readings were designated as "reactive" or "non-reactive", according to the manufacturer's recommendation. When ELISA were repeatedly reactive, the samples were further assayed with supplementary tests using a confirmatory enzyme immunoassay (EIA, Abbott), an immunofluo-

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rescent assay (IFA, Electro-Nucleonics) and Western blot (Wb, DuPont and Abbott). A specimen was considered definitely seropositive if two ELISAs and the supplementary tests were all positive.⁴

In Taiwan, diagnoses of AIDS must be reviewed for approval by the regular assembly of the AIDS Advisory Committee, Department of Health of the Executive Yuan.

RESULTS

Low prevalences of seropositivity were detected in the high-risk groups (Table 1). In total, there were 256 seropositives and among them, 43 developed AIDS. Among the 256 seropositives only 12 were females, with a male to female ratio of 20.3:1. The ages ranged from 6 months to 76 years; the majority were between 20 and 39 years. Despite short term follow-up, among the 43 PWAs 32 were fatalities, 2 committed suicide and only 9 are alive. Among the group of HIV-1 carriers, two also committed suicide.

Since the beginning of 1988, the prevalence of HIV-1 infection and PWAs has increased rapidly (Fig. 1); risk factors have diversified (Fig. 2) and geographic distribution has spread to the central and southern parts of Taiwan. Before 1987, homosexuals and hemophiliacs were the major risk groups. In 1988 homosexuals testing positive increased dramatically, but the prevalence levelled off thereafter. All of the 44 seropositive hemophiliacs had received unscrubbed, non-heat treated factor VIII prior to 1985; but there were four hemophiliacs who had positive seroconversion as late as 1988-1990. In 1988-1991, 14 IVDA who admitted to frequent sharing of syringes or needles were identified as anti-HIV-1 positive; all remained asymptomatic. In 1987, a homosexual carrier, a physician, donated four units of blood which resulted in HIV-1 infection in at least one

Table 1. Prevalence of anti-HIV-1 and PWAs among AIDS-risk groups

Population groups	No. tested	No. positive* (%)	No. of PWAs (%)
Homosexuals-bisexuals	2,833	111 (3.92)	29 (1.02)
Hemophiliacs	603	44 (7.30)	5 (0.83)
Prisoners	35,657	14 (0.04)	0
Patients with STDs and heterosexuals	537,927	43 (0.008)	8 (0.001)
Blood donors	3,836,360	33 (0.001)	0
Military recruits	495,059	7 (0.001)	0
TB patients	1,685	0	0
Others**	52,583	4 (0.008)	1 (0.002)
Total	4,962,707	256	43

* including PWAs.

** Included: HCWs, patients with malignancies, chronic uremic patients hospital in-patients without established diagnoses, blood recipients, and individuals who required certificates or who refused to be interviewed.

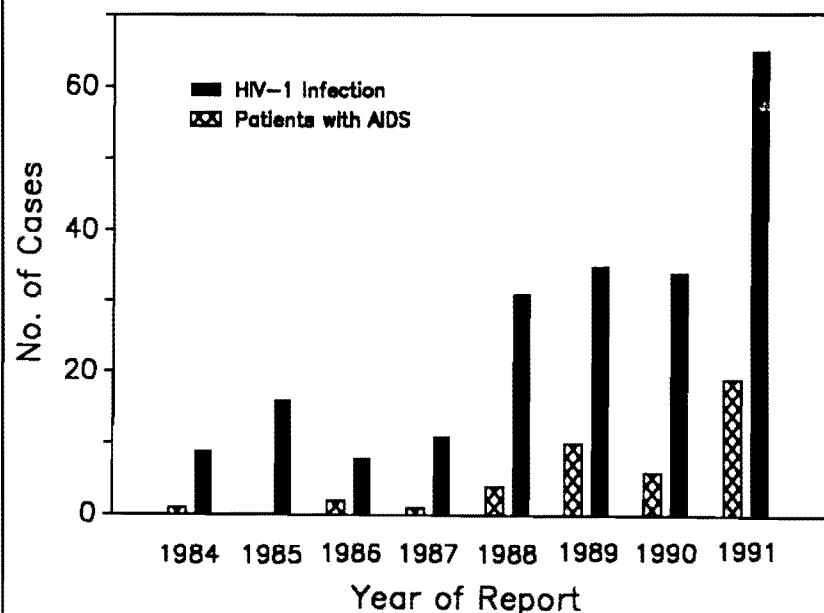
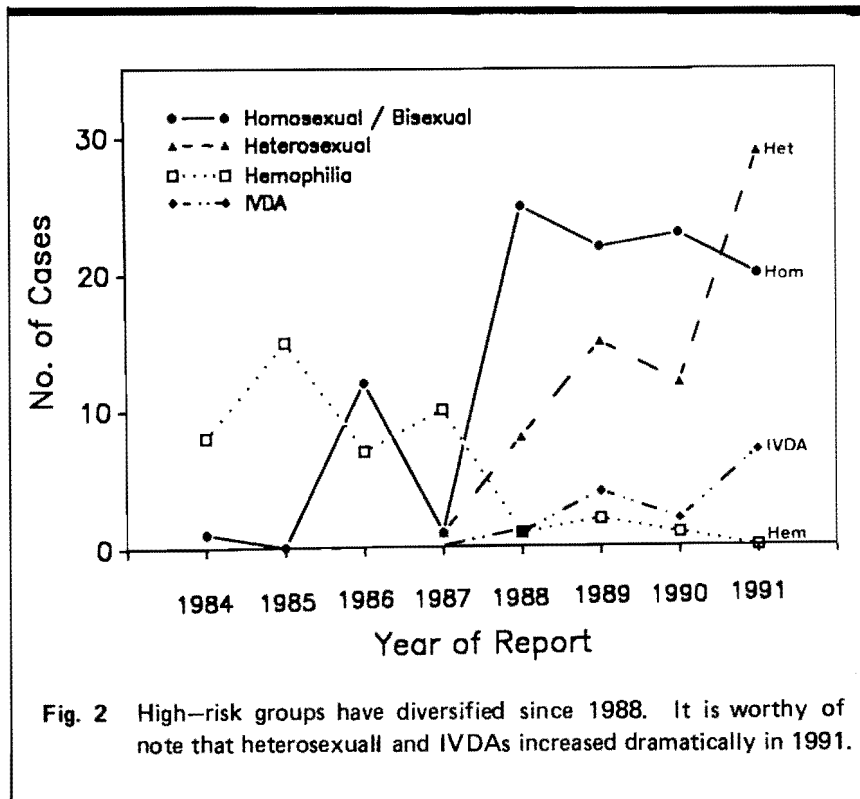


Fig. 1 HIV-1-infected and AIDS cases. Both HIV-1 carriers and PWAs increased dramatically since 1988. In seven carriers the date of report was not clear and thus is not included here.



recipient; the incident called for nationwide prescreening of blood for anti-HIV-1 of blood and organ donors. The same physician continued to practise for two years before development of *Pneumocystis carinii* pneumonia (PCP). In Taichung a seropositive hemophiliac was reported to have transmitted HIV-1 to his wife in 1988. In 1988-1989, two prostitutes died of AIDS, and a case of vertical transmission of HIV-1 was reported from Kaohsiung. To avoid unwelcome public neighbourhood attention, a mother and infant identified with the disease moved abroad.

A preliminary survey of 1,685 patients with tuberculosis (TB) did not detect a single positive for anti-HIV-1.

DISCUSSION

Since 1988, the AIDS epidemic in Taiwan has expanded in scope and magnitude as HIV-1 infection

has affected different populations and geographic areas. Both the numbers of PWAs and HIV-1 carriers have increased dramatically since the beginning of 1988. Because of the vast increase in numbers in 1991, it is almost impossible to ascribe this trend to more voluntary visits to the medical centres for testing after successful health education, nor to attribute the trend to more extensive surveillance conducted by local health agencies.

Since 1988 PWAs and HIV-1 infection have been reported in the central and southern parts of Taiwan. The Kaohsiung district, a highly industrialized sea-port area is internationalized, and consequently has more prostitutes, which will make future control of the spread of AIDS more difficult. Since July 1988 two prostitutes have died of AIDS and there has been one example of vertical transmission of HIV-1 reported from Kaohsiung.

For religious and cultural reasons, homosexuality is strictly taboo in Taiwan as undesirable behaviour; this stigma and its consequent secrecy impedes the surveillance and tracing of patients. Virtually no precise information is available for Taiwan regarding the size of the homosexual population, or their sexual behaviour.⁴ Not only homosexuals but also IVDA's and hemophiliacs who have contracted HIV-1 infection are reluctant to visit medical centres; they often seek medical care from herb doctors.

Special effort was focused, in this study, on prostitutes and patients with sexually transmitted diseases (STDs), with the supposition that this route is of potential importance for the spread of AIDS among heterosexuals in Taiwan. The rapid increase of heterosexual transmission is worthy of note. The relative efficiency of male-to-female versus female-to-male transmission is well understood.⁵ It is worthy of note that in Taiwan there have been only 12 seropositive females detected since 1988. In Taiwan, there are many prostitutes without licences, and to complicate the situation, many prostitutes and laborers have been smuggled into Taiwan from South-East Asia in the past four years. The lack of means for identifying them impedes greatly any general survey of this group. Perhaps many females in Taiwan are unaware of the outside sexual life of their partners and consequently most females do not consider their own sexual life to be high-risk behaviour.

In Taiwan, disposable syringes and needles are readily available, and narcotics are strictly prohibited. Thus AIDS in IVDA's has been thought to pose little problem in Taiwan.⁴ However, the 14 identified seropositive IVDA's reported that group sharing of syringes is not uncommon in Taiwan. HIV-1 infection among IVDA's affects more than just the IVDA's; sexual partners and children are also at risk. The new detection and the

asymptomatic state of the 14 IVDAs suggest that their HIV-1 infection has occurred only recently.

All factors VIII and IX for Taiwanese have been imported from the United States. All the HIV-1-positive hemophiliacs in Taiwan have become infected from factor VIII. The low prevalence of positives among the hemophiliacs (44 positives among 603 hemophiliacs, 7.3%) in Taiwan contrasts with the higher rate in Japan. The proportion of infected victims who develop symptoms may be considerably higher than was once expected, and in the future, the appearance of more PWAs among Taiwan's hemophiliacs is almost inevitable. The recent appearance of positive seroconversions in four previously negative hemophiliacs casts doubt on the safety of heat-treated factors VIII and IX.⁶

In western countries, the ratio of deaths to the reported number of PWAs is usually 1:1.5. In the current series in Taiwan, most PWAs have died, despite only short-term follow-up. Potential victims, especially homosexuals, do not usually visit a medical centre for a blood test until they have developed symptoms or are even possibly in a terminal stage.

Among the 43 PWAs, seven had reactivated or miliary TB and one had atypical TB, causing some concern about the problem of the association of TB with AIDS. However a preliminary survey conducted

in Taiwan on 1,685 TB patients did not detect a single positive for HIV-1.

The world is changing, AIDS has changed the world, and AIDS itself is changing. In Taiwan, the nature of risk groups has changed; the number of new PWAs from the homosexual population have levelled off in the past four years; the problems of blood and its preparation have been solved. However the difficulty in dealing with IVDAs, prostitutes and heterosexuals with AIDS has heightened public awareness. Health care workers (HCWs) are reluctant to take care of PWAs and *vice versa* as patients' concern over HIV-1 infected HCWs has increased.⁷ The US trained physician cited in this report was well aware of his risk behaviour, still he donated four units of blood and continued to practice for two years: it is striking how similar the problems of AIDS can be in different countries and cultures.

It should be recognized that in Taiwan, even a few patients can result in serious social problems for the public, for HCWs and for families. A crucial issue is protection from discrimination. The mother who was delivered of the HIV-1 infected newborn left Taiwan to avoid being harassed. A bisexual 58-year-old male was hospitalized for PCP which was successfully treated. When the attending physicians certified that the patient could be discharged, the family and landlord were reluctant

to allow the patient home; he committed suicide the midnight before discharge.

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