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HIV-1 in Taiwan

Taiwan is entering a new and dangerous phase of its HIV-1/AIDS epidemic. By the end of 2006, 13702 individuals (including 599 foreigners) had been reported as infected with HIV-1 to the Centers for Disease Control of Taiwan.¹ In 2003, HIV-1 rates in first-time blood donors, military conscripts, and pregnant women were measured at 5.2, 57.0, and 12.0 per 100 000, respectively.¹ Data from that year indicated HIV-1 rates of 0.09% for intravenous drug users, 0.2% for female sex workers, 1.9% for patients with sexually transmitted infections, and 6.7% for men who have sex with men in saunas or bath houses.¹ Since then, the number of people living with HIV-1/AIDS in Taiwan has jumped sharply, from an 11% increase in 2003 to a 77% increase in 2004 and a 123% increase in 2005 (figure 1).¹

However, after the implementation of a harm-reduction programme, a 10% decrease was seen in 2006 (figure 1). The current estimated number of HIV-1/AIDS cases in Taiwan is about 30 000, which suggests that the infection rate there could be greater than that in China: 30 000 per 23 million (1/767) compared with 650 000 per 1.3 billion (1/2000).²

A risk-factor analysis of reported cases showed that the proportion of intravenous drug users infected with HIV-1 increased from 1.7% (13/772) in 2002, to 8.1% (70/862) in 2003, to 41.3% (628/1520) in 2004, to 72.4% (2461/3399) in 2005, and dropped to 68.6% (2017/2974) in 2006 (figure 2).¹ The most important risk factor for Taiwanese intravenous drug users is needle-sharing, followed by the sharing of heroin diluents.³ A molecular epidemiological study showed that more than 95% of intravenous drug users with newly diagnosed HIV-1 in 2004 and 2005 were infected with CRF07_BC, a circulating recombinant form of subtypes B' and C.^{4,5} Previously, several studies suggested that CRF07_BC

originated in China's Yunnan province as a mix of subtype B' from Thailand and subtype C from India. The subtype is believed to have moved to Xinjiang province in China's northwest along a major heroin-trafficking route.⁶

Of the 60 000-100 000 intravenous drug users in Taiwan, 10-15% may be infected with CRF07_BC. If so, they probably represent the largest group of such intravenous drug users in northeast Asia. The circulating recombinant form might have followed a separate drug-trafficking route to Taiwan from Yunnan

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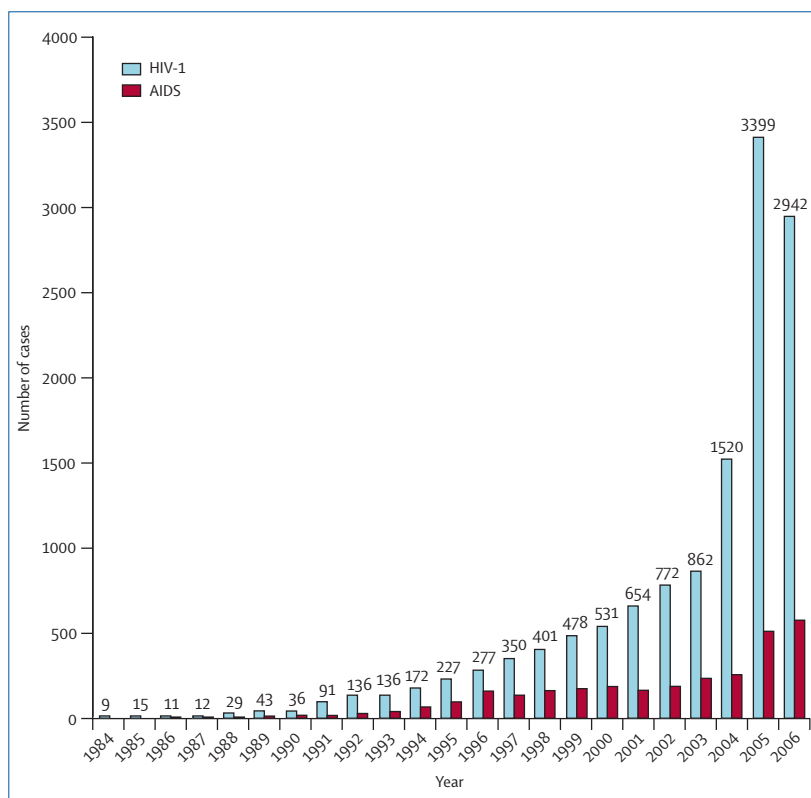


Figure 1: Annual numbers of HIV-1 seropositive cases and AIDS patients reported to Taiwan Centers for Disease Control¹

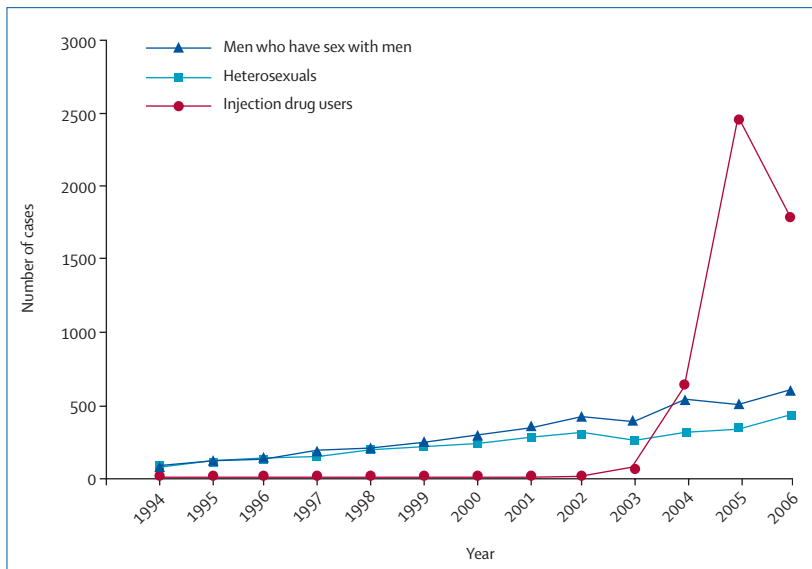


Figure 2: Annual numbers of HIV-1-infected persons in various high-risk groups reported to Taiwan Centers for Disease Control¹

via southeast China, Guangxi province, and Hong Kong.⁷⁻⁹ There have been enormous increases in the amount of heroin smuggled into Taiwan and in the number of intravenous drug users since 2002, when five intravenous drug users from southern Taiwan were diagnosed as the country's first HIV-1 seropositive cases infected with CRF07_BC.⁵ Even though the Hong Kong authorities identified three cases of CRF07_BC infection in 2001, a serious outbreak in that city's population of intravenous drug users is believed to have been blocked by a methadone maintenance programme.⁹

Clearly, close monitoring of emerging HIV-1 subtypes related to intravenous drug use and implementing harm-reduction programmes are vital to preventing similar outbreaks in other populations of intravenous drug users in neighbouring countries. In 2005, Alex Wodak, Jerry Stimson, and other harm-reduction experts were invited to Taiwan to share their experiences with government officials, medical field-workers, and public-health professionals. After careful study of harm-reduction programmes in place in Hong Kong and Australia, a pilot programme was started in four of Taiwan's 23 administrative areas in September, 2005. This programme has since been expanded nationally, and consists of 427 service sites for syringe exchange plus centres for methadone maintenance therapy. Free methadone is provided to HIV-1-infected intravenous drug users while HIV-1 seronegative intravenous drug

users have to pay about US\$1600 a year. The Taiwan Centers for Disease Control plans to provide methadone maintenance to intravenous drug users in prisons, and the country's Bureau of Controlled Drugs will start producing methadone to assist in the government's commitment to providing methadone maintenance to 30 000 intravenous drug users by 2009.

All parts of Asia are reporting rising numbers of HIV-positive and AIDS patients in male homosexuals and bisexuals. In Taiwan, HIV-1 infection rates in men who have sex with men in gay saunas in different cities currently range from 5.2% to 15.8%.^{10,11} The same population has high rates of syphilis, 8.1-13.8%, depending on the city.^{10,11} Taiwanese male homosexual and bisexual HIV-1/AIDS patients have also been diagnosed with significantly higher rates of syphilis than have heterosexual patients.¹² Furthermore, the percentage of homosexual or bisexual HIV-1/AIDS patients under the age of 20 years is significantly higher than that of heterosexual patients, 3.0% versus 1.7%.¹² In addition to the stigmatisation of homosexuality in Taiwanese society, the lack of accurate information on homosexuality in sex education and on risk factors in AIDS education increases the risk of contracting HIV and other sexually transmitted infections within the country's population of men who have sex with men. Whilst a community-based prevention programme for such men has been developed by a group of academic and grass-roots non-governmental organisations, a current challenge is the implementation of this programme into a national programme, and making it a priority.

Taiwan's clinical spectrum of AIDS patients is similar to those reported in other developed countries, but significant differences have been noted in incidences of opportunistic infections. For example, the incidence of tuberculosis in patients with advanced illness is high in Taiwan (24.6%) and the rate of endemic fungal (*Penicillium marneffeii*) infections is increasing.^{13,14} On the positive side, the effort by the Taiwanese Government since April, 1997, to distribute highly-active antiretroviral therapy for free¹⁵ has resulted in dramatic decreases in morbidity and mortality from HIV-1 infection.¹⁶

Because of their high background prevalence, HBV and HCV coinfections with HIV are particularly important in Asian countries in terms of HIV transmission via injecting drug use.^{17,18} In a survey of

459 intravenous drug users infected with HIV-1, one of us (Y-MAC) found that 456 (99.6%) also had anti-HCV antibodies and 77 (16.8%) were seropositive for HBsAg. The long-term impact of hepatitis coinfections on HIV and on morbidity and mortality from liver disease requires monitoring.

By the end of 2006, 19 confirmed cases of vertical HIV-1 transmission have been reported to the Taiwan Centers for Disease Control.¹ In January, 2005, the agency started a national programme focused on prevention of mother-to-child transmission, and five cases of vertical transmission were reported in 2005. By June, 2006, the screening rate had reached 97.4%, and 47 of 338 452 pregnant women (13.9 per 100 000) tested in Taiwan have been identified as having HIV-1 infections and have received antiretroviral therapy to prevent mother-to-child transmission. To increase the participation rate, there is discussion of changing the voluntary counselling and testing strategy from opt in to opt out.

Several positive responses to the HIV/AIDS epidemic in Taiwan should be mentioned. In 1990 an AIDS Prevention and Control Law was passed to protect the rights of people with HIV/AIDS for treatment, education, and employment. Since 1992, 16 non-governmental organisations registered or established in Taiwan have provided shelter, care, counselling, anonymous testing, and AIDS education. One in particular, the People Living with HIV/AIDS Rights' Advocacy Association, has been addressing human rights issues related to HIV/AIDS since 1997. However, most such organisations have their headquarters and facilities in northern Taiwan, and two-thirds of the country's intravenous drug users live in central and southern parts. In addition, many social workers employed by non-governmental organisations are still unfamiliar with issues related to drug abuse and inexperienced in interacting with intravenous drug users. There is a clear and immediate need for counselling workshops for medical staff and social workers.

As the HIV-1 infection threat increases, there are many signs of persistent denial and resurgent discrimination in Taiwan. Several important issues need to be addressed: sentinel surveillance of female sex workers, social welfare institutions and housing for homeless people with HIV/AIDS, financial support for non-governmental organisations, training and re-education programmes aimed at changing the attitudes of medical staff toward

people with HIV/AIDS, and more funding for AIDS research, especially vaccine development.

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