

Rapid increase of HIV infection among injection drug users in Taiwan

*the research findings from inmate population
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Overview of the Presentation

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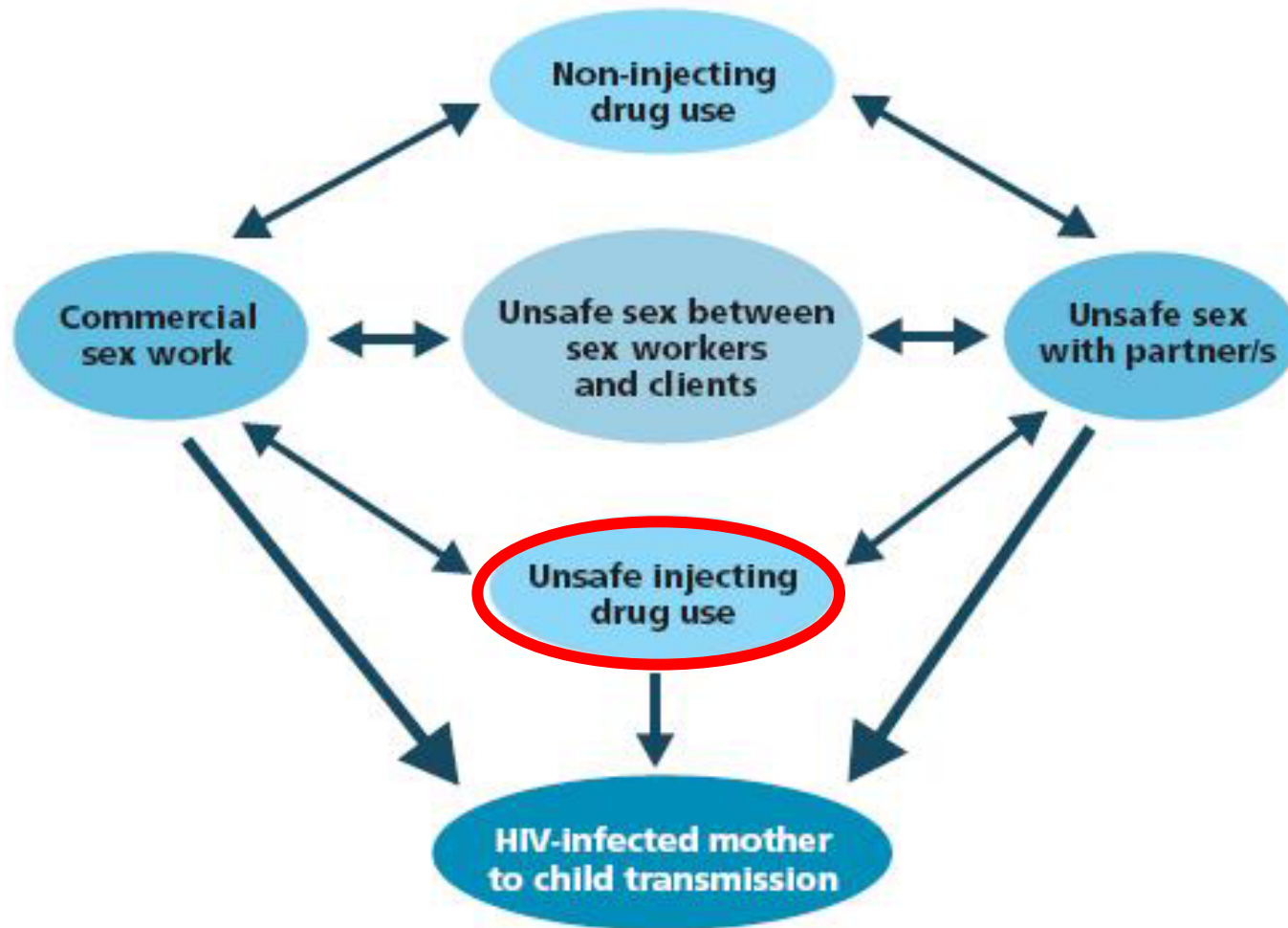


Introduction



Drug abuse and HIV infection

Drug use is contributing to the HIV pandemic, especially related to unsafe injecting drug use.



HIV transmission routes related to drug abuse (World Drug Report, 2005)

Drug abuse and HIV infection

Why is it important to study IDUs?

- (i) they engage in **higher risk behaviors** that put them vulnerable of HIV infection;
- (ii) they are **discriminated** and marginalized populations in society;
- (iii) **an outbreak of HIV infection among IDUs in Taiwan after 2003 SARS epidemic.**



Number of New HIV infected IDUs in Taiwan, 2001 - 2006

Year	No. of newly HIV infected IDUs	Times increase as compared to 2001
2001	4	---
2004	628	157 times
2005	2,461	615 times
2006	1,778	445 times

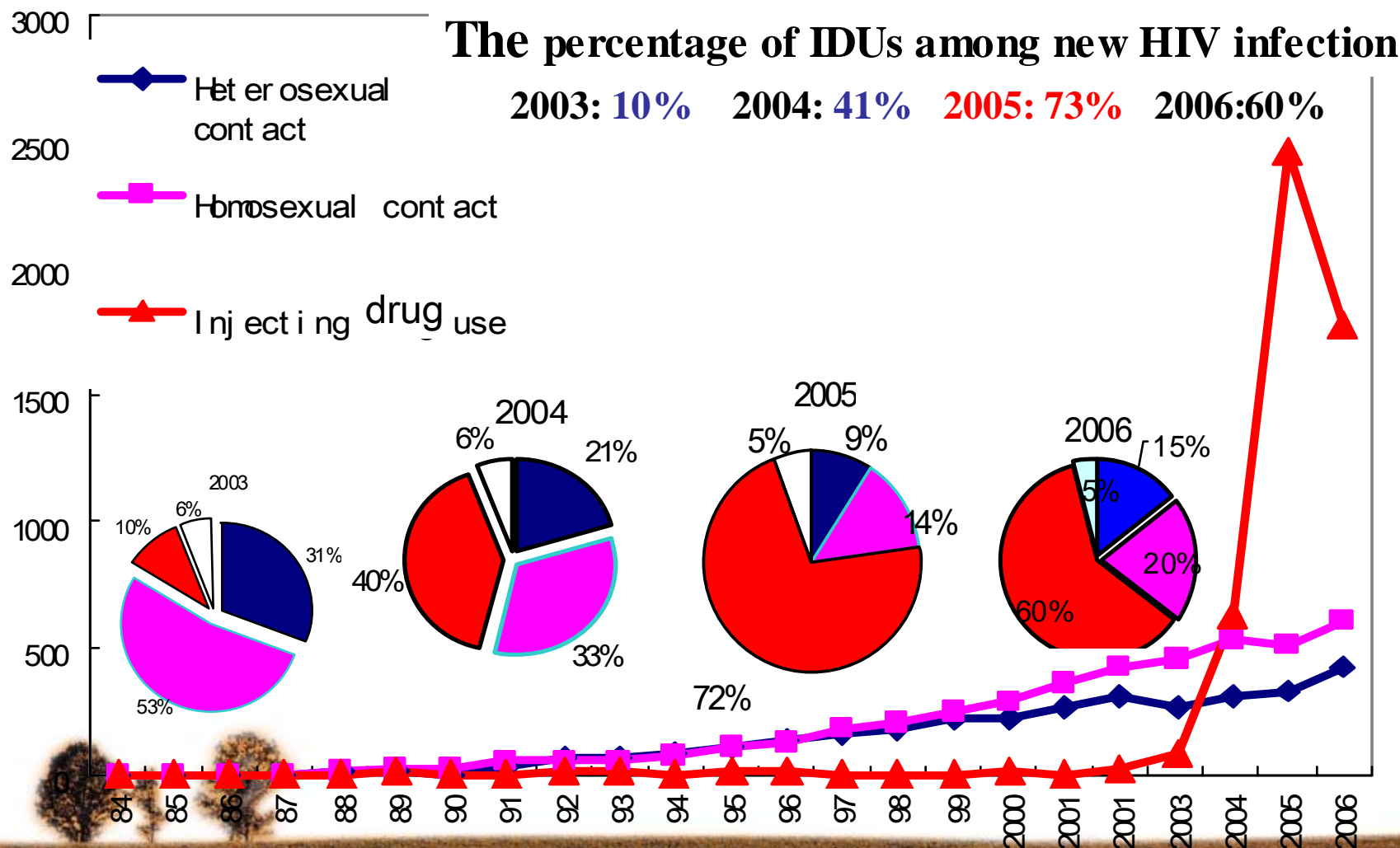


As of 31 August 2007, a total of **15,047 HIV infected people** (including 629 foreigners) were identified in Taiwan, of whom 3,679 had developed AIDS and 1,758 died.

Data from the Center for Disease Control (CDC) in Taiwan showed that **IDUs had replaced MSM as the main risk group of HIV transmission** and that there has been a rapid increase in the number of reported cases of HIV-positive IDUs over the past three years.



Annual Reports of **New** HIV/AIDS Cases by Mode of Transmission, 1984-2006



Source: Taiwan CDC, 2007

Purpose of this study

1. To **examine the modes of HIV transmission according to the self-report of HIV infected inmates; and**
2. To **explore the possible reasons which caused the rapid increase of HIV infection among injection drug users.**



Research Method



Background Information

- **Name-based HIV reporting system in Taiwan. Official surveillance of prison inmates has been established since 1990.**
- **Each new inmate will receive a mandatory HIV blood test and a follow-up test within 6 months in prison if their results were negative.**



Background Information

- **All HIV/AIDS cases in Taiwan have received free medical treatment since 1988 and free highly active antiretroviral therapy (HAART) since 1997.**
- **In 2004, the medical treatment for HIV/AIDS patients cost as much as US\$7,500 per person on the average, which was 70 times the average amount spent by a person in the general population.**



Data Collection

- Target prisons were selected by **stratified sampling** according to their geographic location, i.e., the northern, the middle, the southern, and the eastern part of Taiwan.
- **All HIV infected male inmates in the chosen prisons were surveyed** by using a self-administered anonymous questionnaire in group settings directed by our interviewers.



Data collection

- This cross-sectional study was conducted between October and November, 2006.
- There were **2,739 HIV infected inmates in all correctional institutions** at the end of 2006.
- **A total of 633 HIV infected inmates were in the chosen prisons, 540** of them completed the questionnaire, the response rate is 85%.



Data Analyses

- Among the 540 male subjects who completed the questionnaire, 13 of them did not indicate the date of their HIV infection notification. Thus, finally we use **527 male subjects** for analyses.
- All the subjects were divided into two groups for data analyses, i.e., notification of HIV infection “before Jan. 2004” or “after Jan. 2004”



Results



Table 1 Subjects' demographic characteristics (N=527)

Variables	before 2004 n(%)	after 2004 n(%)	Total n(%)
Notification of HIV+			
Before 2004	34(100.0)	0(0.0)	34(6.5)
After 2004	0(0.0)	493(100.0)	493(93.5)
Age (19-60)			
< 30	6(18.2)	146(30.4)	152(29.6)
30~39	20(60.6)	223(46.5)	243(47.4)
40~49	7(21.2)	85(17.7)	92(17.9)
50 or above	0(0.0)	26(5.4)	26(5.1)
Education level			
Primary school or under	4(12.1)	84(17.1)	88(16.8)
Junior high school	17(51.5)	251(51.2)	268(51.1)
Senior high school	9(27.3)	145(29.5)	154(29.4)
College or above	3(9.1)	11(2.2)	14(2.7)
Marital Status			
Married or living together	25(75.8)	415(87.2)	440(86.4)
Others	8(24.2)	61(12.8)	69(13.6)
Religious Belief			
Yes	27(81.8)	394(82.8)	421(82.7)
No	6(18.2)	82(17.2)	88(17.3)

Table 2 Subjects' other characteristics (N=527)

Variables	before 2004 n(%)	after 2004 n(%)	Total n(%)
Current crime type			
Drug crime	18(52.9)	431(88.0)	449(85.7)
Others	16(47.1)	59(12.0)	75(14.3)
Drug using method			
Injection	20(62.5)	476(98.1)	496(95.9)
Inhalation or oral intake	9(28.1)	7(1.4)	16(3.1)
Do not use drugs	3(9.4)	2(0.4)	5(1.0)
Ever had STI			
Yes	11(33.3)	78(17.2)	89(18.3)
No	22(66.7)	375(82.8)	397(81.7)
Recidivist			
Yes	20(60.6)	370(75.7)	390(74.7)
No	13(39.4)	119(24.3)	132(25.3)

Table 3 Changes in personal life after SARS outbreak in 2003 (N=527)

Item (multiple responses)	before 2004 n(%)	after 2004 n(%)	Total n(%)
Drug supply increase	1(2.9)	28(5.7)	29(5.5)
Drug supply decrease	8(23.5)	135(27.4)	143(27.1)
Drug price increase	7(20.6)	100(20.3)	107(20.3)
Increase of drug crime arrest/trace	3(8.8)	27(5.5)	30(5.7)
Sharing needle/syringe increase	1(2.9)	50(10.1)	51(9.7)
Share drug solution increase	1(2.9)	50(10.1)	51(9.7)
Unsafe sexual behavior increase	1(2.9)	13(2.6)	14(2.7)
Drug inject in China increase	2(5.9)	3(0.6)	5(0.9)
Increased travel to China	1(2.9)	3(0.6)	4(0.8)
Increased travel to south east Asia	0(0.0)	1(0.2)	1(0.2)
In jail during 2003 SARS outbreak	11(32.6)	110(22.3)	121(23.0)
Don't know or others	5(14.7)	113(22.9)	118 (22.4)

Table 4 Self-report of possible reasons for contracting HIV (N=527)

Item (multiple responses)	before 2004 n(%)	after 2004 n(%)	Total n(%)
Single mode of infection			
Share needle/syringe only	9(26.5)	124(25.2)	133(25.3)
Share drug solution only	0(0.0)	94(19.1)	94(17.8)
Share drug paraphernalia only	8(23.5)	140(28.4)	148(28.1)
Had sex with CSW only	1(2.9)	4(0.8)	5(0.9)
Contact HIV+ blood only	0(0.0)	3(0.6)	3(0.6)
Homosexual contact only	4(11.8)	4(0.8)	8(1.5)
Heterosexual contact only	0(0.0)	1(0.2)	1(0.2)
Multiple modes of infection	8(23.5)	98(19.9)	106(20.1)
Don't know or unanswered	4(11.8)	25(5.0)	29(5.5)

Table 5 Subject's risk behaviors (N=527)

Variable	before 2004 n(%)	after 2004 n(%)	Total n(%)	χ^2 value
Risk behavior six month prior to notification of HIV+				
Share needle/syringe or drug solution	6(17.6)	160(32.5)	166(31.5)	1.830
Buy sex in China	2(5.9)	30(6.1)	32(6.1)	--
Frequency of using condoms				--
Never	8(23.5)	150(30.4)	158(30.0)	
Less than half of the time	5(14.7)	92(18.7)	97(18.4)	
Half of the time	4(11.8)	60(12.2)	64(12.1)	
Usually	4(11.8)	77(15.6)	81(15.4)	
Always	6(17.6)	48(9.7)	54(10.2)	
missing	7(20.6)	66(13.4)	73(13.9)	
Other risk behaviors				
Ever bought or injected illegal drugs in China	1(2.9)	29(5.9)	30(5.7)	--
Ever had sexual relations with foreigner	8(23.5)	78(15.8)	86(16.3)	1.442

Table 6 Multiple logistic regression analysis of notification of HIV+ status before or after 2004 (N=527)

Variable	OR	95% CI
Age	1.016	0.951 - 1.085
Education level (senior high school or above = 0)	1.650	0.577 - 4.719
Ever had STI (No = 0)	1.825	0.618 - 5.383
Perceived drug supply decrease during 2003 SARS outbreak (No = 0)	0.871	0.300 - 2.524
Perceived drug price increase during 2003 SARS outbreak (No = 0)	0.402	0.133 - 1.211
Frequency of using condoms (Never = 0)	0.601	0.518 - 3.694
Had sex six months prior to incarceration (No = 0)	1.383	0.070 - 5.188
Drug using method (No injection= 0)	59.942***	13.191 - 272.387
Perceived personal contracted HIV due to share needle/syringe only (No = 0)	3.062	0.950 - 9.866
Perceived personal contracted HIV due to share drug paraphernalia only (No = 0)	1.529	0.420 - 5.560
Constant	0.234	

Discussion and suggestions



Discussion

- Being IDU is the strongest predictor of contracting HIV after SARS outbreak.
- People were afraid to go to hospital during SARS outbreak. Among the subjects, 27% perceived that the drug supply decreased and 20% perceived drug price increased during the SARS outbreak in 2003 (Table 3).
- Roughly 17% to 28% of the subjects considered that they contracted HIV due to sharing needle/syringe and/or drug solution (Table 4).
 - It might increase the needle/syringe sharing as well as increase the possibility of HIV infection.



Discussion

- Chang and Lew-Ting (2006) conducted a qualitative study in Taiwan and found that the outbreak of HIV infection among IDUs was due to shared transmission in a group setting. In addition, the subjects indicated that they might contract HIV from Yunnan (or Burma).
- This phenomenon is observed in our study, some subjects reported that they buy sex or drugs in China.



Discussion

- Recent molecular epidemiological studies have shown 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 (Chen et al. 2006, Lin et al. 2007).
- Previous studies suggested that CRF07_BC originated in China's Yunnan province as a mix of subtype B' from Thailand and subtype C from India (Chen et al. 2007).



Discussion

- It is noted that after HIV is introduced into a community of injecting drug users, infection levels in these populations can rise from **zero to 50–60% within 1–2 years** (WHO, 2003).
- It is very likely that the HIV is introduced to the IDUs after the SARS outbreak in Taiwan. Further molecular epidemiological studies need to clarify the relationship of the mode of transmission and the source of HIV-1 subtype.



Suggestions

- **Education and Counseling should focus on warning IDUs not to share drug paraphernalia (solution/needles/syringe/cotton/containers) as well.**
- **IDUs who have high risk sex partners and/or who inject drugs in high HIV prevalence areas, e.g., Yunnan, should be considered as a higher risk subgroup among the IDUs.**



Thank you for your attention!

