

SHORT REPORT

Open Access

Policy implementation of methadone maintenance treatment and HIV infection: evidence from Hubei province, China

Jifang Dai¹, Lianyi Zhao² and Yuan Liang^{2*}

Abstract

To view methadone maintenance treatment (MMT) globally, it is necessary to accumulate data on MMT policy implementation under different health service systems. The aim of the current study is to provide empirical evidence about policy implementation of MMT and HIV infection control, as well as recommendations for improvement of MMT in the future. Based on China's national policy framework of MMT, policy implementation of MMT in Hubei province has two objectives: 1) to create linkages between health and public security, and 2) to provide integrated services for management of drug abusers. From 2007 to 2011, following the establishment of MMT clinics that provide methadone as well as HIV prevention services, the proportion of HIV infection among drug abusers decreased relatively quickly (12.12% → 5.77% → 5.19% → 2.39% → 2.04%). However, high drop-out rate and poor information management have been identified as particular problems which now need to be addressed. Furthermore, client drop-out from MMT programs may reflect social issues the clients encounter, and consequently, sustainable MMT development requires incorporation of social measures that help MMT clients return to society without discrimination, especially through family cooperation and employment opportunities.

Keywords: Human immunodeficiency virus, Methadone maintenance treatment, Drug abusers, China

Introduction

Addiction to heroin and other opioids poses serious problems for individuals, families, and communities as well as society as a whole. Solutions are sometimes ambiguous, difficult, and controversial [1,2]. Since its development more than 40 years ago, methadone maintenance treatment (MMT) has been adopted by an increasing number of countries to reduce the harmful effects of heroin use [3-5]. Health-related functions of MMT programs generally have two components: reducing opiate addiction, and reducing addiction-related HIV risk behaviors, thereby reducing HIV transmission [6-8].

MMT programs function differently in different countries. In Europe, the United States, Canada, and other Western countries, there are four main providers of MMT: family physicians, multidisciplinary clinics, private clinics,

and prisons [8-12]. Most service delivery is through family physicians and private clinics. In large urban centers, multidisciplinary clinics are common, especially community health clinics that provide MMT along with other medical and health promotion services. In addition to these three models of MMT service, MMT is offered in provincial prisons. The clinical use of methadone differs widely across countries. When it is used, it is commonly reported to have a high dropout rate. Taking an international perspective, the reasons for methadone treatment dropout include waiting lists, lack of money or health insurance, trepidation regarding the social stigma and discrimination that may result from identity exposure due to requirements to possess a photo identification card, beliefs about methadone side effects, and fear of withdrawal from methadone during incarceration [8,13-15]. Typical solutions to methadone treatment dropout include providing public financial support, waiving photo identification requirements, permitting time-limited treatment with the option to extend such treatment upon request, and working with corrections agencies to ensure continued

* Correspondence: liangyuan217@hust.edu.cn

²Department of Social Medicine and Health Management, School of Public Health, Tongji Medical College, Huazhong University of Science and Technology, Hangkong Road 13, Wuhan 430030, China
Full list of author information is available at the end of the article

methadone treatment [12,16,17]. It is worth noting that there are few studies of the impact of these solutions on treatment success in the existing literature. Further study, especially combining policy practice and comparisons among different health service systems and different regions around the world is warranted to improve the effects of MMT policy.

Owing to differences in socio-economic factors and health service systems, MMT programs in China operate differently from those in Western countries. Most MMT in China is provided by public health institutions, unlike Western countries, where MMT is typically provided by private agencies. To gain a wider understanding of the challenges to MMT implementation globally, it is necessary to accumulate data on implementation of MMT policies under different health service systems [18-20]. Although sexual transmission is the main cause of HIV infection, China is now facing an ever-growing HIV/AIDS epidemic fuelled primarily by intravenous drug use (IDU). By the end of 2005, IDU accounted for nearly half of new HIV infections [21-23]. Therefore, the analysis of MMT policy implementation in China is useful on two levels, as it can provide information on outcomes in terms of drug abuse control as well as disease prevention, and HIV prevention in particular.

The main issues addressed by the current study are 1) how to implement MMT policy in Hubei province, China, 2) effectiveness of MMT on reduction in HIV transmission, and 3) how to improve current MMT policy. The study's aim is to provide empirical evidence about policy implementation of MMT and HIV infection control, as well as recommendations for improvement of MMT in the future.

Case presentation

Policy framework of MMT in China

To strengthen AIDS prevention and control activity among intravenous drug users, health advisors to the government have strongly advocated a trial MMT program in China. In February 2003, the Ministry of Health, the Ministry of Public Security, and the State Food and Drug Administration jointly issued the Temporary Scheme for Community-based Drug Maintenance Treatment for Heroin Dependents [21].

A national working group for community-based maintenance treatment for opiate users (hereafter referred to as the National Working Group) comprises members of the Ministries of Health and Public Security, and the State Food and Drug Administration. The organizational structure of the MMT system in China includes working groups at three levels: national, provincial, and city. The MMT clinics are run by public health agencies (including public hospitals, public psychiatric hospitals, and the Chinese Center for Disease Control and Prevention),

and are reviewed by the provincial working group. If clinics are approved, they are then submitted to the national working group for the record. Figure 1 shows the policy framework of MMT in China.

Because of China's vast territory and regional differences in economic development, policy implementation of MMT is mainly completed by provincial working groups.

Policy implementation of MMT in Hubei province, China

Hubei province is located in central China, with a population of approximately 60 million people and about 37,000 opioid addicts in 2012. However, the actual burden of opioid dependency in Hubei province may be much greater as under reporting is likely. In China, more than 30% of drug addicts use intravenous drugs, and at least 70% of IUD share syringes [19,20]. Although the drug abuse epidemic in Hubei province is moderate compared with other areas of China, drug control is particularly important because of Hubei province's role as a traffic hub in China, as well as high population flow, relatively developed economy, and central location. Although Hubei province is considered an area with a relatively low incidence of HIV in China, by the end of 2011 a total of 7875 cases of HIV infection had reported in Hubei province.

Although the national MMT policy was introduced in 2003 in China, Hubei province started a pilot program in 2006 [24]. Figure 2 shows the clinical protocol in the MMT clinics. Following the national policy framework of MMT enacted for five years (2006-2011), policy implementation of MMT in Hubei province has two objectives: 1) to create linkages between health and private security, and 2) to provide integrated services for managing drug abusers.

Link between health and public security in organizational management

China's national policy framework of MMT only provides policy principles. Detailed policy implementation is organized by the provincial departments. As a result of public security threats caused by drug abuse, before 2003, drug abuse in Hubei province was mainly managed by the public security sector and executed with enforced detoxification. The detoxification model has an undeniable role in public security. However, it does not effectively solve the problem of drug-induced disease, especially HIV infection resulting from sharing syringes. Following the national policy framework of MMT in 2003, nowadays, drug abuse in Hubei province is managed by community MMT, which is led by health departments that link health and public security.

There are three aspects of the organizational management of community MMT in Hubei province. First, in terms of disease prevention and control, changing the

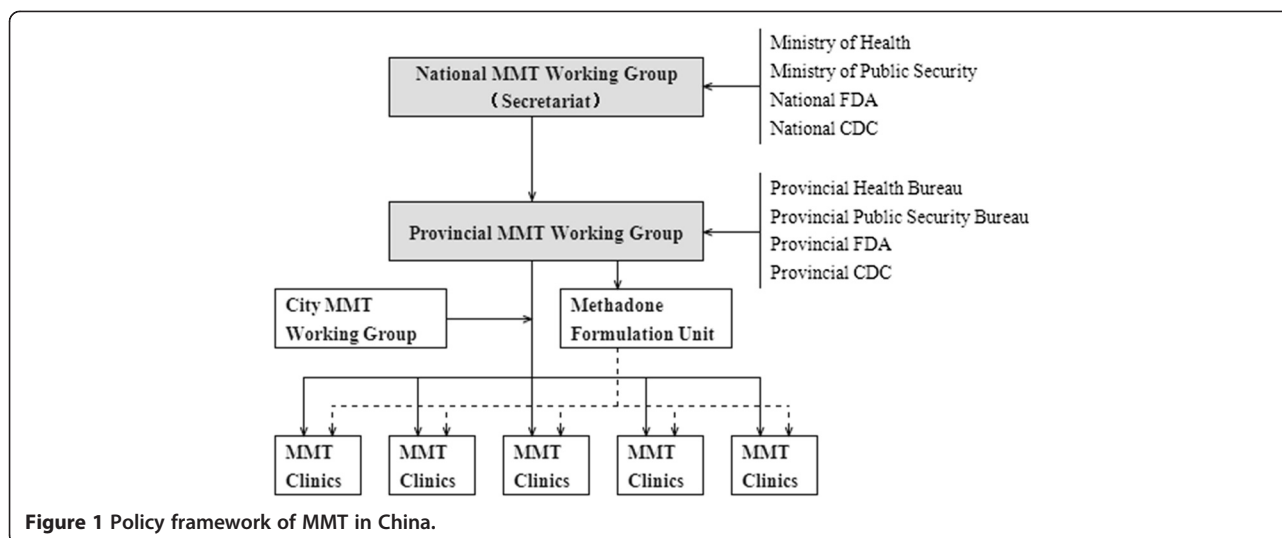


Figure 1 Policy framework of MMT in China.

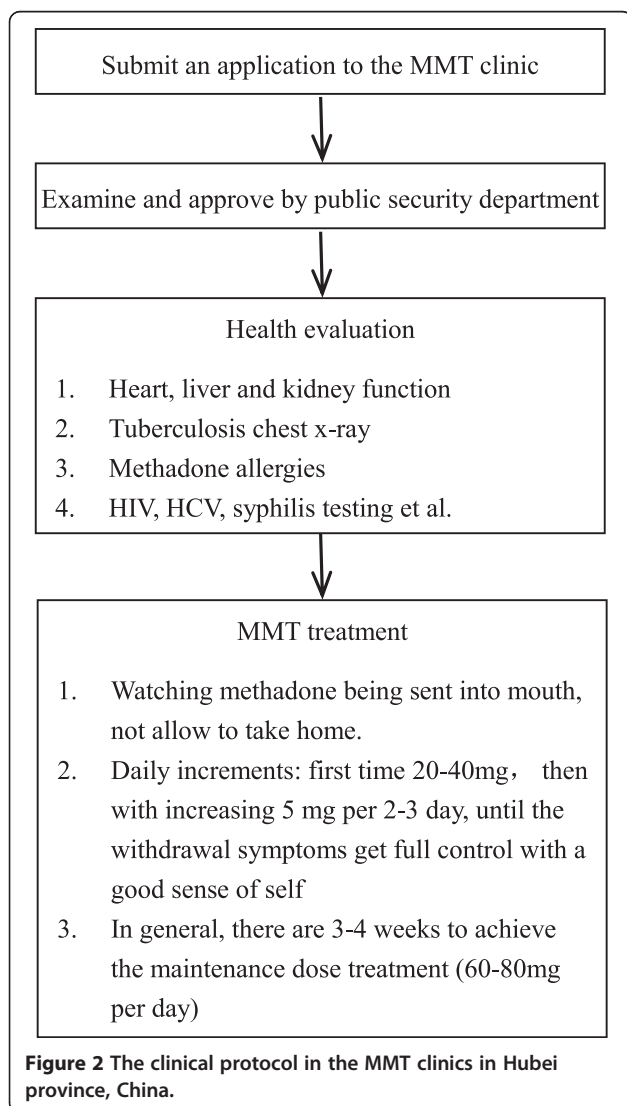


Figure 2 The clinical protocol in the MMT clinics in Hubei province, China.

lead department from the public security sector (namely the police department of government) to the health sector gives primary responsibility for management of drug abusers to the professional health service, which is more appropriate for the HIV prevention and control objective of MMT than the former administration management model. Second, in term of the management of drug abusers rehabilitation, community MMT is preferable to the abusers themselves who are trying to return to society and is more facilitative in promoting family and society support for them, compared with the former public security sector's isolated drug detoxification strategy. Third, regarding public security management, information gathered by the health department (on drug abusers accessing MMT as well as disease surveillance) can be used to provide informational support for the public security department to follow and manage those drug abusers.

Integrated services for management of drug abusers

In addition to providing methadone and needle exchanges, MMT also provides health education and counseling services related to HIV and drug abuse. It provides disease surveillance (urine morphine once per month, HIV antibodies every 6 months, HCV antibodies and syphilis testing every 12 months), condom provision, partner education, and family participation and support. The role of family and community resources cannot be underestimated in drug abuser rehabilitation. In addition, surveillance data from MMT clinics can be used not only in the health management of patients, but can also be provided for the public security department.

Effectiveness of MMT policy implementation on HIV infection

After a pilot intervention in 2006 with 1262 drug abusers, MMT formally began, with data collected since 2007. The

Table 1 Numbers of MMT clinics and patients treated in 2007–2011, Hubei province, China

Year	MMT clinics	Patients being treated in December of this year	Patients treated during this year	Drop-out patients	Average daily attendance
2007	13	4674	5918	78	4070
2008	32	11153	15335	4329	5960
2009	42	9831	17883	9151	6741
2010	46	7936	11471	3970	5242
2011	49	8115	12223	4276	4916

number of MMT clinics built in 2007 was 13, and increased by 16 in 2008, 10 in 2009, 4 in 2010, and 6 in 2011, with a total of 49 clinics currently. Table 1 shows the data from 2007–2011.

The initial number of MMT clinics was small, and the drop-out rate was low, perhaps because of the substantial support and coordination from local governments for those first clinics. Although the number of new entrants in 2008 and 2009 peaked, the number of drop-outs was large, with these numbers changing synchronously.

Table 2 shows HIV/AIDS infection data from MMT clinics. From 2007 to 2011, the proportion of HIV infection among drug abusers decreased relatively quickly (12.12% → 5.77% → 5.19% → 2.39% → 2.04%). Homosexual and bisexual transmission are main avenues of HIV infection. It is noteworthy that both showed an increasing tendency from 2007 to 2011, especially homosexual transmission (5.23% → 22.03% → 31.49% → 40.43% → 41.74%). In addition, it is worth noting that it is difficult for us to estimate the changes of the case number of injection drug use since the implementation of MMT in Hubei province, however, the case number of receiving MMT is increased and at the same time, the case number of infected HIV/AIDS is reduced among the case of received MMT. In other words, the reducing of HIV/AIDS caused by MMT

may be occurring at the same time with the increasing of HIV/AIDS caused by sexual transmission.

There are two aspects worth noting regarding the results presented in Table 2. The first is whether there are factors such as major public relations and marketing campaigns that are true causes of the drop in HIV cases associated with injected drug use, besides MMT. In China, policies regarding injected drug use mainly are directed towards publicity and police control. Police control is crime prevention and control of drug addicts to protect public safety. Publicity is mainly performed by the department of publicity, which is full-time and department affiliated with most government administrations (including governments at all levels and health bureaus, and education bureaus) with responsibility for publicizing the country's major policies. Most publicity activities are relatively simple, and the main approaches are writing slogans on walls and hanging banners (with generally relatively simple messages such as “stay away from drugs, cherish life”), and developing posters, blackboards, and short films for television [23,25]. It is worth noting that the above policies existed in China before the implementation of MMT and there have been almost no new major public relations and marketing campaigns since the implementation of MMT. Therefore, we think the drop in HIV rates associated with injected drug use may be mainly attributable to MMT policies. The second is the reason why sexual behaviors rather than injected drug use increased as a proportion of HIV causes. Sexual behavior-induced HIV includes heterosexual and homosexual behaviors, and aspects of commercial sexual behavior, which is related to urbanization and population shifts among other processes [26,27]. Compared with HIV infections related to injected drug use, HIV infections related to commercial sexual behaviors may be more difficult to control, because commercial sexual behaviors occur within many kinds of entertainment venues, such as salons, bars, nightclubs,

Table 2 HIV/AIDS cases and the percent distribution in 2007–2011, Hubei province, China

Causes of infection	2007		2008		2009		2010		2011	
	N	%	N	%	N	%	N	%	N	%
Injection drug use	44	12.12	33	5.77	31	5.19	20	2.39	18	2.04
Heterosexual behavior	141	38.84	253	44.23	252	42.21	412	49.28	470	53.17
Homosexual behavior	19	5.23	126	22.03	188	31.49	338	40.43	369	41.74
Sexual and injection drug use	0	0.00	1	0.17	3	0.50	2	0.24	0	0
Blood/plasma collection	20	5.51	55	9.62	13	2.18	16	1.91	8	0.90
Blood/blood products transfusion	39	10.74	26	4.55	23	3.85	9	1.08	7	0.79
Mother-to-child transmission	8	2.20	7	1.22	3	0.50	6	0.72	5	0.57
Occupational exposure	0	0	0	0	0	0	0	0	0	0
Others	92	25.34	71	12.41	84	14.08	33	3.95	7	0.79
Total	363		572		597		836		884	

bath centers, and hotels. Condom providing and health education (especially the involving sexual workplace) are the major public policy being taken to address the rise in HIV cases cause by sexual behaviors.

Problems identified in MMT treatment program in Hubei province, China

Although MMT effectively reduces drug abuse and prevents new HIV infections, there are two problems worth noting, namely the high drop-out rate and the poor information collection on and management of MMT clients. The current study used registration data from MMT clinics as no data from a specific survey of drop-outs were available. According to existing research on MMT in China, the reasons for dropping out of MMT—in addition to demographic factors such as gender, education level, and age—mainly include frequent contact with drug abusers, crime, being remanded in custody for drug abuse, and going to work in another city [28–31]. Based on our examinations of the existing research and the practice of MMT in Hubei Province, we think the reasons for client dropout may be related to social issues the clients encounter, not physiological or biological issues. Furthermore, although biological measures such as providing methadone and needle exchanges deal with the physiological withdrawal symptoms and biological virus infections, dropout follow-up and sustainable MMT sustainable development requires social measures, especially family cooperation and employment opportunities, which would help MMT clients return to society without discrimination.

The second problem is that poor information collection on and management of MMT clients was ignored easily at the beginning of MMT projects in many developing countries. Surveys of MMT clients are often ignored, mainly because of poor perceptions of the surveys, a lack of awareness of the role of information itself (here, this information is essentially evidence), or a lack of awareness of the role of the planning, design and implementation of information management. Without information and evidence accumulation, many policy implications would reflect low-level replication. Facing low coverage and a high drop-out rate, it is important to have data collection in different regions and in-depth analysis of factors influencing MMT. In many developing countries, barriers to information and evidence accumulation may not be information technology itself, but rather the lack of awareness, especially the value of this information and the planning, design and implementation of information management.

Conclusions

Following the implementation of the MMT policy in Hubei province the proportion of HIV infection among

drug abusers declined for five consecutive years. However, high drop-out rate and poor information management have been particularly problematic. Client drop-out from MMT programs may reflect social issues the clients encounter, and consequently, the incorporation of social measures, for example involving client families or improving employment possibilities, is required in order to develop sustainable MMT programs that help MMT clients return to society without discrimination.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

JD and YL worked together to designed, conducted and drafted the manuscript. JD and LZ performed the literature search and data extraction. All authors read and approved the final manuscript.

Author details

¹AIDS and STD Prevention and Control Center, Institute of Communicable Disease Prevention, Hubei Center for Diseases Control and Prevention, Wuhan 430079, China. ²Department of Social Medicine and Health Management, School of Public Health, Tongji Medical College, Huazhong University of Science and Technology, Hangkong Road 13, Wuhan 430030, China.

Received: 15 March 2013 Accepted: 12 October 2013

Published: 5 November 2013

References

1. Molfenter T, Capoccia VA, Boyle MG, Sherbeck CK: **The readiness of addiction treatment agencies for health care reform.** *Subst Abuse Treat Prev Policy* 2012, **7**:16.
2. Valentine K: **Methadone maintenance treatment and making up people.** *Social* 2007, **41**(3):497–514.
3. Bravo MJ, Llorens N, Barrio G, Brugal MT, Santos S, Sordo L, de la Fuente L, Itinere Project Group: **Methadone maintenance treatment: a protective factor for cocaine injection in a street-recruited cohort of heroin users.** *Drug Alcohol Depend* 2010, **112**:62–68.
4. McNeely J, Arnsten JH, Gourevitch MN: **Sterile syringe access and disposal among injection drug users newly enrolled in methadone maintenance treatment: a cross-sectional survey.** *Harm Reduct J* 2006, **3**:8.
5. Bergenstrom AM, Abdul-Quader AS: **Injection drug use, HIV and the current response in selected low-income and middle-income countries.** *AIDS* 2010, **S3**:S20–S29.
6. Cao XB, Wu ZY: **Methadone maintenance treatment as an HIV prevention strategy in china: a research update.** *Chinese Journal of AIDS/STD* 2011, **17**(2):196–199 (in Chinese).
7. World Health Organization: *Substitution maintenance therapy in the management of opioid dependence and HIV/AIDS prevention: position paper. UNAIDS position paper: substitution maintenance therapy in the management of opioid dependence and HIV/AIDS prevention.* Geneva: United Nations; 2004.
8. Johnson S, MacDonald SF, Cheverie M, Myrick C, Fischer B: **Prevalence and trends of non-medical opioid and other drug use histories among federal correctional inmates in methadone maintenance treatment in Canada.** *Drug Alcohol Depend* 2012, **124**(1–2):172–176.
9. Eiroa-Orosa FJ, Haasen C, Verthein U, Dilg C, Schäfer I, Reimer J: **Benzodiazepine use among patients in heroin-assisted vs. Methadone maintenance treatment: findings of the German randomized controlled trial.** *Drug Alcohol Depend* 2010, **112**(3):226–233.
10. Nosyk B, Marsh DC, Sun H, Schechter MT, Anis AH: **Trends in methadone maintenance treatment participation, retention, and compliance to dosing guidelines in British Columbia, Canada: 1996–2006.** *J Subst Abuse Treat* 2010, **39**(1):22–31.
11. Yang J, Oviedo-Joekes E, Christian KW, Li K, Louie M, Schechter M, Spittal P: **The cedar project: methadone maintenance treatment among young aboriginal people who use opioids in two Canadian cities.** *Drug Alcohol Rev* 2011, **30**(6):645–651.

12. Mitchell SG, Kelly SM, Brown BS, Reisinger HS, Peterson JA, Ruhf A, Agar MH, Schwartz RP: **Incarceration and opioid withdrawal: the experiences of methadone patients and out-of-treatment heroin users.** *J Psychoactive Drugs* 2009, **41**(2):145–152.
13. Hettema JE, Sorensen JL: **Access to care for methadone maintenance patients in the united states.** *Int J Ment Health Addict* 2009, **7**(3):468–474.
14. Sheridan J, Goodyear-Smith F, Butler R, Wheeler A, Gohns A: **Barriers to, and incentives for, the transfer of opioid-dependent people on methadone maintenance treatment from secondary care to primary health care.** *Drug Alcohol Rev* 2008, **27**(2):178–184.
15. Fu JJ, Zaller ND, Yokell MA, Bazazi AR, Rich JD: **Forced withdrawal from methadone maintenance therapy in criminal justice settings: a critical treatment barrier in the United States.** *J Subst Abuse Treat* 2013, **44**(5):502–505.
16. Joseph H, Stancliff S, Langrod J: **Methadone maintenance treatment (MMT): a review of historical and clinical issues.** *Mt Sinai J Med* 2000, **67**(5–6):347–364.
17. Go F, Dykeman M, Santos J, Muxlow J: **Supporting clients on methadone maintenance treatment: a systematic review of nurse's role.** *J Psychiatr Ment Health Nurs* 2011, **18**(1):17–27.
18. Yin W, Hao Y, Sun X, Gong X, Li F, Li J, Rou K, Sullivan SG, Wang C, Cao X, Luo W, Wu Z: **Scaling up the national methadone maintenance treatment program in China: achievements and challenges.** *Int J Epidemiol* 2010, **S2**:S29–S37.
19. Zhuang X, Liang Y, Chow EP, Wang Y, Wilson DP, Zhang L: **HIV and HCV prevalence among entrants to methadone maintenance treatment clinics in china: a systematic review and meta-analysis.** *BMC Infect Dis* 2012, **12**(1):130.
20. Xu H, Gu J, Lau JT, Zhong Y, Fan L, Zhao Y, Hao C, He W, Ling W: **Misconceptions toward methadone maintenance treatment (MMT) and associated factors among new MMT users in Guangzhou, China.** *Addict Behav* 2012, **37**(5):657–662.
21. Pang L, Hao Y, Mi G, Wang C, Luo W, Rou K, Li J, Wu Z: **Effectiveness of first eight methadone maintenance treatment clinics in china.** *AIDS* 2007, **S8**:S103–S107.
22. Wu Z, Sullivan SG, Wang Y, Rotheram-Borus MJ, Detels R: **Evolution of China's response to HIV/AIDS.** *Lancet* 2007, **369**:679–690.
23. Ministry of Health of China, UNAIDS, WHO: *Update on the HIV/AIDS epidemic and response in china.* Beijing: Ministry of Health; 2005:2006.
24. *Combined Act of Department of Health, Public Security and Food and Drug Administration.* Hubei Province, China. Combined Act No. 2006(№67).
25. Gu J, Lau JT, Tsui H: **Psychological factors in association with uptake of voluntary counselling and testing for HIV among men who have sex with men in Hong Kong.** *Public Health* 2011, **125**(5):275–282.
26. Tucker JD: **The social context of sexual HIV prevention among female sex workers in china.** *Int J Epidemiol* 2011, **40**(5):1421–1422.
27. Zhong F, Lin P, Xu H, Wang Y, Wang M, He Q, Fan L, Li Y, Wen F, Liang Y, Raymond HF, Zhao J: **Possible increase in HIV and syphilis prevalence among men who have sex with men in Guangzhou, china: results from a respondent-driven sampling survey.** *AIDS Behav* 2011, **15**(5):1058–1066.
28. Lin C, Wu Z, Rou K, Yin W, Wang C, Shoptaw S, Detels R: **Structural-level factors affecting implementation of the methadone maintenance therapy program in china.** *J Subst Abuse Treat* 2010, **38**(2):119–127.
29. Bao YP, Liu ZM: **Systematic review of HIV and HCV infection among drug users in china.** *Int J STD AIDS* 2009, **20**(6):399–405.
30. Wu Z, Rou K, Cui H: **The HIV/AIDS epidemic in china: history, current strategies and future challenges.** *AIDS Educ Prev* 2004, **16**(3):7–17.
31. Yang F, Lin P, He Q, Li Y, Long QH, Luo YL: **Logistic regression analysis of factors associated with drop out of drug abusers receiving community-based methadone maintenance treatment in Guangdong, china.** *Chinese J of AIDS/STD* 2011, **17**(5):543–546 (in Chinese).

doi:10.1186/1747-597X-8-38

Cite this article as: Dai et al.: Policy implementation of methadone maintenance treatment and HIV infection: evidence from Hubei province, China. *Substance Abuse Treatment, Prevention, and Policy* 2013 **8**:38.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

