

Regular article

## Impact of methadone on drug use and risky sex in China

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### Abstract

This study examined the impact of methadone on drug-using and risky sexual behaviors among 557 heroin injection drug users in one of the first methadone programs in China. Structured questionnaires were administered to collect data on methadone utilization, drug use, and risky sexual behaviors. Blood samples were tested for blood-borne infections. Multivariate logistic analyses revealed that, among opioid-addicted individuals, methadone participants were less likely to use or inject drugs and share needles than nonparticipants. They also were less likely to have multiple sexual partners or have unprotected sex. Those currently enrolled in methadone maintenance had lower risk of using and injecting drugs than those who were no longer receiving methadone. Data suggest positive, short-term impact on these important behaviors, but further studies are needed to examine the long-term impact of methadone treatment on disease rates. © 2008 Elsevier Inc. All rights reserved.

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### 1. Introduction

Although unprotected sex between men and women is globally the most common way of transmitting HIV, injection drug use (IDU) is the second most important force. Sharing of needles and paraphernalia in particular drives the epidemic in many countries outside Africa (Aceijas, Stimson, Hickman, & Rhodes, 2004; Fuller et al., 2003; Ruan et al., 2004, 2005; Shah et al., 1996; UNAIDS, 2006). Drug abuse also facilitates HIV transmission in

indirect ways. Under the influence of drugs, users are more likely to engage in unprotected sex, and thereby they may transmit or become infected with HIV (Darrow et al., 2005; Edlin et al., 1994). In addition, drug users may trade sex for drugs, which has been observed in both female and male substance-using populations (Edlin et al., 1994; Kuyper et al., 2004; Ruan et al., 2006).

One effective measure to reduce HIV risk among injection opioid drug users is methadone maintenance therapy (MMT). Long-acting oral methadone can effectively suppress use of short-acting opioid drugs (i.e., heroin) and reduce drug-injecting and needle-sharing practices. Provision of MMT is a well-evaluated harm-reduction strategy in Western countries. Studies have shown that MMT can suppress cravings for opioid drugs, decrease risk for injection-related HIV and other infectious diseases, reduce

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overdose deaths, and improve life functioning (Amato et al., 2005; Dole & Nyswander, 1965; Rhodin, Gronbladh, Nilsson, & Gordh, 2006; Ward, Hall, & Mattick, 1999). Higher doses of methadone and longer retention in MMT are positively associated with treatment outcomes (Rhoades, Creson, Elk, Schmitz, & Grabowski, 1998; Sorensen & Copeland, 2000). However, there is less definitive evidence that MMT reduces unsafe sexual behaviors (Sorensen & Copeland, 2000).

IDU has played an initiator role in the HIV/AIDS epidemic in China as it has in other Asian countries such as Thailand, Vietnam, and Myanmar. In 1989, 146 HIV infections were detected among IDUs in Ruili City, Yunnan Province, bordering Myanmar, and this outbreak indicated that the HIV/AIDS epidemic in China transferred from the sporadic phase to the localized phase (Ma, Li, & Zhao, 1990). By the end of 2002, all 31 provinces, municipalities, and autonomous regions in mainland China reported HIV infection among IDUs (Shen, Liu, Han, & Zhang, 2004). IDU became the most important contributor to the cumulative reported HIV/AIDS cases by 2005. It is estimated that about 44% of the 650,000 Chinese people currently living with HIV/AIDS are drug users (Lu, Wang et al., 2006).

To stem HIV spread among IDUs, the Chinese government outlined a series of pragmatic policies and operational guidelines to encourage and promote harm-reduction programs including MMT and needle exchange (Qian, Schumacher, Chen, & Ruan, 2006). China started MMT pilot programs in eight clinics in 2004, and by November 2006, a total of 320 clinics across the country were approved to provide MMT. China is now ready to scale up these programs and it is planned that 200,000 people with heroin addiction will be treated within 5 years (Gill & Okie, 2007). However, the effectiveness of MMT in the Asian region has not been well studied (Wong, Lee, Lim, & Low, 2003), and the effectiveness of MMT within China is unknown. This article reports the impact of methadone on drug-using and risky sexual behavior among heroin users in one of the first eight clinics in China to provide this medication.

## 2. Materials and methods

### 2.1. Study site and context

This study was conducted in Xichang City, Sichuan Province, in southwestern China, which has a total population of 618,000. Xichang is located along one of the major drug-trafficking routes in China and has about 100,000 migrant people each year and nearly 2,500 registered local drug users (Ruan et al., 2004, 2005). An initial survey among 379 IDUs in 2002 found that 11.3% were infected with HIV (Ruan et al., 2004) and that all infected subjects were opioid users (He et al., 2004). Two years of follow-up assessments showed that HIV serocon-

version rates were 3.2% during the first 12-month period and 1.8% during the second 12-month period (Lu, Qin et al., 2006; Ruan et al., 2005).

Within Xichang City there is a needle exchange program. Counseling is provided by local health providers to drug users who seek drug detoxification, but it is limited to provision of HIV and drug abuse information. In addition, Xichang Center (a governmental disease prevention institute) for STD and Leprosy Control opened one of China's first eight clinics to provide MMT in early 2004. MMT at Xichang Center is voluntary. Patients attend the clinic 7 days per week. The daily dose of methadone ranges from 30 to 60 mg per person. By the end of 2005, 397 IDUs were enrolled in MMT at Xichang Center. Of these, 283 (71.3%) dropped out of treatment.

### 2.2. Study design and population

This cross-sectional study was conducted during October and November 2005. Study participants were recruited primarily from the methadone clinic at Xichang Center using community outreach and snowball recruitment methods. All drug users who were receiving methadone treatment at Xichang Center were invited to participate in the study. In addition, project outreach workers recruited at places where drug trade/use took place in the community, distributing study-related information and inviting contacts to participate in the study. Special efforts were employed to recruit MMT dropouts and those opioid users who had never been on MMT. A small financial incentive was given to participants who successfully referred peers to the study.

Eligibility criteria included (a) age 20 years old or above (which is also a criterion for entering MMT in China), (b) self-report of heroin injection, and (3) ability and willingness to provide informed consent.

### 2.3. Data collection

After the study protocol was explained and written informed consent was obtained, a structured questionnaire was administered by a trained same-sex interviewer in a private room. The interview was based on the standard Chinese national study forms and collected data on demographics, history and current use of MMT, drug-using practices in the past 3 months, and risky sexual behaviors in the past 30 days. Questions about MMT included dates of entering and dropping out of treatment, dosage of methadone, and reasons for dropout. These questions were asked for up to four episodes of MMT treatment.

A blood sample was collected from each participant to test for hepatitis B surface antigen (HBsAg) and antibodies to HIV, hepatitis C virus (HCV), and *Treponema pallidum*. Enzyme immunoassay (Beijing WanTai Biological Pharmacy Enterprise Co., Ltd, Beijing, China) was used to detect HBsAg. HIV screening was performed by enzyme-linked immunosorbent assay (ELISA, Beijing WanTai Biological

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