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Facilitators of and Barriers to Methadone Maintenance Treatment Enrollment  
among Opioid Injecting Drug Users in Hai Phong, Vietnam, 2011

A dissertation submitted in partial satisfaction of the  
requirements for the degree Doctor of Philosophy  
in Epidemiology

by

Nguyen Binh Nguyen

2012

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## ABSTRACT OF THE DISSERTATION

Facilitators of and Barriers to Methadone Maintenance Treatment Enrollment  
among Opioid Injecting Drug Users in Hai Phong, Vietnam, 2011

by

Nguyen Binh Nguyen

Doctor of Philosophy in Epidemiology

University of California, Los Angeles, 2012

Professor Roger Detels, Chair

**Background:** *There were more than 170,000 documented DUs in Vietnam as of June 2012 and it was estimated that 80% of them are heroin injectors. Vietnam started its National MMT Program with a successful pilot project in 2008-2009 in Hai Phong and Ho Chi Minh City. In early 2010, the Vietnam Government approved a scale-up plan with the goal to provide MMT to 80,000 DUs by 2015. Approximately 10,000 DUs were receiving MMT in Vietnam in late 2012.*

**Objective:** *(1) To describe perceived facilitators of and barriers to MMT enrollment among opioid IDUs in Hai Phong; (2) To characterize the opioid current IDU population in Hai Phong regarding characteristics and factors that may influence MMT enrollment; (3) To identify factors associated with MMT enrollment among opioid IDUs in Hai Phong.*

**Methods:** Study sites were 2 urban and 2 rural districts in Hai Phong, randomly selected from districts with operating MMT clinics. Qualitative study: In-depth interviews were conducted anonymously with 36 opioid IDUs (from 3 different groups). Cross-sectional survey: 600 current opioid IDUs were recruited via pharmacies and needle-and-syringe programs for anonymous ACASI interviews. Case-control study: Cases were 150 opioid IDUs who had registered for MMT, and controls were 446 current opioid IDUs who had never registered for MMT. For both cases and controls, data were collected anonymously by ACASI interviews.

**Results:** From qualitative interviews, facilitators and barriers are presented in 3 levels: Structural, family and individual levels. Cross-sectional data on the following areas are presented: demographic and familial characteristics, drug use and cessation history, general health and HIV-related behaviors, MMT-related beliefs, attitude, social pressure and other factors that may influence MMT enrollment. Rural and urban participants were significantly different in many aspects. Based on case-control data, positive predictors and negative predictors of MMT registration are presented.

**Conclusion:** Facilitators should be enhanced and barriers should be addressed by MMT program managers and policy makers in Vietnam. The cross-sectional data can be used for program planning and outreach purposes. The results on factors associated with MMT enrollment can be used to identify groups of IDUs who may need supports for MMT participation.

The dissertation of Nguyen Binh Nguyen is approved.

Onyebuchi Arah

Li Li

Steven Shoptaw

Roger Detels, Chair

University of California, Los Angeles

2012

This work is in dedication to drug dependants who are hoping for a change in their life  
and those who are working to facilitate that change.

## TABLE OF CONTENT

	Page
<b>LIST OF ABBREVIATIONS</b> .....	viii
<b>LIST OF TABLES</b> .....	x
<b>LIST OF FIGURES</b> .....	xi
<b>ACKNOWLEDGEMENT</b> .....	xii
<b>VITA</b> .....	xiii
<b>CHAPTER 1: INTRODUCTION</b> .....	1
1.1. Country background and the current HIV/AIDS situation in Vietnam.....	1
1.2. Illicit drug use situation in Vietnam.....	4
1.3. Effectiveness of methadone maintenance therapy .....	6
1.4. The National Methadone Program in Vietnam .....	10
1.5. Research necessity and objectives .....	12
References.....	14
<b>CHAPTER 2: RESEARCH ARTICLE 1: Perceived Facilitators of and Barriers to Methadone Maintenance Enrollment among Opioid Injecting Users in Hai Phong, Vietnam, 2011: A Qualitative Study</b>	
Abstract.....	18
2.1. Introduction.....	19
2.2. Study Sites.....	22
2.3. Methods.....	23
2.4. Results.....	28
2.5. Discussion.....	42
References.....	48
<b>CHAPTER 3: RESEARCH ARTICLE 2: Current Opioid Injecting Users and Methadone Maintenance Enrollment in Hai Phong, Vietnam, 2011: A Cross-Sectional Study</b>	
Abstract.....	52
3.1. Introduction .....	53



3.2. Study Sites.....	57
3.3. Methods.....	57
3.4. Results.....	65
3.5. Discussion.....	82
References.....	91
<b>CHAPTER 4: RESEARCH ARTICLE 3: Factors Associated with Methadone Maintenance Enrollment among Opioid Injecting Users in Hai Phong, Vietnam, 2011: a Case-Control Study</b>	
Abstract.....	96
4.1. Introduction .....	97
4.2. Study Sites.....	99
4.3. Methods.....	100
4.4. Results.....	107
4.5. Discussion.....	115
References.....	123
<b>SUMMARY OF RESULTS</b>	126
<b>SUMMARY OF RECOMMENDATIONS</b>	129
<b>APPENDICES</b>	
Appendix 1. Ineterviewer Guide for the Qualitative Study.....	131
Appendix 2. Questionnaire for the Quantitative Studies.....	141
Appendix 3: A graphic model of the distribution of current and transitional IDUs and coverage of the cross-sectional survey sample of current IDUs in Hai Phong, Vietnam, 2011 .....	169

## **LIST OF ABBREVIATIONS**

ACASI: Audio Computer-Assisted Self-Interview (technique)

AIDS: Acquired Immunodeficiency Syndrome

ARV: Antiretroviral (therapy)

CI: Confidence interval

DU: Drug User

GSO: The General Statistics Office (of Vietnam)

HCMC: Ho Chi Minh City

HIV: Human Immunodeficiency Virus

IBBS: Integrated Biological and Behavioral Surveillance (survey)

IDU: Injecting Drug User

MMT: Methadone Maintenance Treatment

MOH: The Ministry of Health (of Vietnam)

MOLISA: The Ministry of Labor, Invalids and Social Affairs (of Vietnam)

N&S: Needle and syringe (or needles and syringes)

NCHCE: The National Center for Health Communication and Education (of Vietnam)

NCADP: The National Committee for AIDS, Drugs and Prostitution Prevention and Control (of Vietnam)

NGOs: Non-governmental organizations

OR: Odds ratio

STI: Sexually transmitted infection

UNAIDS: The Joint United Nations Programme on HIV/AIDS

UNODC: The United Nations Office on Drugs and Crime

VAAC: The Vietnam Administration of HIV/AIDS Control

VND: Vietnamese dong (the currency of Vietnam)

WHO: The World Health Organization

Yrd: Years of opioid dependence

## LIST OF TABLES

Name of Table	Page
<i>Table 1.2: Characteristics of patients in the pilot MMT project in Hai Phong and Ho Chi Minh City, 2008-2009. (Source: Ministry of Health of Vietnam, 2010).</i>	11
<i>Table 2.1: Demographic characteristics of 36 participants in 4 study districts.</i>	29
<i>Table 3.1: Basic demographic characteristics of 600 current IDUs in Hai Phong, Vietnam.</i>	66
<i>Table 3.2: Family characteristics and relations of 600 current IDUs in Hai Phong, Vietnam.</i>	68
<i>Table 3.3: Drug use and cessation history of 600 current IDUs in Hai Phong, Vietnam.</i>	70
<i>Table 3.4: Health concern, sexual activeness and other HIV risk behaviors of 600 current IDUs in Hai Phong, Vietnam.</i>	72
<i>Table 3.5: MMT service awareness, current enrollment status and intention to apply among 600 current IDUs in Hai Phong, Vietnam.</i>	74
<i>Table 3.6: MMT-related beliefs and attitude of 600 current opioid injecting users in Hai Phong, Vietnam, measured as percent of participants.</i>	76
<i>Table 3.7: Social pressure to enter MMT among 600 current opioid injecting users in Hai Phong, Vietnam, measured as percent of participants.</i>	77
<i>Table 3.8: Number and the percent of participants reported having difficulty with four administrative eligibility criteria for MMT in Hai Phong, Vietnam.</i>	78
<i>Table 3.9: Number and percent of current IDUs reporting high level of difficulty (6 or 7 on a scale of 1-7) with certain requirements for MMT participation in Hai Phong, Vietnam.</i>	80
<i>Table 3.10: Odds ratios as measures of association between MMT enrollment and some factors based on cross-section data of 595 current IDUs in Hai Phong, Vietnam.</i>	82
<i>Table 4.1: Demographic and familial characteristics of 150 cases and 446 controls.</i>	108
<i>Table 4.2: Drug use history and other characteristics of 150 cases and 446 controls.</i>	110
<i>Table 4.3: Associations between MMT enrollment and some factors, based on conditional logistic regression with 21 predictor variables selected using prior knowledge.</i>	112
<i>Table 4.4: Odds ratios as measures of association between MMT enrollment and some factors among opioid IDUs in Hai Phong, Vietnam.</i>	114
<i>Table 4.5: Odds ratios as measures of association between MMT enrollment and demographic characteristics among opioid IDUs in Hai Phong, Vietnam.</i>	115

## LIST OF FIGURES

Name of Figure	Page
<i>Figure 1.1: Number of HIV, AIDS and AIDS-related deaths diagnosed in Vietnam, 1990-2011. (Source: Ministry of Health, 2012).</i>	2
<i>Figure 1.2: Distribution of HIV reported cases in Vietnam by risk groups, 1994-2011. (Source: Ministry of Health, 2012)</i>	3
<i>Figure 1.3: HIV prevalence among IDUs in some major cities in Vietnam, IBBS 2006 and 2009. (Source: Ministry of Health, 2011)</i>	4
<i>Figure 1.4: Proportion of IDUs who reported needle and syringe sharing, IBBS-2009. (Source: Ministry of Health, 2011).</i>	6
<i>Figure 2.1: A conceptual framework for MMT enrollment in Vietnam, adapted from the Theory of Planned Behavior (Ajzen, 1985, 1991, 2010).</i>	26
<i>Figure 3.1: Reported drug-user registration status with local authority among 596 current opioid IDUs in Hai Phong, Vietnam.</i>	71
<i>Figure 3.2: Percentage of participants reported having intention to apply for MMT within the next 3 months among 446 current IDUs who had never registered for MMT.</i>	75
<i>Figure 3.3: One-way travel time to MMT clinic reported by participants in rural districts.</i>	79
<i>Figure 3.4: One-way travel time to MMT clinic reported by participants in urban districts.</i>	79
<i>Figure 3.5: Percentage of participants reported having received financial support from family and/or relatives for MMT participation.</i>	81
<i>Figure 3.6: Percentage of participants reported having potential financial support for MMT from family and/or relatives.</i>	81
<i>Figure 4.1: Illustration of possible changes in observed association between an exposure and an outcome when conditioning on a common effect of the exposure and an intermediate on the causal path from the exposure to the outcome.</i>	106

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*Disclaimer: The opinions, findings, and conclusions stated in this dissertation are those of the author and do not necessarily reflect those of VEF or UCLA/Fogarty AITRP.*

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## **CHAPTER I: INTRODUCTION**

### **1.1. Country background and the current HIV/AIDS situation in Vietnam**

Vietnam is a nation in Southeast Asia with a total area of approximately 331,000 square kilometers (slightly smaller than California, United States). As of Dec, 2011, Vietnam had a population of approximately 87 million, of which 32% living in urban settings, 45% were between 15 and 49 years of age and the median age was 27 years (GSO, 2012a). Currently, subdivisions of the country include: 58 provinces and 5 centrally controlled cities (Hanoi, Ho Chi Minh City, Hai Phong, Da Nang and Can Tho; these cities are at the same administrative level as provinces). The 63 provinces (including the 5 centrally controlled cities) are subdivided into districts, towns and municipalities (district level). Districts are further divided into wards (in urban setting) or communes and townships (in rural setting). Communes, wards and townships constitute the lowest administrative level, often referred to as the commune level (GSO, 2012b). In each administrative unit (at province, district, or commune level), a local government exists and is referred to as “The People’s Committee” which is supported by and oversees the activities of various departments at the same level (public security, health, education, finance, etc.), and to ensure that the laws, government policies and regulations are implemented. Most of these laws, policies and regulations (including health and drug-related policies) are established by the central government and are usually intended to be the same for all provinces and their sub-divisions. However, their implementation in different provinces/regions can vary depending on, for example, availability of resources and interpretation of the policies, etc.

As of June 2012, it was reported that 204,019 people were living with HIV in Vietnam, 58,569 people were living with AIDS and there had been 61,856 cumulative deaths among HIV infected people (NCADP, 2012a). HIV infections have been diagnosed in all of 63 provinces,

98% of 698 districts, and 77% of 10,821 communes of the country (MOH, 2012, GSO, 2012b). The ten provinces with the highest number of people living with HIV in 2011 were: HCMC (46507), Ha Noi (18108), Son La (8013), Thai Nguyen (7093), Hai Phong (6930), Nghe An (5307), Thanh Hoa (4943), Dong Nai (4926), Dien Bien, (4775), An Giang (4450).

According to the definition used by UNAIDS (2011), Vietnam currently has a concentrated HIV epidemic, i.e., HIV transmission occur primarily in one or more vulnerable groups and the epidemic has not been well established in the general population. While the HIV prevalence among the general population in Vietnam still remains below 0.5%, the HIV prevalence among IDUs and female sex workers in 2010, according to national sentinel surveillance data, were 17.2% and 4.6%, respectively. Surveillance data for men who have sex with men (MSMs) are still limited to some major cities. HIV prevalence among MSMs in 2010 varied greatly by cities, from below 1% in Da Nang to 16% in HCMC (MOH, 2012).

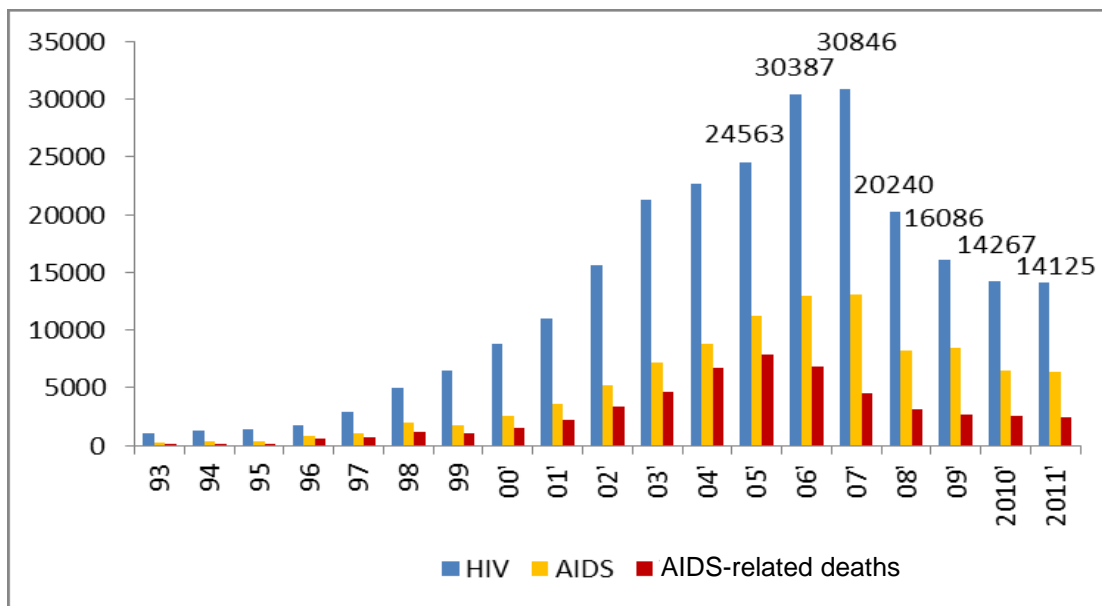


Figure 1.1: Number of HIV, AIDS and AIDS-related deaths diagnosed in Vietnam, 1990-2011 (source: Ministry of Health, 2012).

Although the number of new HIV infections diagnosed each year tended to decrease in the last few years (Figure 1.1), the HIV epidemic in Vietnam still has great potential to change its direction. Injecting drug use remains prevalent among major cities and is a rising issue in some Northern provinces. Meanwhile, unprotected sex has been of increasing importance as a risk factor for HIV infection in Southern and Central provinces (VAAC, 2010, MOH, 2012).

Among 14,125 cases of HIV infections diagnosed in 2011, 46.7% were attributed to injecting drug use, 41.4% to sexual transmission and 2.4% to mother-to-child transmission. National HIV/AIDS sentinel surveillance data also indicate that injecting drug use has remained the most important risk factor for HIV infection in Vietnam since 1993 (MOH, 2012).

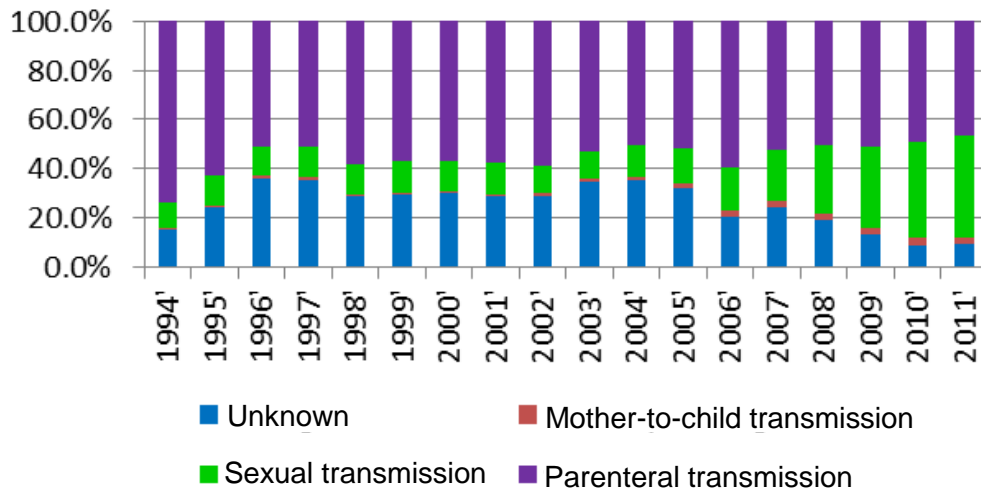


Figure 1.2: Distribution of HIV reported cases in Vietnam by transmission routes, 1994-2011. (Source: Ministry of Health, 2012)

Another important source of HIV/STI related data for Vietnam has been the series of HIV/STI Integrated Biological and Behavioral Surveillance (IBBS) surveys on high risk groups, which used snowball, respondent-driven and time-location sampling technique (varying by group). There have been three such IBBS surveys conducted in Vietnam (2000, 2006 and 2009)

with increasing number of provinces included as survey sites. Based on results from the IBBS 2009 survey, HIV prevalence among male IDUs were very high in Hai Phong (55.7%); Quang Ninh (48.0%), HCMC (46.1%), while lower in Ha Noi (20.7%), An Giang (15.7); and lowest in Da Nang (1.0%), as illustrated in Figure 1.3.

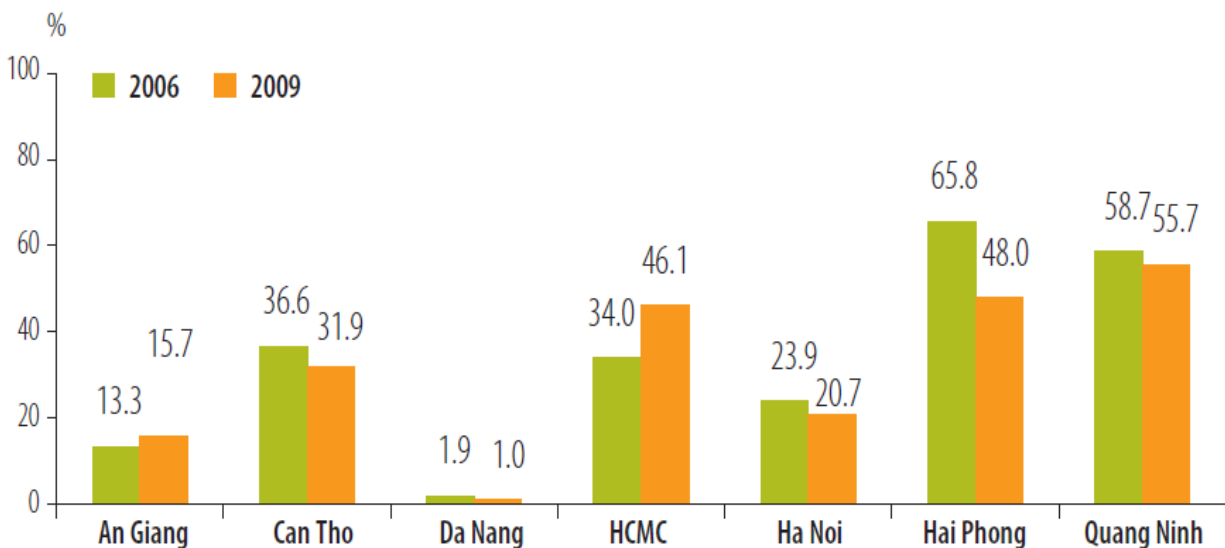


Figure 1.3: HIV prevalence among IDUs in some major cities in Vietnam, IBBS 2006 and 2009. (Source: Ministry of Health, 2011)

## 2.2. Illicit drug use situation in Vietnam

The number of documented DUs in Vietnam as of June 2012 was reported at 171,392 (NCADP, 2012a). Data on the number of documented DUs at the provincial level are generally not publicly available. According to data from the Ministry of Labor, Invalids and Social Affairs (MOLISA, 2007), Ho Chi Minh City, Hanoi, Hai Phong, Son La, Lai Chau, Lao Cai, Thai Nguyen, Ha Tay, Thai Binh, Nghe An were the provinces with more than 3,000 documented DUs in 2007. The number of undocumented DUs is unknown, and no scientific estimate of the size of this segment of the DU population in Vietnam is available.

Since 2000, the Law on Drug Prevention and Control of Vietnam mandates that those drug addicts who do not voluntarily participate in family or community-based rehabilitation be forced to stay in government-run closed setting rehabilitation centers (also known as “social and labor education centers” or “06 centers”) for a period of one to two years. It was estimated that fewer than 30% of documented DUs in Vietnam stay in such centers at any time. According to Martin and colleagues (2009), drug rehabilitation in these centers generally includes 5 steps: detoxification; behavior education; labor therapy; drug relapse counseling and vocational training; and post rehabilitation management in the community. However, relapse rates among “trainees” of these centers within one year after being discharged have been reported to be as high as >90%. So far, drug users in ‘06 centers have no access to MMT or other harm reduction services (Martin et al., 2009).

A survey conducted by the Ministry of Labor, Invalids and Social Affairs (MOLISA, 2001) indicated that heroin was the main form of drug used by more than 90% of drug addicts in large cities, such as Hanoi and Ho Chi Minh City. Nguyen and Scannapieco (2008) described a shift in method of drug use (from smoking to injecting) during the 1995-2001 period, and injection had become the predominant method of drug use in Vietnam by 2001. More recently published data on types and methods of drug use in Vietnam are scarce. According to the director of the UNAIDS Office in Vietnam, heroin injectors account for about 80 percent of all drug users in Viet Nam (Murphy, 2010).

In Vietnam, injecting equipment (needles and syringes, N&S) can be bought easily from pharmacies, except in late night time. The cost of each N&S package, which contains a plastic sterile syringe and a sterile needle, is very affordable. However, the police may stop a person suspected to be a drug user and then possession of N&S without evidence of medical purpose

may lead to an arrest and subsequent mandatory urine testing (to confirm illegal drug use). For this reason, IDUs in Vietnam usually buy injecting equipment immediately before or after buying drug, and then use them as soon as they can to reduce the likelihood of being caught in possession of injecting equipment and/or drug.

The prevalence of N&S sharing practice in Vietnam differs considerably across geographic areas. According to results from the IBBS-2009 survey, the prevalence of N&S sharing at least once in past 6 months ranged from 7.4 % in Hai Phong (a province with a long history of HIV epidemic among IDUs) to 37.2 % in Da Nang (a province where HIV is a rising issue), as shown in Figure 1.4.

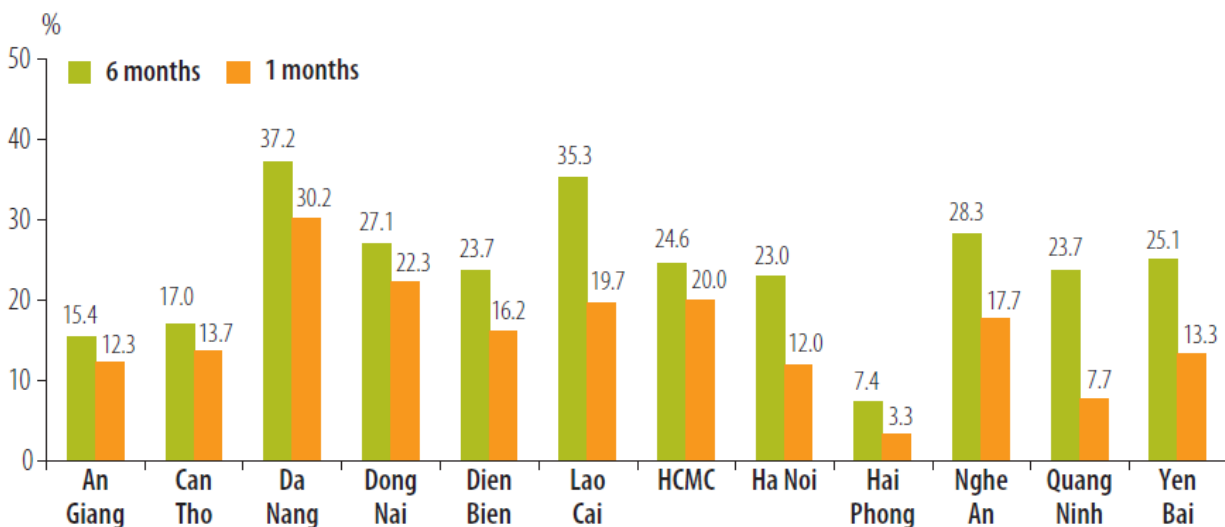


Figure 1.4: Proportion of IDUs who reported needle and syringe sharing in 12 provinces of Vietnam, IBBS 2009 (Source: Ministry of Health, 2011).

### 2.3. Effectiveness of methadone maintenance therapy

Methadone is a long-acting opioid which acts on the opioid receptors in human brain. It was first synthesized in Germany during the World War II and used as an analgesic (Marsch, 1998). Methadone maintenance treatment (MMT) was first developed for the treatment of opioid

drug dependence in the mid 1960s by Dole & Nyswalder (1965). Since then, MMT has been proven globally to be an effective approach in the control of illegal opioid drug use and prevention of HIV infection. Extensive evidence has been established that MMT is associated with (1) cessation of drug use and reduction in frequency of drug use (Marsch, 1998, Gowing et al., 2008, Mattick et al., 2009); (2) decrease in HIV infection rate and other parenterally transmitted infections such as Hepatitis B and C among IDUs (Drucker et al., 1998; Loughlin et al., 2004, Gowing et al., 2008), and (3) other social improvements such as reduction in drug-related criminal activities, increase in employment, family integration, etc. (Jacobs, 1976, Marsch., 1998). MMT has also been shown to be highly cost-beneficial (Doran et al., 2003, Godfrey et al., 2004).

Clinical effectiveness of methadone is most commonly measured by retention of patients in treatment and by reduction in frequency of heroin use, compared to no treatment or treatments that do not include methadone (Gowing et al., 2008, Mattick et al., 2009). Mattick and colleagues (2009) reported results of a meta-analysis of 11 randomized controlled clinical trials conducted in various parts of the world since 1965 (including 7 trials conducted in the USA and the other four conducted in Thailand, Hong Kong, Australia and Sweden), with a total of 1,969 participants. The summary effect estimates of MMT from this meta-analysis are as follows:

- a) MMT significantly increases retention rate from 3 times [RR= 3.05, 95% CI: 1.75-5.35, based on results of 3 trials conducted before 2000], to more than 4 times [RR= 4.4, 95% CI: 3.26-6.04, based on results of 4 newer trials];
- b) MMT reduces risk of heroin use, as measured by urine or hair analyses, by 33% [RR=0.66, 95%CI: 0.56-0.78, based on results of 6 trials];

- c) MMT tends to decrease total mortality but this summary effect is not statistically significant [RR=0.48, 95%CI = 0.01-2.39, based on results of 3 trials]; and
- d) MMT may reduce criminal activity but, as with total mortality, the summary effect estimate is not statistically significant [RR=0.29, 95%CI = 0.12-1.25, based on results of 3 trials]. In their discussion, Mattick et al. indicated that the non-significant results for total mortality and criminal activity reductions may be due scarce data on these two rather uncommon outcome measures of effects of MMT.

An important public health benefit of MMT (in which methadone is administered orally) is that it lowers risk of HIV infection among IDUs and, therefore, their sexual partners. There is abundant evidence that MMT reduces behaviors that are known to facilitate the transmission of HIV, such as injection drug use, sharing of injection equipment, and sex work needed to get money for drugs. In a recent Cochrane Review meta-analysis, Gowing et al. (2008) summarized the results of 33 studies of opioid substitution treatments in relation with HIV incidence and/or prevalence or HIV-related risk behaviors. These were both randomized and non-randomized studies which involved approximately 10,400 participants in total and MMT was used in 32 out of the 33 included studies (buprenorphine and levo- $\alpha$ -acetylmethadone were used in some studies, either as the main intervention or for comparison with methadone). Average doses of methadone used were reported in 20 studies, ranging from 40mg per day to 100mg per day. The meta-analysis showed that MMT was significantly associated with reduction in injecting drug use and sharing of injecting equipment, and results were consistent across studies. Studies also revealed significant associations between MMT and reduction in sex-related high-risk behaviors (such as having multiple sex partners, trading sex for money or drug, etc.), but the associations were weaker than in the case of drug-related high-risk behaviors. The authors reported that



among those studies in which HIV prevalence and/or incidence were measured, reduction in drug-related behaviors did seem to correspond to reduction in number HIV cases.

The recent establishment of a national methadone program in China (since 2004) and its rapid development may provide valuable experience to the methadone program in Vietnam, a neighboring country with comparable socio-economic characteristics. There have been a number of publications on barriers to MMT utilization among opioid users, challenges in providing services in MMT clinics and structural-level factors influencing the implementation of MMT program in China (Lin et al., 2010ab, 2011, Wu et al., 2012, Xu et al., 2012). With some relevance, Liu et al. (2008) reported results from a prospective cohort study in Guizhou province which recruited 1003 patients from 8 MMT clinics. In this study, the overall retention rate after 14 months of follow-up was 56.2%. It was found that higher dose of methadone predicted higher retention (each 1mg decrease in methadone dose under 60mg/day was associated with 1% reduction in retention rate). In addition, retention was also found to be associated with intent to remain in MMT for life and with the clinic attended. The authors concluded that adequate dose of methadone is an important factor for patient retention.

Very few community-based studies on factors associated with methadone enrollment can be found in the English literature. Schutz et al. (1994), Shah et al., (2000) and Kerr et al. (2005) reported some correlates of methadone enrollment in community settings. However, all of these studies were conducted in the United States or Canada and their results are probably not useful for the MMT program of Vietnam, given the remarkable differences between Vietnam and North America in terms of service availability, drug and healthcare policies, and socio-cultural environments.

## **2.4 The National Methadone Program in Vietnam**

The National Methadone Maintenance Treatment (MMT) Program in Vietnam started with a pilot project in Hai Phong and Ho Chi Minh City in 2008 and 2009. Under this pilot project, Hai Phong and Ho Chi Minh City each had 3 clinics located in 3 different districts; and each clinic has the capacity of providing treatment for 250 patients (MOH, 2010). Patients in this pilot project were carefully selected via an intensive multi-step reviewing process which uses the following eligibility and prioritizing criteria:

### ***Eligibility criteria:***

- 1) Being medically diagnosed with opioid dependence (according to diagnostic criteria stipulated by the Ministry of Health of Vietnam);
- 2) Having no contraindication of methadone use;
- 3) Being 18 years old or older (a legal guardian is required if between 16 and 18 years old);
- 4) Submitting a written petition indicating voluntary participation in MMT;
- 5) Having a referral document from the commune-level people's committee (in practice, this criterion often amounts to having residency and drug user status verified by commune/ward authorities);
- 6) Not being prosecuted for or charged with a criminal offense;
- 7) Having stable housing in the district where the MMT clinic is located.

### ***Prioritizing criteria:***

- a) Being an injecting drug user (as opposed to a non-injecting drug user).
- b) Having been in opioid addiction for 3 years or longer.
- c) Having had many unsuccessful drug cessation attempts (by non-MMT methods).
- d) Having actively participated in HIV/AIDS control and prevention activities.

In April 2010, The Vietnam Ministry of Health reported the initial results of the pilot project in which 750 patients in Hai Phong and 750 patients in Ho Chi Minh City were treated with methadone and psychosocial counseling as an integrated component (MOH, 2010). Among 1,500 patients 95% males and mean age 31 years. Other characteristics of patients in the two cities are presented in Table 1.2. The mean dose of methadone used for non-ARV patients was 109mg/day, and for patients with concurrent ARV treatment was 186.5mg/day, these are very high compared to average doses of methadone used in other countries, as reported by Gowing et al. (2008) and Mattick et al. (2009).

*Table 1.2: Characteristics of patients in the pilot MMT project in Hai Phong and Ho Chi Minh City, 2008-2009. (Source: Ministry of Health of Vietnam, 2010)*

<b>Indicators</b>	<b>Hai Phong</b>	<b>Ho Chi Minh</b>	<b>Total</b>
Mean age at first drug use	23.5	19.4	21.4
Type of drug at first use:			
<i>Heroin</i>	80.9	95.2	88.3
<i>Opium</i>	16.9	0.6	8.5
<i>Other</i>	2.2	4.2	3.2
Ever used heroin	99.4	100.0	99.7
Highest reported frequency of drug			
<i>1-2 times/day</i>	3.5	9.0	6.3
<i>3-5 times/day</i>	72.6	52.0	62.0
<i>&gt; 5 times/day</i>	23.9	38.0	31.7
Injecting drugs	84.4	88.4	86.4

An analysis of 9-month follow-up data from a cohort of 965 patients in this pilot project (Long et al., 2010) revealed that the treatment retention rate after 9 months was 90%. Among those who left the program, the main reason for termination of treatment was being sent to ‘06

centers. The proportion of patients with concurrent drug use (either self-reported or detected by urine testing) at 3, 6 and 9 months were 27.5%, 19.4% and 18.0%, respectively. Serologic testing at 6 months detected one new HIV infection, 9 Hepatitis B infections and 72 new Hepatitis C infection (seroprevalence rates at baseline for these infectious agents were 34%, 16% and 60%, respectively). The authors also reported significant reduction in HIV-related risk behaviors among patients and in crime activities in the districts where the pilot MMT was implemented; and significant improvement in patient quality of life (Long et al, 2010).

Based on the results of the pilot project, the Vietnam Ministry of Health proposed an expansion plan for the period 2010-2015, which was approved by the Government in early 2010. According to this plan, the National MMT Program will cover 30 provinces with high prevalence of injection drug use and HIV infection (out of 63 provinces) and provide MMT to 80,000 DUs in the country by 2015. The Vietnam Government has also initiated a plan for in-country methadone production (NCHCE, 2010).

## **2.5. Research necessity and objectives**

Although the pilot MMT program in Hai Phong and HCMC showed positive results, these initial results were based on a small fraction of drug users who had been carefully selected with strict admission criteria. Additionally, the pilot program was done with high level of attention and dedicated resources from many sectors of the society. Experience from China indicated that when a national MMT program is scaled-up too rapidly and aimed at covering a large majority of the DUs population of the nation in a short time; then the initial success experience may no longer be observed (Lin et al., 2010ab, 2011, Wu, 2012, Xu et al, 2012). Thus, for a successful and sustainable scale-up of the MMT program in Vietnam, basic characteristics and other relevant information (such as current service acceptability and enabling

conditions) of the target population, primarily opioid injecting drug users, will be essential for initial financial and human resource planning. Also, a systemic assessment of barriers and facilitators of MMT enrollment among the target population will be needed to identify disadvantaged groups and maximize service utilization once the program has been expanded.

For the reasons and in a context described above, we conducted a research project in Hai Phong, Vietnam in 2011 with the following objectives:

1. To describe perceived facilitators of and barriers to MMT enrollment among injecting opioid drug users in Hai Phong.
2. To characterize the opioid current injecting drug user population in Hai Phong with regard to demographic and familial characteristics, drug use and cessation history, general health and HIV-related behaviors, MMT-related beliefs, attitude, social pressure and other factors that may influence MMT access and enrollment in Hai Phong.
3. To identify factors associated with MMT registration status among opioid injecting drug users in Hai Phong.

This research project was composed of three component studies corresponding to the three objectives above: (1) a qualitative study (in-depth interviews) of successful and unsuccessful MMT applicants, and current IDUs (who had never registered for MMT); (2) a community-based cross-sectional survey of current IDUs; and (3) a case-control study comparing IDUs who had registered for MMT and current IDUs who had never registered for MMT (selected from eligible subjects participating in the cross-sectional survey). Together, the three component studies provide essential (and supplemental) information about the opioid IDU population in Hai Phong, acceptability of service, barriers and facilitators of MMT enrollment among IDUs in a province where the Vietnam National MMT program was first developed and currently considered a model for MMT program development for other provinces in the country.

The results of these studies will also contribute some value to the international literature on drug use and treatment, harm reduction and HIV prevention programs.

This research project was review approved by Institutional Review Boards of the University of California Los Angeles (United States) and the National Institute of Hygiene and Epidemiology (Vietnam).

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## CHAPTER II: RESEARCH ARTICLE 1

### **Perceived Facilitators of and Barriers to Methadone Maintenance Enrollment among Opioid Injecting Users in Hai Phong, Vietnam, 2011: A Qualitative Study**

#### **ABSTRACT**

**Background:** *There were more than 170,000 documented DUs in Vietnam as of June 2012 and it was estimated that at least 80% of them are heroin injectors. Vietnam started its National MMT Program with a successful pilot project in 2008-2009 in Hai Phong and Ho Chi Minh City. In early 2010, the Vietnam Government approved a scale-up plan with the goal to provide MMT to 80,000 DUs in the country by 2015.*

**Objective:** *To describe perceived facilitators of and barriers to MMT enrollment among injecting opioid drug users in Hai Phong, Vietnam in 2011.*

**Methods:** *Anonymous in-depth interviews were conducted with 36 opioid IDUs in 2 urban and 2 rural districts in Hai Phong where MMT clinics were operating in September and October 2011. Participants belonged to 3 groups: 12 MMT patients, 12 MMT applicants (not admitted yet) and 12 current IDUs who had never registered for MMT. Interviews were digitally recorded and later transcribed verbatim into text. Data were coded and analyzed using Atlas.ti 7 software. Emerging themes related to facilitators and barriers to MMT enrollment were identified and presented with illustrative quotes.*

**Results:** *(a) Facilitators: Support from local authorities helped drug users become more confident and willing to enroll in MMT. Each MMT clinic often had a small group of MMT patients who helped in delivering MMT information and encouraging other drug users to enroll (when the clinic had not been full). Most participants reported strong support from families in*

*addiction treatment efforts (but a number of families were uninformed of the effectiveness of MMT and how to help the drug users enroll). Most drug users held highly favorable attitude toward MMT. A majority of them were willing to travel far distance and pay some amount of fee for MMT. (b) Barriers: There was only one MMT clinic in each study district and its admission capacity was often very limited compared to the demand for MMT in the district. Lack of support from local authorities was often reported in districts where the demand for MMT was anticipated to be much higher than their service capacity. In this context, complicated application requirements involving local authorities and their practice of sending drug users to compulsory rehabilitation centers discouraged many drug users from registering for MMT. A number of participants reported that the current requirement of daily clinic visit and dosing time during normal working hours were major problems to them. Some drug users lacked financial resources and/or means of transportation for MMT enrollment while their families could not help, often because the families were poor and uninformed of the effectiveness of MMT. Many drug users also lacked the confidence to contact local officials due to perceived stigma against them.*

***Conclusion:*** *Facilitators should be enhanced and barriers should be addressed by MMT program managers and local governments. Specific recommendations were made in the article.*

## **2.1. INTRODUCTION**

Methadone maintenance treatment (MMT) has been proven globally to be an effective approach in the control of illegal opioid use and prevention of HIV infection (Gowing et al, 2008, Mattick et al., 2009). Since its advent in 1964, MMT has helped millions of opioid users (DUs) in the struggle to recover from opioid addiction (Leavite, 2004). Extensive evidence has been established that MMT is associated with cessation of opioid use, reduction in frequency of

opioid injection (Marsch, 1998; Mattick et al., 2009), and decrease in HIV infection rate and other parenterally transmitted infections such as Hepatitis B and C among opioid injecting users (Gowing et al., 2008; Loughlin et al., 2004; Marsch, 1998). MMT has also been shown to be highly cost-beneficial (Godfrey et al., 2004).

The number of documented DUs in Vietnam as of June 2012 was reported at 171,392 (NCADP, 2012a). The number of undocumented DUs in Vietnam is unknown, and no scientific estimate of the size of this segment of the DU population is available. Several studies (such as Nguyen & Scannapieco, 2008) have indicated that a large majority of drug users in Vietnam are opioid drug abusers. Heroin is the main form of drug used by more than 90% of drug addicts in large cities, such as Ho Chi Minh City (HCMC), Hanoi and Hai Phong (MOLISA, 2001). It was estimated that heroin injectors account for about 80 percent of all drug users in Viet Nam (Murphy, 2010). National HIV/AIDS sentinel surveillance data have indicated that injecting drug use has remained the most important risk factor for HIV infection in Vietnam since 1993 (MOH, 2012).

The National MMT Program of Vietnam started with a pilot project in Hai Phong and Ho Chi Minh City in 2008 and 2009. Under this pilot project, Hai Phong and Ho Chi Minh City each had 3 clinics located in 3 different districts; and each clinic has the designed capacity of providing treatment for 250 patients (MOH, 2010). Patients in this pilot project were carefully selected via an intensive multi-step reviewing process which used the following eligibility and prioritizing criteria: (1) Being diagnosed with opioid dependence (according to the diagnostic criteria stipulated by the Ministry of Health of Vietnam); (2) Having no contraindication of methadone use; (3) Being 18 years old or older (a legal guardian is required if between 16 and 18 years old); (4) Submitting a written petition indicating voluntary participation in MMT; (5)

Having a referral document from the commune-level people's committee (in practice, this criterion often amounts to having residency and drug user status verified by commune/ward authorities); (6) Not being prosecuted for or charged with a criminal offense; and (7) Having stable housing in the district where the MMT clinic is located. Besides, the program also used the following prioritizing criteria: (a) Being an injecting drug user (as opposed to a non-injecting drug user); (b) Having been in opioid addiction for 3 years or longer; (c) Having had many unsuccessful drug cessation attempts (by non-MMT methods); (d) Having actively participated in HIV/AIDS control and prevention activities.

An analysis of 9-month follow-up data from a cohort of 965 patients in this pilot project (Long et al., 2010) revealed that the treatment retention rate after 9 months was 90%. Among those who left the program, the main reason for termination of treatment was being sent to '06 centers. The proportion of patients with concurrent drug use (either self-reported or detected by urine testing) at 3, 6 and 9 months were 27.5%, 19.4% and 18.0%, respectively. The authors also reported significant reduction in HIV-related high risk behaviors and improvement in quality of life of patients (Long et al, 2010). Because the pilot MMT project was considered highly successful, the Vietnam Ministry of Health has developed an expansion plan for the period of 2010-2015 (NCHCE, 2010). According to this plan, which has been approved by the Government, the National MMT Program of Vietnam will cover 30 provinces/cities with high prevalence of injection drug use and HIV infection (out of 63 provinces/cities) and provide MMT to 80,000 DUs in the country by 2015 (NCHCE, 2010). At the end of 2011, approximately 7,000 drug users were receiving MMT at 41 clinics in 11 provinces of Vietnam (MOH, 2012).

Although the MMT program in Vietnam has been showing positive results, these initial results were based on a small fraction of drug users who had been carefully selected. Additionally,

the pilot program was done with a high level of attention and dedicated resources from many sectors of the society. Experience from China indicated that when a national MMT program is scaled-up rapidly and aimed at covering a large majority of the DUs population of the nation in a short time; then the initial success experience may no longer be observed (Lin et al., 2010ab, Lin, Wu and Detels, 2011, Wu et al., 2012). A successful and sustainable national MMT program requires thorough assessment of barriers and facilitators of MMT enrollment among the target population, so that facilitators can be enhanced, and barriers minimized.

In Vietnam, IDUs (mostly heroin injectors) are those who constitute the majority of the DU population and who drive the HIV/AIDS epidemic. Therefore, IDUs are of special public health importance. Also, the target population of methadone treatment is opioid users only. For the reasons above, we conducted a qualitative study in Hai Phong, Vietnam in September and October of 2011 with the objective *to describe perceived facilitators of and barriers to MMT enrollment among injecting opioid drug users in Hai Phong, Vietnam in 2011*. This study also served as the first (exploratory) stage of a research project on MMT service acceptability, demand, and factors associated with MMT enrollment among IDUs living in Hai Phong.

## **2.2. STUDY SITES**

The study was conducted in Hai Phong city, a provincial-level administrative unit which comprises 7 urban districts and 8 rural districts in the North of Vietnam. Specifically, study sites were 2 urban districts (Le Chan and Hong Bang) and 2 rural districts (An Lao and Thuy Nguyen) which had been randomly selected from the 4 urban districts and 3 rural districts where MMT clinics were operating in March 2011. All MMT clinics in Vietnam were providing MMT for free at the time (but a new co-pay MMT clinic was later opened in June 2011 in Kien An, another urban district of Hai Phong).

According to a report by Hai Phong Government (2012), there were 5,336 documented DUs and about 2,430 “suspected” DUs in Hai Phong as of July 2012. It has been estimated that 97% of all DUs in Hai Phong are heroin users, and about 80% of them are IDUs (Nguyen, 2010). There are currently three government-run closed setting rehabilitation centers in Hai Phong (also known as “06” centers). The number of DUs in these three centers in 2010 was reported at 1775 persons (MOLISA, 2012). According to Martin et al. (2009), drug rehabilitation in ‘06 centers generally include 5 steps: detoxification; behavior education; labor therapy; drug relapse counseling and vocational training; and post rehabilitation management at community level. However, relapse rates among “trainees” of these centers one year after being discharged have been reported to be as high as >90%. So far, drug users in ‘06 centers have no access to MMT or other harm reduction services (Martin et al, 2009).

### **2.3. METHODS**

In this study, “drug” is used as a shortened form of an opioid (such as heroin, morphine, opium, etc.), or any mixture of substances in which an opioid is a component. Because the medical criteria of opioid dependence, as those given by the American Psychiatric Association (2000) in *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV), are not easy to use for participant screening in the field, we devised the following operational definition: a *current injecting drug user* is a person who (a) used drug in at least 25 days of the past 30 days AND (b) has suffered from drug craving *at least once* in lifetime, AND (c) injected drug in more than half of the times during the past 30 days. “To register for MMT” in this study means to submit a paper document (which can be a standardized application form or a written petition), or to have one’s name listed for the purpose of MMT. If a study participant went to a place or met a person only to

ask for information or talk about MMT registration, he/she was not considered “having registered” for MMT (even if his/her desire for MMT was clearly indicated).

### **2.3.1. Study design and participants:**

Anonymous in-depth interviews were conducted with 36 participants who belonged to the following three groups (inclusion criteria): (i) 12 IDUs who had registered for and been admitted into the MMT program within the previous 6 months; (ii) 12 IDUs who had registered for MMT within the previous 6 months but had not been admitted; and (iii) 12 current IDUs who had never registered for MMT.

For participant screening we also used the following *exclusion criteria*: (a) Being less than 18 years old; (b) Failing to provide informed consent to participate in the study; (c) Showing clear signs of opioid withdrawal, and/or impaired cognitive ability and/or poor behavior control which, by judgment of a medical doctor in the research staff, would interfere with normal communication or the interview process; (d) Being severely ill and/or in urgent need of medical care (as determined by a medical doctor in the research staff); and (e) Having worked, for a period of at least 3 days, in any organized effort or program whose purpose is drug use control/prevention and/or harm reduction.

### **2.3.2. Participant selection strategy and recruitment procedure:**

Before the start of patient selection, we visited the Hai Phong AIDS Center (a provincial agency responsible for HIV/AIDS control and prevention), MMT clinics, and met with local health workers, and staff of non-governmental organizations (NGOs) in the four study districts to ask for assistance and collect relevant information about study sites and program activities in the



district. The staff of these organizations showed high levels of cooperation and interest in the implementation of this study.

Among drug users who had submitted an application (or otherwise registered) for MMT, the most recent applicants were chosen to avoid recall difficulty when they are asked about factors that influenced their decisions to enroll in the MMT program. Staff of the MMT clinic and local health workers in each district were asked to assist in recruiting 3 MMT applicants who had most recently registered for and been admitted for treatment with an indicated start time, and 3 applicants whose had most recently registered for MMT but had not been admitted. Potential participants in these two groups were referred to interview sites in an anonymous manner.

To recruit participants in the third group (non-applicants), we asked peer educators in the study site (identified through Hai Phong AIDS Center, NGOs and MMT clinics) to assist in recruiting 3 *current IDUs* who had never registered for MMT. Among them, one had a stable job and stable income, one had neither a stable job nor a good source of income, and the remaining one lived in a relatively wealthy family (by personal judgment) but the IDU himself/herself did not regularly involve in income-generating activities. We used this selection strategy to recruit non-applicants because there was no application date for them and the selection of these current IDUs in the community relied on peer educators. Also, we suspected that employment and financial status could significantly influences beliefs, attitudes and behaviors of IDUs on many aspects, including methadone enrollment and we wanted to avoid the likely situation in which most or all of the recruited 12 non-MMT participants (from the 4 study districts) were current IDUs who had neither a stable job nor a good source of income. In our judgment, such IDUs would tend to be more easily recruited by peer educators.

### 2.3.3. Theoretical approach and topics covered in in-depth interviews:

To guide data collection and analysis in this study, we used a conceptual framework (Figure 2.1) adapted from the Theory of Planned Behavior (Ajzen, 1985, 1991, 2010). The Theory of Planned Behavior was chosen because its constructs and ideas seem to fit well in the context of drug-use cessation behavior, especially in that it predicts the performance of a behavior taking into account intention together with perceived behavioral control, as opposed to actual behavioral control (which can be very different among drug users). In addition, enrollment in MMT tends to be a decision that involves significant planning and consideration of desired and undesired aspects of MMT. However, we did not restrict our data collection to the constructs of the conceptual framework (Figure 2.1). Rather, we used it as a rough “roadmap” to guide the exploration of factors that may influence MMT enrollment.

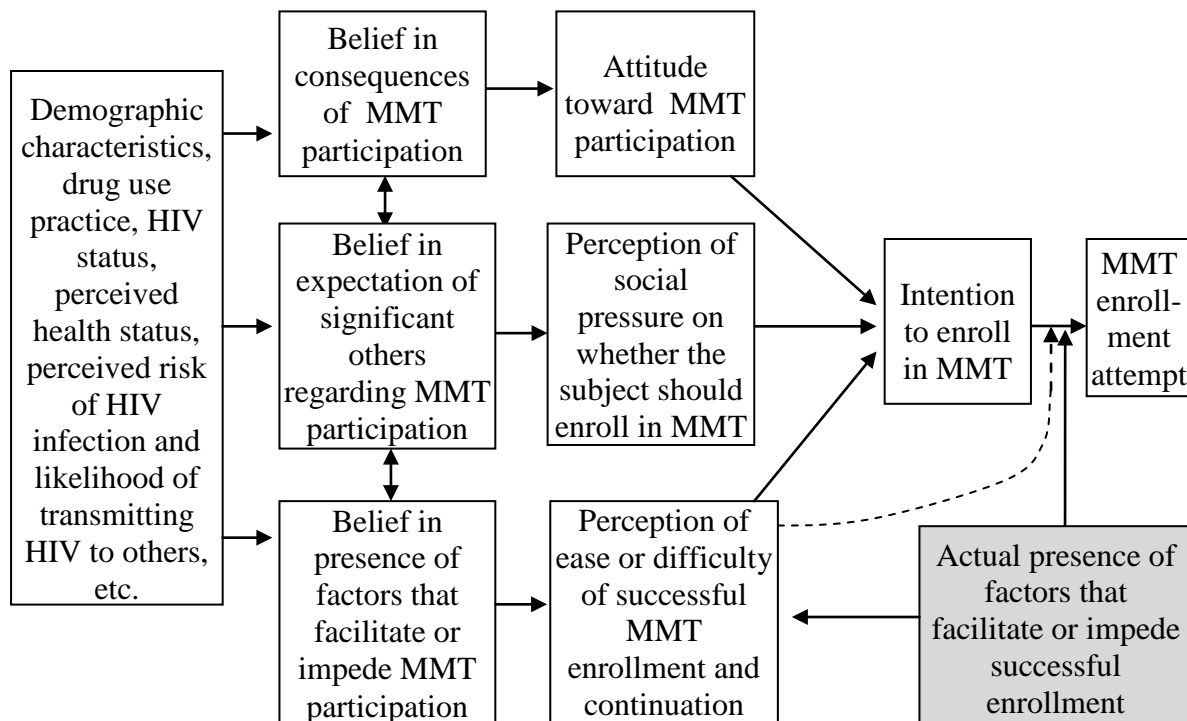


Figure 2.1: A conceptual framework for MMT enrollment in Vietnam, adapted from the Theory of Planned Behavior (Ajzen, 1985, 1991, 2010).

With consideration of the conceptual framework above (and to provide information for subsequent quantitative studies), topics included in the in-depth interview guide (Appendix 1) were: (a) demographic characteristics (b) history of drug use and cessation attempts; (c) sexual activities, perceived HIV risk of oneself and of sex partners, HIV testing and status, perceived health status; (e) MMT-related beliefs and attitude, expectation of family and other significant people, perceived barriers and facilitators of MMT enrollment; and (f) specific reasons why enrolled in the MMT program (for those who had enrolled), and intention to enroll or not and why (for those who had not attempted to do so).

#### **2.3.4. Interview procedure:**

Interviews were conducted in private rooms. Before each interview, the potential participant was given a study information sheet which described the study purpose, procedure, anonymity, potential risks, benefits and voluntariness of participation. Subsequently, the investigator asked the potential participant some screening questions to re-check eligibility. Then each potential participant had the option to give oral informed consent or refuse to participate. For those who agreed, the interviews were semi-structured and followed an interview guide (Appendix 1) which contained open-ended questions on various topics described above. Each participant was paid 120,000 Vietnamese dong (US\$6) for his/her participation.

#### **2.3.5. Data management, quality control and analysis:**

In-depth interviews with participants were digitally recorded for quality control and subsequently transcribed verbatim into text in local language (Vietnamese). Then textual data were imported into the Atlas.ti 7 software for data analysis (coding and identifying themes, in Vietnamese). Throughout the process of data coding and analysis, ongoing review and modifications of codes

were made as appropriate. Identified themes (patterns of information that emerge) were classified into two broad types, facilitators and barriers (and by different levels within each type). Two or more illustrative quotes were chosen to be presented with each theme. This research article was prepared in English. Data analysis, report drafting and translation of quotes were done by the principle investigator, a Vietnamese native speaker and a PhD candidate with formal training in social and behavioral epidemiology, qualitative research and use of Atlas.ti software at UCLA School of Public Health.

## **2.4. RESULTS**

### **2.4.1. Demographic characteristics of participants:**

The 36 participants in this study were 26 to 53 years old (median: 33 years). Thirty-five participants (97.2%) were males. (Males accounted for 96.8% of participants of our subsequent cross-sectional survey of 600 current IDUs in the same study sites. It was also reported by Long et al. in 2010 that 95% of MMT patients in Hai Phong and Ho Chi Minh City were males). Half of the participants were single (never married), 33% were married and 17% were divorced or separated.

Length of opioid dependence (since the start of daily opioid use) of participants ranged from 2 to 17 years (median: 8 years). For each quote presented in the subsequent section, MMT enrollment status (patient, applicant or non-applicant), age in years, job status and number of years of opioid dependence (abbreviated as “yrd”) are provided as background information of the interviewee. Because only one participant was female, we are not reporting gender in the background information of interviewees in the illustrative quotes.

Table 2.1: Demographic characteristics of 36 participants in 4 study districts.

Characteristics	Number	Percent
<b>Age</b>		
26-35 years	21	58%
36-53 years	15	42%
<b>Gender</b>		
Male	35	97%
Female	1	3%
<b>Education</b>		
Grade 1-5 (primary school)	2	6%
Grade 6-9 (middle school)	21	58%
Grade 10+ (high school or above)	13	36%
<b>Marital status</b>		
Single (never married)	18	50%
Married (living with spouse)	12	33%
Separated/Divorced	6	17%
<b>Job status</b>		
Stable job	11	31%
Unstable job	12	33%
No job	13	36%
<b>Years of opioid dependence</b>		
1-4 years	6	17%
5-9 year	16	44%
10 years or longer	14	39%

## 2.4.2. Facilitators of MMT enrollment

### 2.4.2.a. Structural-level facilitators:

Strong support from local authorities (in the sense of encouraging drug users to enroll and providing required verifications and referrals in a prompt manner) were commonly reported by MMT patients and applicants in districts with new MMT clinics. Strong authority support

tended to exist as long as the demand for MMT in a given district remains below the admission capacity of the MMT clinic the district. (This is most clearly observed in An Lao, a rural district with a newly opened MMT clinic and a smaller DUs population.)

*“Just go there and ask for verification of the papers, they (local officials) will sign and stamp them quickly. Both the commune and the district are supportive, no trouble or money suggestion.” (Applicant, 35, stable job, married, 2 yrd)*

*“Authorities have fulfilled all their responsibilities; they made no obstacle (to MMT enrollment). I’m unfortunate to be addicted, they encouraged me. I came to the MMT clinic and the staff there provided instructions in every detail.” (Patient, 37, no job, separated, 8 yrd)*

MMT clinics in all study districts often asked MMT patients, especially those who were referred to as “MMT peer educators”, to help in delivering MMT information and encouraging other drug users to enroll (at least during the early period after the opening of each clinic). Interviewees often reported that they first heard about MMT program via their peer drug users (including MMT patients), and it seems that they are strongly influenced by the opinions of those who had been on MMT and by the notable changes in their life.

*“I heard about this program from early days. My drug-using friends who took methadone told me that it was good. Thus, I voluntarily submitted an application for methadone.” (Patient, 51, stable job, married, 13 yrd)*

*“There is a dude who was even more miserable than me was. But now he has a vehicle (scooter/motorbike) to get around, he is in clean and tidy clothes. I asked him how come? He said he went for methadone and stop playing (using drug). He bought the vehicle and other things from the saved money that would have been spent on drug.” (Applicant, 40, unstable job, divorced, 5 yrd)*

#### **2.4.2.b. Family-level facilitators:**

Family members of drug users play an important role in their enrollment process. Family support may include spiritual, informational, financial and/or transportation supports in the process of considering and applying for MMT. In fact, involvement of a family member (or another responsible person) in the role of a treatment supporter is required by the MMT program.

Most participants in this study reported that their families deeply cared about them. Many family members actively sought further information (after they first heard about MMT) and encouraged the drug users to apply. In some cases, family members led the enrollment process instead of drug users themselves. They came to authority agencies to learn the application requirements and procedure, and then completed most of the documentation requirements.

*“Because my family cares about me, they learned about methadone when the words about its effectiveness started to spread.” (Patient, 27, unstable job, single, 5 yrd)*

*“I started playing long ago; and my mom has taken me to many places for rehab. But I relapsed every time just 2-3 months after I returned home. Some of my friends were also addicted, but they are taking methadone now. When they came to my home, they looked so healthy, they don’t do drug any more. My mom was elated and she went to the ward to apply for me (to be on MMT).” (Applicant, 35, no job, single, 8 yrd)*

During MMT enrollment, families are often an important source of financial support for drug users, who often lack a stable income. Although most MMT clinics in Hai Phong (except a pilot co-pay clinic) did not required any application or treatment fee, drug users still needed money to buy drug for those days in which they came to the MMT clinic and local agencies to fulfill enrollment requirements (before MMT). Some families provided money for the applicants to buy drug during enrollment, waiting time, and in early treatment period, if admitted (even if they had not provided any money for drug use of the subjects before). The reason for that

practice is to help the drug users focus on the enrollment process (which include counseling and group education activities), on treatment and would not commit crime for drug elsewhere.

*“...my daughter brought me home; she completed all the paperwork and other things (for an MMT application). From then she gave me money. Actually, I tried to manage without help from family, but could resist for only 3-4 days, then I had to tell the truth to my daughter and my parents.” (Patient, 37, no job, separated, 8 yrd)*

*“I think my family can pay for me, because they had paid a lot of money for my health and well-being, so they will probably help out.” (Non-applicant, 34, stable job, single, 7 yrd)*

*“I’m sure there will be no (financial) problem, my family will help. My mom used to give me 200,000 dong (\$10) everyday for drug, even if she knew the drug would make me emaciated. I can say for sure that my family will be willing to pay if a fee is required for methadone (treatment).” (Patient, 36, unstable job, single, 4 yrd)*

In districts where demand for MMT was high and the chance of being admitted for an average applicant was low, some MMT patients reported that family’s acquaintance to local officials and/or poor-family status could be factors that contributed to their successful enrollment (in Vietnam, families classified as “poor” may be prioritized for some public services). No one reported that his/her family’s wealth was an advantage over other applicants.

*“I don’t know, because each person is in a unique circumstance. My mom is the chief representative of a residential block, thus officials of the ward gave us some priority. Now my mom has no one else but me in the family, so they prioritize and let me take methadone.” (Patient, 30, no job, single, 14 yrd)*

*“I have some advantage, because I myself am an addict, my children are small and my wife is weak. In the commune, my family is in the list of poor households, thus I got prioritized.” (Patient, 32, unstable job, married, 4 yrd)*



#### **2.4.2.c. Individual-level facilitators:**

Most participants who were informed of (and believed in) the benefits of MMT show favorable attitude and desire to enroll in the program. Financial, employment and health benefit (including reduced risk of HIV transmission) were most commonly mentioned, although many were also aware of potential social benefit (improvement in relationships with others).

*“I haven’t been admitted, but I see that my old drug using friends are now on methadone. They all have gained weight and look very healthy. Now they work, do business and earn well. Their families are happy, and they themselves no longer waste money on drug.”*  
(Applicant, 53, unstable job, married, 17 yrd)

*“Many people said if I take methadone I will stop using drug. And if I stop using drug, the society will no longer have stigma against me, I can go and find a job more easily.”*  
(Non-applicant, 35, no job, single, grade 12)

*“My wife would be the first person who is happy, and then my parents. They want me to quit (drug), so it (MMT) would bring happiness to my family. I can go out and do business with people and have more trust from them, doing business will be easier.”*  
(Non-applicant, 28, wealthy family, married, 9 yrd)

Participants in this study generally accepted maximum daily travel time of one hour or more, despite the fact that most of them reported two-way travel time (to and from MMT clinic) of 30 minutes or less. This can be considered an indication of highly favorable attitude and good acceptability of MMT service (as opposed to other factors, such as enrollment requirements).

*“In order to take this (methadone), I would go even if it takes two hours to get there.”*  
(Patient, 33, stable job, single, 11 yrd)

*“It would be acceptable to me if it take up to three hours round-trip. I’m determined to take methadone.”* (Applicant, 35, stable job, married, 2 yrd)

*“It can go, one hour and a half or two hours would be okay.”* (Non-applicant, 26, no job, single, 7 yrd)

Most injecting drug users are willing to pay for MMT and reported no financial difficulty with a monthly co-pay of 450,000 dong (approximately US\$22.5) for MMT, with potential family financial support taken into account. The hypothetical co-pay level of 450,000 dong per month (US\$0.75/day) was anticipated to be affordable for patients and sustainable for MMT clinics with some government subsidies.

*“It’s a must-do thing (if the co-pay is required). No difficulty, it is nothing compared to the amount of money I used to pay for drug. It would be gone for just one day of drug use” (Patient, 27, no job, single, 8 yrd)*

*“If it is on the scale of 30-50 thousand dong per day I can make it and pay, I won’t need to ask for help from anybody.” (Applicant, 40, unstable job, divorced, 5 yrd)*

*“Yes, even if it’s 50 thousand dong (per day) I will also take methadone, that’s still cheaper than using drug. My parents said we would buy methadone if it is available for sale but it is very expensive (in black market), you’ll get a tiny amount for 700-800 thousand dong” (Non-applicant, 29, wealthy family, single, 8 yrd)*

### **2.4.3. Barriers to MMT enrollment**

#### **2.4.3.a. Structural-level barriers:**

The admission capacities of MMT clinics in Hong Bang, Le Chan and Thuy Nguyen (three out of four study districts) were well below the demand for MMT in those districts. Because each district had only one MMT clinic, once the clinic was filled to capacity it stopped receiving regular applications. Nevertheless, some drug users in those districts still submitted their applications (or written petitions) to commune/ward authorities and wait for “a new wave of admission”, even if they were aware of the very low chance of being admitted in near future. Some others did not do so because they bore little or no hope for being admitted.

*“I asked the commune officials (and learned that) only a few hundred people can be admitted (to the MMT clinic in the district). Now, if you want to get in, the only opportunity is when someone currently on methadone dies or is arrested. Then you may get in only if you find a right person and beg for consideration and do something else (implying to offer a bribe)... The commune officials here said I must wait for a new wave of admission, but I haven’t seen any. Many people who are addicts (like me) want to stop drug use, they have been miserable enough, too miserable, they want to be on methadone but there is no new wave (of admission).” (Applicant, 53, unstable job, married, 17 yrd)*

*“I heard people said the (admission) quota has been reached, and it is generally very difficult to get in. My mom said we will pay any amount of money, but it’s difficult.” (Non-applicant, 29, wealthy family, single, 8 yrd)*

One of the eligibility criteria used by the MMT program was having referral from the commune-level people’s committee. In practice, this criterion often means a drug user applying for MMT must have his/her residency and drug-user status verified by a local police (who is in charge of residence affairs) and have relevant documents sealed by the local government. These requirements were seen as very difficult to fulfill by participants in three of out of four study districts (except An Lao where MMT applicants received strong authority support). Some applicants and MMT patients reported having had problems during their enrollment process because they were not previously documented drug users, and thus the commune/ward authorities refused to verify their drug user status or their application was later rejected at district level.

*“I went there to do the paperwork then I found it quite difficult, they (ward officials) raise difficulties, it’s like if I want them to help me I should have something for them. They didn’t say that directly, but they showed unpleasant attitude, so I felt discouraged. Then I ran across a ward police officer, he also made difficulties, saying this thing and that thing are required. I’m already busy enough all day (supporting my addiction) but*

*he keeps telling me to come see him tomorrow, or the day after tomorrow...” (Non-applicant, 26, no job, single, 7 yrd)*

*“I wrote a petition, and then came to the ward for the seal (verification) but it was too difficult to get the paper sealed.” (Applicant, 27, unstable job, married, 5 yrd)*

*“I didn’t know what obstacle was in my way. Then long time had passed before I learned that I was not in the list of documented drug users of the district, and thus my application wasn’t approved (that time). I had attended the pre-treatment counseling sessions, I thought I would start taking methadone in about ten days, but then I waited for 3-4 months without any news, I’m so discouraged...” (Patient, 30, stable job, single, 12 yrd)*

Some drug users were fear of being sent to compulsory rehabilitation centers (‘06 centers) because once they had applied for MMT, their drug user status became documented and local authorities may send them to 06 centers before an MMT admission offer could be made. Indeed, some MMT applicants and patients reported that they were sent to “camps” (06 centers) after they applied for MMT (although normally they would not expect that to happen).

*“My cousin, whom I often accompany, told me that I should not register for methadone. He said once you registered for methadone you would be in the commune’s list (of documented drug users), and they would later send you to the camp.” (Applicant, 35, stable job, married, 2 yrd)*

*“Communes and wards just want to send (drug users) to camps. I came (to see local officials) many times to ask but they just said there was no new wave of admission.” (Applicant, 29, unstable job, single, 12 yrd)*

*“I submitted my application in 2007, but I was not admitted, I must go to camp for rehab.” (Applicant, 53, unstable job, married, 17 yrd)*

*“I applied for methadone in 2009, then I was sent to camp, I thought my application was discarded. I applied again in June 2010 (and was admitted by the district patient selection committee).” (Patient, 30, no job, single, 14 yrd)*

The gossip of some large amount of bribery money required for admission in districts with high demand for MMT discouraged many drug users (and their families) from seeking further MMT information and/or making enrollment attempts. Given the perceived low chance of success of a regular application, some interviewees reported that they had not applied for MMT because their families could not afford the bribery money supposedly needed for a spot in the local MMT clinic.

*“I heard that many people applied long time ago and they haven’t been able to get in, so what is the point in applying? People said only one out of ten applicants got admitted. There’s actually no hope! People also said you must have some relation (with an official) or pay some price to get in, so I bear no hope.” (Non-applicant, 35, no job, single, 11 yrd)*

*“Not yet, I have never applied. Because my friends said I must have a lot of money (to get in). Also, the procedure is complicated, and I’m not a relative of a person in authority. My friend said he paid a lot to get in.” (Non-applicant, 42, unstable job, divorced, 6 yrd)*

Although the requirement of daily clinic visit (for observed methadone consumption on site) were accepted by most participants, it was commonly perceived as an inflexible policy of the MMT program and a significant barrier to enrollment decision of some drug users. Their concern was that they would not be able to travel out of town for even a few days (because the program did not allow take-away doses, except for hospitalized patients). Some participants were also concerned that MMT clinics are open during office hours only and this would be in conflict with their working schedules.

*“It’s quite difficult, but I try to comply (with treatment requirements). That’s for my sake, not for some else. My parents and family all encourage me. I go (to take methadone every day) as if it is my job, my responsibility. It’s stormy and raining someday, I still go by scooter.” (Patient, 37, no job, separated, 8 yrd)*

*“In general, it causes time constraint. I may need travel sometimes when something comes up. Then, if I skip (taking methadone) one day it would affect my treatment. So it’s difficult.” (Applicant, 35, stable job, married, 2 yrd)*

*“If I can get in the program, I think I’ll have to quit my current job so that I can attend the clinic daily.” (Non-applicant, 38, unstable job, married, 14 yrd)*

*“If I took this medication, how would I be able to withstand two days on business travel? If you take it, you’ll have to stick with it... Because I cannot live a life being constraint in one place, I have to get here and there occasionally. But taking methadone is like going to jail. I can buy drugs anywhere, or I can take it with me. But where can I buy methadone?” (Non-applicant, 35, wealthy family, single, 5 yrd)*

Long wait time experience of previous applicants also had a negative effect on the willingness of other drug users who were considering MMT. Long wait time is mainly caused by limited admission capacity in some districts, but some participants also viewed the typical one month waiting period (caused by the multi-step selection process) as discouraging.

*“Too long, since the time I returned from the camp in 2009. I still have to wait.” (Applicant, 53, unstable job, married, 17 yrd)*

*“I heard that applications must first be reviewed and approved by the commune, then they will be sent to the district, and then to the city (province-level) for ratification. After that it will take half a month before you can start taking methadone. It would be good if everything can be completed within 15 days, because addicts all want to take the medication quickly. If the wait time is 30 days, we have to accept that, but I think it’s long. (Non-applicant, 38, unstable job, married, 14 yrd)*

In all study sites, the delivery of MMT information via official sources (mass media, local officials, health workers, etc) was still limited. Because participants most often heard about MMT through peer drug users, the lack of information from official sources could make drug users (especially those who had not applied) more susceptible to negative opinions of skeptical peers.

*“In reality, I haven’t got any information on how to apply for methadone.” (Non-applicant, 34, stable job, single, 7 yrd)*

*“I don’t know. I paid no attention. No one in my family has talked to me about going to take methadone. (Non-applicant, 27, wealthy family, single, grade 12)*

*“Yes, many of my drug-using friends told me not to take methadone. They said if I took it, I would become infertile.” (Patient, 27, unstable job, single, 5 yrd)*

*“Many people are still skeptical and don’t want to take methadone yet, because they don’t know what methadone is like. Many people have been in camp or prison many times, some stayed there even for 10 years and still relapsed upon return. So they wonder how they could succeed with methadone, how it could help them refrain from drug use. If they really know how successful this program is, they would want to join.” (MMT patient, 36, unmarried, 4 yrd)*

#### **2.4.3.b. Family-level barriers:**

While family general support is a facilitator to most drug users (as described in previous section); lack of minimal family support is a real barrier to MMT enrollment of some others. That is because involvement of a family member (or another responsible person) in the role of a treatment supporter was required in the enrollment process of any applicant. Family involvement is even more important because many drug users are not confident enough to go to local agencies (including MMT clinics) to obtain MMT information/instructions or to start the enrollment

process. This lack of confidence tends to be a result of their previous experience of stigma and discrimination against drug users.

*“My parents said: “If you want to take methadone, go to apply for it yourself”. I think there must be an adult (to talk to local officials), the society is still full of stigma, and no one wants to talk to an addict. It is very difficult. (Non-applicant, 26, no job, single, 7 yrd)*

*“I didn’t try to learn why I haven’t been admitted. I do want to take methadone, but I’m afraid of going to the ward to ask... I have urged my mom to go there to ask why it takes so long. But my mom is quite busy; she goes to the market from dawn to dusk to make money.” (Applicant, 35, no job, single, 14 yrd)*

Lack of family financial support was also a special problem for some drug users who do not have enough saved money to go over the MMT enrollment process. Drug users are often busy most of the time serving their drug dependence (especially seeking money to buy drug). Therefore, without financial support from family (often because the family is poor), they could hardly think of going somewhere to obtain needed MMT information and/or to engage in the application process (which also requires some miscellaneous expenses).

*“I will have to talk to my farther again, about means of transportation, some money to spend on the road, and other things... I’m telling the truth, it’s very difficult for me because I lack those things and I’m dependent on drug. I have thought of going to apply for methadone many times, but without drug for today or tomorrow, I can only think of how to have drug, no mind to think about methadone application.” (Non-applicant, 26, no job, single, 7 yrd)*

#### **2.4.3.c. Individual-level barriers:**

Misunderstanding and skepticism about methadone and its effectiveness do exist among a number of drug users, especially when MMT service is newly introduced to a given district. Some were afraid that methadone is an experimental drug, that could lead to severe mental



impairment or even death. Some others thought that methadone was a detox-type medication that helps drug addicts stop using drug after a short-course treatment (some even reported buying methadone from “black” market and trying it for a few days or intermittently, without knowing the dangerousness of self-medication). MMT is a long-term substitution treatment and it is expected that most patients will continue to use drug during the first few months (the dose increasing and adjusting phase). Even after a “right” maintenance dose is established, occasional concurrent drug use is also considered normal, as long as the patient still adhere to the treatment regimen on most of the days. Without a correct understanding of MMT, drug users (and other people) tend to think methadone is ineffective when they know that some MMT patients continue using drug.

*“Some people said methadone does not help stop drug use, so why taking it. But I attended counseling sessions and I learned that (in early treatment stage) the methadone amount taken into the body is not enough, thus you may still crave for drug. Later on, once methadone amount become enough you won’t crave for drug any more, and you’ll feel no high after injecting heroin. Therefore, you can quit heroin completely.” (Patient, 35, stable job, single, 2 yrd)*

*“I’ve never applied. On one side, I want to take methadone because people said it is good. But on the other side, I don’t to want take it because I will have to follow it (become dependent), if I stopped methadone I would also suffer from craving. Now you would have to pay (bribery money) for methadone... but I see many people taking methadone in the morning and still doing drug in the afternoon as usual. (Non-applicant, 42, stable job, married, 6 yrd)*

*“People have been taking methadone for 2-3 years, I see nobody become insane, and so I also want to go taking it. If I had not thought that methadone made people insane, I would have been admitted in the early time.” (Non-applicant, 29, wealthy family, single, 8 yrd)*

Perceived stigma is one of reasons that made some drug users (especially new ones) unwilling to disclose their drug use status and hesitant about becoming an MMT patient, even though they truly want to be treated with methadone. Once a drug user becomes an MMT patient, it is virtually impossible to hide his drug dependence status to the community. Local authorities and other MMT patients would definitely know they are drug users. People around the MMT clinic would also recognize them as MMT patients because of their daily visits.

*“Only people in my family and my drug-using friends know that I’m addicted. The neighbors and my schoolmates don’t know. Now, if I go to taking methadone, then everybody would know.” (Non-applicant, 27, wealthy family, single, 2 yrd)*

*“During that time my financial situation was not as bad as it is now, I still worked and didn’t want to let people know (my addiction), I tried to hide. Then, from 2010, I wanted to go taking methadone but saw that the procedure was complicated, so I didn’t apply. (Non-applicant, 42, unstable job, divorced, 6 yrd)*

## **2.5. DISCUSSION**

As of November 2011, there had been cumulatively 1,695 MMT patients in Hai Phong, this was only 1/3 of the reported number of approximately 5,000 documented drug users in the province (Hai Phong Government, 2011), not to mention undocumented drug users. While there was high demand for MMT among opioid drug users (as revealed by this study and the subsequent cross-sectional survey), slow expansion and limited admission capacity of the program is the main barrier to MMT service access so far. Some other barriers (e.g., strict requirements, lack of authority support, corruption in patient selection, and the practice of sending non-admitted drug users to ‘06 centers), are closely related to limited admission capacity, in the authors’ opinion. Once the program is expanded to the point where MMT capacity meets the demand for it, these barriers will likely be eliminated or significantly reduced.

It should also be noted that relevant government agencies Vietnam, with support from international and non-governmental organizations, have been working on a plan for closing a number of 06 centers and converting the remaining into open, voluntary, evidence-based addiction treatment centers, with MMT as the core element (Banys, 2012).

As mentioned in the Method section, in this study we used a conceptual model adapted from the Theory of Planned Behavior (Ajzen, 1985, 1991, 2010) as a rough “roadmap” to guide the exploration of factors that may influence MMT enrollment. In the feedback, results of this study have revealed that in the context of the current MMT program in Hai Phong the Theory of Planned Behavior is not useful for predicting the action of registering for MMT based on the subject’s intention. The key issue here, for most drug users, is that the true intention to utilize MMT services (i.e., to implement a behavior change) was affected by multiple programmatic and governmental barriers, including severely limited access to service and the practice of sending drug users to closed setting compulsory rehabilitation centers. In such a context, true intention (or desire) will not necessarily transform into action because the subject knows that his/her action (of registering for MMT) is unlikely to result in a desired effect. The extent that attitude, social norm and perceived behavior control can be used to predict intention is also very limited here. That is because there is not much room left for the usefulness of prediction in a situation that nearly all study subjects reported that they were going to apply as soon as there was a chance of being admitted (97% of current IDUs participating in the subsequent survey reported having intention to apply for MMT within the next 3 months).

To our knowledge, this was the first study focusing on facilitators and barriers to MMT enrollment in Vietnam. Some authors recently reported perceived barriers to MMT enrollment in China from the perspectives of clients and service providers (Lin, Wu and Detels, 2011, Wu et

al., 2012). Some of the reported barriers to MMT in China were similar to those in Vietnam, such as the requirement of drug user registration with police, the practice of sending continued drug users to compulsory detoxification centers, inconvenient clinic operating hours, no take-away doses and complicated paperwork for transfer to other clinics. However, there were also major differences between the two programs and their level of service utilization. In Vietnam, the MMT program was characterized by slow scale-up (between 2008 and 2011), required intensive national training for all service providers, integrated psychosocial counseling service (at all clinics), high average daily dose (>100mg), free treatment, no intrusive police intervention, and much higher demand than service capacity (MOH, 2010, Tam et al., 2012). In contrast, the MMT program in China was characterized by rapid expansion (between 2004 and 2008), inadequate training for service providers, lack of psychosocial counseling service in many clinics, low average daily dose (<50mg), required fee for service, intrusive police intervention, and serious under utilization of service capacity (Lin et al., 2010ab, Lin, Wu and Detels, 2011, Sullivan & Wu, 2007, Xu et al., 2012). Although a higher average daily methadone dose was used in Vietnam, methadone dependence and side effects did not seem to be of much concern for participants in our study, as they were in China (Lin, Wu and Detels, 2011, Xu et al., 2012).

As indicated in the Results section, the delivery of MMT information via official sources was still limited in Hai Phong, leaving many drug users either unaware of MMT service or susceptible to negative opinions of skeptical peers. The issues of misunderstanding and skepticism, however, seem significant only in localities where MMT is newly introduced. In this study, participants from districts with older MMT clinics only reported misunderstanding and skepticism of themselves or of their peers in the past. A cross-sectional survey of 300 new MMT patients in Guangzhou (China) revealed that misconceptions were very common among

participants: 92.3% perceived that MMT was intended primarily for detoxification; 64.2% perceived that one could be completely detoxified and quit using methadone after using it for 2–3 months; 77.9% perceived that MMT is not a long-term or even lifetime treatment; and 84.3% perceived that one should attempt to reduce its treatment dosage as methadone is harmful to one's health (Xu et al., 2012).

Supports from local officials (including MMT clinic staff) are very important for the utilization of MMT in Vietnam. They are in charge of providing information/instructions, verifying residency and drug user status, encouraging hesitant drug users, etc. Therefore, the level of support from local authorities is an important factor affecting drug users' decision whether to enroll for MMT or not. This means that inadequate authority support can be a major barrier to MMT access. It is a policy of the Vietnam National MMT Program to encourage all opioid dependants to participate in the program. But national policy must be matched with local authority support to create a favorable policy environment that facilitates and gives drug users more confidence in applying for MMT.

Complicated enrollment procedures and hard-to-fulfill verification requirements are two programmatic barriers to MMT enrollment in Vietnam that should be simplified as soon as possible. Even if admission capacity cannot be improved in the near future, the simplification of the enrollment process and requirements can still reduce the time and paperwork burden of MMT registration. Simpler paperwork requirements and shorter wait time will increase the willingness of drug users to enroll in MMT, and also bring significant financial benefit to drug users and their families (by saving the cost of daily drug use and other related expenses).

As have been reported by other authors (such as Lin, Wu and Detels, 2011, Zaller et al., 2009), this study indicated that the requirement for a daily clinic visit for observed consumption

of daily methadone dose was a discouraging factor to MMT participation and retention. To reduce the burden of daily attendance and facilitate drug users' reintegration to normal social life, the MMT program in Vietnam should consider allowing take-away doses. In a follow-up study, Gerra and colleagues (2011) showed that contingent take-home incentive was associated with better treatment outcomes, compared to supervised daily consumption, and much better than non-contingent take-home policy. To minimize diversion and misuse of methadone, the privilege of take-away doses should be granted, as an incentive, to stabilized patients who have shown good adherence records (including urine testing results) and the ability to manage take-away doses responsibly. For MMT patients who need to travel, a simple transfer mechanism needs be established so that a travelling patient can easily receive his/her dose at a clinic in the destination locality (if available). Program managers should also consider using more flexible dosing hours at MMT clinics so that most working patients find some convenient time to come for dosing.

This study revealed favorable attitude and good MMT service acceptance among most participants. We attribute this to the good treatment outcomes of current and previous MMT patients in Vietnam. Indeed, the program has been succeeding not only in attracting opioid drug users but also in maintaining a high retention rate, approximately 90% after one year and 80% after two years (Long et al., 2010, Banys, 2012). One factor that might have been contributing to this success is the involvement of a family member (or another responsible person) in the role of the treatment supporter as a requirement for every patient. This is feasible because most drug users in Vietnam stay with their families and there is usually at least one family member who deeply cares for the drug user. In most cases, families are also willing to pay whatever they can afford for an effective addiction treatment of the drug users. Lack of financial support for MMT enrollment tends to happen to drug users in very poor families only, and (in Vietnam's context) it can be

considered a family-level barrier (as opposed to an individual-level one). Lin, Wu and Detels (2011) reported that perceived family support was positively associated with better health outcomes and negatively correlated with concurrent substance use among MMT patients in China.

As of November 2012, there had been 43 MMT clinics operating in 17 provinces/cities in Vietnam, providing MMT service to approximately 10,000 opioid drug users in the country (NCADP, 2012b). This number is still very far below the national target of 80,000 drug users being treated by 2015. In a recent review of the development and challenges of the National MMT Program, Tam and colleagues (2012) estimated that the proportion of patients currently on MMT is only 9% those who need treatment. It is clear that Vietnam should allocate more resources and accelerate its MMT program scale-up to meet the demand. However, according to Tam and colleagues (2012), challenges in scaling up the program include limited capacity for pre-service training and shortcomings in the current laws and regulations on drug and HIV/AIDS control and prevention. Some other probable reasons for the slow expansion of the program in the past few years, based on our experience from working with program officials and international collaborators in Vietnam, include limited financial resources (especially from state budget), political skepticism among a number of government officials about the use an “addictive drug” (methadone) to replace another (heroin), and lack of concrete data on the level of demand among the hidden target population of drug users.

In conclusion, based on the qualitative analyses in this study and backed up by our quantitative data that are presented in the next two papers, we recommend the following for the MMT program in Hai Phong as well as the National MMT program of Vietnam: (a) Open new clinics and/or satellite methadone dispensing sites that are affiliated to a comprehensive clinic in each geographic area with significant number of drug users in order to meet the demand for

MMT in the area and minimize travel time for patients; (b) Abolish any requirement that makes the applicant and/or his/her family contact local authorities for verification or referral purpose, and ensure that no applicant is required to be a previously documented drug user to be eligible for admission; (c) Further simplify the enrollment procedure by conducting both administrative review and clinical assessment at the MMT clinic where the patient submits his/her application, and reduce the enrollment process time to the minimum level possible; (d) Ensure that operating hours of each clinic are convenient for patients with various working schedule and establish mechanisms for take-away doses and easier transfer of patients between clinics (or dosing sites); and (e) Further enhance the role of families in providing drug users with needed supports for the purposes of MMT enrollment and treatment; and consider using more MMT patients who have shown good adherence profiles for the purpose of informing and educating current drug users (and their families) about MMT and how to participate in the program, given that its admission capacity has been improved. *On the other hand*, our recommendations for local government/police are: (i) Promptly provide drug users with appropriate verification or referral if any is required; (ii) Stop the current practice of sending drug users to compulsory rehabilitation centers; (iii) Provide other supports to the MMT program (e.g., by providing working space at convenient locations, facilitating the delivery of MMT information, etc.)

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## CHAPTER III: RESEARCH ARTICLE 2

### **Current Opioid Injecting Users and Methadone Maintenance Enrollment in Hai Phong, Vietnam, 2011: A Cross-Sectional Study**

#### **ABSTRACT**

**Background:** Vietnam started its National MMT Program with a successful pilot project in 2008-2009 in Hai Phong and Ho Chi Minh City, with special involvement of many sectors. In early 2010, the Vietnam Government approved a plan for expanding the program with the goal of providing MMT to 80,000 opioid DUs in the country by 2015. As of November 2012, approximately 10,000 drug users in Vietnam were receiving MMT (for free in most clinics).

**Objective:** This study was conducted to characterize the opioid current IDU population in Hai Phong regarding a variety of characteristics and factors that may influence MMT enrollment in Hai Phong, 2011.

**Methods:** Two urban and two rural districts in Hai Phong were randomly selected from 4 urban districts and 3 rural districts with operating MMT clinics in the province. In late 2011, 600 current IDUs in the selected districts were recruited for anonymous ACASI interviews via pharmacies and needle-and-syringe programs, which helped distributing interview invitation flyers to current IDUs. Descriptive and logistic regression data analyses were performed using SAS 9.2.

**Results:** Rural and urban participants were significantly different in many demographic and familial characteristics, drug use and cessation history, sexual activeness, perceived risk of HIV infection, ability to meet various MMT participation requirements, etc. Of all participants, over 90% indicated highly favorable attitude toward MMT and perceived that other people would strongly agree if they participated in the MMT program; nearly 40% were afraid of being sent to

*compulsory rehabilitation centers if they registered for MMT; 57% reported having difficulty satisfying one or more administrative eligibility criteria. Approximately 3/4 of participants had never registered for MMT although 97% of these non-applicants indicated that they wanted to participate in the MMT program. More than half of 154 MMT applicants had not been admitted. In urban settings, 78% of participants tended to accept a monthly co-pay of 450,000VND for MMT, compared to 62% in rural settings.*

**Conclusion:** *MMT program managers and policy makers in Vietnam may use the wealth of information provided by this study for planning purpose. Specific recommendations were made in the article.*

### **3.1. INTRODUCTION**

Methadone maintenance treatment (MMT) has been proven globally to be an effective approach in the control of illegal opioid drug use and prevention of HIV infection (Gowing et al., 2008, Mattick et al., 2009). Since its first use for opioid dependence treatment in mid 1960s, MMT has helped millions of opioid drug users (DUs) in the struggle to recover from opioid addiction (Leavite, 2004). Extensive evidence has been established that MMT is associated with cessation of drug use, reduction in frequency of injection (Marsch, 1998; Mattick et al., 2009), and decrease in HIV infection rate and other parenterally transmitted infections such as Hepatitis B and C among injecting drug users (Gowing et al., 2008; Loughlin et al., 2004; Marsch, 1998). MMT has also been shown to be highly cost-beneficial (Godfrey et al., 2004).

The number of documented DUs in Vietnam as of June 2012 was reported at 171,392 (NCADP, 2012a). The number of undocumented DUs in Vietnam is unknown, and no scientific estimate of the size of this segment of the DU population is available. Several studies (such as

Nguyen & Scannapieco, 2008) have indicated that a large majority of drug users in Vietnam are opioid abusers. Heroin is the main form of drug used by more than 90% of drug addicts in large cities, such as Ho Chi Minh City (HCMC), Hanoi and Hai Phong (MOLISA, 2001). It was estimated that heroin injectors account for about 80 percent of all drug users in Viet Nam (Murphy, 2010; WHO, 2009). National HIV/AIDS sentinel surveillance data indicate that injecting drug use has remained the most important risk factor for HIV infection in Vietnam since 1993 (MOH, 2012).

The methadone maintenance treatment (MMT) program in Vietnam started with a pilot project in Hai Phong and Ho Chi Minh City in 2008 and 2009. Under this pilot project, Hai Phong and Ho Chi Minh City each had 3 clinics located in 3 different districts; and each clinic has the designed capacity of providing treatment for 250 patients (MOH, 2010). Patients in this pilot project were carefully selected via an intensive multi-step reviewing process which used the following eligibility criteria: (1) Being diagnosed with opioid dependence (according to the diagnostic criteria stipulated by the Ministry of Health of Vietnam); (2) Having no contraindication of methadone use; (3) Being 18 years old or older (a legal guardian is required if between 16 and 18 years old); (4) Submitting a written petition indicating voluntary participation in MMT; (5) Having a referral document from the commune-level people's committee (in practice, this criterion often amounts to having residency and drug user status verified by commune/ward authorities); (6) Not being prosecuted for or charged with a criminal offense; and (7) Having stable housing in the district where the MMT clinic is located. Besides, the program also used the following prioritizing criteria: (a) Being an injecting drug user (as opposed to a non-injecting drug user); (b) Having been in opioid addiction for 3 years or longer; (c) Having

had many unsuccessful drug cessation attempts (by non-MMT methods); (d) Having actively participated in HIV/AIDS control and prevention activities.

An analysis of 9-month follow-up data from a cohort of 965 patients in this pilot project (Long et al., 2010) revealed that the treatment retention rate after 9 months was 90%. Among those who left the program, the main reason for termination of treatment was being sent to '06 centers. The proportion of patients with concurrent drug use (either self-reported or detected by urine testing) at 3, 6 and 9 months were 27.5%, 19.4% and 18.0%, respectively. The authors also reported significant reduction in HIV-related high risk behaviors and improvement in quality of life of patients (Long et al., 2010). Because the pilot MMT project was considered highly successful, the Vietnam Ministry of Health has developed an expansion plan for the period of 2010-2015 (NCHCE, 2010). According to this plan, which has been approved by the Government, the MMT program in Vietnam will cover 30 provinces/cities with high prevalence of injection drug use and HIV infection (out of 63 provinces/cities) and provide MMT to 80,000 DUs in the country by 2015. The Vietnam Government has also initiated a plan for in-country methadone production (NCHCE, 2010). At the end of 2011, approximately 7,000 drug users were receiving MMT at 41 clinics in 11 provinces of Vietnam (MOH, 2012).

Although the MMT program in Vietnam has been showing positive results, these initial results were based on a small fraction of drug users who had been carefully selected. Additionally, the pilot program was implemented with a high level of attention and dedicated resources from many sectors of the society. The recent establishment of a national methadone program in China (started in 2004) and its rapid development may provide valuable experience to the methadone program in Vietnam, a neighboring country. Several studies have indicated that service quality and under utilization of MMT clinics were major issues of the China National MMT program after its

rapid scaled-up with the goal to cover a large majority of the DUs population of the nation in a relatively short time (Lin et al., 2010ab, Lin, Wu and Detels, 2011, Wu et al., 2012). Thus, for a successful and sustainable scale-up of the MMT program in Vietnam, basic characteristics and other relevant information (such as current service acceptability and enabling conditions) of the target population, primarily opioid injecting drug users, will be essential for financial and human resource planning. Also, a systemic assessment of barriers and facilitators of MMT enrollment among the target population will be needed to identify disadvantaged groups and maximize service utilization once the program has been expanded.

The opioid drug user population in a given geographic area is often highly heterogeneous in terms of mode of drug administration, place where they can be reached and attitude toward research participation, etc. For these reasons, it is unlikely that any single study can effectively (and validly) address the opioid user population as a whole. Rather, studies should focus on certain sub-populations defined by method of administration (e.g., injecting use vs. inhaling use), by timing of drug-use history (e.g., current vs. under-therapy drug users), or by the setting from which study subjects are recruited (e.g., rehabilitation centers, testing/counseling facilities, MMT clinics, community, etc.). In Vietnam, opioid IDUs (mostly heroin injectors) are those who constitute the majority of the DU population and who drive the HIV/AIDS epidemic. For the reasons above, we conducted a cross-sectional study in Hai Phong, Vietnam in late 2011 with the objective *to characterize the opioid current injecting drug user population in Hai Phong with regard to demographic and familial characteristics, drug use and cessation history, general health and HIV-related behaviors, MMT-related beliefs, attitude, social pressure and other factors that may influence MMT enrollment in Hai Phong, 2011.*



### **3.2. STUDY SITES**

The study was conducted in Hai Phong city, a provincial-level administrative unit which comprises 7 urban districts and 8 rural districts in northern Vietnam. Specifically, study sites were 2 urban districts (Le Chan and Hong Bang) and 2 rural districts (An Lao and Thuy Nguyen) where MMT clinics were operating in March 2011. All MMT clinics in Vietnam were providing MMT for free at the time (but a new co-pay MMT clinic was opened in June 2011 in Kien An, another urban district of Hai Phong).

It was reported that there were 5,336 documented DUs and about 2,430 “suspected” DUs in Hai Phong as of July 2012 (Hai Phong Government, 2012). It has also been estimated that 97% of all DUs in Hai Phong are heroin users, and about 80% of them are IDUs (Nhu, 2010). There are currently three government-run closed setting rehabilitation centers in Hai Phong (also known as ‘06 centers) and the number of drug users in these centers in 2010 were reported at 1775 persons (MOLISA, 2012). Relapse rates among “trainees” of ‘06 centers within one year after being discharged have been reported to be as high as >90%. So far, drug users in ‘06 centers have no access to MMT or other harm reduction services (Martin et al., 2009).

### **3.3. METHODS**

In this study, “drug” is used as a shortened form of an opioid (such as heroin, morphine, opium, etc.), or any mixture of substances in which an opioid is a component.

#### **3.3.1. Study design and participants**

This was an anonymous community-based cross-sectional ACASI survey on a probability sample of current IDUs. An eligible participant had to be a current opioid-dependent injecting drug user (IDU, for short) who resided in one of the four study districts during the recruitment

period. Because the medical criteria of opioid dependence, as given in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV, 2000), are not easy to use for participant screening in the field, we devised the following operational definition: a *current injecting drug user* is a person who (a) used drug in at least 25 days of the past 30 days AND (b) has suffered from drug craving *at least once* in lifetime, AND (c) injected drug in more than half of the times during the past 30 days.

According to the definition above, virtually all drug users in 06 centers and most participants of drug detoxification/treatment programs are not current drug users (possible exceptions are, for example, MMT patients who continue to use drug on a daily basis). Only current IDUs were subjects of this study, while transitional DUs (those who were subject to active treatment/rehabilitation efforts and no longer used drug on a daily basis), previous DUs and non-injecting DUs were not.

For participant screening we also used the following *exclusion criteria*: (a) Being less than 18 years old; (b) Failing to provide informed consent to participate in the study; (c) Showing clear signs of opioid withdrawal, and/or impaired cognitive ability and/or poor behavior control which, by judgment of a medical doctor in the research staff, would interfere with normal communication or the interview process; (d) Being severely ill and/or in urgent need of medical care (as determined by a medical doctor in the research staff); and (e) Being an attendant of a closed-setting drug rehabilitation center.

### **3.3.2. Sample design**

We used the two-stage cluster sampling design in which clusters (districts) were selected with equal probability (Levy & Lemeshow, 2008). Because comparisons between rural and urban sector were desired, a separate sampling frame was established for each sector. In the first

stage, each district was considered a cluster. Two urban districts and two districts were randomly selected from 4 urban districts and 3 rural districts where MMT clinics were operating in early 2011. In the second stage, we recruited all eligible IDUs in each of the selected districts who voluntarily participated in the study during a recruitment period of 7-10 days (in November and December of 2011). A graphic model of the distribution of current and transitional IDUs in Hai Phong in 2011 and coverage of the cross-sectional survey sample is provided in Appendix 3.

### **3.3.3 Sample size determination**

To calculate the minimum sample size ( $n$ ) needed for comparison of proportions between the two groups in this study (urban versus rural), we used the formula given by Aday & Cornelius (2006) with a desired sample power of  $\beta=0.80$  to detect a 15% difference between two proportions at significance level  $\alpha=0.05$ . The calculated minimum sample size was 296 and we set the target sample size of 300 participants for each group. The total sample size was 600 participants (after excluding ineligible subjects, refusals and early withdrawals, see below).

### **3.3.4. Participant recruitment procedure**

We used social mapping and recruitment techniques that are similar to (but simpler than) those used by Vu (2007) in her study in the adjacent city of Nam Dinh. In each study district, we first conducted in-depth interviews with IDUs and asked collaborators (IDU peer educators, local health staff and/or NGOs) to identify all possible sources of needle and syringe (N&S) for IDUs. The identified sources included pharmacies, free N&S programs, a number of stores along a stretch of the rail-way system that ran across Le Chan district (which is commonly referred to by drug users as “the railway area”) and N&S vendors who hung about near drug selling places, especially along “the rail-way area”, the single most important drug market in Hai Phong.

As the next step, we sent a pair of field workers to each ward/commune and instructed them to scan every street, road and alley to find pharmacies, pay special attention to areas surrounding drug selling or injecting locations, and make sure not to miss any pharmacy with a specific address available. Once a pharmacy was found, field workers went in and talked to the manager (a person in charge of the pharmacy) about this study and asked if the pharmacy sold N&S to IDUs (some pharmacies, especially large ones, did not sell N&S to buyers deemed to be drug users). If the manager said “yes”, we then asked the pharmacy to assist in distributing one interview invitation flyer to each client who bought N&S package(s) without a recognizable medical purpose (presumably an IDU). Information on each invitation flyer included the study purpose, eligibility criteria (that define a current IDU), an emphasis on the anonymous nature of the survey, a unique ID code and how to participate. We maintained a list of all ID codes on flyers distributed to each pharmacy, together with its location and name of the manager.

To elicit cooperation from pharmacy managers, we explained to them potential social and public health benefits of their cooperation, and provided each pharmacy a small incentive for each eligible IDU who later comes to a study site with a flyer ID code associated with the pharmacy. We asked each pharmacy for a rough estimate of the number of N&S packages sold each day and provided a doubled number of invitation flyers. To cope with the fact that some pharmacies had several staff working in shifts, and that IDUs tended to come, grasp a N&S package and go very quickly, invitation flyers were held together with a paper band which bears simple distributing instructions and a phone number for contacting research staff in case more flyers are needed.

Because N&S vendors and N&S selling stores in the rail-way area (most of which were small “tea stalls”) were illegal sellers and their hidden N&S business was attached to the highly vigilant drug market, we were advised by collaborators not to “interfere” with their business. In

our judgment, people selling N&S illegally tended to be unreliable as collaborators in this project and would probably be unwilling to talk to or help us distribute interview invitation flyers. Therefore we did not contact them. Instead, we asked peer educators, especially those who work for N&S programs (run by NGOs) to distribute flyers to IDUs who came to buy drug in the rail-way area (except those who were known to have already received our flyers). Because the peer educators were highly familiar with the rail-way area and they knew most drug users who came to buy drug in the area, they had no difficulty approaching and distributing flyers to drug users together with one or more N&S package. In addition to the rail-way area (in Le Chan district), we also asked peer educators to distribute flyers to IDUs near other drug-selling places and those who they knew to be IDUs in their daily tasks as outreach workers. The research staff and staff of NGOs supervised the field work.

On average, the recruitment period in each study district lasted 7 days. Because the targeted sample size was 300 participants for each sector (composed of two study districts), we aimed at recruiting 150 participants from each district. We started the recruitment in An Lao, a rural district with the anticipated smallest drug user population. It turned out that we could only recruited 125 eligible participants in An Lao (after 10 days) and thus we later recruited 175 participants from the remaining rural district (Thuy Nguyen). For the two urban districts, 150 participants were recruited from each district with no difficulty.

In total, we distributed 1,295 interview invitation flyers, 736 subjects came to interview sites. After screening for eligibility, 74 persons were excluded because they did not meet our definition of a current IDU. Among the remaining 662 subjects, 7 refused to participate after they were explained about the study. Among 655 IDUs who agreed to participate, 46 did not reside in the four study districts. We let these 46 IDUs take the ACASI survey as usual (to avoid

bias in reporting district of residence among subsequent comers) but later excluded them in data analysis. Among the 609 eligible participants, 9 withdrew before completing their interviews and 600 completed the ACASI interview. We estimated that the response rate among those who received at least one invitation was between 60-70%. Please note that the response rate in this study could not be precisely calculated by dividing 736 by 1,295 (57%), because 1,295 was not the number of potential subjects who received invitations (one IDU could possibly receive several flyers). Indeed, several participants did come the second time for interview but such cases were refused (we always had 2 research staff screening for any “repeated face” by memory).

### **3.3.5. Data collection and quality control**

Data were collected using the audio computer-assisted self interview (ACASI) technique. We used the QDS 2.6.1 software (NOVA Research Company, Bethesda, MD) to produce an ACASI computer program based on the Vietnamese version of a standardized survey questionnaire (Appendix 2). The program were piloted and revised 3 times before actual data collection. The program has a number of features for the purpose of quality control, such as logic checks, range checks, pop-up reminders or notifications, etc. The ACASI interview was programmed in a way that if a participant entered an invalid response to any of the questions used for re-checking eligibility (such as those about age and number of days using/injecting drug in past 30 days), the program would apparently stop until a research staff was notified to check the problem. Also, a participant would not be able to proceed to the next question if no answer option was chosen (the options of “Don’t know” and “Refuse” were available for every question).

Before each interview, the investigator first emphasized that no personal identifying information were to be collected from any participant. Subsequently, the investigator asked the

potential participant some screening questions to re-check eligibility and then explained the study purpose, interview procedure, potential risks, benefits and voluntariness of participation. Then each potential participant had the option to give oral informed consent or refuse to participate. If oral consent was given, a research staff instructed the participant on how to use the computer mouse and headphone in order to complete the interview properly. After these instructions, each participant completed a practice survey which included various types of questions and answers, and careful explanations of terms used. Participants were given additional time for practice if needed. Then participants were guided to a computer station in a quiet room to start the actual interview process. A maximum of six participants could take the ACASI survey at the same time, and they were located at a distance from each other in the interview room so that one participant could not read the computer screen of another participant. At least 2 research staff were always be available to provide assistance to participants when needed, but they otherwise stayed at a distance from all participants undergoing the interview. Each participant received 120,000VND (US\$6) as reimbursement for their participation.

### **3.3.6. Outcome and explanatory variables**

The main outcome of interest in this study is MMT registration status (ever versus never registered for MMT), which is sometimes also referred to as “MMT enrollment status”. Before each participant started his/her ACASI interview, a research staff carefully explained to him/her that “to register for MMT” means to submit a paper document or to have one’s name listed for the purpose of MMT; and that simply coming to a place and asking for information is not considered “having registered” for MMT (even if his/her desire for MMT was clearly indicated). Then, the research staff asked the participant if he/she had ever registered for MMT, determined his/her MMT registration status and entered that information into the ACASI program during the interviewee preparation process.

Predictor variables included in the survey questionnaire belonged to the following areas: (a) demographic and familial characteristics; (b) drug use history, injection equipment sharing practice, drug treatment/cessation history, drug-user registration status; (c) perceived health status, sexual and other HIV-related behaviors, perceived HIV status and risk of HIV infection (d) MMT related beliefs and attitude; (e) perceived social pressure (expectation of family and other people regarding whether one should apply for MMT or not); (f) other factors that may influence MMT enrollment decision; and (g) intention to register for MMT (for those who had never done so).

For some topics (such as attitude, perceived social pressure, level of difficulty satisfying certain requirements for MMT enrollment), answer options were presented as a 7-point Likert scale. The numeric values on such a scale may range from -3 to +3 (for example, -3 = “extremely bad” while +3 = “extremely good”, or -3 = “strongly disagree” while +3 = “strongly agree”); or from 1 to 7 (for example, 1 = “not at all” while 7 = “definitely yes”, or 1 = “no difficulty” while 7 = “extremely difficult”).

### **3.3.7. Data analysis**

Data analyses were done using SAS 9.2 (SAS Institute, Cary, NC). Before actual data analyses began, every individual variable was examined for extreme values, level of missing data, unusual phenomenon, etc. The answer choices of “Don’t know” and “Refuse” were coded as missing (except for reported HIV status). The level of missing data for each single variable was found to be under 1% for most variables. In multivariate logistic regression analysis (see below), records with missing data (for at least one of the included variables) were excluded, because the percentage of such records was less than 5%.

Data were described in percentages (for categorical variables) or medians with 10<sup>th</sup> percentiles and 90<sup>th</sup> percentiles (for numeric variables). Comparisons between urban and rural



groups were made using the Pearson Chi-square test for proportional measures (percentages) and the non-parametric Wilcoxon rank sum test for median measures. P-values for these tests are reported together with the descriptive measures mentioned above.

Relations between MMT enrollment status and other variables were explored using conditional logistic regression with *district of residence* as the stratifying variable. Eleven predictor variables were included in this regression analysis (as presented in Table 3.10 in the Result section). They were demographic characteristics and other factors that we considered helpful (and practical) for predicting MMT enrollment (if associations were to be found). Based on our prior knowledge, factors which possibly changed as a result of MMT registration and/or treatment (such as family relations, job status, drug-use and sexual behaviors, knowledge and attitude to MMT, etc.) were excluded from this logistic regression analysis. Selected variables were re-scaled and/or re-categorized as appropriate for meaningful interpretation of results and avoid sparse data in certain categories (Greenland & Rothman, 2008). Odds ratios derived from the logistic regression model with the 11 selected predictor variables were presented together with 95% Wald confidence intervals and P-values.

## **3.4. RESULTS**

### **3.4.1. Characteristics of current opioid injecting drug users in Hai Phong**

#### ***3.4.1.a. Demographic characteristics:***

A great majority of participants were male (96.8%) and there was no significant difference between rural and urban in terms of gender composition. The median age of urban participants was significantly higher than that of rural participants (35 years vs. 30 years,  $p < 0.001$ ).

Table 3.1: Basic demographic characteristics of 600 current IDUs in Hai Phong, Vietnam.

Characteristics	Total (n=600)		Rural (n=300)		Urban (n=300)		P-value
	#	%	#	%	#	%	
Gender (Male)	581	96.8	293	97.7	288	96.0	0.24
Age							
18-24 yrs	69	11.5	48	<b>16.0</b>	21	<b>7.0</b>	
25-34 yrs	260	43.3	146	<b>48.7</b>	114	<b>38.0</b>	<b>&lt;0.001</b>
35-44 yrs	196	32.7	80	<b>26.7</b>	116	<b>38.7</b>	
≥45 yrs	75	12.5	26	<b>8.7</b>	49	<b>16.3</b>	
Median (10%ile - 90%ile)	34 (24-46)		<b>30</b> (22-44)		<b>35</b> (26-48)		<b>&lt;0.001</b>
Current marital status							
Never married	257	42.8	124	41.3	133	44.3	
Married (living with spouse)	234	39.0	141	<b>47.0</b>	93	<b>31.0</b>	<b>&lt;0.001</b>
Separated/Divorced/Widowed	109	18.2	35	<b>11.7</b>	64	<b>24.7</b>	
Level of education completed							
Less than primary school	43	7.2	29	9.7	14	4.7	
Primary school	161	26.8	79	26.3	82	27.3	0.06
Middle school	247	41.2	126	42.0	121	40.3	
High school or above	149	24.8	66	22.0	83	27.7	
Currently going to school	8	1.3	4	1.3	4	1.3	1.00
Having a job (something to do to earn money, not prohibited by laws)	359	59.8	167	<b>55.7</b>	192	<b>64.0</b>	<b>0.04</b>
Stability of monthly income from jobs							
Unstable	199	55.4	97	58.1	102	53.1	
Fairly stable	128	35.7	52	31.1	76	39.6	0.18
Very stable	32	8.9	18	10.8	14	7.3	
Average daily income from jobs [Median (10%ile-90%ile); unit= thousand VND]	120 (80-200) (n=351)		120 (80-200) (n=162)		120 (70-200) (n=189)		0.17

Note: 1USD = ~20,000VND. Effective sample size for some variables can be lower than the targeted sample size due to non-applicability or missing data (usually <1%, if any).

The percentage of married participants was significantly higher for rural, while the percentage of separated, divorced or widowed participants was higher for urban ( $p < 0.001$ ). In rural districts, 22.0% of participants reported having completed high school or above, slightly lower than that in urban districts (27.7%). Very few participants were going to school (1.3% for both rural and urban). A higher percentage of rural participants reported having a job (64.0%), compared to 55.7% for urban ( $p = 0.04$ ). There were no significant differences between rural and urban regarding stability of monthly income and average daily income from jobs (Table 3.1).

#### ***3.4.1.b. Family characteristics and relations:***

As shown in Table 3.2, more than half of participants reported having a family size of 4 persons or above (in both groups), but family size tended to be larger in rural districts ( $p < 0.001$ ). The percentage of participants having one child or more was 56.0% in rural district, compared to 49% for urban districts ( $p = 0.09$ ). A great majority of participants reported that their families were aware of their drug dependence (96% for rural and 97% for urban). About half of participants perceived their decision making role in family as limited (49.0% for urban, 45.8% for rural). However, the percentage of participants who reported having decisive role (i.e., they were the persons who made most of the important decisions in their families) was significantly higher in rural districts 18.1%, compared to 5.0% in urban districts.

Approximately 50% of participants perceived their family financial condition as “average” compared to other families in the community, while the percentages for “below average” and “very poor” were 24% and 17.8%, respectively (there was no significant difference between rural and urban). More than 80% of participants reported getting money from their families or relatives at least once per month (83.7% for rural vs. 90.0% for urban,  $p = 0.02$ ).

Table 3.2: Family characteristics and family relations of 600 current IDUs in Hai Phong, Vietnam.

Characteristics	Total (n=600)		Rural (n=300)		Urban (n=300)		P- value
	#	%	#	%	#	%	
Number of persons in family							
1 (living alone)	14	2.3	3	<b>1.0</b>	11	<b>3.7</b>	<b>&lt;0.001</b>
2	70	11.7	22	<b>7.3</b>	48	<b>16.1</b>	
3	171	28.6	95	<b>31.7</b>	76	<b>25.4</b>	
4+	344	57.4	180	<b>60.0</b>	164	<b>54.8</b>	
Having a child or more	315	52.5	168	56.0	147	49.0	0.09
Age of the youngest child							
0-11 yrs	201	64.0	118	<b>70.2</b>	83	<b>56.9</b>	<b>0.04</b>
12-17 yrs	64	20.4	27	<b>16.1</b>	37	<b>25.3</b>	
≥18 yrs	49	15.6	23	13.7	26	17.8	
Family aware of subject's drug dependence	578	96.5	287	96.0	291	97.0	0.50
Decision-making role in family							
Decisive role	69	11.6	54	<b>18.1</b>	15	<b>5.0</b>	<b>&lt;0.001</b>
Important role	96	16.1	47	15.7	49	16.5	
Limited role	283	47.4	137	45.8	146	49.0	
Other	149	25.0	61	<b>20.4</b>	88	<b>29.5</b>	
Family financial condition							
Very poor	106	17.7	61	20.3	45	15.1	0.14
Below average	144	24.1	64	21.3	80	26.9	
Average	303	50.7	156	52.0	147	49.3	
Above average or wealthy	45	7.5	19	6.3	26	8.7	
Getting money from family or relatives at least once per month	521	86.8	251	<b>83.7</b>	270	<b>90.0</b>	<b>0.02</b>
Receiving regular allowance from family or relatives	245	40.9	108	<b>36.1</b>	137	<b>45.7</b>	<b>0.02</b>
Main source of money for drugs in past 30 days							
Personal legal income	251	44.7	112	<b>40.6</b>	139	<b>48.8</b>	<b>0.004</b>
Family	233	41.5	113	40.9	120	42.1	
Others	77	13.7	51	<b>18.5</b>	26	<b>9.1</b>	
Main source of living expenses in past 30 days							
Personal legal income	184	32.2	85	30.0	99	34.3	0.53
Family	355	62.1	182	64.3	173	59.9	
Others	33	5.8	16	5.7	17	5.9	

Note: Effective sample size for some variables can be lower than the targeted sample size due to non-applicability or missing data (usually <1%, if any).

Nearly half of urban participants (45.7%) reported that they received regular allowance from their families or relatives, whereas the corresponding percentage for rural participants was 36.1% ( $p=0.02$ ). In both rural and urban districts, approximately 40% of participants reported that their families were the main source of money for their drug use. The percentage of participants reporting personal legal income as the main source of money for their drug use was 40.6% and 48.8% for rural and urban, respectively ( $p=0.004$ ). On the other hand, a majority of participants in both rural (64.3%) and urban districts (59.9%) relied on their family for living expenses (food, housing, utilities).

#### ***3.4.1.c. Drug use and cessation history:***

All participants in this study reported heroin as the type of opioid used most often during past 30 days. As shown in Table 3.3, the median number of addiction years of rural participants was 6 years, significantly shorter than that of urban participants, 11 years ( $p<0.001$ ). Rural participants also had a median number of injection years lower than that of urban participants (5 years compared to 8 years,  $p<0.001$ ). In urban districts, 61.7% of participants reported injecting drug 3 times per day, and 22.3% reported injecting drug 2 times per day (on average). In rural districts, the corresponding percentages were 36.9% (3 times/day) and 36.3% (2 times/day). This means that, on average, urban participants injected drug more often than rural participants, and the difference was statistically significant ( $p<0.001$ ). For both rural and urban, approximately 30% of participants reported injecting drug with another drug user at their last injection. The percentage of participants who reported that they had given used N&S to others for their re-use at least once in the past 30 days was 4.7% for rural and 2.3% for urban ( $p=0.12$ ). Whereas, the percentage of participants who reported that they had re-used N&S from other drug users at least once in the past 30 days was 3.3% for rural and 1.0% for urban ( $p=0.05$ ).

Table 3.3: Drug use and cessation history of 600 current IDUs in Hai Phong, Vietnam.

Characteristics	Total (n=600)		Rural (n=300)		Urban (n=300)		P- value*
	#	%	#	%	#	%	
Years since the start of daily opioid use							
< 5 yrs	151	25.2	104	<b>34.7</b>	47	<b>15.7</b>	<b>&lt;0.001</b>
5-9 yrs	192	32.1	111	<b>37.0</b>	81	<b>27.1</b>	
10-14 yrs	173	28.9	63	<b>21.0</b>	110	<b>36.8</b>	
≥ 15 yrs	83	13.9	22	<b>7.3</b>	61	<b>20.4</b>	
Median (10%ile - 90%ile)	8 (2-16)		<b>6</b> (2-13)		<b>11</b> (4-17)		<b>&lt;0.001</b>
Years since the start of daily injecting use							
< 5 yrs	219	36.6	135	<b>45.0</b>	84	<b>28.2</b>	<b>&lt;0.001</b>
5-9 yrs	193	32.3	98	32.7	95	31.9	
10-14 yrs	133	22.2	52	<b>17.3</b>	81	<b>27.2</b>	
≥ 15 yrs	53	8.9	15	<b>5.0</b>	38	<b>12.8</b>	
Median (10%ile - 90%ile)	6 (1-14)		<b>5</b> (1-12)		<b>8</b> (2-15)		<b>&lt;0.001</b>
Average number of drug injections per day							
1 time	61	10.3	47	<b>15.9</b>	14	<b>4.7</b>	<b>&lt;0.001</b>
2 times	176	29.6	109	<b>36.9</b>	67	<b>22.3</b>	
3 times	292	49.1	107	<b>36.3</b>	185	<b>61.7</b>	
≥ 4 times	66	11.1	32	10.9	34	11.3	
Median (10%ile - 90%ile)	3 (1-4)		<b>2</b> (1-4)		<b>3</b> (2-4)		<b>&lt;0.001</b>
Injecting drug with another IDU last time (not necessarily sharing anything)	179	29.8	96	32.0	83	27.7	0.25
Gave used N&S to other IDUs for their re- use during past 30 days	21	3.5	14	4.7	7	2.3	0.12
Re-used N&S that had been used by other IDUs during past 30 days	13	2.2	10	<b>3.3</b>	3	<b>1.0</b>	<b>0.05</b>
Number of drug cessations in the past							
0 time	52	8.7	33	<b>11.1</b>	19	<b>6.3</b>	<b>&lt;0.001</b>
1-3 times	242	40.4	142	<b>47.5</b>	100	<b>33.3</b>	
4-6 times	154	25.7	65	<b>21.7</b>	89	<b>29.7</b>	
> 6 times	151	25.2	59	<b>19.7</b>	92	<b>30.7</b>	
Places where drug cessations occurred							
At home or home of a relative	396	72.4	201	75.6	195	69.4	0.11
In compulsory rehab centers (06')	230	42.1	93	<b>35.0</b>	137	<b>48.8</b>	<b>0.001</b>
In jails/prisons	83	15.2	32	<b>12.0</b>	51	<b>18.2</b>	<b>0.05</b>
In private or other rehab facilities	99	18.1	44	16.5	55	19.6	0.35
Voluntariness of last drug cessation							
Completely voluntary	368	67.4	186	69.9	182	65.0	0.31
Forced but "agreed to be forced"	139	25.5	65	24.4	74	26.4	
Completely compulsory	39	7.1	15	5.7	24	8.6	

Note: Effective sample size for some variables can be lower than the targeted sample size due to non-applicability or missing data (usually <1%, if any).

A majority participants in urban districts (60.4%) reported having had more than 3 drug cessation attempts, while less than half of participants in rural districts (41.4%) reported so, ( $p < 0.001$ ). In terms of places where cessations occurred, 72.4% of participants reported having undergone drug cessations at home or the home of a relative (no significant difference between rural and urban). The percentage of participants who reported having undergone drug cessations at O6 centers, however, was significantly different between rural (35.0%) and urban (48.8%) districts. More than half of participants (54%) reported that they had current drug-user records with local authorities, while about 10% reported they had previous drug-user records (Figure 3.1). There was no significant difference between rural and urban.

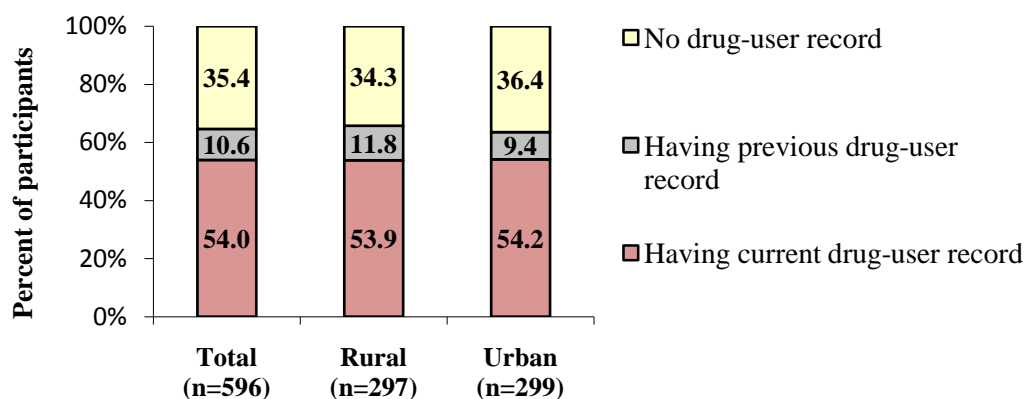


Figure 3.1: Reported drug-user registration status with local authority among 596 current opioid IDUs in Hai Phong, Vietnam.

#### 3.4.1.d. Health concern, sexual activeness and other HIV risk behaviors

Approximately 42% of participants reported poor general health. They typically had no clinic or hospital visit for medical care or health check-up in past 3 months, but 97% of them reported desire to get healthcare more often (Table 3.4).

Table 3.4: Health concern, sexual activeness and other HIV risk behaviors of 600 current IDUs in Hai Phong, Vietnam.

Indicator	Total (n=600)		Rural (n=300)		Urban (n=300)		P-value
	#	%	#	%	#	%	
Perceived poor general health (level 1-4 on a scale of 1 to 7, where 7= perfect health)	251	41.8	126	42.0	125	41.6	0.68
Number of clinic and hospital visits in past 3 months [median (10%ile – 90%ile)]	0 (0-2) (n=594)		0 (0-3) (n=295)		0 (0-2) (n=299)		0.86
Wanting to get health checked-up more often	584	97.3	290	96.7	294	98.0	0.31
Having ever been tested for HIV	414	69.0	200	66.7	214	71.3	0.22
Years since last HIV test [median (10%ile – 90%ile)]	1 (0-4) (n=413)		1 (0-3) (n=198)		1 (0-5) (n=215)		0.26
Perceived current HIV status							
<i>Negative</i>	380	63.3	234	<b>78.0</b>	146	<b>48.7</b>	<b>&lt;0.001</b>
<i>Positive</i>	114	19.0	52	17.3	62	20.7	
<i>Unknown</i>	87	14.5	5	<b>1.7</b>	82	<b>27.3</b>	
<i>Refused to answer</i>	19	3.2	9	3.0	10	3.3	
Receiving ARV treatment (total n=112, HIV+)	78	69.6	38	73.1	40	66.7	0.46
Perceived significant risk of getting HIV during the next 3 years (level 4-7 on a scale of 1 to 7, total n=379, HIV-)	234	61.7	158	<b>67.6</b>	76	<b>52.5</b>	<b>0.003</b>
Having ever had sexual intercourse	582	97.0	287	95.7	295	98.3	0.06
Having >3 sexual intercourses in past 3 months (among those ever had sex)	259	44.9	148	<b>51.9</b>	111	<b>38.0</b>	<b>&lt;0.001</b>
Number of regular sex partners in past 6 months (having intercourses 2 times or more)							
<i>0 (no body)</i>	58	10.2	14	<b>5.0</b>	44	<b>15.4</b>	<b>&lt;0.001</b>
<i>1 person</i>	353	62.4	180	64.1	173	60.7	
<i>2 persons or above</i>	155	27.4	87	<b>31.0</b>	68	<b>23.9</b>	
Perceived significant risk of HIV infection of the most frequent sex partner in past 6 months (level 4-7 on a scale of 1 to 7)	161	31.7	81	30.2	89	33.3	0.84
Consistent (100%) condom use with regular sexual partner(s) during past 6 months	162	31.4	79	29.2	83	33.9	0.25
Having irregular sex partners in past 6 months	98	17.1	52	18.3	46	15.9	0.44
Consistent (100%) condom use with irregular sexual partner(s) in past 6 months (n=96)	43	44.8	20	38.5	23	52.3	0.18
Having ever donated or sold blood	33	5.5	13	4.3	20	6.7	0.21

Note: Effective sample size for some variables can be lower than the targeted sample size due to non-applicability or missing data (usually <1%, if any).



A majority of participants (69%) had had at least 1 HIV test, with the last test typically taken 1 year before the interview. There were no significant differences between rural and urban in these indicators. However, a much higher percentage of rural participants (78%) reported their perceived HIV status as *negative*, while only 48% of urban participant did so. Contrarily, 27% of urban participants reported their HIV status as *unknown*, compared to only 1.7% for rural participants ( $p < 0.001$ ). Among those who reported *negative* HIV status, 67.6% of rural participants self-evaluated their risk of getting HIV during the next 3 years at levels 4-7 (on a scale of 1 to 7), while 52.5% urban participants did so ( $p = 0.003$ ).

The percentage of participants who reported having ever had a sexual intercourse was slightly lower for rural (95.7%), compared to urban (98.3%). Nevertheless, participants in the rural setting were significantly more sexually active than those in the urban setting, as indicated by the percentage reporting more than 3 sexual intercourses during the past 3 months (51.9% vs. 38.0%, respectively). Also, 31.0% of rural participants reported having 2 or more regular sex partners, while only 23.9 of urban participants did so ( $p < 0.001$ ). But there were no significant differences between rural and urban participants regarding perceived level of risk of HIV infection for their regular sex partners, and the percentage of consistent condom use with them (both at approximately 31%).

In the urban group, 15.9% of participants reported having at least one irregular sex partner in the past 6 months and only 52.3% reported using condoms with them consistently. The corresponding measures for the rural group were 18.3% and 38.5%, respectively. A very low percentage of participants reported having ever donated or sold blood (4.3% for rural and 6.7% for urban).

### 3.4.2. MMT service awareness, current enrollment status and intention to apply

Approximately 80% of subjects were aware of MMT service in their corresponding district of residence before participating in this study (Table 3.5). However, the percentage of participants who had registered for MMT was only 25.7% (the same for rural and urban), and only 43% of them (i.e., approximately 11% of total 600 participants) had been admitted. Among those who had never registered for MMT, 96.9% reported having intention to apply for MMT within the next 3 months (99.1 for rural and 94.6% for urban,  $p=0.01$ ), Figure 4.2.

Table 3.5: MMT service awareness, current enrollment status and intention to apply among 600 current IDUs in Hai Phong, Vietnam.

Criteria	Total (n=600)		Rural (n=300)		Urban (n=300)		P-value
	#	%	#	%	#	%	
Having heard about MMT in the district before study participation (service awareness)	478	79.7	245	81.7	233	77.7	0.22
Having ever registered for MMT	154	25.7	77	25.7	77	25.7	1.00
<i>Admitted</i>	66	42.9	52	<b>67.5</b>	14	<b>18.2</b>	<b>&lt;0.001</b>
<i>Not admitted (yet)</i>	88	57.1	25	<b>32.5</b>	63	<b>81.8</b>	
Having <i>never</i> registered for MMT	446	74.3	223	74.3	223	74.3	1.00
<i>Having intention to apply</i>	432	96.9	221	<b>99.1</b>	211	<b>94.6</b>	<b>0.01</b>
<i>No intention to apply</i>	14	3.1	2	<b>0.9</b>	12	<b>5.4</b>	

Note: The question used for soliciting intention: “Given your current circumstance and the methadone program as you know it, do you intend to apply for methadone in the coming 3 months?”

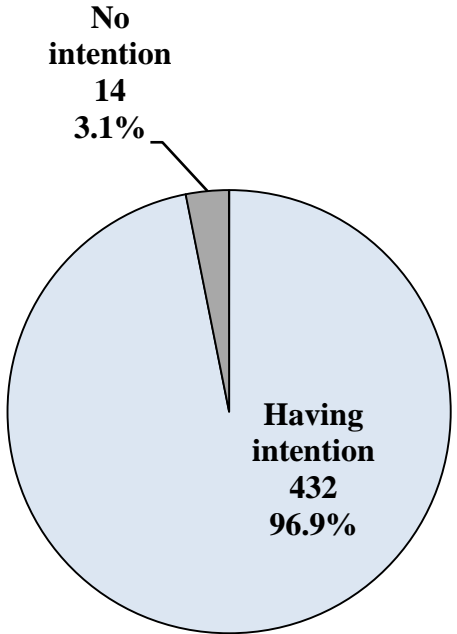


Figure 3.2: Percentage of participants reported having intention to apply for MMT within the next 3 months among 446 current IDUs who had never registered for MMT.

**3.4.3. Beliefs, attitude, perceived social pressure and other factors which may influence MMT enrollment**

**3.4.3.a. MMT-related beliefs and attitude**

More than 80% of participants held highly favorable beliefs and attitude toward MMT, as indicated by their highest positive rating (+3) to most items in Table 6. However, a significant proportion of participants gave negative ratings to indicate that they were afraid of being sent to O6 centers (37.2%) and/or were concerned with having to use methadone for life (14.9%). It should be noted that in this section we only present aggregate data for all participants because there were no significant differences between rural and urban sectors (in both statistical and practical senses).

*Table 3.6: MMT-related beliefs and attitude of 600 current opioid injecting users in Hai Phong, Vietnam, measured as percent of participants.*

<b>Aspect of MMT on which opinion was solicited</b>	<b>Severely Unfavorable (-3)</b>	<b>Unfavorable (-2 or -1)</b>	<b>Neutral (0)</b>	<b>Favorable (+1 or +2)</b>	<b>Highly Favorable (+3)</b>
Bad or good (generally)	2.2	0.3	3.2	11.5	82.8
Harmful or good for health	0.5	0.3	3.0	11.8	84.3
Helps stop drug use completely or not	1.8	1.0	5.3	15.5	76.3
Cost of MMT versus cost of drug use	1.5	0.3	2.2	6.7	89.3
Having to use methadone for life or not	12.2	2.7	7.5	13.5	64.2
Effect of MMT on family relations	1.0	0.2	2.3	7.5	89.0
Effect of MMT on non-family relations	0.7	0.2	2.7	10.8	85.7
Afraid of being sent to 06 if register for MMT but unsuccessful (not admitted)	29.5	7.7	7.2	7.2	48.5
Effect of MMT on working ability of drug users	1.2	1.0	2.7	12.5	82.7
MMT helps avoid or bring more legal problems to drug users	0.3	0.3	2.0	8.7	88.7
Benefits versus undesired effects	0.7	0.2	2.8	11.3	85.0

*Note: Participants were asked to rate each aspect of MMT on a 7-point Likert scale from -3 to +3, in which -3 is most unfavorable while +3 is most favorable (0 represents neutral opinion).*

### **3.4.3.b. Perceived social pressure regarding the subject's MMT enrollment**

A great majority of subjects (at least 90%) perceived that people surrounding them would like them to participate in MMT program, given the assumption that these people know “more or less” about MMT (Table 3.7). “Peer drug users” was the group of people who were least commonly reported as being strongly supportive of the subject's MMT enrollment (but still at 79.2%).

*Table 3.7: Social pressure to enter MMT among 600 current opioid injecting users in Hai Phong, Vietnam, measured as percent of participants.*

<b>Group of people</b>	<b>Strongly Disagree (-3)</b>	<b>Disagree (-2 or -1)</b>	<b>Neutral (0)</b>	<b>Agree (+1 or +2)</b>	<b>Strongly Agree (+3)</b>
Immediate family	1.2	0.3	1.5	6.5	90.5
Close relatives	0.5	0.2	1.7	8.0	89.7
Close friends	0.7	0.2	2.0	8.5	88.7
Peer drug users	3.8	0.7	5.7	10.7	79.2
Other significant people	1.0	0.2	1.2	6.2	91.5

*Note: Each of the item in this table was presented as a question of the form: “Do you think (the group of people) would like you to participate in the MMT program or not? Participants were asked to respond to each question by selecting a number on a Likert scale from -3 to +3 (for each group of people), in which -3 means strongly disagree, +3 means strongly agree and 0 indicates a neutral opinion).*

### **3.4.3.c. Program and logistic barriers to MMT enrollment:**

Among the 7 eligibility criteria for MMT participation (listed in the introduction section), 5 of them are of administrative (non-clinical) nature. We consider these criteria (requirements) potential barriers to MMT enrollment among drug users who are clinically appropriate for MMT. As shown in Table 3.8, more than 20% of subjects reported having difficulty with the following criteria: “providing written petition indicating voluntary participation”, “having a referral document from the commune-level people’s committee” and “having stable housing in the district where the MMT clinic is located”. Only 6.6% of participants reported difficulty with the criterion of “not being prosecuted for or charged with a criminal offense”. There were significant differences between rural and urban participants regarding the last-mentioned 3 indicators. It should be noted that no participant in this study had problem with the criterion “being 18 years old or older” because this was also an eligibility criterion for being in this study and we excluded

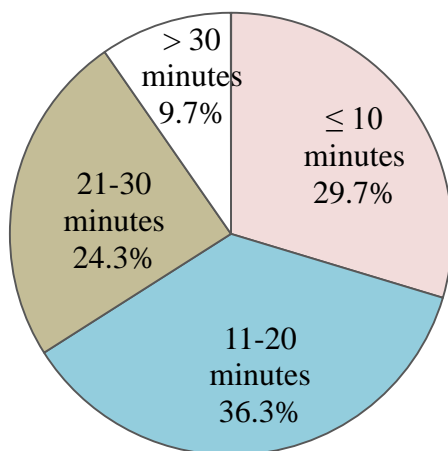
those who reported being less than 18 years old. The proportion of participants who reported having difficulty with any of the remaining four eligibility criteria was 44.5% for rural and 69.9% for urban ( $p < 0.001$ ).

*Table 3.8: Number and the percent of participants reported having difficulty with administrative eligibility criteria for MMT in Hai Phong, Vietnam.*

Criteria	Total (n=588)		Rural (n=299)		Urban (n=289)		P-value
	#	%	#	%	#	%	
Being 18 years old or older	0	0	0	0	0	0	N/A
Providing a written petition indicating voluntary participation	141	24.0	64	21.4	77	26.6	0.14
Having verification from local authorities about one's residence and drug-user status	138	23.5	41	<b>13.7</b>	97	<b>33.6</b>	<b>&lt;0.001</b>
Having stable housing in the district where the MMT clinic located	130	22.1	50	<b>16.7</b>	80	<b>27.7</b>	<b>0.001</b>
Not being prosecuted for or charged with a criminal offense	39	6.6	12	<b>4.0</b>	27	<b>9.3</b>	<b>0.009</b>
Reporting difficulty with any of the above	335	57.0	133	<b>44.5</b>	202	<b>69.9</b>	<b>&lt;0.001</b>

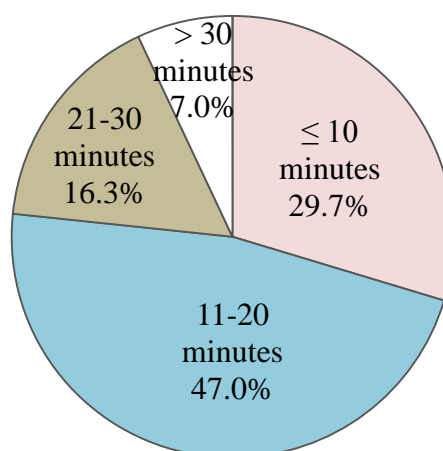
For a potential MMT client, if the time required to travel to and from an MMT clinic (he/she is considering to attend) is long, then daily travel to the clinic can be a logistic barrier to his/her MMT enrollment. To assess this potential barrier, we asked each study participant to report the average one-way travel time it would take him/her to get to the MMT clinic using his/her current usual means of transportation. The results (Figure 3.3 & 3.4) indicated that 34% of participants in rural districts would have to travel more than 20 minutes (one-way) to come to an MMT clinic, compared to 23.3% of participants in urban districts would have to do the same. The difference in travel time to MMT clinics between the rural settings and the urban settings were statistically significant ( $p = 0.02$ ).

**Rural, n=300**



*Figure 3.3: One-way travel time to MMT clinic reported by participants in rural districts.*

**Urban, n=300**



*Figure 3.4: One-way travel time to MMT clinic reported by participants in urban districts.*

The results in Table 3.9 revealed that the proportions of participants reporting high level of difficulty with some other requirements for MMT participation vary from 9.8% to over 50%. Significantly higher proportions of participants in rural districts reported difficulty level 6-7, compared to those in urban districts, regarding finding means of transportation (23.0% vs.12.3%), adhering to daily-clinic-visit requirement (14.7% vs. 5.0%), accepting an average wait time of 30 days (21.4% vs. 13.4%), paying the hypothetical co-pay of 450,000VND (\$22.5) per month for MMT (37.7% vs. 21.7%) and paying the hypothetical monthly co-pay of 900,000VND (\$45) per month (63.0% vs. 49.3%). However, a significantly lower percentage of participants in rural districts reported difficulty level 6-7 with “successfully entering the MMT program” (45.8% vs. 59.7%).

Regarding family financial support (Figure 3.5), 78.6% of subjects who had registered for MMT reported they had received (some) financial support from family/relatives since their MMT enrollment (85.7% for rural compared to 71.4% for urban,  $p=0.03$ ). On the other hand (Figure 3.6), 89% of subjects who had never registered for MMT perceived they had *potential*

financial support from family/relatives if they would need it for MMT participation (91.5% for rural compared to 86.1% for urban,  $p=0.09$ ). It should be noted that the data here are not about the subjects' *actual need* of financial support because there could be people who needed but did not receive support, and people who were not actually in need but still received support from family/relatives. (Actual need of financial support can be approximated by the percentage of participants who received money from family and/or relatives at least once per month, 86.8%, as presented in Table 3.2).

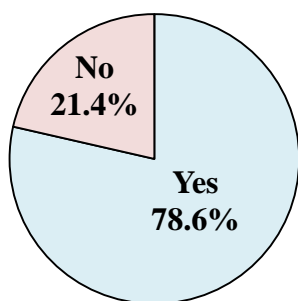
*Table 3.9: Number and percent of current IDUs reporting high level of difficulty (6 or 7 on a scale of 1-7) with certain requirements for MMT participation in Hai Phong, Vietnam.*

Requirement (or hypothetical requirement)	Total (n=600)		Rural (n=300)		Urban (n=300)		P-value
	#	%	#	%	#	%	
	Finding means of transportation	106	17.7	69	<b>23.0</b>	37	
Adhering to the daily-clinic-visit requirement from MMT program	59	9.8	44	<b>14.7</b>	15	<b>5.0</b>	<b>&lt;0.001</b>
Accepting an average wait time of 30 days before knowing one's application result	104	17.4	64	<b>21.4</b>	40	<b>13.4</b>	<b>0.001</b>
Successfully entering (being admitted to) the MMT program at current time	315	52.8	137	<b>45.8</b>	178	<b>59.7</b>	<b>&lt;0.001</b>
Paying 450,000VND/month for MMT (assuming every MMT client has to pay)	178	29.7	113	<b>37.7</b>	65	<b>21.7</b>	<b>&lt;0.001</b>
Paying 900,000VND/month for MMT (assuming every MMT client has to pay)	337	56.2	189	<b>63.0</b>	148	<b>49.3</b>	<b>&lt;0.001</b>

*Note: 1 US dollar  $\approx$  20,000VND (by exchange rate in 2011). Participants were asked to rate the level of difficulty of overcoming each issue/requirement by selecting a number on a Likert scale from 1 to 7, where 1=no difficulty and 7= extremely difficult.*

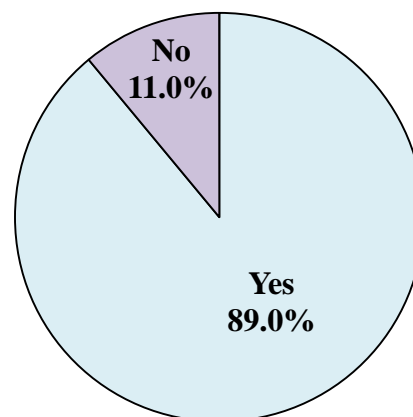


**Total, n=154**



*Figure 3.5: Percentage of MMT applicants reported having received financial support from family and/or relatives for MMT.*

**Total, n=446**



*Figure 3.6: Percentage of current IDUs reported having **potential** financial support from family and/or relatives for MMT.*

#### **3.4.4. Factors associated with MMT enrollment**

Based on the results from a conditional logistic regression model which included all variables listed in Table 3.10, we observed no significant association between MMT enrollment and demographic characteristics of participants (with the commonly used significance level  $\alpha=0.05$ ). However, the variable *family financial condition* has a tendency toward significance with  $p=0.09$ . If we accept a 10% probability of Type I error (i.e.,  $\alpha=0.1$ ), then reported family financial condition of “above average or wealthy” can be said to be associated with nearly 80% higher odds of MMT enrollment, compared to reported family financial condition of “average or below” (OR=1.77). Among the remaining three non-demographic factors variables in Table 10, *length of injecting opioid use* and *one-way travel time to MMT clinic* have  $p < 0.05$ . Specifically, every 5-year increment in length of injecting drug use was associated with approximately 35% higher odds of MMT enrollment (OR=1.36,  $p=0.01$ ). Also, every 10-minute increment in travel time from home to MMT clinic was associated with 20% lower odds of MMT registration (OR=0.80,  $p=0.01$ ). Because the odds ratios reported here are based on cross-sectional data, they

should be interpreted with caution. In our opinion, they should only be viewed as suggestive of possible associations between MMT enrollment and the factors under analysis (and not as evidence of causal relations).

*Table 3.10: Odds ratios as measures of association between MMT enrollment and some factors based on cross-section data of 595 current IDUs in Hai Phong, Vietnam.*

<b>Factors</b>	<b>OR (95%CI)</b>	<b>P-value</b>
Gender (female vs. male)	0.60 (0.17-2.18)	0.44
Age (every 5-year increment)	0.98 (0.83-1.16)	0.84
Marital status		
<i>Never married vs. married</i>	0.90 (0.49-1.68)	0.74
<i>Separated/divorced/widowed vs. married</i>	1.23 (0.70-2.15)	0.48
Education level (high school and above vs. middle school and below)	1.27 (0.82-1.98)	0.28
Currently going to school (yes vs. no)	1.01 (0.18-5.83)	0.99
Number of persons in family (every additional person)	1.06 (0.92-1.21)	0.41
Number of offspring (every additional child)	0.90 (0.63-1.29)	0.58
Family financial condition (wealthy or above average vs. average or below)	<b>1.77 (0.90-3.47)</b>	<b>0.09</b>
Length of injecting drug use (every 5-year increment)	<b>1.36 (1.09-1.71)</b>	<b>0.01</b>
Ever attended a compulsory rehabilitation center	1.20 (0.81-1.80)	0.37
One-way travel time from home to MMT clinic (every 10-minute increment)	<b>0.80 (0.67-0.94)</b>	<b>0.01</b>

*Notes: OR: odds ratio; 95%CI: 95% confidence interval*

### 3.5. DISCUSSION

There have been few published studies conducted in Vietnam which investigated current IDUs living in a community as a distinct population. Vu (2007) conducted a community-based study on 451 IDUs in Nam Dinh city with voluntary counseling and testing uptake as the primary

outcome of interest (participants were recruited via sources of N&S for drug injection, thus assumed to be current IDUs). Bergenstrom et al. (2008) reported results of a survey on 299 IDUs in Bac Ninh, another province in Northern Vietnam, with non-fatal drug overdose as the primary outcome (participants, those who reported having injected drugs in the past 6 months, were recruited via snowball sampling). To our knowledge, the present study was the first community-based survey relating opioid current IDUs and the MMT program in Vietnam. Therefore, as far as analogous assumptions can be made between Hai Phong and other provinces, the findings from this study may also be useful for MMT program development in other provinces in Vietnam.

As of November 2011, there have been cumulatively 1,695 MMT patients Hai Phong (Hai Phong Government, 2011). In the present study, the proportion of current IDUs who had registered for MMT was 25.7%, and 43% of them (i.e., only 11% of total) had been admitted. Based on reports from several sources (Hoang, 2009, Hai Phong Government, 2012), we assume that the number of *documented* DUs in Hai Phong in late 2011 were 5,000. Among them, approximately 2,000 were in closed-setting rehabilitation centers (Phan, 2011) and approximately 1,500 were in MMT program (from 1,695 MMT patients reported in November 2011, after excluding those who had left the program), and there remained approximately 1,500 documented DUs living in community. If we further assume that all these 1,500 documented (i.e., registered) DUs living in community were current IDUs in 2011 and that they also accounted for 54% of all current IDUs in Hai Phong in 2011, the same as the proportion of current IDUs who reported having current drug-users records in this study (54%, Figure 3.1), then the total number of current IDUs in Hai Phong in 2011 (let's call it "T") can be estimated from the following simple equation:  $1,500/T=54\%$ . Solving for T, we have the estimated total number of current IDUs in Hai Phong  $T \approx 2,800$  (not including MMT patients, drug users in 06 centers and non-injecting drug users in community).

Although the assumptions above may have flaws and the estimated numbers may be imprecise, they give us a rough idea about the size of the population of current IDUs in Hai Phong in 2011.

In this study, a majority of participants came to the study sites with the hope that they could register for MMT with, or via, the study staff. Their desired for MMT was illustrated by a very high proportion of participants reporting intention to apply for MMT within the next 3 months (97%). Also, the attitude profile of participants in this study was highly favorable, with over 80% of participants giving the highest rating (+3) toward the positive side of most attitude-related questions. These quantitative results and our related qualitative results (described in the preceding article) strongly support each other. It should be noted that we specified “within the next 3 months” in the intention question as a time frame for the registration action to be planned because there were probably participants who really want to register but they were not ready to do so immediately, e.g., due to transportation- or employment-related issues. (Besides, we viewed that a simple question such as “Do you want to register for MMT now?” would be inappropriate to ask in the situation that most participants showed strong desire for MMT and even frustration when their long hope was not met).

The preceding information can provide an optimistic estimate of the proportion of IDUs currently not on methadone who will register for MMT when the following conditions are met: service quality is as good as it is now or better, easy enrollment, affordable cost (if any) and reasonable daily travel time. However, it is unlikely that all who answered “yes” to the intent question (97%) will take action to enter the program when MMT becomes more widely accessible. Because there were still 1/3 of participants reported that their last drug cessation attempts were either completely compulsory or “compulsory but agreed to be forced”, many of these participants may be not ready for MMT. That is because voluntariness is especially

important in MMT, which requires long term treatment, daily dosing and (for most patients) daily travel. A good news is that relevant government agencies in Vietnam (with support from international organizations, NGOs and advocacy groups) have been working on a plan for closing a number of '06 centers and converting the remaining ones into open, voluntary, evidence-based addiction treatment centers, with MMT as the core element (Banys, 2012). Thus, compulsory drug rehabilitation (based primarily on detoxification) will probably become less prevalent in the near future, and those who return from '06 centers will add to the pool of potential clients for MMT program, especially since relapse rates among them have been reported to be over 90% (Martin et al., 2009, WHO 2009).

MMT programs (and other programs targeting IDUs) in Hai Phong may find the data on demographic and family characteristics, as well as drug use/cessation history and other health-related behaviors provided by this study useful for planning purposes, taking into account of possible differences between rural and urban settings. For example, outreach and information delivery efforts may need to be adapted to different groups based on age, level of education, family situation and job status, etc. (Table 3.1 and 3.2). Those who live in poor and/or small families may need special supports. Also, some programs may need to target families as well as the drug users because families are often the most important source of support for drug users in Vietnam, and because many drug users are no longer the trusted persons to make important decisions in their families (e.g., to buy a vehicle for transportation). As suggested by this study, 40% of current IDUs in Hai Phong have no job (no legal income), and more than half of those who had jobs reported that their jobs were unstable (many of them were “free workers”). MMT clinics are places where MMT clients must visit every day. Thus, MMT programs have a special

advantage in providing or referring them to employment support services, which will help drug users meet this important need and reintegrate better into society (Dennis et al., 1993).

This study showed that 42% of participants in rural districts and 28.2% of participants in urban districts had been injecting for less than 5 years (Table 3.3). If the association between length of injecting use and MMT enrollment is true (i.e., more experienced heroin injectors are more likely to register for MMT, Table 3.10), then the MMT program may need a customized strategy for reaching and attracting newer injectors. According to the data on perceived HIV status (Table 3.4), approximately 20% study participants were HIV positive and they would need ARV treatment and/or other HIV/AIDS- related services. However, in our judgment, the actual HIV prevalence among the participants could be higher, because many IDUs may not know or are unwilling to report their HIV status. Based on a study with similar sampling method and recruitment approach, Vu (2007) reported that the HIV prevalence among current IDUs in the adjacent city of Nam Dinh in 2006 was 23.7% (testing results).

More than 24% of subjects in this study reported having difficulty with the criterion “providing a written petition indicating voluntary participation” (Table 3.8). As informed by our previous in-depth interviews, the difficulty was not that participants could not write a petition nor had problem with voluntariness. Some participants reported difficulty with this requirement because they were concerned of providing a written statement of their drug-dependence status based on which local authority could later send them to O6 centers. Also, the “voluntary MMT petition form” provided by MMT clinics often had a space in lower part of the form for local authorities to verify residence status and/or drug-user status. Thus, the requirement of “providing a written petition indicating voluntary participation” was mixed with the requirement of “having verification from local authorities about one's residence and drug use status”, which was also

reported as difficult to fulfill by 23.5% of participants. The proportion of participants who reported having difficulty with any of the administrative eligibility criteria was 44.5% in rural settings, and nearly 70% in urban settings. The conspicuous issue here is a strict and complicated MMT enrollment procedure with several requirements involving local authorities. In this context, lack of support from local officials, especially in districts with high demand for MMT, became a significant barrier that deters drug users from registering for MMT. Thus, it was not surprising that 45.8% participants in rural districts and 59.7% participants in urban districts reported high levels of difficulty entering the program (Table 3.9). In our judgment, the proportions reporting difficulties could have been even higher if all participants had had the experience of applying for MMT.

As of November 2012, there had been 43 MMT clinics operating in 17 provinces/cities of Vietnam, providing MMT service to approximately 10,000 opioid drug users in the country (NCADP, 2012b). This number is still very far below the national goal of 80,000 drug users being on MMT by 2015. Challenges in scaling up the program, according to Tam and colleagues (2012), include lack of capacity for pre-service training and shortcomings in the current laws and regulations on drug and HIV/AIDS control and prevention. Some other probable reasons for the slow expansion of the program in the past few years, based on our experience from working with program officials and international collaborators in Vietnam, include limited financial resources (especially from state budget), political skepticism among a number of government officials about the use an “addictive drug” (methadone) to replace another (heroin), and lack of concrete data on the level of demand among the hidden target population of drug users. To meet the national goal mentioned above, Vietnam soon needs to build a harmonized drug and HIV/AIDS policy environment, mobilize and allocate more resources for faster scaling-up of its MMT program.

However, a caution is that if the program is expanded too quickly (beyond available resources and without proper preparation), the quality of MMT service may decline and this will result in reduced MMT utilization among drug users, as observed in the China MMT program (Lin et al., 2010ab, Lin, Wu and Detels, 2011, Xu et al., 2012). Thus, in our opinion, maintaining service quality is a crucial factor for the scale-up of MMT program in Vietnam to be successful.

It has been visioned that all MMT clinics in Hai Phong will become co-pay clinics within 3 years (Hoang, 2012). In this context, how much the co-pay amount should be and whether or not a co-pay will be required for every MMT client are two important questions which deserve discussion. Kien An MMT clinic, the first pilot co-pay clinic in Hai Phong (and in Vietnam) set a monthly co-pay of 240,000VND (approximately US\$12, by exchange rate in 2011) and the clinic quickly received more applications than its designed capacity within one month. The co-pay amount in Kien An clinic was rather low compared to the estimated cost of \$1.0 per day (per patient) as reported by Health Policy Initiative (2008) for the 2008-2009 pilot MMT program in Hai Phong and Ho Chi Minh City (this estimate included the cost of facility renovation, equipment and all operation costs, but did not include the costs of the initial construction and land property). In the context of free MMT in all other clinics (primarily funded by international support), a monthly co-pay of 240,000VND could be a good start point to explore acceptability of service in the target population, but we consider it too low to make the Vietnam National MMT program sustainable (without international support). Therefore, in our study we asked each participant to rate his/her level of difficulty paying a hypothetical co-pay of 450,000VND/month (\$0.75/day) with potential family financial support taken into account (and then 900,000VND/month, or \$1.5/day). The results (in Table 3.9) suggest that \$0.75/day tended to be acceptable to approximately 60% of participants in rural settings and 80% of participants in



urban settings. Thus, we estimate that a co-pay of between 420,000VND to 450,000VND will be reasonable in urban settings for a few coming years. For the rural settings, however, a co-pay of between 300,000VND-360,000VND would be more affordable to most potential MMT clients. For both urban and rural settings, government subsidies are still needed, at least during the first few years of transition from a free program to a fee-for-service one. In our opinion, for any setting and at any stage of development, there should be discount or fee-exempt policies for IDUs in poor families or with hardships (at publicly funded clinics). If private MMT clinics are to be allowed in future, higher fees may also be acceptable to IDUs with better income. As our results suggested, a daily cost of \$1.5/day for MMT tend to be affordable for approximately 50% of IDUs in urban settings.

The present study had some limitations. First, as in many other epidemiologic studies of hard-to-reach populations, the non-response rate in this study may be high and it may affect representativeness of the study sample. Second, reported information could be biased and imprecise to some extent, although this could be partially reduced by the use of an anonymous, computerized self-interviewing technique, and careful explanation to participants about key terms used and that they may choose not to answer any question. Third, we did not have enough resources to extend the recruitment period and recruited all eligible subjects in each study site (i.e., to really “take all” in the second stage of the two-stage probability cluster sampling design). Given the non-response issue among hidden populations, it was actually impossible for this study to “take all” subjects eligible in the four study sites. Therefore, we only recruited all eligible subjects who responded within a reasonable recruitment period (7-10 days).

This study also had several strengths. First, we used explicit definitions of the terms “drug” and “current injecting drug user”, which formed the basis for standardized participant

screening and recruitment procedures, and for more precise interpretation of study results. Second, we employed a recruitment approach which, by logics, could help obtain a more representative sample of a current IDUs in population, compared to other recruitment approaches based on selective locations where only some types of current IDUs can be found (e.g., injecting places, testing/counseling facilities, entertainment venues, internet, etc.). The logic here is that virtually all current IDUs must obtain injecting equipment (N&S) from some sources and if the researchers can identify all important sources of N&S and gain collaboration from relevant people in reaching current IDUs via those sources, then the chance of obtaining a representative sample of current IDU population should be better than other recruitment approaches relying on selective locations. (Before the present study, we conducted a qualitative study involving current IDUs and outreach workers and one of its purposes is to identify all important sources of N&S for IDUs in study sites and how to effectively approach them.) Third, this was an anonymous study and, in our belief, anonymity helped alleviate drug users' concern about possible disclosing of their identity and stigmatized behaviors, and therefore increases willingness to participate and reduce information bias. In addition, there have been a number studies (such as Des Jarlais et al., 1999, Perlis et al., 2004) showing that the ACASI interviewing technique (used in this study) helps minimize social desirability bias, which is a common issue in research on drug use and other HIV/AIDS related behaviors. The ACASI interviewing technique also helped us to standardize the interviewing procedure, and to minimize interviewer-related bias, missing data and data entry errors.

To conclude, we have the following recommendations for the MMT program in Hai Phong as well as the National MMT program of Vietnam: (a) Establish a special working group with the task of estimating the number of current opioid dependents in each district with

anticipated significant drug use problem for planning and prioritizing purposes; (b) Accelerate the expansion of the program (while maintaining service quality) to meet the demand for MMT in each geographic area with a significant estimated number of opioid dependents; (c) Abolish any requirement that makes MMT applicants and/or their families contact local authorities for verification or referral purpose, and further simplify the MMT enrollment procedure; and (d) Further enhance the role of families in providing drug users with needed supports for their MMT enrollment and treatment, given that the admission capacity of the program has been improved. *On the other hand*, to maximize the proven benefits of MMT to drug users, their families and the society as a whole, we recommend the following to policy makers in Vietnam: (i) Continue to provide political and legislative support to the MMT program, especially by adopting and promulgating the modern view that opioid dependence is a relapsing chronic medical condition and thus opioid dependents need long-term medical treatment and social supports; (ii) Mobilize and allocate adequate human and financial resources for an accelerated expansion of the MMT program to meet the national goal of providing MMT to 80,000 drug users by 2015; and (iii) Implement, as soon as feasible, the plan to close compulsory rehabilitation centers and/or convert them into open, voluntary, evidence-based addiction treatment facilities with integrated vocational and other services for drug users.

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## CHAPTER IV: RESEARCH ARTICLE 3

### **Factors Associated with Methadone Maintenance Enrollment among Opioid Injecting Users and in Hai Phong, Vietnam, 2011: A Case-Control Study**

#### **ABSTRACT**

**Background:** Vietnam started its National MMT Program with a successful pilot project in 2008-2009 in Hai Phong and Ho Chi Minh City. In early 2010, the Vietnam Government decided to expand the program with the goal of providing methadone treatment to 80,000 DUs in the country by 2015. This study was conducted in Hai Phong during an early stage of its MMT program characterized by high demand, limited access and existence of multiple administrative barriers.

**Objective:** To identify factors associated with MMT registration status among opioid injecting drug users in Hai Phong, 2011.

**Methods:** In this cumulative case-control study, cases were opioid IDUs who had registered for MMT in 4 districts of Hai Phong, and controls were current opioid IDUs who had never registered for MMT and who resided in the same districts. From 600 participants of a concurrently conducted cross-sectional survey, 446 eligible subjects were selected as controls. The survey recruited current IDU for anonymous ACASI interviews via pharmacies and needle-and-syringe programs, which helped distributing invitation flyers. In each district, MMT clinic staffs, local health and outreach workers were asked to assist in selecting and inviting the most recent 35-40 MMT applicants to participate as cases, from whom data were also collected by anonymous ACASI interview. Relations between MMT enrollment status and other variables were analyzed using conditional logistic regression in SAS 9.2.



**Results:** Positive predictors of MMT registration includes: family care [1.93 (1.25-2.98)], receiving regular family allowance [1.97 (1.29-3.02)], longer history of opioid injection [1.31 (1.04-1.65)], higher daily injection frequency [1.34 (1.08-1.66)], more drug cessation attempts in the past [1.11 (1.05-1.18)], ever tested for HIV [4.78 (2.52-9.04)], and marital status of being separated, divorced or widowed, compared to being married [1.99 (1.12-3.54)]. Negative predictors of MMT registration include longer travel time to MMT clinic [0.80 (0.66-0.98)] and female gender [0.26 (0.05-1.25)].

**Conclusion:** Study results can be used by MMT program managers in Vietnam to identify and target subpopulations of IDUs who are less likely to register for MMT in provinces where MMT programs are in a context similar to that of Hai Phong in 2011.

#### 4.1. INTRODUCTION

As of June 2012, it was reported that 204,019 people were living with HIV in Vietnam, 58,569 people were living with AIDS and there had been 61,856 cumulative deaths among HIV infected people (NCADP, 2012a). National HIV/AIDS sentinel surveillance data have indicated that injecting drug use has remained the most important risk factor for HIV infection in Vietnam since 1993 (MOH, 2012). In recent years (2008-2011), over 40% of new HIV infections in Vietnam were directly attributed to injecting drug use (the rest were attributed to unsafe sex, mother-to-child transmission, and a large proportion to unknown or multiple risk behaviors).

The number of documented DUs in Vietnam in June 2012 was reported at 171,392 (NCADP, 2012a), while the number of undocumented DUs is unknown. A survey conducted in 2001 revealed that heroin was the main form of drug used by more than 90% of drug addicts in

large cities, such as Ho Chi Minh City, Hanoi and Hai Phong (MOLISA, 2001). Nguyen and Scannapieco (2008) described a shift in method of drug use (from smoking to injecting) during the 1995-2001 period, and that injection had become the predominant method of drug use in Vietnam by 2001. More recent published data on types and methods of drug use in Vietnam are scarce. It was estimated that heroin injectors account for about 80 percent of all drug users in the country (Murphy, 2010; WHO, 2009).

The methadone maintenance treatment (MMT) program in Vietnam started with a pilot project in Hai Phong and Ho Chi Minh City in 2008 and 2009. Because this pilot MMT project was considered highly successful, in early 2010 the Vietnam Government decided to expand the program and set the national goal of covering 30 provinces/cities with high prevalence of injection drug use and HIV infection (out of 63 provinces/cities in the country), and providing MMT to 80,000 DUs in the country by 2015 (NCHCE, 2010).

The recent establishment of a national methadone program in China (started in 2004) and its rapid development may provide valuable experience to the methadone program in Vietnam, a neighboring country with comparable socio-economic conditions. Several studies have indicated that, aside from multiple benefits and a geographically wide coverage of the MMT program, service quality, under utilization of MMT clinics, clients' negative perceptions and providers' poor perspectives were major issues of the China National MMT program (Lin et al., 2010ab, Lin, Wu and Detels, 2011, Wu et al., 2012, Xu et al., 2012). These issues only emerged after the program was rapidly scaled-up with the goal to cover a large majority of the DUs population of the nation in a relatively short time (Sullivan & Wu, 2007, Lin C. et al., 2010ab, Wu et al., 2012).

In addition to basic information such as demographic and drug-use related characteristics of the target population, the Vietnam MMT program also needs careful assessment of factors

associated with MMT enrollment among the target population, so that facilitators can be enhanced, and barriers can be minimized. In Vietnam, as mentioned above, opioid IDUs are those who constitute the majority of the drug user population and who drive the HIV/AIDS epidemic. For these reasons, we conducted a case-control study in Hai Phong, Vietnam with the objective *to identify factors associated with MMT registration status among opioid injecting drug users in Hai Phong, 2011*. It should be noted that this study was conducted in Hai Phong during an early stage of its MMT program characterized by high demand, limited access to MMT and existence of multiple administrative barriers (as described in the two preceding articles); thus the opportunity to participate in the program was not similar for (or open to) all IDUs in the province.

#### **4.2. STUDY SITES**

The study was conducted in Hai Phong city, a provincial-level administrative unit which comprises 7 urban districts and 8 rural districts in northern Vietnam. Specifically, study sites were 2 urban districts (Le Chan and Hong Bang) and 2 rural districts (An Lao and Thuy Nguyen) which had been randomly selected from the 4 urban districts and 3 rural districts where MMT clinics were operating in March 2011. All MMT clinics in Vietnam were providing MMT for free at the time (but a new co-pay MMT clinic was opened in June 2011 in Kien An, another urban district of Hai Phong).

It was reported that there were 5,336 documented drug users and about 2,430 “suspected” drug users in Hai Phong as of July 2012 (Hai Phong Government, 2012). It has also been estimated that 97% of all DUs in Hai Phong are heroin users, and about 80% of them are IDUs (Nhu, 2010). There are currently three government-run closed setting rehabilitation centers in Hai Phong (also known as “06” centers). The number of drug users in these three centers in 2010 was reported at 1775 persons (MOLISA, 2012). Relapse rates among “trainees” of ‘06 centers within one year

after being discharged have been reported to be as high as >90%. So far, drug users in '06 centers have no access to MMT or other harm reduction services (Martin et al., 2009).

### **4.3. METHODS**

In this study, the term “drug” was used as the shortened form of “an opioid (such as heroin, morphine, opium, etc.) or any mixture of substances in which an opioid is a component”. Because the medical criteria of opioid dependence, as those given by the American Psychiatric Association (2000) in *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*, are not easy to use for participant screening in the field, we devised the following operational definition: a *current injecting drug user* is a person who (a) had used drug in at least 25 days of the past 30 days AND (b) had suffered from drug craving *at least once* in lifetime, AND (c) injected drug in more than half of the times during the past 30 days. “To register for MMT” in this study means to submit a paper document (which can be a standard application form or a written petition) or to have one’s name listed for the purpose of MMT. If a study participant went to a place or met a person only to ask for information or talk about MMT registration, he/she was not considered “having registered” for MMT (even if his/her desire for MMT was clearly indicated).

#### **4.3.1. Study design and participants**

This was a cumulative case-control study with 150 cases and 456 controls. A *case* was defined as an IDU who has registered for methadone treatment in one of the four study districts, regardless of subsequent results (admission or non-admission). Such a registration action is hereafter referred to as an “enrollment attempt” and a case may have made one or more enrollment attempts. In this study, we assume that all cases were current IDUs at the time of their first MMT

enrollment attempt. A *control* was defined as a current IDU who had never registered for MMT and who resided in one of the four study districts during the recruitment period.

For both cases and controls we used the following *exclusion criteria*: (a) Being less than 18 years old; (b) Failing to provide informed consent to participate in the study; (c) Showing clear signs of opioid withdrawal, and/or impaired cognitive ability and/or poor behavior control which, by judgment of a medical doctor in the research staff, would interfere with normal communication or the interview process; (d) Being severely ill and/or in urgent need of medical care (as determined by a medical doctor in the research staff); and (e) Being an attendant of a closed-setting drug rehabilitation center.

#### **4.3.2. Predictor and outcome variables**

The outcome of interest in this study is MMT registration status (ever versus never registered for MMT), which is sometimes also referred to as “MMT enrollment status”. For cases, “exposures” are past experience (e.g., years of drug use, number of past drug cessation attempts, etc.), as well as personal characteristics and living conditions that existed before the first MMT enrollment attempt. For controls, because they have never registered for MMT, we chose the time of interview as the reference time point for questions regarding past experience, pre-existing conditions and characteristics.

#### **4.3.3. Sample size and selection of cases and controls**

In this study we aimed at recruiting 150 cases and approximately 450 controls. We asked MMT clinic staffs, local health and outreach workers in each district to assist in selecting and inviting the most recent 35-40 MMT applicants to participate as cases, in an anonymous manner. Most recent applicants were chosen to increase time-comparability between cases and controls (because controls were current IDUs recruited during the same study period). All cases in this

study made their enrollment attempts within 6 months before the study started. Forty cases were recruited via the MMT clinic in each of the two districts An Lao (rural) and Hong Bang (urban), where new applicants were more abundant because the MMT clinics in these two districts had come into operation only 5 months before the recruitment started and the numbers of patients receiving MMT at An Lao and Hong Bang clinics were only 90 and 76, respectively (well under half of their capacity design of 250 patients each). Thirty-five cases were recruited in each of the two districts Thuy Nguyen (rural) and Le Chan (urban) where fewer IDUs made enrollment attempts during the prior 6 months, because the numbers of patients receiving MMT at Thuy Nguyen and Le Chan clinics were 348 and 476 (well beyond their designed capacity of 250 patients each). These two MMT clinics had been opened since 2008 and they only admitted new patients on special circumstances.

Among 600 current IDUs who participated in the concurrently-conducted anonymous cross-sectional survey (in the same 4 study districts), 446 had never registered for MMT and all of them were used as controls. To recruit current IDUs for the cross-sectional survey, we asked pharmacies and N&S programs in the study districts to assist in distributing interview invitation flyers to IDUs. Because the targeted sample size was 300 current IDUs for each sector (composed of two study districts), we aimed at recruiting 150 current IDUs from each district. We started the recruitment in An Lao, a rural district with the anticipated smallest drug user population. It turned out that only 125 eligible participants could be recruited in An Lao (after 10 days) and thus we later recruited 175 participants from the remaining rural district (Thuy Nguyen). For the two urban districts, 150 participants were recruited from each district with no difficulty. From the 600 current IDUs, we exclude those who had registered for MMT; the number of remaining participants

(controls) was 446, divided by the four districts as follows: 81 in An Lao, 106 in Hong Bang, 117 in Le Chan and 142 in Thuy Nguyen.

On average, the recruitment period in each study district lasted 7 days. Each participant received 120,000 Vietnamese dong (US\$6) as reimbursement for their participation.

#### **4.3.4. Data collection and quality control**

For both cases and controls, data were collected using the audio computer-assisted self interview (ACASI) technique. First, we used the QDS 2.6.1 software (NOVA Research Company, Bethesda, MD) to develop an ACASI computer program for controls based on the Vietnamese version of a standardized survey questionnaire (Appendix 2). The program has a number of features for the purpose of quality control, such as logic checks, range checks, pop-up reminders/notifications, etc. A participant would not be able to proceed to the next question if no answer option was chosen (the options of “Don’t know” and “Refuse” were available for every question). For cases, the program was adapted by adjusting a number of questions to accommodate the fact that all cases had made at least one MMT enrollment attempt, and to ensure that exposure variables that may change over time were asked in reference to a period before the first MMT enrollment attempt of each case. The ACASI program for each group was piloted and revised 3 times before actual data collection began.

Before each interview, the investigator first emphasized that no personal identifying information were to be collected from any participant. Subsequently, the investigator asked the potential participant some screening questions to re-check eligibility and then explained the study purpose, the interview procedure, potential risks, benefits and voluntariness of participation. Then each potential participant had the option to give oral informed consent or

refuse to participate. If oral consent was given, a research staff instructed the participant on how to use the computer mouse and headphone in order to complete the interview properly. After these instructions, each participant completed a practice survey which included various types of questions and answers, and detailed explanations of terms used. Participants were given additional time for practice if needed. Then each participant was guided to a computer station in a quiet room to start the actual interview process. A maximum of six participants could take the ACASI survey at one time, and they were located at a distance from each other in the interview room so that one participant could not read the computer screen of another participant. At least 2 research staff were always be available to provide assistance to participants when needed, but they otherwise stayed at a distance from all participants undergoing the interview.

To increase comparability between cases and controls in terms of data collection conditions (including length of interview time), most questions in the questionnaire for controls (current IDUs) were also used for cases. However, a number of those questions were excluded from this case-control data analysis because the information obtained by those questions were considered likely to be affected by MMT enrollment status of cases and could be easily mixed between the time before after their MMT enrollment attempts (e.g., those related to attitude, beliefs and knowledge of MMT or HIV prevention, perceived level of difficulty adhering to treatment requirements, etc.). It should be noted that 104 out of 150 cases had been admitted into the MMT program, and 98 of them had been receiving treatment by the time the study began.

#### **4.3.5. Data analysis**

Data analyses were done using SAS 9.2 (SAS Institute, Cary, NC). The answer choices of “Don’t know” and “Refuse” were coded as missing (except for reported HIV status). The level of missing data for each single variable was generally under 2%. In multivariate logistic regression

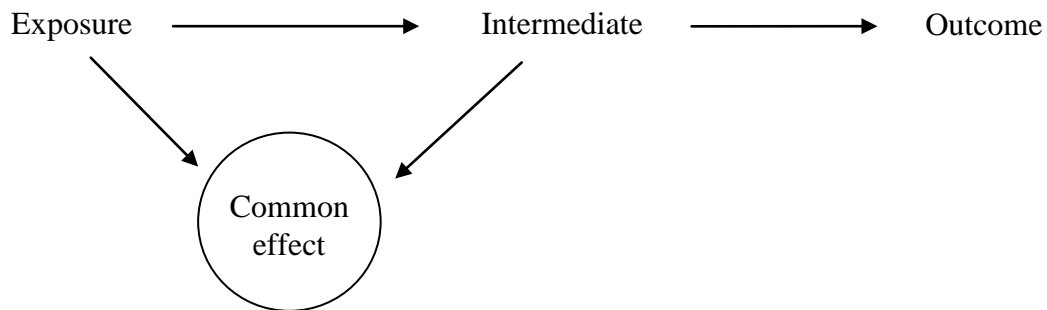


analysis (see below), records with missing data for at least one of the included variables were excluded, because the number of such records was small (14 records of the total 596 records).

Descriptive data for cases and controls were presented as percentages (for categorical variables) or medians with 10<sup>th</sup> percentiles and 90<sup>th</sup> percentiles (for numeric variables) and the differences in corresponding percentage/median values for the two groups. Crude odds ratios were not presented because the stratified sampling of participants (by district of residence) required controlling for the stratifying variable in analysis. Crude odds ratios were likely to be biased because the overall distribution of exposure variables among cases and controls tended to be altered by pre-determined target numbers of cases and controls in each study site. This bias will be removed by controlling for the stratifying variable (Greenland & Rothman, 2008).

Relations between MMT enrollment status (ever registered or never registered) and other variables were explored using multiple conditional logistic regression, with district of residence included as the only stratifying variable (district of residence). Odds ratios derived from the employed conditional logistic regression models (described below) were presented as measures of associations between predictor variables and MMT enrollment, together with their 95% Wald confidence intervals and P-values. After excluding variables that were considered inappropriate for this case-control data analysis (as explained in the preceding section), 21 remaining variables were included as predictor variables in an initial conditional logistic regression model (Table 4.3). These initially included variables were re-scaled and/or re-categorized as appropriate for meaningful interpretation of results and to avoid sparse data in certain categories. Based on results of the initial model, 9 variables with p-values of 0.1 or lower were included in a second model (Table 4.4) to check for consistency of results.

Because basic demographic information of potential MMT clients is usually either already available or can be collected easily by local health workers or outreach workers, true associations between demographic factors and MMT registration status (if any) would be very helpful for MMT program managers to identify groups of potential clients who are less likely to register for MMT (probably due to some barriers) and target them in future program development. In a regression model such as the first one above, the measure of association between MMT enrollment and a specific variable was computed while conditioning on all other variables in the model. A possible problem here, in the terminology of epidemiologic causal diagrams (Glymour and Greenland, 2008), is that conditioning on an intermediate (factor) in the causal path between an exposure of interest and the study outcome will probably weaken the association between the exposure and the outcome. As another possibility, conditioning on a common effect of the exposure and the intermediate may also distort the observed association between the exposure and the outcome (as illustrated in Figure 4.1).



*Figure 4.1: Illustration of possible changes in observed association between an exposure and an outcome when conditioning on a common effect of the exposure and an intermediate on the causal path from the exposure to the outcome.*

For the reasons above, there could be some demographic factors for which measures of associations with MMT enrollment were altered (or disguised) by the inclusion of many other factors in the initial regression model, and they could then be excluded from the second model if  $p > 0.1$ . To reduce the chance of omitting possible associations between demographic factors and

MMT enrollment, we fit a third regression model on demographic variables only (among the 21 initial predictor variables). Results from this third regression model are presented in Table 4.5.

## **4.4. RESULTS**

### **4.4.1. Description of participants**

#### ***4.4.1.a. Demographic and familial characteristics of cases and controls:***

As shown in Table 4.1, a great majority of participants were male (97.8% for cases and 96.4% for controls). The median age of cases was close to that of controls (34 years vs. 33 years, respectively). There were no large difference in the distribution of completed education levels between cases and controls. A very small proportion of them currently went to school (1.3% for cases and 1.4% for controls). The proportion of cases who were never married (36.0%) was lower than as that of controls (43.5%), whereas the proportion of cases who were separated, divorced, or widowed was higher than as that of controls (28.7% vs. 17.7%). There was no difference between cases and controls in terms of median family size (4 persons per family) and median number of offspring (1 child). The percentage of cases who reported having a job (58.0%) was slightly lower than that of controls (62.6%). In terms of decision-making role in family, 36% of cases reported they had either decisive or important role, while 29.1% of controls reported so.

Approximately 60% of cases perceived that all other members (except young children, if any) of their family cared about them “deeply”, while the corresponding proportion among controls was lower, approximately 46%. The proportions of cases who reported their family financial condition as “very poor” and “below average” (compared to other families in the community) was 13.3% and 15.3%, respectively. Among controls, the corresponding proportions were 19.6% and 25.0%. More than half of cases (59.1%) reported receiving regular allowances from their families or relatives, while only 36.6% of controls reported so.

Table 4.1: Demographic and familial characteristics of 150 cases and 446 controls.

Characteristics	Cases (n=150)		Controls (n=446)		Difference in % or unit of median
	#	%	#	%	
Gender (Male)	148	97.8	430	96.4	2.3
Age					
18-24 yrs	7	4.7	58	13.0	-8.3
25-34 yrs	76	50.7	190	42.6	8.1
35-44 yrs	53	35.3	143	32.1	3.2
≥45 yrs	14	9.3	55	12.3	-3.0
Median (10 <sup>th</sup> percentile - 90 <sup>th</sup> percentile)	34 (27-43)		33 (24-46)		1 year
Level of education completed					
Less than primary school	8	5.3	35	7.9	-2.6
Primary school	33	22.0	126	28.3	-6.3
Middle school	70	46.7	180	40.4	6.3
High school or above	39	26.0	105	23.4	2.6
Currently going to school	2	1.3	6	1.4	-0.1
Current marital status					
Never married	54	36.0	194	43.5	-7.5
Married (living with spouse)	53	35.3	173	38.8	-3.5
Separated/Divorced/Widowed	43	28.7	79	17.7	11.0
Number of persons in family:					
Median (10 <sup>th</sup> percentile - 90 <sup>th</sup> percentile)	4 (2-6)		4 (2-6)		0 person
Number of offspring:					
Median (10 <sup>th</sup> percentile - 90 <sup>th</sup> percentile)	1 (0-2)		1 (1-2)		0 child
Having a job (something to do in past 30 days to earn money that is not prohibited by laws)	87	58.0	279	62.6	-4.6
Decision-making role in family					
Decisive role	18	12.0	59	13.3	-1.3
Important role	36	24.0	70	15.8	8.2
Limited role	61	40.7	203	45.8	-5.1
Other	35	23.3	111	25.1	-1.8
Care by other family members (except small children)					
All members care deeply	91	60.7	206	46.3	14.4
All members care, but not much	42	28.0	128	28.8	-0.8
Some members care, some do not	15	10.0	82	18.4	-8.4
Other situations	2	1.3	29	6.5	-5.2
Family financial condition					
Very poor	20	13.3	87	19.6	-6.3
Below average	23	15.3	111	25.0	-9.7
Average	91	60.7	220	49.5	11.2
Above average or wealthy	16	10.7	26	5.9	4.8
Receiving regular allowance from family/relatives	88	59.1	163	36.6	22.5

Note: For cases, all indicators above were measured in reference to the time before their first MMT enrollment attempt. Effective sample size for some variables can be lower than the targeted sample size due to non-applicability or missing data (usually <2%, if any).

#### ***4.4.1.b. Drug use history and other characteristics of cases and controls:***

As shown in Table 4.2, 100% participants reported heroin as the type of opioid used most often during past 30 days. The proportion of controls with less than 5 years of opioid dependence (28.3%) was almost doubled of that among cases (14.8%). The median length of opioid dependence among cases was 10 years, compared to 8 years among controls. The median length of opioid injecting use for cases was also higher than that of controls (8 years vs. 6 years). Approximately 22% of cases were new injectors (those with less than 5 years of injecting use), while nearly 40% controls were new injectors. In terms of injecting frequency, 80.5% of cases reported injecting drug  $\geq 3$  times per day (before applying for MMT), while 62.3% of controls reported injecting drug  $\geq 3$  times per day (before the interview). A majority of cases (70.4%) reported having had more than 3 drug cessation attempts, while only half of controls (49.2%) reported so. Half of the cases had ever attended compulsory rehabilitation center; compared to approximately 1/3 of controls. The proportion of participants who reported having ever been tested for HIV among cases was (91.3%), much higher than that among controls (63.7%). In terms of perceived HIV status, 30.7% of cases and 16.1% of controls reported to be HIV positive. However, 16.8% of controls reported their HIV status as unknown, while no case did so.

For a potential MMT client, the time required to travel to and from an MMT clinic (he/she is considering to attend) can be a logistic barrier to his/her MMT enrollment. Therefore, we asked each study participant to report the average one-way travel time it would take him/her to get to the MMT clinic using his/her current usual means of transportation. The results indicated that 32% of controls had to travel more than 20 minutes (one-way) to come to an MMT clinic, compared to 18% for cases (Table 4.2).

Table 4.2: Drug use history and other characteristics of 150 cases and 446 controls.

Characteristics	Cases (n=150)		Controls (n=446)		Difference in % or unit of median
	#	%	#	%	
Heroin was used most often in past 30 days	150	100	446	100	0
Years since the start of daily opioid use					
< 5 years	22	14.8	126	28.3	-13.5
5-9 years	47	31.5	141	31.6	-0.1
10-14 years	57	38.3	128	28.7	9.6
≥ 15 years	23	15.4	51	11.4	4.0
Median (10 <sup>th</sup> percentile - 90 <sup>th</sup> percentile)	10 (3-15)		8 (2-15)		2 years
Years since the start of daily opioid injecting use					
< 5 years	33	22.1	176	39.5	-17.4
5-9 years	54	36.2	145	32.5	3.7
10-14 years	45	30.2	95	21.3	8.9
≥ 15 years	17	11.5	30	6.7	4.8
Median (10 <sup>th</sup> percentile - 90 <sup>th</sup> percentile)	8 (2-15)		6 (1-13)		2 years
Average number of drug injections per day					
1 time	9	6.0	32	7.2	-1.2
2 times	20	13.5	135	30.5	-17.0
3 times	86	57.7	222	50.2	7.5
≥ 4 times	34	22.8	53	12.1	10.7
Median (10 <sup>th</sup> percentile - 90 <sup>th</sup> percentile)	3 (2-4)		3 (2-4)		0 time
Number of past drug cessation attempts					
0 time	0	0.0	48	10.8	-10.8
1-3 times	42	28.0	178	40.0	-12.0
4-6 times	45	30.0	114	25.6	4.4
> 6 times	63	42.0	105	23.6	18.4
Ever attended a compulsory rehabilitation center	75	50.0	163	36.6	13.4
Ever been in jail/prison	27	18.0	57	12.8	15.2
Ever had drug-user record with local authorities	89	59.3	264	59.7	-0.4
Ever being tested for HIV	137	91.3	284	63.7	27.6
Perceived HIV status					
Negative	102	68.0	283	63.5	4.5
Positive	46	30.7	72	16.1	14.6
Unknown	0	0.0	75	16.8	-16.8
Refused to answer	2	1.3	16	3.6	-2.3
One-way travel time to MMT clinic (unit=minute)					
≤ 10 minutes	43	28.7	126	28.3	0.4
11-20 minutes	80	53.3	177	39.7	13.6
21-30 minutes	20	13.3	100	22.4	-9.1
> 30 minutes	7	4.7	43	9.6	-4.9
Median (10 <sup>th</sup> percentile - 90 <sup>th</sup> percentile)	15 (8-30)		20 (8-30)		5 minutes

Notes: For cases, all indicators above were measured in reference to the time before their first MMT enrollment attempt. Effective sample size for some variables can be lower than the targeted sample size due to non-applicability or missing data (usually <2%, if any).

#### 4.4.2. Factors associated with MMT enrollment

##### *4.4.2.a. Associations between MMT enrollment and some factors, based on conditional logistic regression with a broad variety of predictor variables:*

As explained in the Methods section, 21 variables were included as predictor variables in an initial conditional logistic regression model with district of residence as the stratification variable. It should be noted here that *length of opioid dependence* was not included in this model because it was highly correlated with *length of opioid injecting use* (Pearson correlation coefficient  $r=0.85$ ), and we chose to include the latter one because it was deemed more relevant to this study of IDUs (in fact the choice of either of the two for analyses did not affect the results to an important extent). For the initial model, all fit statistics were satisfactory. Odds ratios derived from this model for all 21 predictor variables are presented in Table 4.3. Based on the commonly used significance level of  $\alpha=0.05$ , there were statistically significant associations between MMT enrollment and 8 variables (Table 4.3).

As the next step, all variables with p-values  $\leq 0.1$  obtained from the initial model (including *gender* with  $p=0.07$ ) were included in the second model to check for consistency of results. For this model, all fit statistics were also satisfactory. Odds ratios for 9 predictor variables derived from this second model were presented in Table 4.4. The odds ratio point estimates for these 9 variables were very close to those derived from the first model. The only variable with a change of more than 10% in its odds ratio point estimate was *gender*, with OR= 0.23 ( $p=0.07$ ) in the first model, compared to OR=0.26 ( $p=0.09$ ) in the second model. The other 8 variables with p-values  $<0.05$  in the first model remained so in the second model (no important changes in p-values). The high level of consistency between the results of the second regression model and those of the initial model indicates that the excluded variables (those with  $p>0.1$ ) do not interfere with

the association measures for the 9 predictor variables with  $p < 0.1$  in the initial model. The results of the second model were chosen for interpretation below because fewer predictor variables in a regression model often mean a lower chance of overfitting and higher reliability of results.

*Table 4.3: Associations between MMT enrollment and some factors, based on conditional logistic regression with 21 predictor variables selected using prior knowledge.*

<b>Factors</b>	<b>OR (95%CI)</b>	<b>P-value</b>
Gender (female vs. male)	0.23 (0.04-1.16)	0.07
Age (every 5-year increment)	0.85 (0.68-1.05)	0.13
Marital status		
<i>Never married vs. married</i>	1.12 (0.54-2.33)	0.75
<i>Separated/divorced/widowed vs. married</i>	<b>2.06 (1.12-3.81)</b>	<b>0.02</b>
Education level (complete high school vs. below high school )	0.95 (0.57-1.58)	0.84
Currently going to school (yes vs. no)	4.49 (0.70-29.03)	0.11
Having a job (yes vs. no)	0.93 (0.59-1.47)	0.76
Number of persons in family (every additional person)	0.98 (0.83-1.14)	0.75
Number of offspring (every additional child)	1.19 (0.81-1.75)	0.38
Decision-making in family (important and decisive roles vs. limited role and others)	1.11 (0.68-1.80)	0.69
Care by other family members (all members care deeply vs. other situations)	<b>1.95 (1.24-3.05)</b>	<b>0.004</b>
Family financial condition (wealthy or above average vs. average or below)	1.42 (0.65-3.11)	0.38
Receiving regular allowance from family/relatives (yes vs. no)	<b>1.87 (1.20-2.92)</b>	<b>0.006</b>
Length of opioid injecting use (every 5-year increment)	<b>1.45 (1.09-1.93)</b>	<b>0.01</b>
Number of injection per day (every additional injection/day)	<b>1.31 (1.06-1.64)</b>	<b>0.01</b>
Number of past drug cessation attempts (every additional attempt)	<b>1.10 (1.04-1.17)</b>	<b>0.001</b>
Ever attended a compulsory rehabilitation center (yes vs. no)	1.20 (0.76-1.91)	0.44
Ever been in jail/prison (yes vs. no)	1.38 (0.75-2.57)	0.30
Ever having drug-user record with local authorities (yes vs. no)	0.75 (0.47-1.19)	0.22
Ever being tested for HIV (yes vs. no)	<b>4.61 (2.40-8.86)</b>	<b>&lt;0.001</b>
Perceived HIV status (positive/unknown/refused vs. negative)	0.79 (0.48-1.26)	0.30
One-way travel time to MMT clinic (every 10-minute increment)	<b>0.81 (0.66-0.98)</b>	<b>0.03</b>

*Note: OR: odds ratio; CI: confidence interval*



According to the results from the second model, female participants had much lower odds of registering for MMT than male participants [OR=0.26 (0.05-1.25)]. Although the observed association between gender and MMT enrollment was not statistically significant ( $p=0.09$ ), but it could have been so if the number of female participants had been larger (females accounted for only approximately 3% of participants in the present study) or if we accept a higher level of Type I error (e.g.,  $\alpha=0.1$ ).

A nearly two times higher odds of registering for MMT were associated with participants who reported their marital status as separated, divorced or widowed, compared to those who reported living with their legal spouses [OR=1.99 (1.12-3.54)]; who reported that all other family members cared for them deeply [OR=1.93 (1.25-2.98)]; and who reported receiving regular allowance from family or relatives [OR=1.97 (1.29-3.02)]. Every 5-year increment in length of opioid injecting use was associated with approximately 30% higher odds of MMT enrollment [OR=1.31 (1.04-1.65)]. Analogously, every additional injection per day (on average) was associated with approximately 35% higher odds of MMT enrollment [OR=1.34 (1.08-1.66)]; and every additional drug cessation attempt in the past was associated with approximately 10% higher odds of MMT enrollment [OR=1.11 (1.05-1.18)].

Participants who had ever been tested for HIV had almost five times higher odds of registering for MMT [OR=4.78 (2.52-9.04)]. Every additional 10-minute increment in travel time from home to MMT clinic was associated with 20% lower odds of MMT enrollment [OR=0.80 (0.66-0.98)].

Table 4.4: Odds ratios as measures of association between MMT enrollment and some factors among opioid IDUs in Hai Phong, Vietnam.

Factors	OR (95%CI)	P-value
Gender (female vs. male)	0.26 (0.05-1.25)	0.09
Marital status		
<i>Never married vs. married</i>	1.06 (0.65-1.75)	0.80
<i>Separated/divorced/widowed vs. married</i>	<b>1.99 (1.12-3.54)</b>	<b>0.02</b>
Care by other family members (all members care deeply vs. other situations)	<b>1.93 (1.25-2.98)</b>	<b>0.003</b>
Receiving regular allowance from family/relatives (yes vs. no)	<b>1.97 (1.29-3.02)</b>	<b>0.002</b>
Length of injecting opioid use (every 5-year increment)	<b>1.31 (1.04-1.65)</b>	<b>0.02</b>
Number of injection per day (every additional injection/day)	<b>1.34 (1.08-1.66)</b>	<b>0.008</b>
Number of past drug cessation attempts (every additional attempt)	<b>1.11 (1.05-1.18)</b>	<b>&lt;0.001</b>
Ever being tested for HIV (yes vs. no)	<b>4.78 (2.52-9.04)</b>	<b>&lt;0.001</b>
One-way travel time from home to MMT clinic (every 10-minute increment)	<b>0.80 (0.66-0.98)</b>	<b>0.03</b>

Note: OR: odds ratio; CI: confidence interval

**4.4.2.b. Possible associations between MMT enrollment and demographic characteristics, based on conditional logistic regression with only demographic predictor variables:**

Odds ratios derived from the third regression model with only demographic factors included as predictor variables were presented in Table 4.5. Compared to the results given by the first model (Table 4.3), the only notable changes was observed for the variable *family financial condition*, for which the odds ratio point estimate increased from 1.42 (p=0.38) in the initial model to 1.82 (p=0.09) in the model with only 9 demographic predictor variables. It should be noted that if we use the significance level of  $\alpha=0.1$ , then this observed measure of association

will be “statistically significant”, and the odd ratio value of 1.82 means that approximately 80% higher odds of MMT enrollment was associated with reported family financial condition of *above average* or *wealthy* (compared to *average* or *below*).

*Table 4.5: Odds ratios as measures of association between MMT enrollment and demographic characteristics among opioid IDUs in Hai Phong, Vietnam.*

<b>Factors</b>	<b>OR (95%CI)</b>	<b>P-value</b>
Gender (female vs. male)	0.29 (0.06-1.32)	0.11
Age (every 5-year increment)	0.99 (0.86-1.15)	0.93
Marital status		
<i>Never married vs. married</i>	1.15 (0.61-2.18)	0.67
<i>Separated/divorced/widowed vs. married</i>	<b>1.90 (1.12-3.21)</b>	<b>0.02</b>
Education level (high school and above vs. middle school and below)	1.12 (0.74-1.80)	0.52
Currently going to school (yes vs. no)	2.06 (0.38-11.15)	0.52
Having a job (something to do to earn money that is not prohibited by law)	0.78 (0.53-1.16)	0.22
Number of persons in family (every additional person)	1.02 (0.89-1.17)	0.73
Number of offspring (every additional child)	1.17 (0.84-1.64)	0.34
Family financial condition (wealthy or above average vs. average or below)	1.82 (0.92-3.63)	0.09

*Note: OR: odds ratio; CI: confidence interval*

## 4.5. DISCUSSION

There have been few community-based studies on factors associated with methadone enrollment in the English literature. Schutz et al. (1994), Shah et al., (2000) and Kerr et al. (2005) reported some correlates of methadone enrollment in community settings, but all of these studies were conducted in the United States or Canada. We consider them of little relevance to the present study in Vietnam, especially due remarkable differences between Vietnam and North America in terms of availability of MMT service, drug and healthcare policies, and socio-

cultural environments. To our knowledge, this study has been the first community-based study to explore possible predictors of MMT enrollment among IDUs in Vietnam.

In addition to the qualitative study results and cross-sectional data reported previously, results from this case-control study further illustrate the role of family in MMT enrollment of IDUs in Hai Phong. In our qualitative study, many participants indicated that family support was a major facilitator of MMT enrollment. Logistic regression analysis of cross-sectional data also revealed that family economic condition tended to be associated with MMT enrollment [OR=1.77 (0.90-3.47)], very similar to that observed in the present study [OR=1.82 (0.92-3.63)] (based on the regression model with only demographic predictor variables). Although these association measures did not reach statistical significance, they do suggest that MMT enrollment decision tended to be related to family financial condition among IDUs in Hai Phong. This possibility is strongly supported by the associations between MMT registration status of participants and family care [OR=1.93 (1.25-2.98)], and regular allowance from family or relatives [OR=1.97 (1.29-3.02)].

Related to the role of family, there are some interesting observations that we would like to discuss in more details. In this study, the measure of association between family financial condition and MMT enrollment changed significantly between the first model with 21 variables (OR=1.42,  $p=0.38$ ) and the model that included demographic variables only, i.e., without family care and regular family allowance (OR=1.82,  $p=0.09$ ). However, family financial condition was correlated with neither family care nor regular family allowance ( $r<0.05$ ). On the other hand, family financial condition (as a predictor variable), was only “close to statistical significance” in both cross-sectional and case-control studies. Based on these observations, it can be hypothesized that family financial condition was related to MMT registration status via some

other unmeasured intermediate factors (such as the level of getting-along between the drug user and his/her family); and that family care and regular family allowance, on the other hand, are more directly related to MMT enrollment support, and thus their measures of association with MMT enrollment status were not significantly affected by the inclusion or exclusion of other variables in the different regression models used.

This study has revealed that longer history of opioid injecting use, higher daily drug injection frequency, and more drug cessation attempts in the past were moderate predictors of MMT registration. For length of opioid injecting use, the measure of association was OR=1.31 (1.04-1.65) and this is supported by the results of cross-sectional data regression analysis, from which the OR=1.36 (1.09-1.71). A possible explanation for the addiction-related predictors of MMT enrollment mentioned above can be that longer and/or more severe addiction makes drug users “tired” of the consequences of their addiction; thus they try to quit more often and their MMT enrollment attempts were also an indication of higher desire for drug cessation, compared to other drug users with shorter and/or less severe addiction. It should also be noted that MMT registration status was not significantly associated with the history of (ever or never) attending compulsory rehabilitation centers in both of the quantitative studies that we conducted.

As described in the Result section, participants who reported their marital status as separated, divorced or widowed (hereafter referred to as “separated”, for short) were more likely to register for MMT compared to those who reported living with their legal spouses [OR=1.99 (1.12-3.54)]. In an attempt to look for an explanation, we recoded the marital status of 254 participants who were never married as “missing”, so that there remained only two marital status categories: “married” vs “separated” (there were 10 widowed controls and no widowed case). Next, we switched the role of MMT enrollment and marital status in the conditional logistic

model with 21 predictors variables, i.e., marital status (now a binary variable) is the outcome of interest while MMT enrollment status becomes a regular predictor variable. Results of this “switched” model revealed that “separated” status was negatively associated with length of opioid injecting use (OR=0.63), family size (0.66), family care (0.41), having a job (OR=0.42); and positively associated with daily injecting frequency (OR=1.43) and MMT enrollment (OR=2.31). These means that “separated” participants tended to live in smaller families, receive less family care and have no job; while they tended to inject drug more often and were more likely to enroll in MMT. Most of these associations seem understandable, except that for MMT enrollment; we still cannot find a good explanation for the positive association between MMT enrollment and being “separated”. It should be note that all other variables were included in the model means that they were controlled for, and the significant association between MMT enrollment and being “separated” cannot be explained away by the factors included in this analysis. For these reasons, we suspect that another factor that was unmeasured in this study was responsible for the association in question, e.g., it can be a personality characteristic that is related to MMT enrollment and the tendency to be “separated” (and possibly other factors). On the other hand, in the preceding in-depth interview study, we noted that MMT applicants/patients often reported their parents as the persons who they relied on for MMT enrollment and other drug cessation efforts (more often than spouses). Thus, we came to a (somewhat odd) hypothesis that drug users who were not living with their spouses were more likely to live with their parents, and the parents were more caring of drug users than were spouses with regard to addiction rehabilitation support. However, we found no association between MMT enrollment and living with a parent (or both parents) using these case-control data, either controlling for marital status and other variables or not.

In this study, ever being tested for HIV is the strongest predictor of MMT enrollment [OR=4.78 (2.52-9.04)]. We are indeed somewhat skeptical of this strong association because HIV testing was performed as part of the routine procedure for admitting MMT applicants (104 out of 150 cases in this study had been admitted for MMT). It was possible that a number of admitted MMT applicants failed to answer the related ACASI interview question properly, although we did emphasize the timing aspect in the question: “**Before registering for MMT,** had you ever been tested for HIV?” On the other hand, we can also hypothesize (in support of a true association) that drug users who had had one or more HIV tests were more health conscious and/or more willing to try health services for drug users (or more “courageous” to come into contact with healthcare providers); and therefore they were more likely to register for MMT than other drug users.

Travel time from home to the MMT clinic of the district of residence was a factor negatively associated with MMT enrollment. Every 10-minutes increment in travel time was associated with 20% lower odds of registering for MMT [OR=0.80 (0.66-0.98)]. This result is almost identical to that reported earlier in the article on cross-sectional data regarding the same factor [OR=0.80 (0.67-0.94)]. As a more concrete example, OR=0.8 here means that the odds of registering for MMT among those whose homes were located 30 minutes from the clinic was 40% lower than the odds of registering for MMT among those whose homes were only 10 minutes from the clinic. (Note: the difference in travel time is 20 minutes, or 2 times of 10-minute increment,  $2 \times 20\% = 40\%$  lower odds). For a potential MMT client, the time required to travel to and from an MMT clinic tended to be a logistic barrier to his/her MMT enrollment. The time required to travel to an MMT clinic can be viewed as a measure of relative distance (depending on the means of transportation available) that a rational potential client will consider

when he/she thinks of whether to register for MMT or not. It can also be viewed as the travel burden that MMT clients have to overcome to adhere to the daily-visit requirement of the current MMT program. The lower odds of MMT enrollment among those whose homes are located far from the MMT clinic may also reflect a lower level of access to MMT information, and to other related resources/supports, which tend to be more readily available to those who live near the “center of service”. The implication here is that MMT program managers should facilitate access to MMT for drug users whose homes located far from MMT clinics; for example, by ensuring they are adequately informed and, as discussed in the previous qualitative paper, by establishing take-away-dose policies.

Based on our data, female IDUs were found to be less likely to make MMT enrollment attempts [OR=0.26 (0.05-1.25)]. The value of OR=0.26 and the range of its 95% confidence interval suggest that the association can be strong, although this result is not found statistically significant. Females account for a very small proportion of the IDUs population in Hai Phong (estimated at 3%, based on results from the concurrent community-based cross-sectional survey of 600 current IDUs). In our experience with the MMT program in Hai Phong, there is no programmatic barrier against women applicants (in favor of men) and, according to MMT clinic staffs, women applicants even received higher priority once they had applied. The negative association of female gender and MMT enrollment in this study may reflect either a selection bias (female MMT applicants were less likely to participate in the study than male applicants while the same phenomenon did not occur among controls) or a true socio-cultural barrier to MMT enrollment among female IDUs. In contrast to our results, two large cohort studies in the United States (Shah et al., 2000) and Canada (Kerr et al., 2005) showed that female IDUs were more likely to enroll in MMT, with ORs ranging from 2.2 to 2.5. However, as mentioned earlier,



we viewed these results as irrelevant to the Vietnam's context because of differences in availability of service, drug and healthcare policies, social and cultural environments between Vietnam and North America. Also, the populations of IDUs in these two studies were very heterogeneous because they included injecting users of various types of illicit drugs (heroin, cocaine, etc.) and with various injecting frequencies (even injected only once during the past month in Kerr's study or "had injected illicit drugs since 1977" in Shah's study).

This study had some limitations. First, unavailability of a good sampling frame for random selection of cases and controls (from the hidden source population of IDUs) and possible differential participation tendencies between cases and controls could lead to selection bias. Second, reported information could be biased and imprecise to some extent, although we made considerable effort to improve data reliability by using an anonymous, computerized self-interviewing technique, and careful explanation to participants about key terms used and that they may choose not to answer any question. Third, as a case-control study, the data analyses here were limited to factors that were, in our belief, relatively accurate for both cases and controls. We consider data on other factors (such as those related to perception, attitude and knowledge of MMT and some HIV-related behaviors) are not appropriate for this case-control analysis, as explained in the Method section.

The present study also had several strengths. First, this case-control study was conducted together with a qualitative study (in-depth interviews) and a cross-sectional survey in an integrated research project. These three component studies have provided supportive data and help interpret results of each other. Second, this was an anonymous study and (in our belief) anonymity helped alleviate the concern of drug users about possible disclosing of their identity and stigmatized behaviors, and therefore increases willingness to participate and reduce information bias. Third, it

has been shown that the ACASI interviewing technique (used in this study) helps minimize social desirability bias, which is a common issue in research on drug use and other HIV/AIDS related behaviors (Des Jarlais et al., 1999, Perlis et al., 2004). In addition, the ACASI interviewing technique also helped us to standardize the interviewing procedure, and to minimize interviewer-related bias, missing data and data entry errors. Last, in this study we used specific definitions of the terms “drug” (opioids), “current injecting drug user” and “register for MMT”, which helped delineate the study population and provide the basis for standardized participant screening and recruitment procedures, and for more precise interpretation of study results.

In conclusion, the present study indicates that positive predictors of MMT registration among opioid IDUs in Hai Phong (Vietnam) includes: family care, receiving regular family allowance, longer history of opioid injecting use, higher daily opioid injection frequency, more drug cessation attempts in the past, ever been tested for HIV, and marital status of separated, divorced or widowed. On the other hand, negative predictors of MMT registration include longer travel time from home to the MMT clinic and female gender (the latter factor is statistically significant only if  $\alpha=0.1$ ). These results can be useful for MMT program managers in Vietnam to identify and target subpopulations of IDUs who are less likely to register for MMT in provinces where MMT programs are in a context similar to that of Hai Phong in 2011 (which is especially characterized by high demand, limited access to MMT and existence of multiple administrative and logistic barriers). New studies may need to be conducted for geographic areas where MMT programs are in a significantly different context or development stage.

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## SUMMARY OF RESULTS

### Qualitative study:

- Facilitators: Support from local authorities (in the sense of encouraging drug users to enroll and providing required verifications and referrals in a prompt manner) was an important factor that helped drug users become more confident and willing to enroll in MMT. Each MMT clinic often had a small group of MMT patients who helped in delivering MMT information and encouraging other drug users to enroll (when the clinic had not been full). These “MMT peer educators” were very influential to current drug users because they were real and persuasive examples of the benefits of MMT. Families of drug users were the primary and indispensable source of support for drug users to enroll in MMT. Most participants reported strong support from families in addiction treatment efforts (but a number of families were uninformed about the effectiveness of MMT and how to help the drug users enroll). Most drug users held highly favorable attitude toward MMT. A majority of them were willing to travel far distance and pay a reasonable amount of fee for MMT.
- Barriers: There was only one MMT clinic in each study district and its admission capacity was often very limited compared to the demand for MMT in the district. Lack of support from local authorities was often reported in districts where the demand for MMT was anticipated to be much higher than their service capacity. In this context, complicated application requirements involving local authorities and their practice of sending drug users to compulsory rehabilitation centers made many drug users discouraged about MMT enrollment. A number of participants reported that the current requirement of daily clinic visit (i.e., lack of a take-away dose policy) and dosing time during normal working hours

were major problems to them. Some drug users lacked financial resources and/or means of transportation for MMT enrollment while their families could not help, often because the families were poor and uninformed of the effectiveness of MMT. Many drug users also lacked the confidence to contact local officials due to perceived stigma against them.

**Cross-sectional survey:**

- Rural and urban participants (current opioid IDUs) were significantly different in many aspects such as demographic and familial characteristics, drug use and cessation history, sexual activeness, perceived risk of HIV infection and ability to meet various MMT participation requirements.
- Of all participants:
  - ✓ Over 90% indicated a highly favorable attitude toward MMT and perceived that other people would strongly agree if they participated in the MMT program.
  - ✓ Nearly 40% were afraid of being sent to compulsory rehabilitation centers if they registered for MMT.
  - ✓ Almost 60% reported having difficulty satisfying one or more administrative (non-clinical) eligibility requirements.
  - ✓ Approximately 75% had never registered for MMT although 97% of these non-applicants indicated that they wanted to participate in the MMT program.
- More than half of 154 MMT applicants had not been admitted.
- In urban settings, nearly 80% of participants tended to accept a co-pay of 450,000VND (US\$22.5) per month for MMT, compared to approximately 60% in rural settings.

### **Case-control study:**

- Positive predictors of MMT registration: A nearly two times higher odds of registering for MMT is associated with participants who reported that all other family members cared for them deeply [OR=1.93 (1.25-2.98)], who reported receiving regular allowance from family or relatives [OR=1.97 (1.29-3.02)] and who reported their marital status as separated, divorced or widowed, compared to those who reported living with their legal spouses [OR=1.99 (1.12-3.54)]. Every 5-year increment in length of opioid injecting use was associated with approximately 30% higher odds of MMT enrollment [OR=1.31 (1.04-1.65)]. Analogously, every additional injection per day (on average) was associated with an approximately 35% higher odds of MMT enrollment [OR=1.34 (1.08-1.66)], and every additional drug cessation attempt in the past was associated with an approximately 10% higher odds of MMT enrollment [OR=1.11 (1.05-1.18)]. Participants who had ever been tested for HIV had almost five times higher odds of registering for MMT [OR=4.78 (2.52-9.04)].
- Negative predictors of MMT registration: Every additional 10-minute increment in travel time from home to the MMT clinic was associated with 20% lower odds of MMT enrollment [OR=0.80 (0.66-0.98)]. Female participants had much lower odds of registering for MMT than male participants [OR=0.26 (0.05-1.25)], although this observed association between gender and MMT enrollment was not statistically significant ( $p=0.09$ ).



## SUMMARY OF RECOMMENDATIONS

### **For MMT program managers at provincial and national levels in Vietnam:**

- a) Accelerate the expansion of MMT service (while maintaining service quality) to meet the demand for MMT in each geographic area with a significant estimated number of opioid dependents; For planning purpose, consider using the results from the cross-sectional survey with possible differences between rural and urban settings taken into account (for example, the results on acceptability of different co-pay levels among IDUs);
- b) Examine and address the potential barriers to MMT enrollment identified in this research project. The potential barriers here include all difficulties and negative factors revealed by the qualitative interviews (for example, lack of a take-away dose policy and inflexible dosing hours), by the survey results (for example, difficulties related to administrative eligibility criteria and other logistic requirements) and by the case-control results which identify subgroups of the IDU population who are less likely to register for MMT (for example, female IDUs, newer opioid injectors, IDUs who have never had an HIV test, IDUs whose homes are far from MMT clinics, etc.);
- c) Abolish any requirement that makes MMT applicants and/or their families contact local authorities for verification or referral purpose, and further simplify the MMT enrollment procedure; and
- d) Further enhance the role of families in providing drug users with needed supports for MMT participation; and consider using more MMT patients who have shown good adherence profiles for the purpose of informing and educating current drug users (and their families, if applicable) about MMT and how to participate in the program, given that its admission capacity has been improved.

➤ **For policy makers in Vietnam (in general):**

- i. Continue to provide political, legislative and other supports to the MMT program, especially by adopting and promulgating the modern view that opioid dependence is a relapsing chronic medical condition (and thus opioid dependents need long-term medical treatment and social supports, instead of punishment); and by building a harmonized policy environment that facilitates the harm-reduction approach to drug and HIV/AIDS issues (of which opioid substitution treatment is one important component);
- ii. Mobilize and allocate adequate human and financial resources for an accelerated expansion of MMT service to meet the national goal of providing MMT to 80,000 drug users by 2015; and
- iii. Stop the current practice of sending drug users to compulsory rehabilitation centers and implement, as soon as feasible, the plan to close compulsory rehabilitation centers and/or convert them into open, voluntary, evidence-based addiction treatment facilities with integrated vocational and other services for drug users.

## INTERVIEW GUIDE - QUALITATIVE STUDY

### A. DEMOGRAPHICS AND FAMILY RELATIONS

I would like to start the interview with some questions about you and your family.

A1: Gender. *If necessary, ask “what is your gender as indicated on your national ID?”*

A2: How old are you? (What year were you born according to the western calendar?)

A3: What was the highest level of education you completed? [What grade/how many years?]

A4: Are either of your parent an ethnic minority? [not Kinh]

A5a: Have you been married?

<If YES> A5b: How long have you been married?

A5c: What is your current marital status?

A6a: With whom are you currently living? [*relationship, not name*]

A6b: <If any person is indicated in A6a> Do you interact with each other on a daily basis, such as talking to each other or having meals together?

<Questions A6a-b are for describing the interactive family and for excluding extended-family members who live in the same house/building but don't have frequent interactions with each other.>

A7a: Do you have any children?

<If YES> A7b: How many?

A7c: What are their ages?

A8a: Do any of your family members know that you are/were a drug user?

A8b: How is your relationship with members of your family?

A8c: Do you think they are supportive of you in general?

A8d: Have they supported you since you become a drug user?

A9a: Do you currently have a job? (*any activity on a daily or weekly basis that earns income*)

<If YES > A9b: What kind of job do you have?

A9c: How long have you had that job?

A9d: Can you describe your daily or weekly work schedule?

A9e: On average, how much do you earn per day or per week at that job?

A9f: Before starting this job, did you do anything else for a significant period of time?

A10: *<If “NO”, skip to A9a>* Please tell me about other jobs you had in the past, if any, and for how long.

A11: For the family members you live with, how would you rate your finances (i.e., good, poor)?

A12a: Do you get money from your family or relatives for money very often?

*<If “YES” to A12a>* A12b: Do you have a regular allowance from them (daily, weekly, monthly)?

*<If “YES” to A12b>* A12c: On average, how much do you get each time?

A13: During the last six months, what has been your main source of money for buying drugs?

A14: Are you a permanent resident, registered dweller, or an unregistered person in this district?

*<If not a permanent resident>* A14b: Where is your home town?

A15c: How often do you go back to visit?

## **B. DRUG USE HISTORY AND ATTEMPTS TO QUIT**

*Reminder: In this interview, when we say “drug” we mean an opiate drug, such as heroin, or morphine, or opium, or mixtures containing them. Drugs such as methamphetamine, cocaine, and marijuana are not opiate drugs, and we will refer to them as “other types of drugs” when necessary.*

B1a: When did you use a drug for the first time?

B1b: What was the setting at that time, such as who you were with, what drug you used, and why you chose to use it.

B2a: When did you use start using drugs on a daily basis? *(from first use to the time that you started using drug on a daily basis)*

B2b: How were your financial and family situations at the time you started using drugs on a daily basis?

B3: When was the first time you injected? What were your reasons to begin injecting?

B4a: About how many times during the past week did you use drugs?

*<If the subject is not an MMT participant and indicates that he/she used drugs  $\leq 5$  days in the past week, ask the following question to re-check his/her eligibility.>*

B4b: How many days during the past month did you use drugs?

*<Terminate the interview if the subject has been recruited by a peer educator but now reports using drugs fewer than 25 days out of the last 30.>*

B5: When was your most recent injection? When will you inject again?

*<Based on answers to B4a-b and B5, determine whether to use “do” or “did” in the subsequent questions as appropriate for the subject. Generally, use “do” if the subject is a current IDU and reports continued drug use; use “did” if the subject reports that he has stopped using drugs. Also, be more vigilant about signs of drug craving if the subject is a current IDU and the last drug shot is more than 4 hours ago.>*

B6: On average, how many drug shots do/did you have per day?

B7: What type of drug do/did you use **most often**? (Is/Was it heroin, morphine, opium or other types?)

B8: What are **other types** of recreational drugs, including non-opiate drugs, that you have used and how often (for each type)?

B9: Where do/did you usually buy drug from? When?

B10: Where do/did you usually obtain injecting equipment from? When?

B11a: Where do/did you usually inject drug?

B11b: What are other places where you may inject drug?

B11c: What are the places that you know *other* drug users often inject drug?

B12a: How often do/did you inject drug in presence of another drug user?

B12b: What are/were the reasons of being with another user when you inject drug? How often is/was sharing a common drug “dose” the main reason for being with another user when you inject drug?

B13a: Can you describe in details your own drug using process? (How do/did you make the drug goes into your body?) At times when you share(d) a common drug “dose” with another user, how do/did you do so?

B13b: When you inject drug with another user (including times that each of you have a separate drug dose), how often do/did you share injecting equipment?

B13c: When you share/shared injecting equipment with another user, do/did you usually give or receive used injecting equipment?

B13d: Are/Were there situations in which you share drug or injecting equipment with two or more other users (that is, in a group of three or larger)? Can you describe the sharing practice then?

B14a: Have you ever attempted to stop using drug? How many time and why?

B14b: Where did the cessation attempts take place?

B14c: What methods have you used in those attempts, and why?

B14d: What do you think about the effectiveness of the drug cessation methods that you have tried? (If the subject indicates MMT as a method used, then ask about the current daily dose of methadone that he/she receives and whether he/she thinks that dose is sufficient).

B14e: What have been the main reasons for you to return to drug use after the previous cessation attempt(s)?

## **[C – OTHER HEALTH-RELATED BEHAVIORS]**

Now we would like to ask you some questions about some other health-related behaviors, such as your sexual activities and condom use. It should be emphasized again that we do not collect your personal identifying information and we will not judge you in any manner. Truthful information is all that we need to improve health and social services for injecting drug users. So please feel free to share with us about what you do and think. As always, you may choose not to answer some questions if you don't want to.

C1: How often did you have sex in the last 3 months?

C2: How often did you have sex when you began using drug?

C3a: Do you currently have any regular sex partner (such as wife, live-in partner or girlfriend/boyfriend)?

<If yes> C3b: What type?

C3c: What do you think about her/his (their) risk of HIV infection? Why?

C3d: How often do you use condoms with her/him (them)?

C4a: Do you sometimes have sex with irregular partners? *<If the subject does not seem to understand the question, explain that “irregular partners” are people whom you have sex with one time and do not expect to meet again, such as “street girls” or those in one-night affairs.>*

*<If “yes”>* C4b: What type?

C4c: What do you think about their risk of HIV infection? Why?

C4d: How often do you use condoms with them?

C5a: What do you think about *your own* risk of HIV infection?

C5b: Do you think your risk of HIV infection is higher, the same or lower than that of an average person in society? *<If the subject says “higher”, then ask “how much higher?”>*

C6a: Have you ever had an HIV test?

*<If “yes” to C6a>* C6b: How many times have you been tested for HIV?

C6c: When was the last time?

C7a: Do you know your HIV status? *<If “no” to C6a but “yes” to C7a, then ask “How do you know?”>*

*<The subject may disclose his/her HIV status in the answers to the preceding questions, but if not, then ask:>*

C7b: Are you willing to tell us about your HIV status, i.e., positive or negative result of the most recent test?

*<If the subject indicates that his/her HIV status is “positive”>*

C7c: How likely do you think you can transmit HIV to your drug-injecting peers?

C7d: How likely do you think you can transmit HIV to your regular sex partner(s)?

C7e: How likely do you think you can transmit HIV to your irregular sex partner(s)?

C8a: Have you ever donate or “sell” blood?

*<If “yes”>* C8b: How often and why?

C8c: Have you had any blood donation (or selling) since the time you discover your HIV status?

C9a: What do you think about your current general health status?

C9b: How many doctor or hospital/clinic visits did you have in the last three months?

C9c: Do you want to get your health checked more often and why?

**[D – BEHAVIORAL BELIEFS AND ATTITUDE TOWARD MMT]**

D1: Have you heard about methadone maintenance treatment (MMT) for drug users in (the district)? When and how?

D2: In simple terms, what is your understanding about the working mechanism of methadone in the treatment of drug users? (Why methadone is used for treatment of drug users?)

*Hereafter, I will refer to methadone maintenance treatment as “methadone”, for short.*

D3: Have you ever submitted an application for methadone?

*<Verify eligibility of the subject: The subject must have applied for MMT if he is recruited via an MMT clinic and the subject must not have applied for MMT if he is recruited via a peer educator. Otherwise, terminate the interview.>*

*In the next several questions, we would like to ask about your opinion (your belief) about methadone, please answer according to your own opinion or belief and not that of anyone else:*

D4a: What do you believe are the main benefits of methadone?

D4b: To what extent do you think methadone can help drug users stop using drug? Do you hear from IDUs enrolled in MMT about whether the daily doses of methadone they currently receive are sufficient? How much is this dosing information of your concern?

D4c: What economic effect do you think methadone can have?

D4d: What health benefit do you think methadone can have?

D4e: What social benefit do you think methadone can have?

D5a: Do you think methadone would change (has changed) your relationships to your family? How?

D5b: Do you think methadone would change (has changed) your relationships to your friends (including peer-drug users)? How?

D5c: Do you think methadone would change (has changed) your relationships to other people who know you, such as neighbors and/or co-workers?

D5d: Do you think methadone would change (has changed) your relationships to local authorities? (such as the local community leaders and police officers)

D6a: What do you believe are the undesired aspects of methadone?



D6b: What negative effects do you believe methadone can have on your health? To what extent they are of your concern?

D7a: In general, do you believe methadone is good or bad for drug users? How good (or bad) is it?

D7b: Do you think the overall benefit of methadone is worth for all the undesired aspects or inconveniences that it may cause? To what extent?

**[E – NORMATIVE BELIEFS AND PERCEIVED SOCIAL PRESSURE REGARDING MMT]**

*For the subsequent questions, assume that other people (such as your family members, friends and neighbors) have some knowledge about MMT.*

E1: Are there any individuals or groups who you think would like you to be treated with methadone? Who are they?

E2: Are there any individuals or groups who you think would NOT like you to be treated with methadone? Who are they?

E3: Who else come to mind when you think about applying for methadone?

*<If any of the following groups: “family”, “relatives”, “friends” and “peer drug users”, is NOT indicated as either approving or disapproving methadone treatment for the subject, then ask E4, E5, E6 as appropriate.>*

E4: Do you think that your immediate family members (such as parents, spouse, brothers and sisters, offsprings) would like you to be treated with methadone?

E5: Do you think that people who are of some importance to you (such as close friends, relatives and/or others) would like you to be treated with methadone?

E6: Do you think that peer drug users who are in most frequent contacts with you would like you to be treated with methadone?

**[F - CONTROL BELIEFS AND PERCEIVED BEHAVIORAL CONTROL OVER MMT ENROLLMENT]**

F1a: What factors or circumstances do you think would make it easier to become a participant of the methadone program? *<The factors/circumstances can be about the subject himself/herself or about IDUs in general.>*

F1b: What factors or circumstances do you think would make it more difficult to become a participant of the methadone program? (What do you consider obstacles for an IDU to become a methadone patient?)

F2a: *<For participants who has never been on methadone>* How likely would your family provide financial support if you were going to be in methadone and need money to do so? To what extent?

F2b *<For MMT patients>* Has your family actually provided any financial support for your methadone treatment so far? To what extent?

*<In answers to E1a-f, if any individual or group other than “family” is indicated as **approving** methadone treatment, then ask E2c or E2d.>*

F2c: *<For participants who has never submitted an application for MMT>* How likely would (the person or the group) provide financial support if you were going to be in methadone and need money to do so? To what extent?

F2d *<For participants who did submit an application for MMT>* Has (the person or the group) actually provide any financial support for your methadone treatment so far? To what extent?

*<For F4a-e below, say “and your family” in the questions only if the subject previously indicated (in E2) that at least some of his/her family members or relatives are willing to provide financial support for his/her methadone treatment.>*

F3a: Given that each current methadone participant has to pay approximately ..... VND per month to the clinic, would this be (is this) an issue to you (and your family)?

F3b: Suppose that, from next month, the monthly clinic fee will be double the current amount, would that be an issue to you (and your family)?

F4a: By your usual means of transportation, how long would/does it take to travel to and from the methadone clinic (both ways)?

F4b: Now assuming the methadone clinic is going to be moved to another location, what is the *maximum amount of time* that you would consider acceptable for daily (two ways) travel to and from the methadone clinic? *<If the subject is not an MMT patient and seems uninterested, explain that he/she can answer the question in the view of a peer drug user who is considering MMT.>*

F5: In considering methadone treatment, to what extent the requirement of visiting the methadone clinic once every day is an issue for you?

F6a: Do you know what the eligibility requirements for methadone in the district are?

*<If the subject does not have a correct and complete knowledge of the current eligibility requirements for methadone treatment in the district, then read aloud a list of them (and briefly explain to the subject, if necessary).>*

F6b: What do you think about the above-mentioned eligibility requirements?

F6c: Is there any eligibility requirement that you did/do not meet automatically and had (would have) to make a specific action to fulfill it? How easy or difficult was it (would it be)?

F7a: What do you know about the paperwork requirements for an application for methadone?

*<If the subject does not have a correct and complete knowledge of the current paperwork requirements for methadone application in the district, then read aloud a list of them (and briefly explain to the subject, if necessary).>*

F7b: What do you think about the above-mentioned paperwork requirements?

F7c: How easy or difficult was it (would it be) for you to fulfill the paperwork requirements?

F8: Given that methadone applicants in the district have to wait ..... to ..... days between their application submission and the time that an admission decision is made, do you think such a wait time acceptable?

F9: Do you have any other comments about the methadone application procedure and requirements as you know them?

**[G – INTENTION TO ENROLL (FOR THOSE WHO HAVE NOT SUBMITTED ANY MMT APPLICATION)]**

*Following are some final questions and we hope your answers to them will best reflect what you really think or want to do.*

G1a: Given your current circumstance and the methadone program as you know it, do you plan to apply for methadone?

*<If “yes”, then ask G1b; if “no”, then ask G1c.>*

G1b: What are the factors that you consider crucial for your intention to apply for methadone? (This means without those factors you would not want to apply). *<If the subject mentions fewer than 3 factors/reasons, then probe “anything else?”>*

G1c: What are the most important factors that hinder your intention to apply for methadone? *<If the subject mentions fewer than 3 factors/reasons, then probe “anything else?”>*

G2: What do you think the methadone program managers and the local government can do to make the program more accessible to drug users? *<If the subject does not seem to fully understand the word “accessible” then use the word “attractive” as a substitution.>*

**[H –FACTORS THAT INFLUENCED DECISION TO ENROLL (FOR THOSE WHO HAVE SUBMITTED AN MMT APPLICATION)]**

We learnt that you have submitted an application for methadone.

H1: How did you prepare and submit your application?

H2a: What are the factors that you considered crucial for your decision to apply for methadone? (This means without those factors you would not have applied) *<If the subject mentions fewer than 3 factors/reasons, then probe “anything else?”>*

H3a: Have you been accepted for methadone treatment?

*<If yes>* H3b: What advantages do you think you have over other applicants?

H3c: Have you actually started MMT? *<If yes>* For how long?

H3d: What is your goal of using methadone?

*<If no>* H3e: Do you know the reasons why you have not been accepted?

H3f: If you were admitted, what would be your goal of using methadone treatment?

H3g: Are you going to apply again when the situation is improved, for example, (improvements related to the reasons mentioned in H3e)?

H4: What do you think the methadone program managers and the local government can do to make the program more accessible to drug users? *<If the subject does not seem to fully understand the word “accessible” then use the word “attractive” as a substitution.>*

*Do you have any other comments or thoughts that you want to share with us?*

*This is the end of the interview. We really appreciate your time and participation.*

**QUESTIONNAIRE FOR THE CROSS-SECTIONAL SURVEY AND THE  
CASE-CONTROL STUDY ON INJECTING DRUG USERS IN RELATION TO  
THE METHADONE PROGRAM IN HAI PHONG, VIETNAM 2011**

(Note: Questions for cases in the case-control study were adapted  
from applicable questions in this questionnaire.)

*Notes:*

- *This questionnaire will be computerized for research studies using the Audio- Computer-Assisted Self-Interviewing technique. The computerized version for participants of the cross-sectional survey (current injecting drug users) and “controls” of the the case-control study (injecting drug users who have **never** applied for methadone treatment) will use the questions in this questionnaire verbatim. The computerized version for “cases” in the case-control study (injecting drug users who have applied for methadone treatment) will adapt the questions in the questionnaire by adding “when you applied for methadone for the first time” to those question that ask about things that may change over time.*
- *This questionnaire will be computerized with integrated “range checks” and “logic checks”. If the interviewee selects an answer which is inconsistent with a previous answer, or enters an inappropriate numeric value for a “numeric question”, then an error message will be popped-up asking the interviewee to review the responses to the questions involved. Some questions are may seem redundant because they are added to check for consistency of responses across questions. For the same purpose, a given question may have some answer options that are logically incompatible with an answer choice the interviewee has made for a previous question.*
- *For each question, in addition to a list of meaningful answer options, the following options and navigating buttons will also be provided on the computer screen: “Don’t know/Don’t remember”, “Refuse”, “Proceed to next question” and “Go back to previous question”, “Repeat this question”.*
- *Programming notes are put within angle brackets and the interviewee will not see them on computer screen. For example: <If “No” → A11> means “If the interviewee answers “No” to the current question, then jump to question A11”.*

*Welcome and thank you for your participation! This interview will take about 60 to 90 minutes to complete.*

## **A – DEMOGRAPHICS AND FAMILY RELATIONS**

A01: What is your gender?

- a) Female                      b) Male*

A02: When were you born?    *Year* \_\_\_ \_\_\_ \_\_\_ \_\_\_ *<Year must be 1993 or before>*

A03: What level of education have you completed?

- a) Never completed primary school      b) Primary school      c) Middle school*  
*d) High school      e) Some college/Vocational school      f) University or above*

A04: Are you currently a student?

- a) Yes                      b) No*

A05: What is your current marital status?

- a) Never married      b) Married and living with legal spouse*  
*c) Married but not living with legal spouse (separated)*  
*d) Divorced                      e) Widowed*

A06: Do you currently live in the same house/apartment with the following persons? Check all that apply:

- a) Father or mother*  
*b) Wife (or husband) officially married to you*  
*c) Live-in sex partner (without marriage)*  
*d) Offspring (including any adopted child)*  
*e) Brother, sister or relative*  
*g) Friend*  
*h) Others*

*<Logic check: A05 and A06>*

In this interview, unless it is noted otherwise, “family” refers to those who live in the same house/apartment and have interactions with each other almost every day.

A07: How many persons are there in your family (*including yourself*)?

If you live alone, please enter “1”                    *— — persons*

A08: Do you have any children (including adopted child, if any)?    *a) Yes                    b) No*

*<If “No” or “Refuse” → A11>*

A09: How many children do you currently have?                    *\_\_\_\_\_ children*

A10: How old is the youngest of them?                    *\_\_\_\_\_ years old*

A11: Does anybody in your family know that you are a drug user?

*a) Yes                    b) No*

A12: Which of the following would best describe your family economic situation around the time that you started using drug?

*a) Very poor    b) Below average    c) Average    d) Above average    e) Wealthy*

A13: Currently, which of the following best describes your decision-making role in your family?

- a) I have no decision-making role in the family*
- b) I have some limited decision-making role in the family*
- c) I have an important decision-making role in the family*
- d) I have the final say in most of important decisions in the family*
- e) Other*

A14: Currently, do you think other members in your family (not to mention children) care about you?

- a) They care about me very little or don’t care about me at all*
- b) Some of them care about me but some do not*
- c) All of them care about me but not much*
- d) All of them deeply care about me*
- e) Other situation*

In subsequent questions, “a job” means a certain type of physical or intellectual activity which earns money for you or your family and which is not prohibited by law.

A15: During the past month, did you have a job?

a) *Yes*      b) *No*      <If “No”, “Don’t know” or “Refuse” → A19>

A16: Please think about a currently job that earns you the most money, how much longer do you think you can continue to do that job?

a) *Less than 6 months*      b) *Six months to one year*      c) *One year or longer*

A17: On average, how much do you earn per day from all of your current jobs?

Please enter the amount in terms of “thousands dong”. For example, if you earn about 120 thousand dong per day from your job(s), then please enter "120".

*Approximately*    \_\_\_ \_\_\_ \_\_\_ *thousands dong per day*

A18: How stable is your monthly income from your current job(s)?

a) *Unstable*    b) *Fairly stable*      c) *Very stable*

A19: Have you ever hold any job for 12 months or longer?

a) *Yes*      b) *No*

A20: Now consider your family that includes only those who live in the same house/apartment and are economically integrated. How would you evaluate your current family economic condition?

a) *Very poor*    b) *Below average*    c) *Average*    d) *Above average*    e) *Wealthy*

A21: Do you get money from your family or relatives at least once per month?

a) *Yes*      b) *No*      <If “No” or “Refuse” → A24>

A22: Is it a regular (such as daily, weekly or monthly) allowance?

a) *Yes*      b) *No*      <If “No” or “Refuse” → A24>

A23: On average, how much money **per day** do you get from your family or relative?

Please enter the amount in terms of “thousands dong”. For example, if you get about 120 thousand dong per day from your family/relatives, then please enter "120".

*Approximately*    \_\_\_ \_\_\_ \_\_\_ *thousands dong per day*



A24: During the past 30 days, what has been the main source of money for your drug use?

- a) *Paid jobs or business activities (those are legal)*
- b) *Family with consent from other members*
- c) *Family without consent from other members*
- d) *Relatives or friends (lending or giving)*
- e) *Illegal activities*
- f) *Other source*

A25: During the past 30 days, what has been the main source of money for your food and accommodation?

- a) *Paid jobs or business activities (those are legal)*
- b) *Other family members who live in the same place*
- c) *Parents, brother/sisters and/or offspring who do NOT live in the same place*
- d) *Relatives or friends (lending or giving)*
- e) *Illegal activities*
- f) *Other source*

A26: Where is your registered place of permanent residence? Choose one:

- a) *An Lao*                      b) *Hong Bang*                      c) *Le Chan*                      d) *Thuy Nguyen*
- e) *An Duong*                      f) *Bach Long Vy*                      g) *Cat Hai/Cat Ba*                      h) *Duong Kinh*
- i) *Do Son*                      j) *Hai An*                      k) *Kien An*                      l) *Kien Thuy*
- m) *Ngo Quyen*                      n) *Tien Lang*                      o) *Vinh Bao*                      p) *Not in Hai Phong*

A27: Where was your most frequent living place in the past month? Choose one:

- a) *An Lao*                      b) *Hong Bang*                      c) *Le Chan*                      d) *Thuy Nguyen*
- e) *An Duong*                      f) *Bach Long Vy*                      g) *Cat Hai/Cat Ba*                      h) *Duong Kinh*
- i) *Do Son*                      j) *Hai An*                      k) *Kien An*                      l) *Kien Thuy*
- m) *Ngo Quyen*                      n) *Tien Lang*                      o) *Vinh Bao*                      p) *Not in Hai Phong*

## B- HISTORY OF DRUG USE AND CESSATION ATTEMPTS

In scientific terms, heroin, morphine and opium are classified into the same group called “opiate drugs”. Recreational drugs such as methamphetamine, ketamine, cocaine, marijuana, etc., are **not** opiate drugs and we will refer to them as “other types of drugs” when necessary. In this interview, by “*drug*” we means an opiate drug, such as heroin, or morphine, or opium.

B01: When did you use drug for the **first time**? Year: \_\_\_ \_\_\_ \_\_\_ \_\_\_

B02: What kind of drug did you use in the **first time**?

a) *Opium*                      b) *Heroin*                      c) *Morphine*

B03: When did you start using drug **on a daily basis**? Year: \_\_\_ \_\_\_ \_\_\_ \_\_\_

*<Logic check: Year in B03 must be the same or after year in B01 >*

B04: What kind of drug did you **use most often when** you started using drug on a daily basis?

B05: Which method did you use when you start using drug on a daily basis?

a) *Smoking or inhaling*      b) *Injecting*                      c) *Other method*

B06: When did you **start injecting drug on a daily basis**? Year: \_\_\_ \_\_\_ \_\_\_ \_\_\_

*<Logic check: Year in B06 must be the same or after year in B03 >*

B07: In how many days of the past 7 days did you use drug?      \_\_\_ \_\_\_ *days*

B08: In how many days of the past 30 days did you use drug (by any administration method)?

\_\_\_ \_\_\_ *days* *<Logic check: Number of days in B08 must be equal or greater than in B07 >*

*<The interviewee will be asked to confirm the accuracy of the answer and the interview will be terminated if the answer is fewer than 25 days because the subject does not meet the definition of a current IDU.>*

B09: In how many days of the past 30 days did you **inject** drug?      \_\_\_ \_\_\_ *days*

*<The interviewee will be asked to confirm the accuracy of the answer and the interview will be terminated if the answer is fewer than 13 days because the subject does not meet the definition of a current INJECTING drug user.>*

B10: How many hours ago was your most recent drug shot? Please estimate and enter an approximate number of hours lapsed. If more than 24 hour has past, please enter “25”.

\_\_\_ \_\_\_ *hours ago*

B11: On average, how many drug shots did you have **per day** during the past 30 days?

\_\_ \_\_ *shots/day*

B12: What type of drug did you **use most often** during the past 30 days?

a) *Opium*                      b) *Heroin*                      c) *Morphine*

B13: In the following list of opiate drugs and non-opiate drugs, select all types that you **have ever used, even once only**:

a) *Opium*                      b) *Heroin*                      c) *Morphine*  
d) *Dolargan*                      e) *Marijuana (cannabis)*                      f) *Ecstasy (or molly)*  
g) *Methamphetamine (meth, ice, glass)*                      h) *Cocaine*                      i) *Ketamine*  
j) *Pipolphen*                      k) *Seduxen*

< *Logic check: B13 and B12* >

B14: Which of the following opiate drugs and non-opiate drugs you have ever used **as often (or more often) as once a week**?

a) *Opium*                      b) *Heroin*                      c) *Morphine*  
d) *Dolargan*                      e) *Marijuana (cannabis)*                      f) *Ecstasy (or molly)*  
g) *Methamphetamine (meth, ice, glass)*                      h) *Cocaine*                      i) *Ketamine*  
j) *Pipolphen*                      k) *Seduxen*

< *Logic check: B14 and B13* >

B15: How far from your home is the place that you bought drug **most often** during the past 30 days?

a) *Within 500 meters*    b) *Between 500meters to 2km*                      c) *More than 2km*

B16: Please indicate **all sources** of injecting equipment for your drug use during the past 30 days:

a) *Private clinics/hospitals*  
b) *Public clinics/hospitals*  
c) *Pharmacies*  
d) *Stores that are not pharmacies*

- e) *Needle and syringe vendors around drug selling places*
- f) *Drug retailers (who also sell or give needles and syringes)*
- g) *Needle exchange points (free of charge)*
- h) *Other drug users*
- i) *Other sources*

B17: What was the **main source** of injecting equipment for your drug use during the past 30 days?

- a) *Private clinics/hospitals*
- b) *Public clinics/hospitals*
- c) *Pharmacies*
- d) *Stores that are not pharmacies*
- e) *Needle and syringe vendors around drug selling places*
- f) *Drug retailers (who also sell or give needles and syringes)*
- g) *Needle exchange points (free of charge)*
- h) *Other drug users*
- i) *Other sources*

B18: In your **most recent drug shot with a new needle**, where did you get the needle from?

- a) *Private clinics/hospitals*
- b) *Public clinics/hospitals*
- c) *Pharmacies*
- d) *Stores that are not pharmacies*
- e) *Needle and syringe vendors around drug selling places*
- f) *Drug retailers (who also sell or give needles and syringes)*
- g) *Needle exchange points (free of charge)*
- h) *Other drug users*
- i) *Other sources*

B19: Please indicate **all places** where you injected drug during the past 30 days (even once):

- a) *Your home*
- b) *Your friends' or relatives' home*
- c) *Guesthouses/hotels*
- d) *Karaoke bars or service venues with private rooms*
- e) *Public toilets*
- f) *Near rail-ways*
- g) *Street sides*
- h) *Under bridges or deserted structures*
- i) *Roofless deserted places*
- j) *Others*

B20: What was the characteristic of the places where you **usually** inject drug (for at least 30% of the times) during the past 30 days? Please check either type or both:

- a) *Indoor/closed-space (such as in houses or entertaining facilities, etc.)*
- b) *Outdoor/open-space (such as on streets, public parks or unoccupied areas, etc.)*

B21: Where did you inject drug in your most recent drug short?

- a) *Your home*
- b) *Your friends' or relatives' home*
- c) *Guesthouses/hotels*
- d) *Karaoke bars or service venues with private rooms*
- e) *Public toilets*
- f) *Near rail-ways*
- g) *Street sides*
- h) *Under bridges or deserted structures*
- i) *Roofless deserted places*
- j) *Others*

In the following questions, “**inject drug with another drug user**” are circumstances in which you and another person (familiar or unfamiliar) are present at the same place to inject drugs and communicate with each other.

B22: How often did you **inject drug with another drug user** during the past 6 months?

- a) *Not at all (0%)*
  - b) *Occasionally (1-33%)*
  - c) *About half of the times (34-66%)*
  - d) *Most of the times (67-99%)*
  - e) *Always (100%)*
- <If B22 = “Never” → B24>

B23: During the past 30 days, what was the **most frequent reason** for injecting drug with another user?

- a) *To pool money for buying drug together*
- b) *To help each other injecting drug*
- c) *To share injecting equipment*
- d) *Because we happened to meet each other on the way or at the injecting places*
- e) *Just to have a companion*
- f) *Other reasons*

B24: In your **most recent drug shot**, did you **inject drug with another drug user**?

- a) *Yes*
  - b) *No*
- <Logic check: B22 and B24>

B25: During the past 6 month, was there any time that you **divided drug from a small packet with another user**?

- a) *Yes*
  - b) *No*
- < If “No”, “Don’t know” or “Refuse” → B28>

B26: **At the most recent occasion** when you divided drug from a small packet with another user, which of the following ways of dividing did you use:

- a) *Solution division: Preparing drug solution in one syringe and and then pumping the solution into another syringe.*
- b) *Dry division: Splitting drug in its dry form*
- c) *Dividing drug in another way*

B27: **At times when you** divided drug from a small packet with another user during the past 6 month, how often did you do so by splitting the drug in its dry form?

- a) *Not at all (0%)*
- b) *Occasionally (1-33%)*
- c) *About haft of the times (34-66%)*
- d) *Most of the times (67-99%)*
- e) *Always (100%)*

B28: During the past 30 days, how many times did you **give your used needles to other drug users** for their re-use? Please enter the number of times (not including times that you threw away your needles after use) \_\_\_

B29: In your most recent drug shot, did you **give your used needle to another drug user** for re-using?                      a) *Yes*                      b) *No*

*<Logic logic check: B28 and B29>*

B30: During the past 30 days, how many times did you **re-use needles that had been used by other drug users**? Please enter the number of times \_\_ \_\_

B31: In your most recent drug shot, did you **re-use needles that had been used by other drug users**?                      a) *Yes*                      b) *No*

*<Logic check: B30 and B31>*

B32: How many drug cessation attempts have you had? Please enter the number of times (including times that you could refrain from drug use for only 2-3 days, and times that you were in jail/prison, if any). If more than 10 time, please enter "11": \_\_ \_\_ *times*

B33: Where did the cessation attempts take place?

- a) *At home*
- b) *In government closed-setting rehab centers*
- c) *In community rehab facilities (including the commune health station)*
- d) *In private drug rehab facilities*
- e) *In jails/prisons*
- f) *In other facilities (such as hospitals or private clinics/centers)*

*<Logic check: B32 and B33>*

B34: What methods were used in your **previous** cessation attempts?

- a) *Just stopping drug use (without any medication)*
- b) *Using some types of modern medication to reduce pains, uneasy feelings and other symptoms of drug withdrawal*
- c) *Using traditional medicine, acupuncture and/or acupressure, etc.*
- d) *Using methadone (not including the current methadone treatment, if applicable)*
- e) *Using another replacement or anatagonistic drug*
- f) *Other method(s)*

B35: In your most recent drug cessation attempt, was it voluntary or was you forced to do so?

1. *It was completely voluntary*
2. *I was forced but I myself also wanted to do so*
3. *I was forced to do so (with no willingness)*

<Note: Questions from B36 through B39 are for cross-checking with those in Section H>

B36: Are you currently a participant of the methadone program?

- a) *Yes*                      b) *No*                      <If "No" -> B40>

B37: What is your current daily dose of methadone? \_\_\_ \_\_\_ \_\_\_ ml

B38: How long have you been on methadone this time?

- a) *Less than three months*      b) *Three to six months*      c) *Six months or longer*

B39: Which of the following is the **main** reason for you to continue using drug while in methadone program? Choose one main reason:

- a) *For me, methadone is only for controlling drug craving; I still want to use drug when I have money.*
- b) *I'm in the methadone program just because my family wants that; I don't think methadone will stop me from using drug.*
- c) *The dose of methadone currently prescribed to me is not enough to stop me from drug craving, although I want to stop using drug completely.*
- d) *I don't know why I still crave for drug, although I want to stop using drug completely.*
- e) *Other reason(s)*

B40: Which of the following best describes your drug-user registration status?

- a) *The local authorities have record indicating that I am a current drug user*
- b) *The local authorities have record indicating that I am an ex- drug user*
- c) *The local authorities know I am a drug user but they do not put me on record*
- d) *The local authorities do not know that I am a drug user*

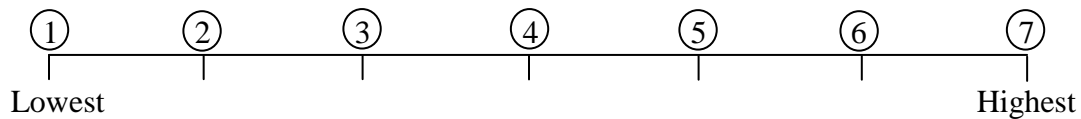


## C – OTHER HEALTH-RELATED BEHAVIORS

Now we would like to ask you questions about some other health-related behaviors, such as your sexual activities and condom use. It should be emphasized again that we do not collect your personal identifying information and we will not judge you in any manner. Truthful information is all that we need to improve health and social services for injecting drug users. So please feel free to share with us about what you do and think. As always, you may choose not to answer some questions if you don't want to.

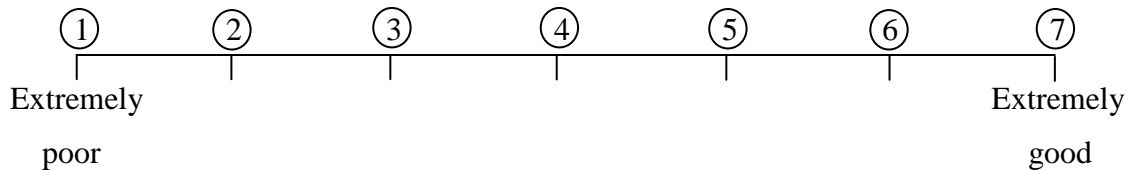
In some of the following questions, a scale of 1 to 7 is shown and each numeric value on the scale represents a certain level of risk or likelihood. In the example question below, "1" represents the lowest level risk HIV infection that a person can have (only by rare accidents), and "7" represents the highest (almost surely).

*Example question: Which level of risk of HIV infection do you think a drug user may have if he often re-uses needles and syringes already used by other drug users?*



For this type of questions, please indicate your answer by clicking a number on the scale that you think best represents your judgment or opinion.

C01: How do you rate your current general health level?



C02: How many doctor or hospital/clinic visits did you have in the past three months?

\_\_ \_\_ times

C03: If you have time and money, do you want to get health check-ups more often?

a) Yes                      b) No

C04a: Did you had an HIV test **in 2010**?      a) Yes                      b) No

C04b: Have you ever had an HIV test?      a) Yes                      b) No      <If "No" → C07>

C05: How many times have you been tested for HIV?      \_\_ times

<Logic check: C04 and C05>

C06: When was the last time that you had an HIV test? Year: \_\_\_ \_ \_ \_

C07: Do you know your HIV status? a) Yes b) No

<Logic check: C07 and C04> <If “No” → C09>

C08: What is your current HIV status?

a) Positive b) Negative

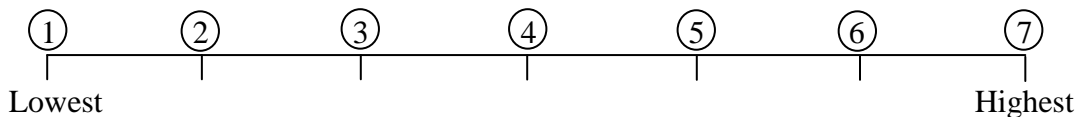
<Logic check: C08 and C04>, <If “Negative”, → C11>

C09: Through which route do you think your HIV infection has occurred?

a) Injecting equipment sharing b) Unsafe sex  
c) Either or both of the above d) Other route(s)

C10: Are you currently on ARV treatment? a) Yes b) No

C11 <Ask this question only if C08=“Negative”>: If you continue to inject drug as you currently do, please indicate the level of risk of becoming HIV infected during the next 3 years that you think **you** are at?



In the following question, by “**having sexual intercourse**” we mean having vaginal or anal intercourse with another person.

C12: Have you ever had sexual intercourse? a) Yes b) No

<Logic check: C12, C09, A04 and A07>

C13: How many times did you have sexual intercourse in the last 3 months? \_\_\_ \_ times

<Logic check: C12 and C13>

C14: Please think about a time period when you had sexual intercourse most often, how often was it?

a) less than 1 time per month b) 1-3 times per month  
c) 1-2 times per week d) 3 or more times per week

In the following questions, a **regular sex partner** is a person with whom you have had sexual intercourse more than once and maintained a sexual relationship for a certain period of time.

C15: With whom of the following **you have had sexual intercourse at least twice during the past 6 months**? Check all that apply:

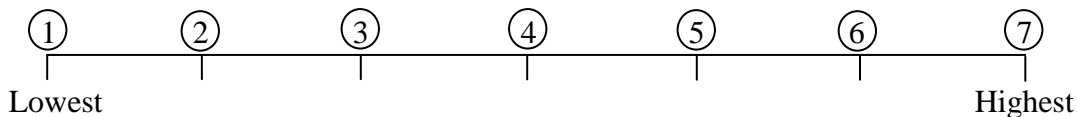
- a) *Wife/husband (legal spouse)*
- b) *Female live-in partner*
- c) *Male live-in partner*
- d) *Girl friend who does not live with you*
- e) *Boy friend who does not live with you*
- f) *A sex worker of whom you are regular client*
- g) *Other types of regular partner*

C16: Please indicate the number of persons with whom you have had sexual intercourse at least twice during the past 6 months:       *regular sex partners*

<Logic check: C15 and C16>; <If C16=0 → C20>

C17: Which level of risk of HIV infection do you think your most frequent sex partner during the past 6 months may have?

*Note: This can be the only person that you have had sexual intercourse with during the past six months.*



C18: How often do you use condoms with your regular sex partner(s) during the past 6 months?

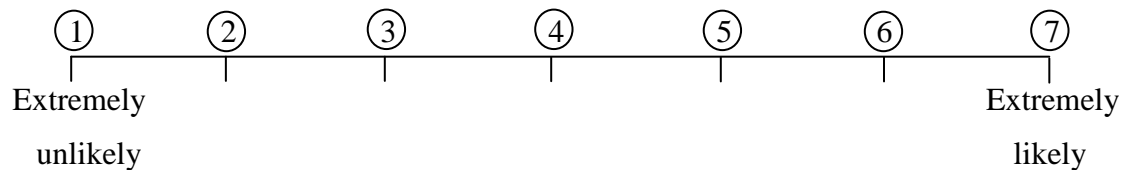
- a) *Not at all (0%)*
- b) *Occasionally (1-33%)*
- c) *About half of the times (34-66%)*
- d) *Most of the times (67-99%)*
- e) *Always (100%)*

C19: Does any of your regular sex partner(s) during the past 6 months inject drug?

- a) *Yes*
- b) *No*



C24 <Skip this question if C8 = "Negative" >: If you continue to inject drug, how likely do you think you can transmit HIV to your drug-injecting peers?



C25: Have you ever donated or "sold" blood?

- a) *Yes*                      b) *No*                      <If "No" → C28>

C26: How many times have you donated or "sold" blood?    \_\_ \_\_ *times*

C27: Why did/do you donate or "sell" blood?

- a) *To get money to buy drug*                      b) *Other reasons*

C28: Based on your knowledge, please select **exactly three most important routes of HIV transmission** in Vietnam:

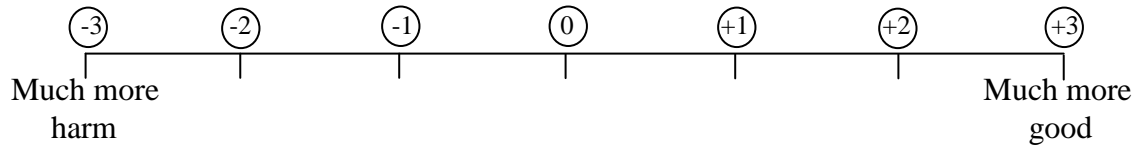
- a) *Via social contacts (such as hand-shaking, hugging or touching) with an HIV infected person.*
- b) *From HIV infected mothers to fetuses, newborns and breast-fed babies.*
- c) *Via sharing things such as toothbrushes, cups, bowls and chopsticks, etc., with an HIV infected person.*
- d) *By receiving infected blood/blood products or sharing things that are contaminated with HIV infected blood.*
- e) *Via sexual intercourse with an HIV infected person without using any protective measure.*
- f) *By kissing an infected person.*

C10b: Based on your knowledge, please select **exactly three most important measures** to prevent HIV infection among the following:

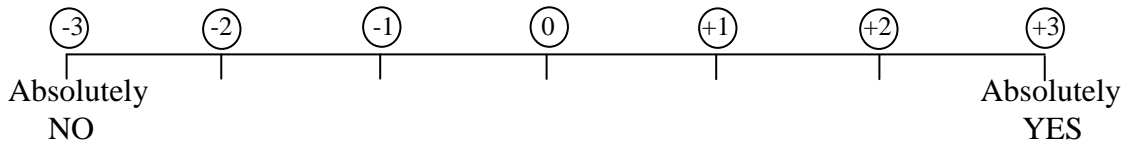
- a) *Using condoms or other protective measures when having sexual intercourse with a person whose HIV status is unknown to you.*



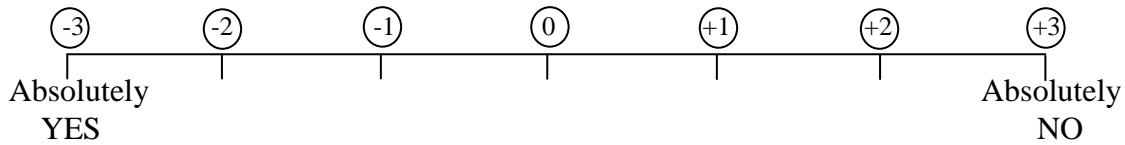
D06: In your opinion, does MMT do **more harm or more good** to the health of drug users?



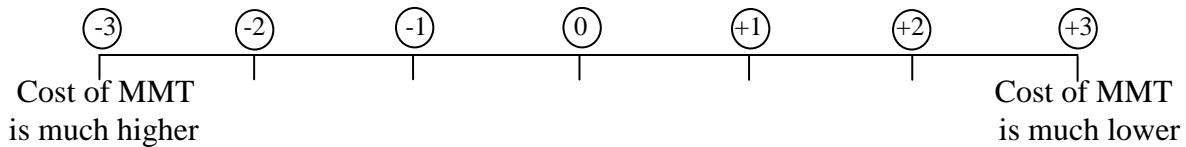
D07: In your opinion, **whether or not** MMT can help a majority of drug users **stop using drug completely**?



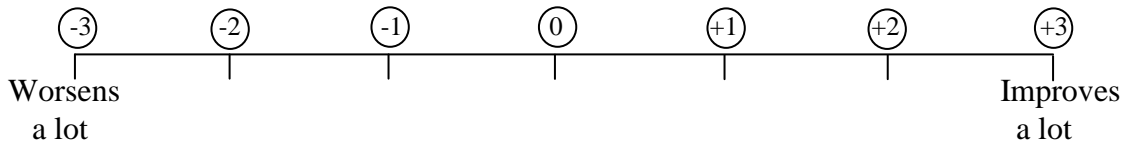
D08: Do you think those who use methadone will **have to use it for life**?



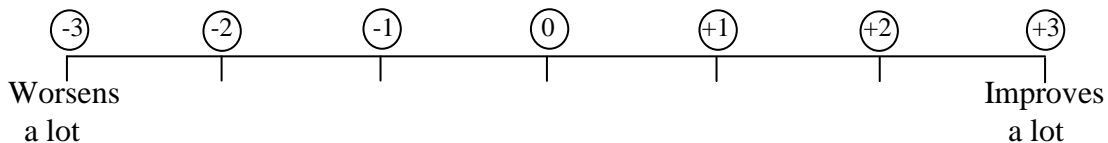
D09: In your opinion, whether the cost of MMT is higher or lower than the cost of drug use?



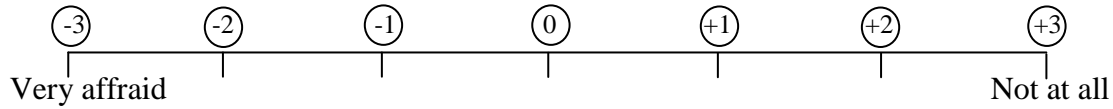
D10: Do you think MMT **worsens** or **improves** the relationships between drug users **and their families**.



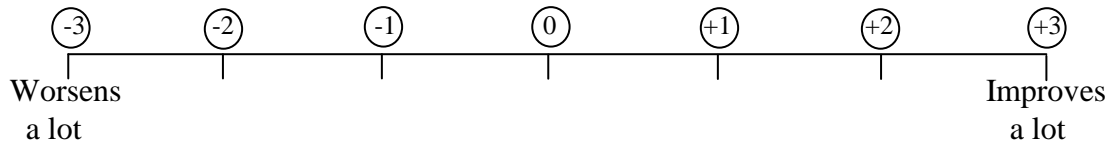
D11: Do you think MMT **worsens** or **improves** the relationships between drug users **and those who previously know about the drug dependency** of the drug users.



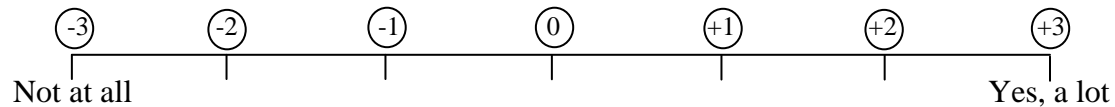
D12: Do you think those drug users who still try to hide their drug-use status are **afraid of being sent to closed-setting drug rehab centers** (if their MMT applications are unsuccessful) **or not**?



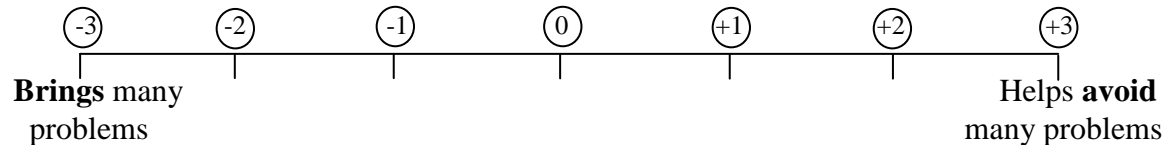
D13: In your opinion, whether MMT **worsens or improves the working ability** of drug users?



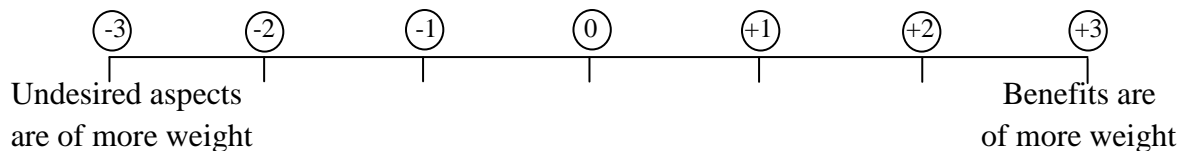
D14: Do you think MMT helps reduce illegal activities in the society or not?



D15: In your opinion, whether MMT helps drug users **avoid legal problems** or **bring more legal problems** to them?



D16: In your opinion, whether the **benefits** that MMT can bring (including health, economic and social benefits) or the **undesired aspects** that it may cause (including harms and inconveniences) are of more weight?

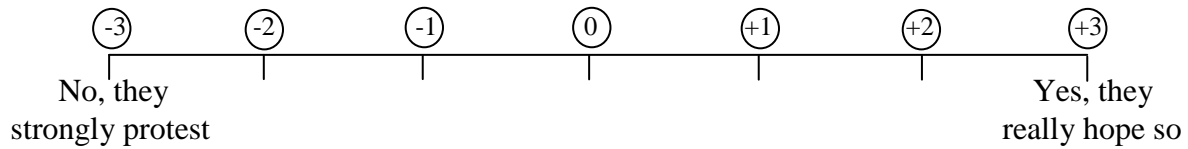




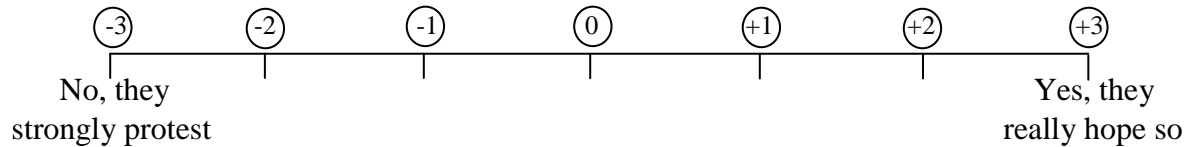
## E – NORMATIVE BELIEFS AND PERCEIVED SOCIAL PRESSURE REGARDING MMT

For the subsequent questions, assume that other people (such as your family members, friends and neighbors) have some knowledge about MMT. By clicking a number on the scale of - 3 to 3 (again), please let us know whether you think other people would like you to participate in the MMT program or not.

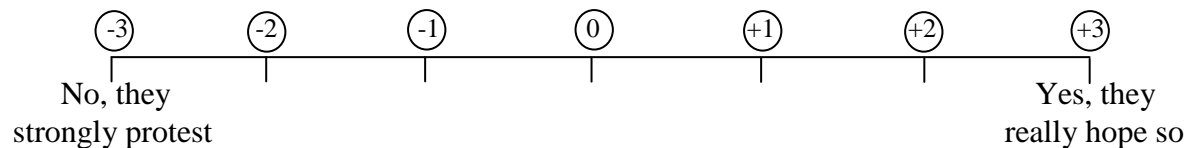
E01: Do you think **your immediate family members** would like you to participate in the MMT program or not?



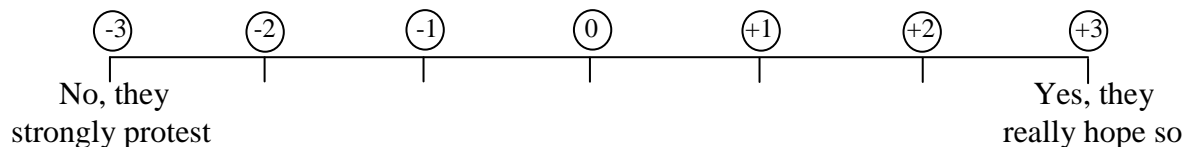
E02: Do you think your **close relatives** would like you to participate in the MMT program or not?



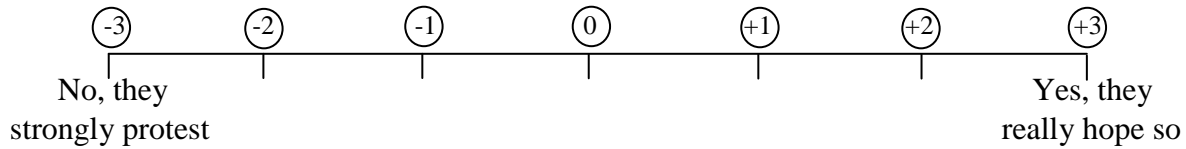
E03: Do you think your **close friends** (if any) would like you to participate in the MMT program or not?



E04: Do you think peer drug users who are in most frequent contact with you would like you to participate in the MMT program or not?



E05: Do you think **other people who you consider important to you** would like you to participate in the MMT program or not?



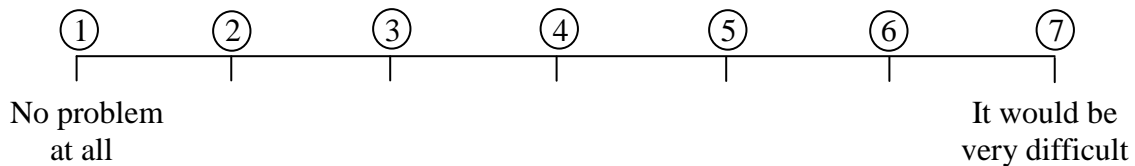
**F - CONTROL BELIEFS AND PERCEIVED BEHAVIORAL CONTROL REGARDING MMT ENROLLMENT**

In the following questions, **“financial support”** may include (but not limited to) money and/or means of transportation to help you to participate in the MMT program, and/or money for you to buy and use drug (in a moderate manner) during the MMT preparation or in the early treatment period.

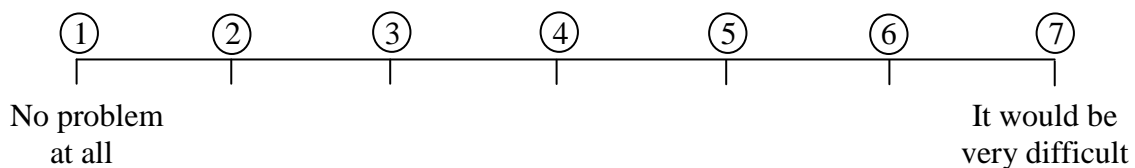
F01: <If the answer to D02 is “No”> Do you think your family or any of your relatives would provide financial support if you were going to enroll in the MMT program and need money or means of transportation to do so?    a) Yes            b) No

F02 < If the answer to D02 is “Yes”> Has your family or any of your relatives actually provided any financial support for your MMT participation so far?  
    a) Yes                    b) No

F03: Assuming that in the near future MMT participants have to share the cost of MMT service and each participant has to pay **450,000 dong per month**, would it be difficult for you and your family to pay that amount every month?

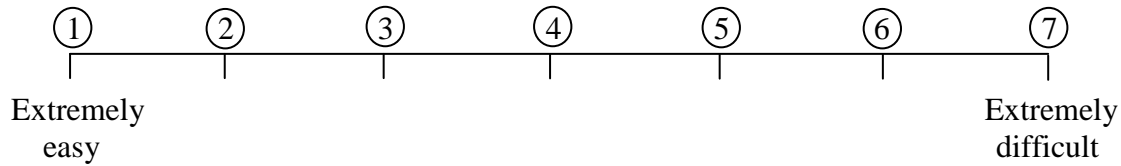


F04: Now, assuming that the MMT program receives no financial support and each methadone participant has to pay **900,000 dong per month** for MMT service, would it be difficult for you and your family to pay that amount every month?



F05: How easy or difficult for you to find means of transportation to and from the methadone clinic every day?

If it would take only several minutes to walk to the clinic (i.e., no vehicle needed), please select “1”.



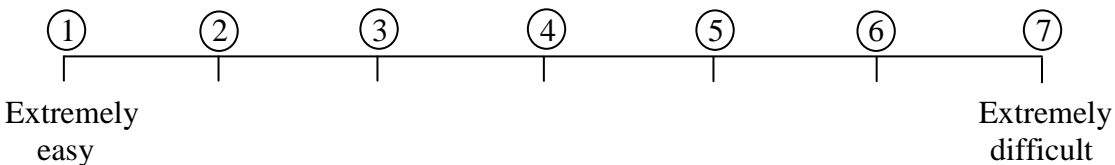
F06: By your usual means of transportation, how many minutes would it take (on average) to travel (one way) to the methadone clinic?

*Approximately \_\_\_ \_\_\_ \_\_\_ minutes (your best estimate)*

F07: Now assuming the methadone clinic is going to be moved to another location, what is the **maximum amount of time** that you would consider acceptable for daily travel to the methadone clinic (one way)?

- a) 15 minutes   b) 20 minutes   c) 25 minutes   d) 30 minutes   e) 40 minutes or more*

F08: In considering whether to participate in the methadone program or not, how easy or difficult do you think it would be for you to comply with the requirement of visiting the methadone clinic once every day?



F09: Below are the administrative and legal eligibility requirements for enrollment in the MMT program. Please select all requirements that you **had (or would have) difficulty to fulfill**:

Note: Please DON'T select those requirements that you can fulfill without any difficulty.

- a) Being 18 years old or older (a legal guardian is required if between 16 and 18 years old)*  
*b) Providing written petition indicating voluntary participation in MMT.*

- c) *Having verification from the commune-level people’s committee about your residence and drug use status.*
- d) *Not being prosecuted for or charged with a criminal offense.*
- e) *Having stable housing in the district where the MMT clinic is located.*

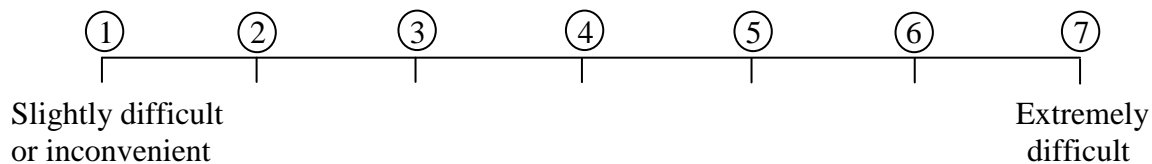
*<If none is selected, then ask the interviewee to confirm and jump to F12>*

F10: Please select one of the requirements that is/was **most difficult** for you to fulfill?

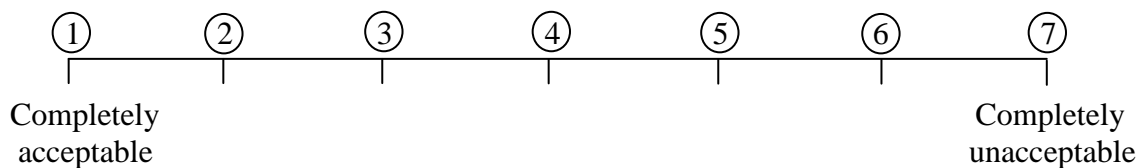
1. Being 18 years old or older (if between 16 and 18 years old, then a legal guardian is required).
2. Providing written petition indicating voluntary participation in MMT.
3. Having referral or verification from the commune-level people’s committee about your residence and drug use status.
4. Not being prosecuted for or charged with a criminal offense.
5. Having stable housing in the district where the MMT clinic is located.

*<If “Don’t know/Not remember” or “Refuse to answer” -> F12>*

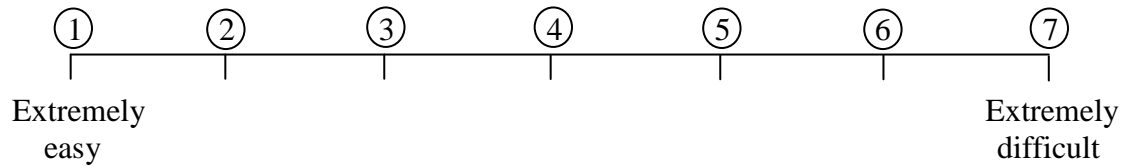
F11: Regarding **the most difficult requirement** that you have just selected, how difficult is/was it for you to fulfill?



F12: When a new methadone clinic is opened, each applicant has to wait **30 days (on average)** between their application submission and the time that an admission decision is made, do you think such a wait time acceptable?



F13: In general, how easy of difficult do you think it is to become a participant of the current methadone program in the district.



**G – INTENTION TO ENROLL (FOR THOSE WHO HAVE NOT SUBMITTED ANY MMT APPLICATION)**

<This section applies to only those whose answer to D02 is “No”>

G01: Given your current circumstance and the methadone program as you know it, **do you intend to apply for methadone in the coming 3 months?**

- a) Yes                      b) No

G02: Which of the following factors **have bothered you** in considering whether to apply for methadone or not? Check all that apply.

- a) *The possibility of methadone being harmful to health*
- b) *The requirement of going to the MMT clinic once everyday*
- c) *The distance between home and the MMT clinic*
- d) *The amount of “unofficial” money that you heard you would have to pay for being accepted as a methadone participant.*
- e) *The cost of methadone and/or clinic services*
- f) *Residency or stable-housing requirement*
- g) *The requirement of obtaining verification from local authorities about your drug-use status.*
- h) *The requirement of not being prosecuted for or charged with a criminal offense.*
- i) *Difficulty of obtaining required documents.*
- j) *Waiting time between application submission and the time that an admission decision will be made*
- k) *Other factors*

G03: Assuming that in a near future the following 3 conditions will be guaranteed:

1. Applying for and becoming a MMT participant are easy;
2. The distance between your home and the MMT clinic is reasonable;
3. The cost of MMT is within your budget.

**Will you apply for MMT then?**      a) *Yes*      b) *No*

### **H –FACTORS THAT INFLUENCED DECISION TO ENROLL (FOR THOSE WHO HAVE SUBMITTED AN MMT APPLICATION)**

*<This section applies to only those whose answer to D02 is “Yes”>*

H01: Which of the following factors **have bothered you** in considering whether to apply for methadone or not? Check all that apply:

- a) *The possibility of methadone being harmful to health*
- b) *The requirement of going to the MMT clinic once everyday*
- c) *The distance between home and the MMT clinic*
- d) *The amount of “unofficial” money that you heard you would have to pay for being accepted as a methadone participant.*
- e) *The cost of methadone and/or clinic services*
- f) *Residency or stable-housing requirement*
- g) *The requirement of obtaining verification from local authorities about your drug-use status.*
- h) *The requirement of not being prosecuted for or charged with a criminal offense.*
- i) *Difficulty of obtaining required documents.*
- j) *Waiting time between application submission and the time that an admission decision will be made*
- k) *Other factors*

H02: Have you been accepted for MMT?

- a) *Yes*                      b) *No*                      <If “No” → H05>

H03: Have you actually started MMT?

- a) *Yes*                      b) *No*

H04: Which of the following is/are your main goal of methadone treatment regarding your drug use status?

- a) *To stop using drug completely and permanently*
- b) *To reduce drug use but not to stop completely*
- c) *To have control over when to use drug (for example, when you have money)*
- d) *Other goal*

<The following questions are for those whose answer to H02 is “No” only. >

H05: Which of the following is **the main reason** why you have not been accepted?

- a) *I do not meet one or several eligibility requirements*
- b) *My application does not include all the required documents or one of those documents is not deemed to be properly prepared/valid.*
- c) *There are too many applicants while the number of participants each MMT clinic can admit is very limited.*
- d) *I discontinued the preparation procedure before an admission decision is made.*
- e) *I don't know why I have not been accepted.*
- f) *Other reasons*

H06: If you were admitted, what would be your goal of methadone treatment with regard to your drug use status?

- a) To stop using drug completely and permanently*
- b) To reduce drug use but not to stop completely*
- c) To have control over when to use drug (for example, when I have money)*
- d) Other goal*

H07: When the situation is improved and you have all the necessary conditions for becoming an MMT participant, are you going to apply again (or to follow-up the previous application)?

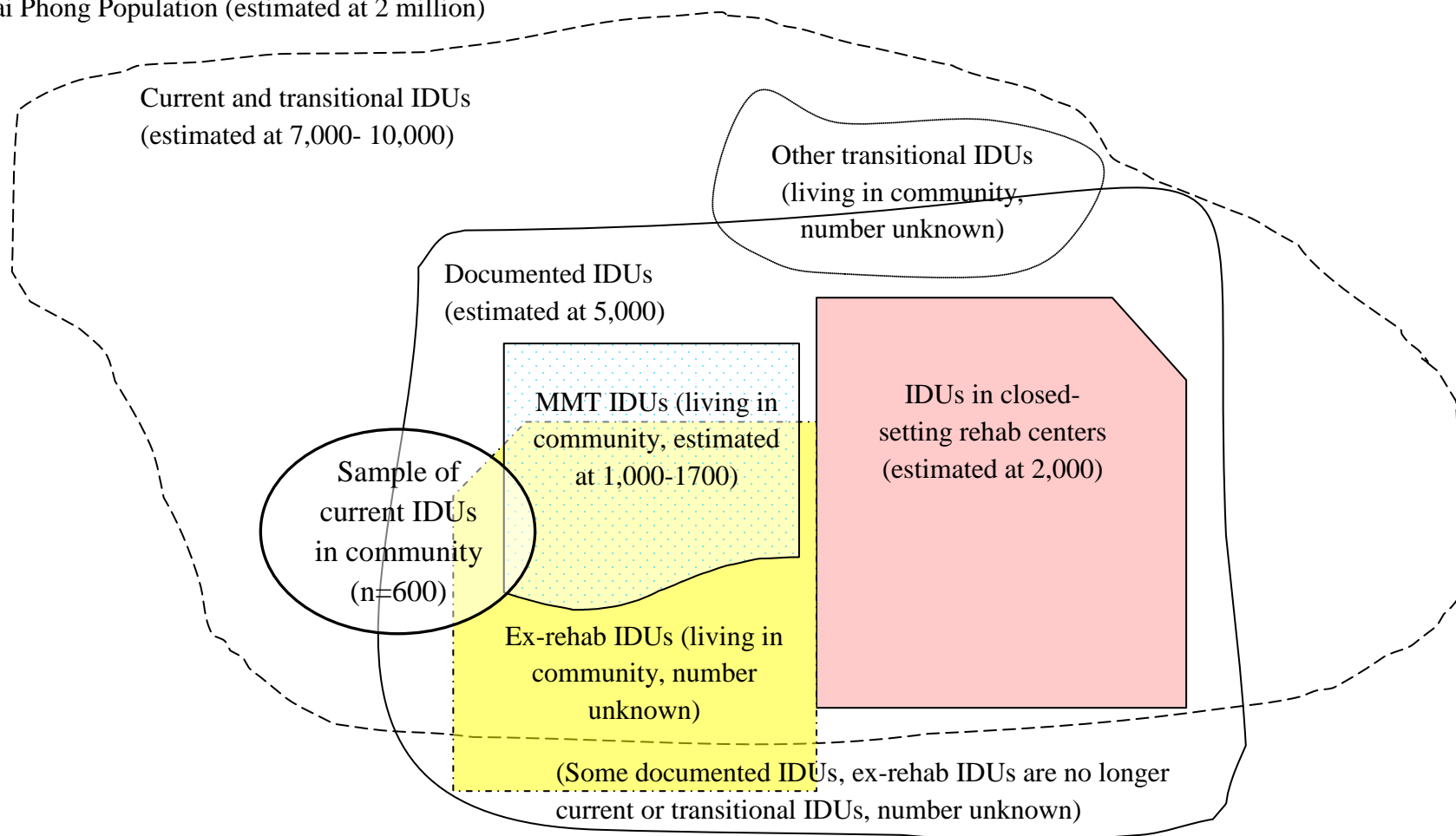
- a) Yes*
- b) No*

*This is the end of the interview. Thank you for your time and participation.*



**APPENDIX 3: A GRAPHIC MODEL OF THE DISTRIBUTION OF CURRENT AND TRANSITIONAL IDUs AND COVERAGE OF THE CROSS-SECTIONAL SURVEY SAMPLE OF CURRENT IDUs IN HAI PHONG (VIETNAM), 2011**

Hai Phong Population (estimated at 2 million)



*Note: "Transitional IDUs" are IDUs who no longer used drug on a daily basis but has not successfully stopped using drug for at least 6 months.*