Economic evaluation comparing
center-based compulsory rehabilitation and community-based methadone treatment in Hai Phong City, Vietnam

Preliminary research findings

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June 2014

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RESEARCH PARTNERSHIP

This research has been enabled through a strong partnership of many organizations:

1. *Government buy-in and ownership:* The Government authorities of Hai Phong city has taken ownership in the design and implementation of this research from the onset. The political endorsement of the People's Committee in February 2012 provided a platform for the research institutions to engage with leaders of the Department of Labor, Invalids and Social Affairs and Division of Social Evils Prevention. The contribution of time by the managers of the 3 CCT centers and 3 MMT clinics were significant.

2. *Technical expertise:* four research institutions have contributed their research expertise for this research: FHI360 in Vietnam, Hanoi Medical University, Hai Phong Medical University and the National Drug and Alcohol Research Center at the University of New South Wales, Australia.

3. *Funding:* The implementation of this research is funded by Atlantic Philanthropies, as a part of a bigger project commissioned through FHI360. Funding has also come in the form of PhD scholarships from Endeavour Awards and from NDARC/UNSW, from where Ms Thu Vuong can get access to technical assistance from NDARC/UNSW.

ABSTRACT

Background

Currently in Vietnam, there are two dominant and competing drug dependence treatment modalities: 1) center-based compulsory rehabilitation (CCT), which started in the 1990s and funded by the Vietnamese Government; and 2) methadone maintenance treatment (MMT), which started in 2008 and primarily funded by international donors with limited contribution by the Government. The goal of this research is to identify which treatment modality is more cost-effective to assist the Government in its resource planning.

Methods

A total of 216 CCT-released participants from 3 CCT centers in Hai Phong city were recruited after they were released from CCT centers and interviewed at baseline, 3, 6 and 12 months. Secondary data of 467 MMT participants from previous MOH MMT cohort study were used. In addition, 318 of these 467 MMT participants were recruited in this research to be followed up for another 12 months (at the same intervals as CCT-released participants). Data on effectiveness (from interviews with participants) and costs of treatment (costs paid by participants and costs of running CCT centers and MMT clinics) were collected for cost-effectiveness analysis.

Results

Part I: the goal of Part I is to compare the lifetime baseline characteristics between two groups.

Results of Part I:

- The preliminary results show that CCT participants appear not to be as dependent on heroin compared to MMT group. However, both groups experienced equal levels of harms related to health consequences (overdose) and legal consequences (being prisoned);

Part II: the goal of Part II is to compare the effectiveness of two treatment modalities across 8 outcome measures.

Results of Part II:

- Both CCT and MMT are effective at: 1) reducing heroin use (basing on urine drug screening); 2) reducing any drug use (self-report); and 3) reducing the number of days using drugs during the previous month. However, MMT is significantly more effective across all these three outcome measures;

- CCT and MMT modalities are equally effective for: 1) reducing monthly expenditure on drugs *(for those who used drugs)*; 2) reducing illegal behaviors; and 3) reducing overdose;

- MMT and CCT have a small effect on: Increasing monthly legal income *(for those who were employed);*

- Both CCT and MMT do not have any effect on: rates of employment;

For this PRELIMINARY REPORT, the cost-effectiveness analysis results are not presented. They will be presented in the FINAL REPORT in March 2015.

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BACKGROUND

Currently in Vietnam, there are two dominant and competing drug dependence treatment modalities: 1) center-based compulsory rehabilitation (CCT), which started in the 1990s and funded by the Vietnamese Government; and 2) methadone maintenance treatment (MMT), which started in 2008 and primarily funded by international donors with limited contribution by the Government. According to the Ministry of Labor, Invalid and Social Affairs, by the end of 2013, there were 181,000 injection drug users. Of these, 25% (45,000 drug users) were in CCT centers and 10% (17,500 drug users) were in MMT treatment. The remaining of 65% (118,500 drug users) were either receiving no treatment or had been released from CCT centers.

In 2010, Vietnam became a middle income country. This means donor funding will start to decrease from 2015. Research evidence from an cost-effectiveness research comparing CCT and MMT is needed to enable the Government leaders to develop effective drug policies and to improve the allocation of limited resources for drug treatment services. The results of this research might also assist organizations working with the Gov in redesigning service delivery and/or engaging in data-driven drug policy dialogues.

OBJECTIVES OF THE STUDY

To compare the cost-effectiveness of center-based compulsory rehabilitation (CCT) with community-based Methadone maintenance treatment (MMT) in Hai Phong City, Vietnam.

RESEARCH QUESTIONS

In Hai Phong City, Vietnam:

1) Does participation in CCT result in improved health and social outcomes for illicit drug users? Health and social outcome will be measured in terms of illicit drug use, drug-use related criminal behaviors, drug-use related HIV risk behaviors, overdose incidents and quality of life.

2) Is CCT more cost-effective than MMT in terms of the 1) proportion of people free from drug use, 2) number of drug-free days, 3) number of days free from criminal behaviors, 4) number of drug-use related HIV risk behaviors reduced, 5) number of overdose incidents reduced and 6) number of QALYs gained for illicit drug users?;

The questionnaires were designed to collect data to answer the above two questions only.

STUDY DESIGN AND METHODS

This is a combined retrospective and prospective longitudinal cohort study that collects data from 5 time points within a 3-year comparison timeframe for CCT-released participants and MMT participants. The study combines empirical data and secondary data to assess the effectiveness of each treatment modality. In addition, an economic component is built along the study to measure costs of two treatment modalities to compare cost-effectiveness outcomes of the two treatment modalities across different outcome measures.
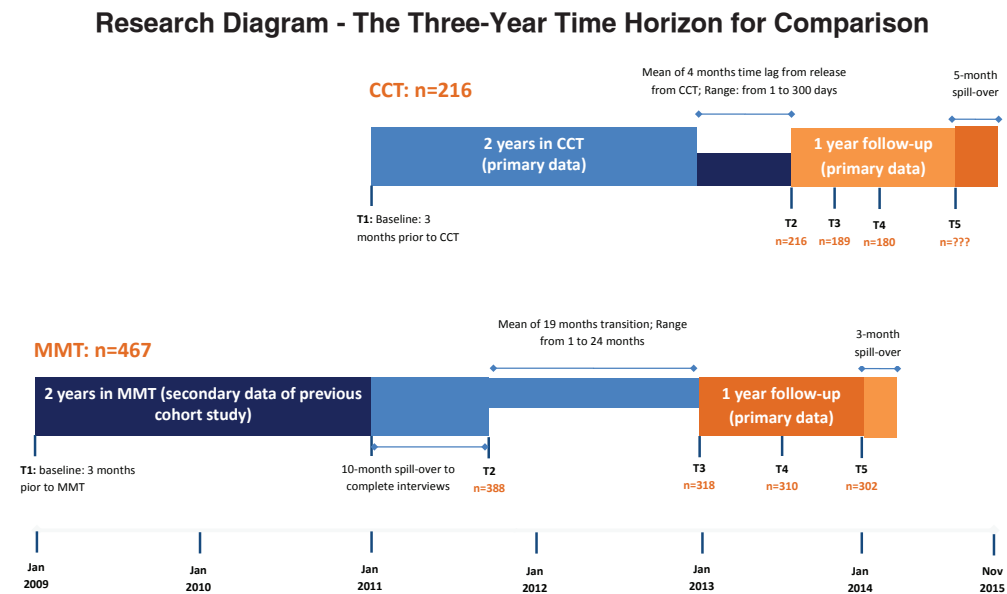
A total of 216 CCT-released participants from 3 CCT centers in Hai Phong city were recruited after they were released from CCT centers and interviewed at baseline, 3, 6 and 12 month. Secondary data of 467 MMT participants from previous MOH MMT cohort study were used. In addition, 318 of these 467 MMT participants were recruited in this research to be followed up for another 12 months (at the same intervals as CCT-released participants). Data on effectiveness (from interviews with participants) and costs of treatment (costs paid by participants and costs of running CCT centers and MMT clinics) were collected for cost-effectiveness analysis.

At interviews, urine drug screening were also conducted and compared to participants' self-report drug use. Although urine drug screening was performed throughout this study, the use of self-reported data will allow to measure reductions in illicit opioid use, not abstinence only.

Research Diagram: The Three-Year Time Horizon for Comparison

Comparing a 2 year center-based drug rehabilitation model (time-limited) with methadone maintenance treatment (on-going) represents a time inequivalent comparison. In order to minimize this "inquivalence in time horizon", we framed a relative three-year time horizon comparison, which includes a two-year rehabilitation of drug users in CCT and one-year community follow-up of CCT released participants. For MMT, the time horizon includes two-year retrospective MMT cohort study and one-year prospective cohort follow-up (see Figure 1 below). The cost-effectiveness analysis comparing the two treatment modalities will be analyzed within this three-year time horizon.

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Figure 1

Research Diagram - The Three-Year Time Horizon for Comparison

CCT-released participants:

At the time of recruitment of CCT-released participants (July 2013), approximately 50 CCT participants were released from all 3 CCT centers on a monthly basis. In order to recruit 220 participants (basing on sample size calculation), invitation letters need to be sent to approximately 500 CCT-released participants. For this reason, invitation letters were sent to all CCT-released participants who were released from 1 January 2013 to 30 November 2013. This explains the mean time lag of 4 months for CCT-released participants in the diagram. Participants were required to bring the invitation letter and the certificate of completion of treatment in CCT center to the research office to be eligible to be enrolled in the research.

MMT participants:

The previous MOH MMT cohort study was implemented from Jan 2009 to October 2011. This research started recruiting MMT participants in January 2013. This explains the mean time lag of 19 months. The 318 MMT participants who were enrolled in this research are a subset of the 467 MMT participants who were in the previous MMT cohort study.

These realities do not allow for a perfect 3-year time horizon. However, mixed effects regression model, an advanced statistical method, has been used for the analysis of this research. This method is very effective in dealing with this unstructured time horizon.

RESULTS

This briefing presents preliminary results on two parts:

PART I: To compare of baseline characteristics;

PART II: To compare the effectiveness of two treatment modalities from 3 time points (baseline, and two subsequent time points).

The cost-effectiveness analysis results will be presented in the FINAL REPORT in March 2015.

RESULTS OF PART I

The data analysis of PART I aims to: 1) compares the sample lifetime characteristics of the two groups; and 2) assists an understanding of the profile of drug users in Hai Phong city to adapt treatment and prevention programs based on identified needs;

The results of PART I show that:

- CCT group was younger (mean=33.60 vs 37.53), more likely to be single (51.9% vs 43.5%), more likely to be employed (76.4% vs 66.6%) and had higher legal monthly income (3 mil dongs vs 1.5 mil dongs);

- Both groups started to use drug at similar age: early 20's;

- The proportion of people who used HEROIN daily was the same for both groups (CCT=97.70%; MMT=99.40%);

- The level of education for both groups was the same with 40.70% of CCT group and 46.50% of MMT group finished high school at minimum *(the difference is not statistically significant)*;

- CCT group had a higher proportion starting with heroin (84.7% vs 80.9%) but their daily use frequency was lower (97.7% vs 99.4%) and they had been using drugs for less years (11.03 years vs 13.19 years);

- From the commencement of drug use until treatment entry, CCT group spent less money on drugs on a monthly basis (4.5 mil dongs vs 6.25 mil dongs), which is consistent with using less frequently;

- A smaller proportion of CCT group ever injected heroin (64.40% vs 83.70%);

- However, CCT group were more likely to be poly drug users (50.50% vs 28.90%), with 28.3% also using methamphetamine. Among those who were poly users, CCT groups used higher number of more drug classes (3 vs 2);

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- CCT participants were less likely to have sought treatment (78.77% vs 96.6%). For those who did, the median number of treatment episodes was smaller fewer (2 vs 5);

- CCT participants were less likely to have previously been in CCT center (38.0% vs 49.9%) and less likely to have undergone home-based detoxification (66.7% vs 84.4%);

- The proportions of people who had ever : 1) committed illegal behaviors (CCT=35.2% and MMT=29.3%); 2) been to prison (CCT=15.7% and MMT=19.3%); and or 3) overdosed were the same for both groups (CCT=18.5% and MMT=13.1%) à These suggest that both groups experienced *"equal levels of health (overdose) and legal harms (imprisonment)"* caused by their drug use;

IMPLICATIONS – PART I

The results of PART I suggest that:

1. CCT participants appear not to be as dependent on drugs heroin compared to MMT group. CCT group had a:

   - *Higher proportion of people who did not use drugs on a daily basis (~20%)*

   - *Higher proportion who never injected drugs (35.6%)*

   - *Smaller proportion who ever sought treatment*

2. However, both groups experienced EQUAL levels of harms related to health consequences (overdose) and legal consequences (being prisoned)

3. Heroin continues to be the most prevalent reported drug reported → treatment services should continue to focus on heroin

4. 10 years ago, opium was the 2nd drug of choice. Now it is methamphetamine. New services should also focus on methamphetamine treatment

5. Poly drug use was more common among CCT participants:

   - Poly drug use increases the risk for overdose

   - Health care services need to be redesigned for prevention of overdose targeting CCT-released participants

6. 35.6% of CCT participants had never injected heroin:

   - Drug injection is more likely to be associated with blood-borne infections and other health-related consequences

   - → they are ideal candidates for early intervention to prevent moving into injecting
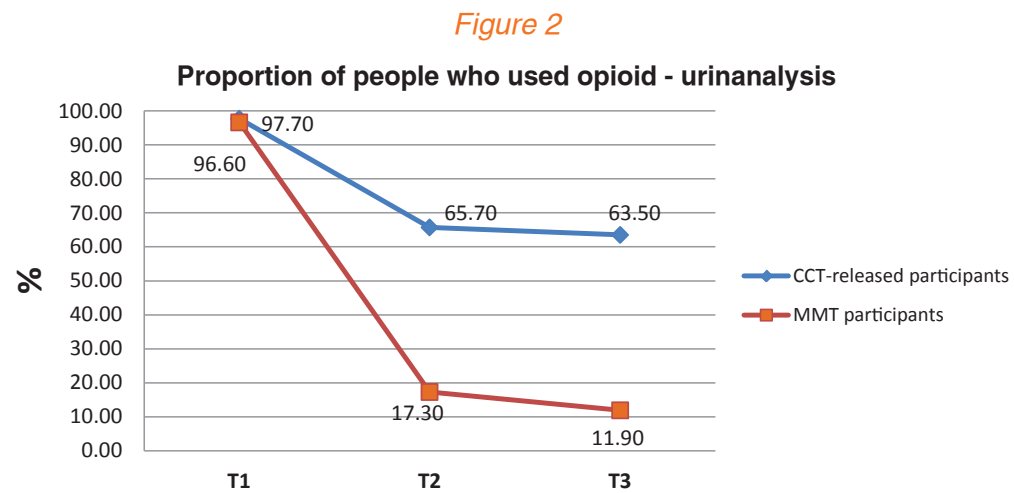
PART II

The data analysis of PART II aims to: 1) compare treatment effectiveness by means of selected outcome measures across 3 time points; and 2) identify which treatment modality is more effective for each outcome measure;

Below is the presentation of the results with eight (8) following outcome measures:

1. Opioid use (basing on urinalysis) (yes/no)

2. Use of all drugs (basing on self-report) (yes/no)

3. Number of days using drugs (during the previous 30 days)

4. Average monthly expenditure on drugs (for those who used drugs)

5. Illegal behaviors (yes/no)

6. Overdose incident (yes/no)
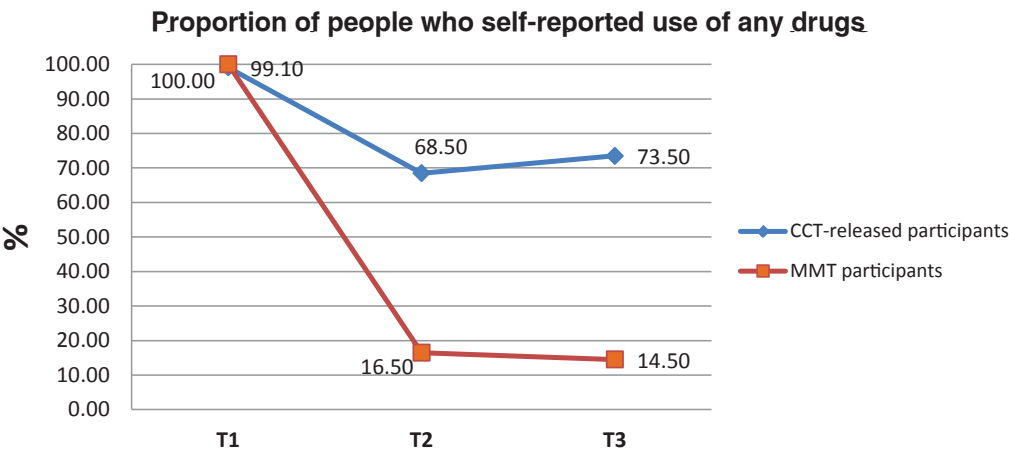
7. Employment (yes/no)

8. Average monthly legal income

1. Heroin use (confirmed by drug urine screening)

Figure 2

Proportion of people who used opioid - urinanalysis

At 3 months prior to treatment, the majority of both groups used heroin. Over the 3 time points, the proportion of people who had a positive heroin urine sample was reduced for both groups. However, statistical test shows that CCT-released participants were almost **3.5 times more likely** to have a positive opioid urine sample compared to MMT participants; These results show that both CCT and MMT are effective in reducing the proportion of people using heroin. However, **MMT is more effective** in this measure.

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2. Use of any drugs (self-report)

Figure 3

Proportion of people who self-reported use of any drugs

At 3 months prior to treatment, the majority of both groups used at least one kind of drugs. Over 3 time points, the proportion of people who self-reported using any drug was reduced for both groups. However, statistical test shows that CCT-released participants were **9.5 times more likely** to report any drug use compared to MMT participants. These results show that both CCT and MMT are effective in reducing the proportion of people who use drugs. However, **MMT is more effective** in this measure.

## 3. The number of days using drugs during the last month

Figure 4

Monthly expenditure on drugs - for those who use drugs
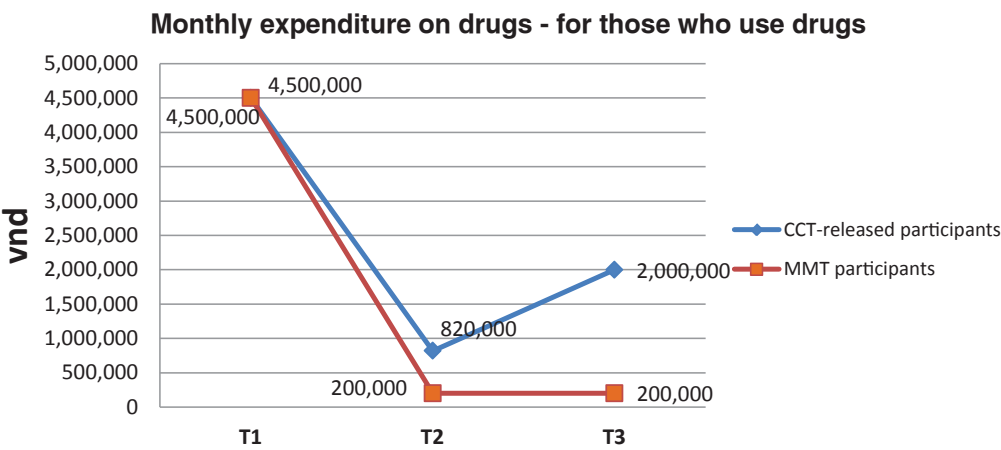
At 3 months prior to treatment, the majority of both groups used drugs almost on a daily basis. Over 3 time points, the median number of days using drugs during the last month (30 days) were reduced significantly for both groups. However, statistical test shows that on average CCT-released participants were using drugs for **3.20 MORE days** per month compared to MMT participants; These results show that both CCT and MMT are effective at reducing the number of days using drugs a month. However, **MMT is more effective** in this measure.
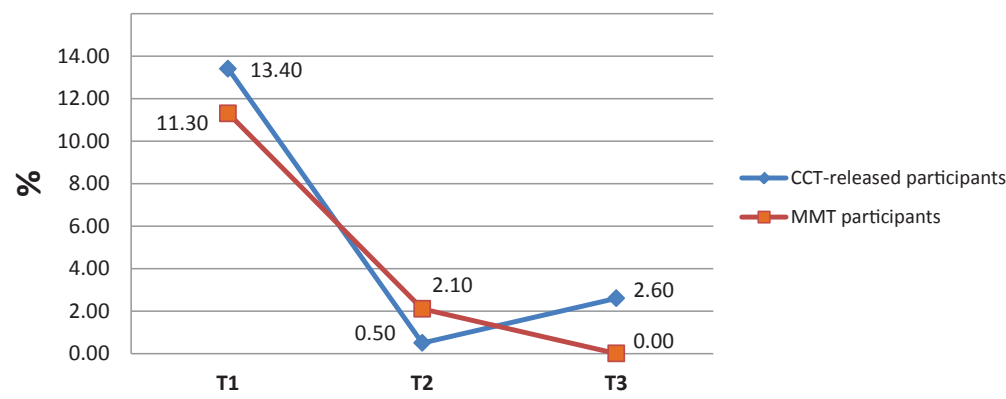
4. Monthly expenditure on drugs

Figure 5

Median number of days using drugs during last 30 days
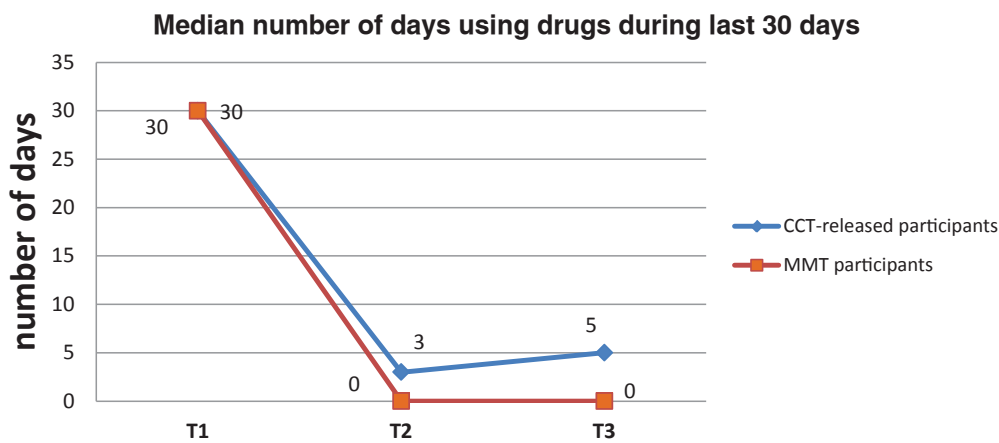
At 3 months before treatment entry, both groups spent the same amount of money on drugs a month (4.5 mil dongs). Over 3 time points, both groups spent less money on drugs. By visual inspection of the graph, it looks like CCT group were spending more money on drugs at T2 and T3. However, this difference did NOT reach statistical significance. These results show that **both CCT and MMT are equally effective** at reducing the monthly amount of money spent on drugs.

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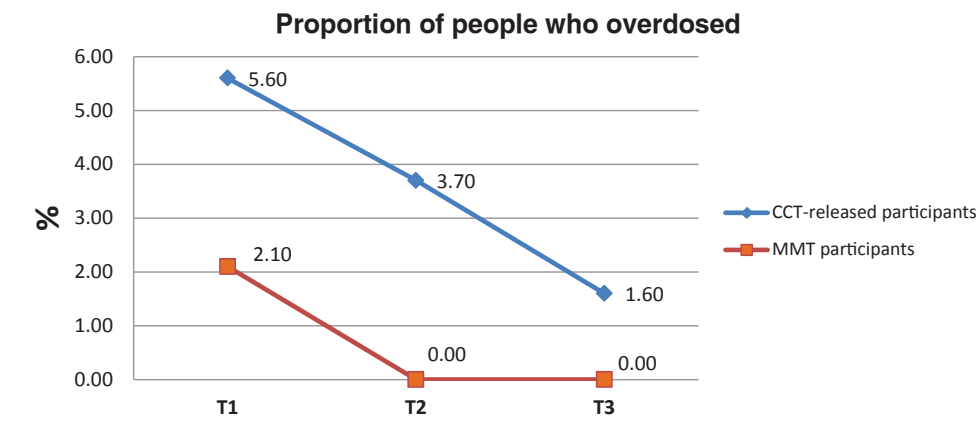## 5. Drug use related illegal behaviors

Figure 6

At 3 months before treatment, both groups have similar proportion (confirmed by statistical test) of people who committed illegal behaviors related to their drug use. Over 3 time points, the proportion of participants who violated illegal behaviors reduced for both groups and the level of change was similar for both groups. These results show that both CCT and MMT are **equally effective** at reducing illegal behaviors.

6. Non-fatal overdose

Figure 7

Proportion of people who overdosed

At 3 months before treatment, both groups have similar proportion (confirmed by statistical test) of people who experienced overdose. Over 3 time points, the proportion of participants who overdosed was reduced for both groups and the level of change was similar for both groups. These results show that both CCT and MMT are **equally effective** at reducing overdose incidents.

7. Employment

Figure 8

Proportion of people who were employed - full-time and part-time
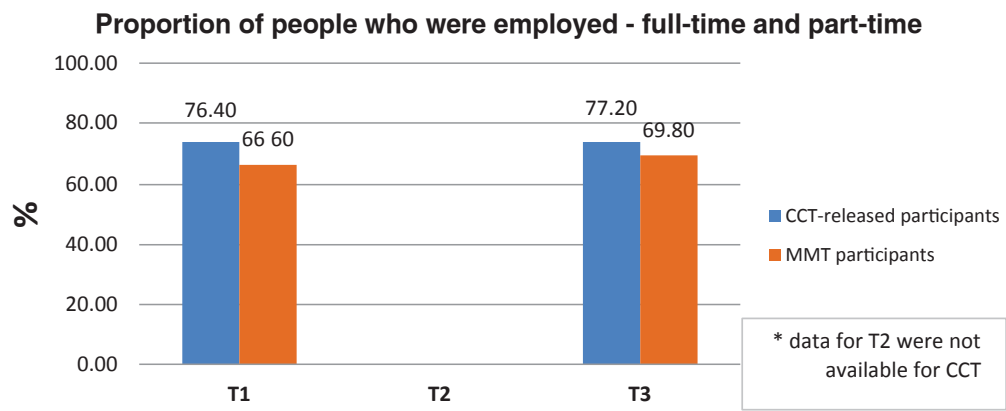
At 3 months before treatment, both groups had high rates of employment, a combination of full-time and seasonal work but the employment rate of CCT group was higher. The higher proportion employed for CCT group persisted at follow-up. The results show that **neither treatment appears to influence the likelihood of employment**.

8. Monthly legal income

Figure 9

Monthly legal income - for those who are employed
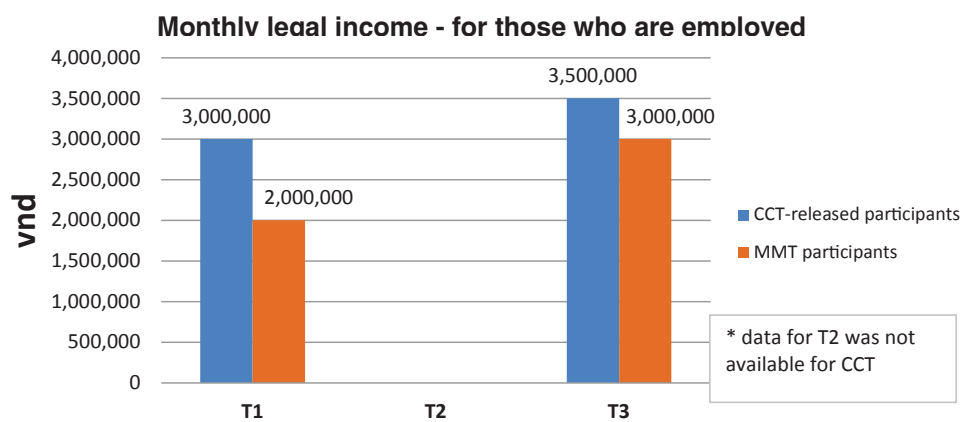
At 3 months prior to treatment, CCT group had higher level of income and this was persistent at follow-up. Over the 2 time points, the level of income increased for both groups. The results show that **both treatment modalities have a small effect on level of legal income**.

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SUMMARY OF PRELIMINARY FINDINGS – PART II

The preliminary findings of PART II suggest:

- MMT modality is more effective for:

    1. Reducing heroin use (urinalysis)

    2. Reducing any drug use (self-report)

    3. Reducing the number of days using drugs

- CCT and MMT modalities are equally effective for:

    4. Reducing monthly expenditure on drugs *(for those who used drugs)*

    5. Reducing illegal behaviors

    6. Reducing overdose

- MMT and CCT have a small effect on:

    7. Increasing monthly legal income *(for those who were employed)*

- Both CCT and MMT do not have any effect on:

    8. Rates of employment

RESEARCH LIMITATIONS

Observation studies have limitations. The limitations of this research are:

1. Except for opioid use outcome measure, which was confirmed by urine analysis, all other outcomes are based on self-report data, which potentially introduced social desirability bias. Underreporting of risk behavior information would have a conservative effect on the measures of association. However, this is unlikely to affect the comparison of effects between groups because underreporting of risk behaviors, if occurred, would apply equally for both groups. Similar proportions of positive urinalysis and self-reported drug use for both groups indicates truthful reporting of drug use behaviors;

2. Due to convenience sampling technique, caution must be undertaken when attempting to generalize the findings to all CCT or MMT participants in Hai Phong city and in Vietnam;

FINAL RESULTS - MARCH 2015

The FINAL research findings to be presented in March 2015 will include the followings:

1. Comparison of effectiveness between two treatment modalities across 5 time points. This will ensure more confirmative results on treatment effects

2. Cost-effectiveness analysis results: These will assist to answer question such as *"Which modality is more cost-effective in reducing the proportion of drug-using participants? What is the cost (could be + or -) for 1% reduction?"*

3. In addition to the 8 outcomes analysed for this preliminary presentation, the final findings presentation will include:

    •   Quality of life

    •   Drug-use related HIV risk behaviors

For comments or questions, please kindly contact:

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