PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Factors associated with HIV testing among male injecting and non-injecting drug users in Lashio, Myanmar: A cross-sectional study
AUTHORS	Yasuoka, Junko; Saw, Yu Mon; Saw, Thu Nandar; Poudel, Krishna; Tun, Soe; Jimba, Masamine

VERSION 1 - REVIEW

REVIEWER	Thomas Kerr, PhD Director, Urban Health Research Initiative British Columbia Centre for Excellence in HIV/AIDS Associate Professor, Dept. of Medicine University of British Columbia St. Paul's Hospital 608-1081 Burrard Street Vancouver, British Columbia, Canada I have no competing interests
REVIEW RETURNED	15-Mar-2013

THE STUDY	There are minor issues regarding the description of the sample and the methods which are noted in the review. The writing is very good but needs a bit of attention. There is a lack of references to work done in similar (e.g., south east Asian) settings.
RESULTS & CONCLUSIONS	The interpretation needs some work, in particular, the recommendation that more drug users be registered within government registries as a means of increasing access to HIV testing is problematic.
GENERAL COMMENTS	This is an interesting and unique study that assessed the prevalence and correlates of HIV testing among injection drug users (IDU) and non-injection drug users (NIDU) in Myanmar. This may be the first study of its kind, and it is of significance given the high burden of HIV infection among drug users in this setting. There are a few shortcomings with the presentation that are detailed below. These considered this is still a very good study that makes a unique contribution. Abstract: 1. The authors note that IDU may avoid HIV testing due to the illegal nature of drug use. Later they correctly note that the stigma and discrimination associated with drug use is a key barrier to HIV testing. This should probably be noted in the abstract as well. 2. The authors note that injecting twice a day was associated with a lower likelihood of receiving HIV testing. However, it seems that this variable captures those who inject twice a day or more often. This should probably be corrected.

	Methods: 3. Could the authors elaborate on how “visible signs of injection” were observed? Who did this checking and how was it done? 4. Can the authors provide some justification for recruiting only males? Why were females excluded? The title of the paper should probably note that the sample only included males. 5. The authors also note that they did not recruit individuals with “serious drug dependency”. If this means they did not accept people who were intoxicated they should note this. If they did not take people with “drug dependency” then the sample suffers somewhat from selection effects and this should probably be noted in the limitations section. Specifically, they may have recruited a more stable population with higher rates of HIV testing as those with more acute drug dependency issues are probably less likely to access HIV testing. 6. It would be helpful if the authors could describe in greater detail the independent variables considered and how these were managed (e.g., dichotomized, etc). 7. The authors early on say that the participants were recruited from a service but later say that they went out in to the field to recruit people. Can they clarify this and be more consistent regarding the recruitment procedures? 8. The authors arguably provide a bit too much detail regarding the age distribution and this could probably be trimmed down. Discussion 9. The authors refer to harm reduction programs being implemented in some settings. This is the first mention of this. Could they provide more details? What harm reduction programs were implemented and did these programs offer HIV testing? 10. The authors contrast their results with work done in Italy when data from more similar settings such as Thailand are available (see Ti et al, AIDS Care). Perhaps they could consider referring to these works. The same applies to a later discussion about the association between drug treatment and HIV testing exposure (see Ti et al, AIDS Care). 11. The authors point out that individuals who take greater risks are less likely to be tested, but then also point out that those with greater perceived risk of HIV infection are more likely to be tested. Can they try and reconcile these seemingly inconsistent findings somehow? 12. It is somewhat concerning that the authors recommend registering drug users as a means of scaling up testing. There are many potential problems associated with such a system of registration (e.g., stigma, discrimination), and there are easier ways to scale up testing. Can the authors perhaps consider taking a more critical approach this aspect of their study? It seems a little to simple to conclude that registering drug users is a good way to increase access to testing when other, less stigmatizing options are available. Tables

	13. It seems as though some tracked changes may have been left in the tables. 14. Can the authors define “unsafe injection practices”? This could mean many different things. 15. Although the authors have done a nice job of writing up this study, there are a few places where the language could be improved upon.

REVIEWER	Zelaya, Carla Johns Hopkins Bloomberg School of Public Health, Epidemiology
REVIEW RETURNED	21-Mar-2013

THE STUDY	The paper title makes the research question unclear. It states the recommendation rather than the research question. The introduction does not explain how looking at factors associated with HIV testing, will help to make recommendations for integration of HIV testing into drug treatment. RDS inadequately described. No information on how representative the sample was. Rationale for recommendations very unclear. Also why was only one finding incorporated into recommendations. Not taken into account that other findings (e.g., high risk IDU were less likely to test) could be very important for future recommendations.
RESULTS & CONCLUSIONS	It is very worrying to me that the main recommendation is to increase HIV testing in drug treatment services, when there is no information given in this paper about the nature of drug treatment services in Myanmar. Is drug treatment voluntary? Does it have human rights issues? Are there ethical issues? Does drug treatment use internationally recognized methods e.g., methadone?
GENERAL COMMENTS	Other comments: Title: Should reflect research question, not recommendation. Article focus: The articles focus does not match with the title. Need to explain how identifying factors associated with HIV testing among injectors and non-injectors will help to integrate HIV testing in drug treatment services Methods: RDS very poorly described. How many seeds? How were seeds chosen (i.e., what characteristics? Location for recruiting very unclear. Do they think this sample is representative? Are findings generalizable to target population? Results: Finding that higher risk IDU and NIDU are less likely to test, seems like a big problem to me. Are active injectors not seeking testing due to confidentiality concerns or stigma? Or is it that while actively injecting the HIV testing is not a major priority given other more pressing concerns in daily life. Not properly discussed, and no recommendations on how to address this problem. Similarly the finding that ethnic minorities are less likely to test, is also an important finding. Not discussed adequately, and no

	recommendations made. Recommendation that registering as a drug user is beneficial is extremely worrying. What are the ethical problems with this? What will happen to drug users who register?

VERSION 1 – AUTHOR RESPONSE

Reviewer 1

1. We agree with the reviewer's comment. The previous sentence ("However, uptake of HIV testing is a major challenge within the drug-using population due to the stigma and discrimination associated with their illegal drug use behaviors.") has been rephrased as follows: "However, uptake of HIV testing is a major challenge within the drug-using population due to the stigma and discrimination associated with their illegal drug use behaviors." (Abstract, line 3)

2. As suggested, we revised the relevant description from "who inject twice daily" to "who injected at least twice daily". (Abstract, line 14; Results, line 14, page 8 and line 7, page 9; Discussion, line 11, page 11, line 6, page 14, lines 9-10, page 13 and line 4, page 17)

3. As suggested we rephrased the previous sentence ("In this study, IDUs were defined as individuals who have visible signs of injection and/or who injected drugs in the past 6 months.") to read as follows: "In this study, IDUs were defined as individuals having visible signs of injection, as confirmed by medical personnel in a private setting, and/or who had injected drugs in the past 6 months." (Methods, lines 6-8, page 3)

4. There are three reasons why this study targeted only males: 1) This study is a part of a larger study which examined sexual behaviors of male drug users only; 2) Data on arrests and drug treatment in Myanmar has suggested that drug use is predominantly an issue of the male population (Devaney, 2006); and 3) By the RDS sampling method, females who did not come to drug treatment services could have been recruited. We have revised the study title according to your kind suggestion as follows: "What are the factors associated with HIV testing among male injecting and non-injecting drug users in Lashio, Myanmar?: A cross-sectional study"

5. In this study, "suffering from a serious drug dependency" was defined as drug users who are under the influence of drugs and exhibit withdrawal symptoms at the time of interview. We supposed that a respondent may have difficulty answering and recalling his past behaviors in such a condition. On the other hand, we included drug users who had a "drug dependency" in this study. Therefore, to make the point clear, we rephrased the pertinent description as follows: "exhibiting no withdrawal symptoms and not under the influence of drugs at the time of interview". (Methods, lines 11-12, page 3)

6. Following the reviewer's advice, we added information on independent variables as follows: "Assessed socio-demographic variables included age (IDUs: ≤29 vs. >29 years old; NIDUs: ≤25 vs. >25 years old), marital status (single vs. married vs. divorced/widowed), race/ethnicity (Burma vs. Shan vs. Kachin vs. others), educational background (primary/ no formal education vs. secondary education vs. high school or above), employment (non-regular job vs. regular job), and Lashio residence status (migrant vs. resident). Variables on drug use and sexual behaviors included type of illicit drug use, route of administration for drug use, frequency of injecting drug use, unsafe injecting practice (receptive or distributive syringe sharing; yes vs. no), poly drug use (yes vs. no), disclosure of sexual orientation (hetero vs. bi/homo sexual), having more than one partner (yes vs. no), and history of female sex worker visit (yes vs. no). Variables regarding health services utilization included ever undergoing drug rehabilitation treatment (yes vs. no), ever registered as a drug user (yes vs. no), and ever convicted for drug related crimes (yes vs. no). All variables were measured for the past 6 months

unless otherwise stated." (Methods, lines 10-17, page 5, and lines 1-7 page 6)

7. We recruited participants from a local drop-in centre and other field sites. To make the point clear, we revised the previous sentence ("The lead researcher and trained interviewers went to field to recruit participants who were willing to participate in this study without coming to a DIC.") to read as follows: "The research team also visited various field sites (shooting gallery, drug users' home, and cemetery, etc.) to recruit participants who were willing to participate in the study but did not want to come to the DIC." (Methods, lines 1-3, page 7)

8. As suggested, we condensed the sentences on age distribution as follows: "Among IDUs, 48.7% were between 21-30 years and 31.6% were between 31-40 years of age. Of the NIDUs, 63.8% were between 21-30 years and 14.3% were between 31-40 years." (Results, line 4, page 8)

9. Following the reviewer's advice, we added information on the harm reduction programs as follows: "Such harm reduction programs include primary health care services, needle and syringe exchange programs, recreational activities (tea, video, sports and games), and drug/HIV counseling." (Discussion, lines 1-3, page 11)

10. As suggested, we added information on the Thailand IDUs' HIV testing rate as follows: "Nonetheless, a comparably high HIV testing rate (76.2%) in the past 6 months was reported among Thai IDUs." (Discussion, lines 6-7, page 11)

11. Perceived HIV risk was considered as the Individual's perception. HIV risk perception may vary depending on the person's experiences, the education they received on HIV, and/or HIV counseling through testing. We revised the previous sentence ("They may perceive themselves as at risk of HIV infection because they learn their partner's HIV status or may weigh the implications of their risky drugs use and sexual behaviors.") to read as follows: " Such individuals may perceive themselves as at risk of HIV infection after learning their partner's HIV status, or they may be compelled to weigh the implications of their risky drug use and sexual behaviors, prompting them to seek HIV counseling and to have their HIV status tested.." (Discussion, lines 5-8, page 14)

12. Registering as a drug user is mandatory and also serves as a gateway to access drug treatment services in Myanmar. We added information on the drug user registration system in Myanmar as follows: "Registration as a drug user is a way to access drug treatment, including MMT and other medical services, at government-run facilities in Myanmar. Following registration, drug users are scheduled to receive a minimum of six weeks compulsory detoxification. Drug users who fail to register or non-compliant with treatment may face a three-to-five-year prison sentence. Currently, drug treatment in Myanmar is provided through 26 major drug treatment centers (DTCs), with a 450 bed capacity per day, and 40 minor DTCs." (Discussion, lines 14-18, page 12 and lines 1-2, page 13)

13. Thank you for your note. We revised the tables accordingly (Living status variable, Table 2, page 24).

14. We added our definition of "unsafe injection practices" under Table 2 as follows: "had either receptive or distributive needle/syringe sharing" (Table 2, page 24).

15. The manuscript was edited by a native English speaker and researcher in the public health field.

Reviewer 2

1. We revised the study title ("Integrated HIV testing into drug treatment to increase testing uptake among male injecting and non-injecting drug users in Lashio, Myanmar: A cross-sectional study") to read as follows: "Factors associated with HIV testing among male injecting and non-injecting drug

users in Lashio, Myanmar: A cross-sectional study"

2. We added the following sentence to the Introduction section in order to support HIV testing and drug treatment. (This is also discussed in the Discussion section.) "Drug treatment, including methadone maintenance treatment (MMT), is provided through government-run medical facilities in Myanmar, and HIV testing is not a compulsory service in the treatment. Despite the critical importance of these population sub-groups to HIV prevention and treatment efforts, only limited information is available on the characteristics of both IDUs and NIDUs undergoing HIV testing in Myanmar." (Introduction, lines 6-11, page 2)

3. We added further information on RDS as follows: "The first-round respondents, also known as "seeds", were recruited from the pool of service-recipients at a local drop-in center (DIC). From three seeds (two IDUs and one NIDUs), a total of 174 IDUs and 216 NIDUs (not including seeds) meeting the study criteria were recruited. The recruitment process did not distinguish between IDUs and NIDUs. Both IDUs and NIDUs were allowed to recruit any friends who used drugs by means of administration. Distribution of coupons was terminated when the target sample size was attained." (Methods, lines 4-11, page 4)
In addition, we revised the previous sentence ("Second, our results may not be generalized to drug users in other cities as both IDUs and NIDUs from other parts of Myanmar may have different characteristics than those in Lashio.") to read as follows: "Second, our results may not be generalized to drug users in other cities or to drug users who did not participate in this study because they may have different behaviors and characteristics than those who participated. However, our finding are generally consistent with those of another study from Thailand" (Discussion, lines 7-11, page 16)

4. We added a recommendation for high-risk populations as follows: "Hence, HIV testing programs targeting drug users who exhibit high-risk behaviors are urgently needed, and such programs might also fruitfully incorporate educational programs toward reducing discrimination against drug use." (Discussion, lines 1-3, page 14)

5. In response to the reviewer's concern and questions, we added information on drug treatment in Myanmar as follows: "Registration as a drug user is a way to access drug treatment, including MMT and other medical services, at government run facilities in Myanmar. Following registration, drug users are scheduled to receive a minimum of six weeks compulsory detoxification. Drug users who fail to register or do not comply with treatment may face a three-to-five-year prison sentence. Currently, drug treatment in Myanmar is provided through 26 major drug treatment centers (DTCs), with a 450 bed capacity per day, and 40 minor DTCs." (Discussion, lines 14-18, page 12, and lines 1-2, page 13)

Other comments
1.We revised the study title from "Integrated HIV testing into drug treatment to increase testing uptake among male injecting and non-injecting drug users in Lashio, Myanmar: A cross-sectional study" to "Factors associated with HIV testing among male injecting and non-injecting drug users in Lashio, Myanmar: A cross-sectional study"

2. As described above, we added information on drug treatment in Myanmar as below: "Registration as a drug user is a way to access drug treatment, including MMT and other medical services, at government-run facilities in Myanmar. Following registration, drug users are scheduled to receive a minimum of six weeks compulsory detoxification. Drug users who fail to register or do not comply with treatment may face a three-to-five-year prison sentence. Currently, drug treatment in Myanmar is provided through 26 major drug treatment centers (DTCs), with a 450 bed capacity per day, and 40 minor DTCs." (Discussion, lines 14-18, page 12, and lines 1-2, page 13)

3. We added RDS information as follows: “The first-round respondents, also known as “seeds”, were recruited from the pool of service-recipients at a local drop-in center (DIC). From three seeds (two IDUs and one NIDUs), a total of 174 IDUs and 216 NIDUs (not including seeds) meeting the study criteria were recruited. The recruitment process did not distinguish between IDUs and NIDUs. Both IDUs and NIDUs were allowed to recruit any friends who used drugs by either means of administration. Distribution of coupons was terminated when the target sample size was attained.” (Methods, lines 4-11, page 4)
In response to the reviewer’s questions of generalizability to the target population, we revised the previous sentence (“Second, our results may not be generalized to drug users in other cities, as both IDUs and NIDUs from other parts of Myanmar may have different characteristics than those in Lashio.”) to read as follows: “Second, our results may not be generalized to drug users in other cities or to drug users who did not participate in this study, because they may have different behaviors and characteristics than those who participated. However, our findings are generally consistent with those of another study from Thailand.” (Discussion, lines 7-11, page 16)

4. Following the reviewer’s advice, we rephrased and added discussion points as follows: “It is not surprising that the drug users are more prone to feel reticent to learn of their HIV status through testing due to their risky behaviors and to stigma/discrimination related to drug use and its illegality. However, injecting drug use is the main mode of HIV transmission in Myanmar, and studies indicate that poly drug users are especially likely to practice unsafe sexual behaviors. HIV transmission among drug users engaging in risky behaviors might thus be fueling the HIV epidemic in Myanmar. Hence, HIV testing programs targeting drug users who exhibit risky sexual behaviors are urgently needed, and such programs may also fruitfully incorporate educational programs toward reducing discrimination against drug users.” (Discussion, lines 13-18, page 13, and lines 1-3, page 14)

5. We rephrased and added a recommendation regarding ethnic minorities. The previous sentence (“Especially who do not speak or read Myanmar language may have had difficulty in accessing HIV testing services.”) was rephrased to read as follows: “Owing to a lack of Myanmar language ability, participants who do not speak or read the Myanmar language may have had difficulty in accessing HIV testing services. Other ethnicities would also benefit if HIV testing services could be conducted in languages representing a broader range of ethnicities such as Shan and Kachin, or if the services could employ staff conversant in the languages of other ethnicities.” (Discussion, lines 17-18, page 15, and lines 1-4, page 16)

6. Registering as a drug user is mandatory and it also is a gateway to access drug treatment services in Myanmar. We added information on the drug use registration system in Myanmar as follows: “Registration as a drug user is a way to access drug treatment, including MMT and other medical services, at government-run facilities in Myanmar. Following registration, drug users are scheduled to receive a minimum of six weeks compulsory detoxification. Drug users who fail to register or do not comply with treatment may face a three-to-five-year prison sentence. Currently, drug treatment in Myanmar is provided through 26 major drug treatment centers (DTCs), with a 450 bed capacity per day, and 40 minor DTCs.” (Discussion, lines14-18, page 12 and lines 1-2, page 13)

Additional revision
1. The pervious sentence (“A multivariate analysis was performed separately for IDUs and NIDUs.”) was rephrased to read as follows: “Multivariate analysis was performed separately for IDUs and NIDUs” (Abstract, line 9, page 1)

2. We rephrased and added new sentences to the conclusion section. The pervious sentence (“In this study, more IDUs underwent HIV testing than did NIDUs. Those who had ever received drug treatment were more likely to test for HIV in both IDUs and NIDUs. Integrating HIV testing into drug treatment and expanding drug treatment may be effective to increase HIV testing uptake among both

IDUs and NIDUs in Myanmar") was rephrased to read as follows: "In this study, more IDUs underwent HIV testing than did NIDUs. Those who had ever received drug treatment were more likely to test for HIV in both IDUs and NIDUs. Integrating HIV testing into drug treatment and expanding drug treatment may be effective to increase HIV testing uptake among both IDUs and NIDUs in Myanmar." (Abstract, line 18-21)

3. In introduction, the pervious sentence ("According to UNAIDS, approximately 240,000 people were living with HIV/AIDS and HIV prevalence was 0.5% among the adult population in Myanmar at the end of 2011.") has been rephrased as follows: "According to the Joint United Nations Programme on AIDS (UNAIDS), approximately 240,000 people were living with HIV/AIDS at the end of 2011, and HIV prevalence was 0.5% within Myanmar's adult population." (Introduction, line2-4, page 1)

4. The pervious sentence ("HIV testing is a highly cost-effective intervention for HIV risk reduction and transmission. Early detection of HIV infection in individuals is essential to provide HIV-related support, care, and treatment, and to prevent further spread of infection.") was rephrased as follows: "HIV testing is a highly cost-effective intervention for reduction of HIV risk and transmission Early discovery of HIV infection in individuals is essential to provide HIV-related care and treatment, and to prevent further spread of the disease to others." (Introduction, line11-13, page 1)

5. We added a recommendation for IDUs with regular job as below: "Further investigation may thus be necessary to explore the impact of employment status on HIV testing behaviors in different contexts." (Discussion, lines 2-4, page 15)

6. We added six new references as follows:

16. Asian Harm Reduction Network (AHRN), Annual Performance Report,Myanmar 2005.
18. Ti L,Hayashi K, Kaplan K, et al.HIV testing and willingness to get HIV testing at a peer-run drop-in centre for people who inject drugs in Bangkok, Thailand. BMC Public Health Mar 2012; 13:189.
21. Devaney, M., Reid, G., Baldwin, S. Situational analysis of illicit drug issues and responses in the Asia-Pacific region. 2006. Burnet Institute's Centre for Harm Reduction and Turning Point Alcohol and Drug Centre.
26. Hayashi K, Milloy MJ, Fairbairn N, et al. Incarceration experiences among a community-recruited sample of injection drug users in Bangkok, Thailand. BMC Public Health 2009; 30:492.
27. Patterson TL, Semple SJ, Zians JK, et al. Methamphetamine-using HIV-positive men who have sex with men: correlates of polydrug use. J Urban Health 2005; 82:I120-i126.
28. Fernández MI, Bowen GS, Varga LM, et al. High rates of club drug use and risky sexual practices among Hispanic men who have sex with men in Miami, Florida.Subst Use Misuse 2005; 40:1347-62.

VERSION 2 – REVIEW

REVIEWER	Kerr, Thomas British Columbia Centre for Excellence in HIV/AIDS
REVIEW RETURNED	22-Apr-2013

GENERAL COMMENTS	The authors have done a thorough job of responding to the comments of the reviewers.

REVIEWER	Carla E. Zelaya, Assistant Scientist Department of Epidemiology Johns Hopkins Bloomberg School of Public Health USA
REVIEW RETURNED	03-May-2013

- The reviewer completed the checklist but made no further comments.