Author's response to reviews

Title: Spatial Distribution and Characteristics of Injecting Drug Users (IDU) in Five Northeastern States of India

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Author's response to reviews: see over
Reply to comments:

**Reviewer:** V. Anna Gyarmathy

Thanks for your constructive and very important suggestions which have given us an opportunity to improve our manuscript. Hope, we have been able to done so.

1. **Abstract:** What do the authors mean by “overlapping of injecting drug and sex’’? Please write out the actual network size, instead of writing “medium and large”.

   Reply: I some locations male and female IDUs engaged in sex with each i.e. both sex work and injecting drug use overlapped in same location. We tried to explain that by “overlapping of injecting drug and sex”. We have re-written the sentence as “Illicit sexual activities between male and female IDUs were evident in some locations.”. We have also given actual network size instead of large or medium. (Page1 result)

2. Can you please spell out (p6, par2), what type of experts the trainers were?

   Reply: The changes have been made (p8, par1). The research team involved in the data collection was imparted appropriate training by experienced social scientists who were trained in qualitative research methodology.

3. It is unclear how snowballing was used to identify the sites. Who were the “units” in the snowball (people, organizations, IDUs, social workers…?), and how did they refer to the next line of units?

   Reply: Individuals was unit in the snowball. The details of referral system have been described (p7, par2). Snowballing technique (chain of referrals) was used for identifying the locations. The initial KIs were asked to provide further information about other persons who would be able to provide more information about places where IDU congregated. This process of identifying KIs continued till no more further information was being generated. Similarly, IDUs in one identified location were also asked to act as KIs for further identifications of IDU locations. This process continued until we failed to get any new information about IDU locations.

4. To differentiate between “sex” and “sex”, please use “gender” for the sociodemographic characteristic and “sex” for the sexual act.

   Reply: The suggestion is complied

5. What is the definition of sharing injecting drugs with “different groups”?

   Reply: We elicited this information from IDUs during in-depth interview (p9, para2). In order to obtain more insight about sharing networks, IDUs were further asked – “With whom do you share your needle/syringes? Do you share your needle/syringes
with same group of injecting partners?” During our analysis, we found that large proportion of IDUs said that they shared needle/syringes other than their usual partners and we considered them as “sharing with different groups”.

6. More details are needed about the questions in the questionnaire. Was this an ethnographic survey of key informants with open ended questions or a structured survey of IDUs? This should be clarified.

Reply: More details have been described in the methodology section as suggested for the clarity of data collection process. The query is clarified in the page no 8 & 9. Some of the information was collected during mapping process by direct observation and informal discussion with IDUs available in the locations or from KI during mapping using the mapping format. On the other hand other information (such as sharing behaviours, procurement of needle/syringes, networking, and attitude) was collected through in-depth interview with IDUs using a semi-structure interview guide.

“After identifying the locations, the field teams prepared a hand drawn sketch of the identified location with key landmarks, boundaries and other features. The field teams spent times in the location developing friendship with drug users in the locations and talking to them. The current/ex-IDUs in the team introduced the field teams to IDUs in the locations and helped in creating rapport and trusting relationship of the field teams with the IDUs. The field teams in the process assessed the characteristics of identified locations through direct observations in the locations, interaction with IDUs available in the locations and also by asking KIs. All the information during mapping process was collected using a mapping format. The information collected were geographical description of the identified location (e.g. state, district, urban/rural, name of the village/town, important landmark by which the location could be identified), types of locations (physical characteristics of locations), nature of the location (drug and sex work site, shooting gallery), demographic information of IDUs (age and gender) and average numbers of IDUs congregated in the locations per day. Based on information obtained during the preliminary exploratory interview with KIs, we pre-coded the types of locations into eight categories (such as home, pharmacy, parks, abandoned building, cemeteries/graveyards, riverside, public toilet, tea stall). However, any new types of locations explored during the survey were also specified in the format apart from those eight categories. To ascertain numbers of IDUs per locations, IDUs available in locations or KIs were asked to tell average numbers of IDUs usually assembled in the locations. Similarly, KIs or IDU were also asked about the age range of IDUs assembled in the locations. A shooting gallery was defined as a place where injecting equipments were readily available and can be purchased, borrowed, rented. A drug and sex work site was defined as an IDU location where male and female IDUs engaged in illicit sex.

In-depth interviews with current IDUs were also conducted using a semi-structured interview guide to get better insight about the risk behaviours of IDUs, procurement of needle/syringes, and attitudes of community and health care providers (HCP) towards IDUs. Injecting drug users who were present in the location during
study team visit were selected purposively for the in-depth interviews. To be eligible for the in-depth interview, an IDU had to be minimum 18 years of age, injected drug at least once in the last six months. Participants who were under the influence of drug (intoxicating state) and aggressive at the time of interview were excluded from in-depth interview. Except for Nagaland, one IDU was interviewed from each selected locations. In Nagaland, 2-3 IDUs were selected for in-depth interview from each selected locations. The focus of discussion in in-depth interview with IDUs was needle/syringe sharing behaviours, sources of procurement of needles and syringes (such as pharmacy, NSEP/NGO, peddlers, friends), network pattern of IDUs and attitude of community and HCPs towards the IDUs. To establish the network size of IDUs, they were asked—“Tell the number of IDUs that you know personally and in turn they also knew you?” To understand needle/syringe sharing practices, IDUs in in-depth interviews were asked—“Please tell, have you injected with needle and/or syringes previously used by other injecting drug users or have passed on your used needle/syringes to others in the last six months?” In order to obtain more insight about sharing networks, IDUs were further asked—“With whom do you share your needle/syringes? Do you share your needle/syringes with same group of injecting partners?”

7. There is nothing in the methods about how social network data was collected: data collection methods and questions asked. Was it aggregate, egocentric or sociocentric data?

Reply: The network data was collected during in-depth interview with IDUs. The network data was sociometric in nature. The average numbers of IDUs assembled per locations and network was different. Information regarding average numbers of IDUs assembled in the locations was collected during mapping through observation or casual discussion of IDUs or KIs. However, information regarding networking was elicited during in-depth interviews with current IDUs. “To establish the network size of IDUs, they were asked—“Tell the number of IDUs that you know personally and in turn they also knew you?”” (p9, par2)

8. What methods of data analysis were used?

Reply: The analysis section has been added (p10 with heading)

9. “Young” is correct, but “adult” is incorrect: 20-year-olds are also adults. Maybe a different term would be better here – or just say those under 25, and 25 and above. The categories <25 and >25 are incorrect: where is 25? So if both <25 and =>25 were observed in about 60% of the sites, how old is the rest 40%? Why did you pick 25 as the cutoff age? The use of “adult” is confusing, because the authors later seem to use it for older than 18.
Reply: As suggested we have written “Under 25” or “above 25” instead of “<25 or >25”. The 60% given was also incorrect which should have been 51%. As suggested the correction has been made. “The ages of IDUs were generally between their early twenties and mid thirties. In the majority of locations (51%), IDUs assembled were of mixed ages i.e. below 25 years and more than 25 years. Close to 20% of locations consisted of IDUs less than 25 years of age, while about 29% of locations consisted of IDUs aged more than 25 years. No exclusive female IDU locations were identified. However, there were female IDUs in about 10% of identified locations.” (p11, par1)

10. The second to last sentence staring with “however” on p9, par1, should be in the limitation section of the discussion.

Reply: Changes have been made as per suggestion

11. It is unclear what the authors mean by “networks”. To me it seems like what they really mean is how many people were hanging out at the location of interest. That is not network size, but group size. The injecting with different groups part in the methods is unclear because of lack of adequate description in the methods.

Reply: We collected two kind of information-i) group size: average numbers of IDUs hanging out at the locations during mapping as you have mentioned; ii) information regarding network was collected from IDUs during in-depth interviews. We have now clarified it in our methodology-“Tell the number of IDUs that you know personally and in turn they also knew you?”. (p9, par2)”. Possible limitation of our network data has also been mentioned in limitation section. (p25)

12. What are local pressure groups (p10)?

Reply: The militant underground organizations are very active in Manipur and Nagaland against drug use. They were mentioned as pressure group. Changes have been made (p14, para2 & p15, para2). “IDUs were afraid of local pressure groups (such as militant underground organization who are against drug use) in Manipur. Some IDUs revealed that some times IDUs were even beaten up by the local militant groups.’ (p16, para1);

13. What do you mean by “punished”? Beaten up, locked up, arrested? By whom?

Reply: Punishment mainly meant “beaten up”. “Some IDUs revealed that some times IDUs were even beaten up by the local militant groups.” (p16, para1);

14. The part of the results on sharing behaviour is unclear. Were the drug users asked or were the key informants asked? This should be spelled out in the methods, but now it is not.
Reply: The information regarding sharing behaviours was collected from IDUs during id-depth discussion which has been clarified in methodology as suggested. “To understand needle/syringe sharing practices, IDUs in in-depth interviews were asked –“Please tell, have you injected with needle and/or syringes previously used by other injecting drug users or have passed on your used needle/syringes to others in the last six months?”” (p9, para2)

15. The quotes on p10-p11 are very interesting and informative.

Reply: Thanks for the appreciation

16. Can you please explain why graveyards are a popular place for injecting? This is a very strange finding, and it would be interesting to learn more about it.

Reply: Due to associated stigma/fear from police, IDUs may generally prefer isolated places. Hence places such as graveyards may be found to be popular locations. “Isolated places like graveyards may also be suitable for such clandestine activities as people are generally scared of graveyards and usually avoid visiting graveyards.” (p21, para1).

17. P12, par 1: pathogens get transmitted from not because the users don’t know each other, but because one is infected and the other is not. Please rewrite sentence accordingly.

Reply: As per your suggestion, modification has been done “Use of such contaminated equipments may spread pathogens from an infected individual to uninfected users.”. (p21, para1)

18. What do the authors mean by “interface”?

Reply: By “interface” we mean that there is link between each other i.e. “sex work” and “drug use”. However, we have modified the whole paragraph to give better explanation- “Injecting drug use is perceived predominantly as a male problem in India. However, this study highlighted significant presence of female IDUs in all the states of northeastern region of India. One notable finding of the study was regarding evidences of illicit sexual interaction between male and female IDUs in some locations. Injecting drug using female sex workers may most often engage in sex with male IDUs to support their drug use habit. It was also found in a previous study in Manipur that many female IDUs worked as sex workers to support their drug habit as well as livelihood making them more vulnerable to HIV [18]. That study also recorded 57% prevalence of HIV among injecting drug using female sex workers [18]. They may get infected with HIV through sexual interaction with male IDUs and these female IDUs may, in turn, transmit the infection to general populations through their non-IDU sexual clients. Similarly, male IDUs may also be at risk of acquiring HIV and other STIs due to sexual relationship with female IDUs. Overlapping of both
sex and injecting risk behaviors put IDUs at dual risk of acquisition and transmission of HIV and other blood borne infections.” (p21, para1)

19. It seems like the words “network” and “networking” is incorrectly used to mean “groups” and “interactions”.

Reply: This time we have tried to clarify how data on ‘network’ was collected as clarified above. We have also mentioned limitations of our network data in limitation section.

20. The limitation section is missing from the discussion.

Reply: We have added the limitation section now (p24-25).

21. Abbreviations: What is EHA? What is OSD? Make sure the list of abbreviations in complete. There are way too many unconventional abbreviations.

Reply: These abbreviations have been omitted from the manuscript as these are names of some organization working there.

22. Table 1: this table would be more informative as a map. Table 4 should be labelled as table 3. The footnotes have too much additional information – maybe they should be presented as part of this or another table.

Reply: We have incorporated to show the region. However, we have modified the table 1 to make it more informative as per another reviewer. Table 4 has been labeled as Table 3. Other data of Table 3 have been described in text only as these data were collected from in-depth interview.

23. Discretionary Revisions Table 2: this could be presented in a bar chart

Reply: It is very difficult to present it in a chart as numbers categories are very high (five states in one axis and 6/7 categories in another axis)
Reviewer: Danielle Ompad

24. METHODS: Why was a location considered to be where two or more IDUs gathered? Two seems to be a very low threshold for a “gathering.” Please provide the justification for this definition.

Reply: This was done based on our assumption that there should be at least two IDUs to engage in risky injecting practices. The justification for the definition is added (p6, para1) “Presence of two IDUs is minimum requirement for engaging in risky injecting practices such as sharing of injecting equipment, hence we considered minimum threshold of two IDUs in defining a IDU locations.”

25. METHODS: More detail is needed for the “various methods and techniques to be adopted for identifying sites and collecting qualitative data.” (p. 6)

Reply: We have added more detailed methodology adopted for identifying locations and collecting qualitative data in page no 7 to page no 9.

“Data Collection:

Mapping of the locations were carried out by the field teams through extensive field visits in all the five states. All the districts and sub-divisions were covered. Mapping was facilitated by KIs who were closely acquainted with IDUs in the locality such as current IDUs (including peer educators), ex-IDUs; out-reach workers and other persons associated with interventional activities with IDUs (e.g. persons from NGOs working with IDUs).

Snowballing technique (chain of referrals) was used for identifying the locations. The initial KIs were asked to provide further information about other persons who would be able to provide more information about places where IDU congregated. This process of identifying KIs continued till no more further information was being generated. Similarly, IDUs in one identified location were also asked to act as KIs for further identifications of IDU locations. This process continued until we failed to get any new information about IDU locations. The KIs were asked to bring the study teams to the locations during peak time of congregation so that more information regarding the activities and characteristics of study population could be obtained. To ensure quality of the data, at least 10% of identified locations by the field teams were cross-verified by the state coordinators and other authors. The research team involved in the data collection was imparted appropriate training by experienced social scientists who were trained in qualitative research methodology. They were enlightened about various methods and techniques to be adopted for identifying locations and collecting qualitative data from the field. Most of the research team members involved in the data collection for the study had prior experience in this field.

After identifying the locations, the field teams prepared a hand drawn sketch of the identified location with key landmarks, boundaries and other features. The field teams spent times in the location developing friendship with drug users in the locations and talking to them. The current/ex-IDUs in the team introduced the field
teams to IDUs in the locations and helped in creating rapport and trusting relationship of the field teams with the IDUs. The field teams in the process assessed the characteristics of identified locations through direct observations in the locations, interaction with IDUs available in the locations and also by asking KIs. All the information during mapping process was collected using a mapping format. The information collected were geographical description of the identified location (e.g. state, district, urban/rural, name of the village/town, important landmark by which the location could be identified), types of locations (physical characteristics of locations), nature of the location (drug and sex work site, shooting gallery), demographic information of IDUs (age and gender) and average numbers of IDUs congregated in the locations per day. Based on information obtained during the preliminary exploratory interview with KIs, we pre-coded the types of locations into eight categories (such as home, pharmacy, parks, abandoned building, cemeteries/graveyards, riverside, public toilet, tea stall). However, any new types of locations explored during the survey were also specified in the format apart from those eight categories. To ascertain numbers of IDUs per locations, IDUs available in locations or KIs were asked to tell average numbers of IDUs usually assembled in the locations. Similarly, KIs or IDU were also asked about the age range of IDUs assembled in the locations. A shooting gallery was defined as a place where injecting equipments were readily available and can be purchased, borrowed, rented. A drug and sex work site was defined as an IDU location where male and female IDUs engaged in illicit sex.

In-depth interviews with current IDUs were also conducted using a semi-structured interview guide to get better insight about the risk behaviours of IDUs, procurement of needle/syringes, and attitudes of community and health care providers (HCP) towards IDUs. Injecting drug users who were present in the location during study team visit were selected purposively for the in-depth interviews. To be eligible for the in-depth interview, an IDU had to be minimum 18 years of age, injected drug at least once in the last six months. Participants who were under the influence of drug (intoxicating state) and aggressive at the time of interview were excluded from in-depth interview. Except for Nagaland, one IDU was interviewed from each selected locations. In Nagaland, 2-3 IDUs were selected for in-depth interview from each selected locations. The focus of discussion in in-depth interview with IDUs was needle/syringe sharing behaviours, sources of procurement of needles and syringes (such as pharmacy, NSEP/NGO, peddlers, friends), network pattern of IDUs and attitude of community and HCPs towards the IDUs. To establish the network size of IDUs, they were asked—“Tell the number of IDUs that you know personally and in turn they also knew you?”. To understand needle/syringe sharing practices, IDUs in in-depth interviews were asked —“Please tell, have you injected with needle and/or syringes previously used by other injecting drug users or have passed on your used needle/syringes to others in the last six months?”. In order to obtain more insight about sharing networks, IDUs were further asked —“With whom do you share your needle/syringes? Do you share your needle/syringes with same group of injecting partners?”. 


26. METHODS: More detail is needed about the site characteristics collected, specifically the site physical characteristics and the social network characteristics.

Reply: We have added more details in methodology about site characteristics including physical characteristics and social network characteristics.

Regarding site characteristics: (We have consistently described IDU site as IDU location in the revised manuscript)

“After identifying the locations, the field teams prepared a hand drawn sketch of the identified location with key landmarks, boundaries and other features. The field teams spent times in the location developing friendship with drug users in the locations and talking to them. The current/ex-IDUs in the team introduced the field teams to IDUs in the locations and helped in creating rapport and trusting relationship of the field teams with the IDUs. The field teams in the process assessed the characteristics of identified locations through direct observations in the locations, interaction with IDUs available in the locations and also by asking KIs. All the information during mapping process was collected using a mapping format. The information collected were geographical description of the identified location (e.g. state, district, urban/rural, name of the village/town, important landmark by which the location could be identified), types of locations (physical characteristics of locations), nature of the location (drug and sex work site, shooting gallery), demographic information of IDUs (age and gender) and average numbers of IDUs congregated in the locations per day. Based on information obtained during the preliminary exploratory interview with KIs, we pre-coded the types of locations into eight categories (such as home, pharmacy, parks, abandoned building, cemeteries/graveyards, riverside, public toilet, tea stall). However, any new types of locations explored during the survey were also specified in the format apart from those eight categories. To ascertain numbers of IDUs per locations, IDUs available in locations or KIs were asked to tell average numbers of IDUs usually assembled in the locations. Similarly, KIs or IDU were also asked about the age range of IDUs assembled in the locations. A shooting gallery was defined as a place where injecting equipments were readily available and can be purchased, borrowed, rented. A drug and sex work site was defined as an IDU location where male and female IDUs engaged in illicit sex.

Regarding networking
To establish the network size of IDUs, they were asked—“Tell the number of IDUs that you know personally and in turn they also knew you?”. In order to obtain more insight about sharing networks, IDUs were further asked—“With whom do you share your needle/syringes? Do you share your needle/syringes with same group of injecting partners?”.

27. METHODS: Ethical consideration: Was the data with regard to the injection sites provided to any outside parties?

Reply: No, the data was shared with any outside parties. We have added that in the manuscript in the “Ethical Consideration” section. “The data regarding identified locations were not provided to any outside parties.”
28. RESULTS: Page 10, first paragraph: Description of attitudes of health care providers (HCPs) is not helpful. Under what circumstances are HCPs cordial/friendly to IDUs? Under what circumstances are they rude and discriminatory?

Reply: We have added some more information in result section of each state as far as possible as on information elicited during in-depth interviews. The results of in-depth interviews have been presented state-wise in page no 14-19.

Manipur: (p15, para2 & p16, para1)

“One major theme emerged from the in-depth interview was regarding attitude of HCPs towards IDUs. Most of the IDUs revealed that HCPs were generally cordial and friendly towards IDUs. One IDU said-“HCPs treated me like any other general patients and no discrimination was shown because of drug use status.”. However, some IDUs reported differently. One IDU described his experiences-“-----I was suffering from diarrhea. When I went to a hospital the doctor refused to treat me suspecting me HIV/AIDS. Then I went to a NGO working in the field of HIV/AIDS and took my treatment there.”. Attitude of general community’s towards IDUs was largely negative and hostile in the state. IDUs were often ill-treated, rejected and scolded in the community. Most of the IDUs revealed that “stigma and discrimination” towards IDUs was very high among general community. This stigma and discrimination was most often due to association of injecting drug use with HIV/AIDS. One IDUs said that-“---Society look down upon IDUs because they think that IDUs spread HIV/STIs and other diseases.”. IDUs were afraid of local pressure groups (such as militant underground organization who are against drug use) in Manipur. Some IDUs revealed that some times IDUs were even beaten up by the local militant groups.

Nagaland: (P17, PAR1)

In general, IDUs consistently reported that HCPs were cordial or friendly towards drug users and treated them well. However, some IDUs were on different opinions. One IDU described his experiences-“Once I visited a hospital for my health problem. I had to wait long period. It was deliberately done by the doctor knowing that I was a drug addict. The medical attendant also discussed with me using abusing words.”. Another IDU said-“Doctors consider us as trouble makers”. Most of the IDUs revealed that family and community had negative attitudes toward them. One IDU described-“Most people discriminate, looked down upon IDUs, do not care or reject us.”. Similarly another IDU also said- “The community has less concern for the IDUs. We are hated by the community member and church overlooked us. We are isolated from social gathering and considered us as sinner and criminals”. Some IDUs felt that they were discriminated because of relationship of injecting drug use with HIV/AIDS. One IDU said-“Many times IDUs were beaten up and even locked up as punishment of drug use” by community members.”.

Similar description is also given for Mizoram, Meghalaya and Assam.

29. RESULTS: In some settings, pharmacy acquired syringes are considered to be safe. Page 10, 2nd paragraph suggests that this may not be the case in India, or at least in
these northern states. Please describe if and how pharmacy acquired syringes are safe or unsafe in this setting.

Reply: This has been described in the discussion section. Pharmacy was an important source of acquiring needle/syringes in this study among IDUs. However, findings of the study also suggest that IDUs in this setting can hardly afford to purchase needle/syringes regularly from pharmacies to sustain their needs leading to re-use or sharing of needle/syringes. Many times pharmacy may also refuse to sell needle/syringes to known IDUs. Many times, IDUs may be hesitant to purchase needle/syringes from pharmacies regularly, as it may reveal their identity as drug users. Drug users may not like to reveal their identity as it is associated with social discrimination and stigma. For these reasons, we hardly foresee pharmacy as the viable solution for accessing sterile needle/syringes although there is evidence in other settings that pharmacy availability of sterile needle/syringes provides benefit in addition to those derived from NSEP [29]. (p23, par1)

30. METHODS/DISCUSSION: The authors state “…the magnitude and the extent of [the] injecting drug use problem corresponded to the magnitude of the HIV burden in the states…” It is unclear if this in indeed the case because seroprevalence and incidence of HIV among IDUs in each of the five states are not provided, either from seroprevalence surveys done by the authors or data reported from elsewhere. Further, it is unclear how exhaustive the mapping project was for each state. How did the authors know when they had found all the injection sites?

Reply: Seroprevalence data (latest published data from National AIDS Control Society) for all the 5 states have been added in introduction section. However, we have modified that para as below-

As expected, the study demonstrated that injecting drug use problem was more extensive in three bordering states of Myanmar i.e. Manipur, Nagaland and Mizoram. Compared to size of land and population, numbers of locations identified were higher in those three states. The size of IDUs estimated by NACO in 2006 also showed that injecting drug use problem was bigger in these three states. According to NACO’s estimates Manipur had the highest numbers of IDUs followed by Nagaland in the entire country and Mizoram had third highest numbers of IDUs in the northeastern region of India” (p20, par2)

Regarding exhaustiveness of aping, we are giving the clarification in the next question.

31. DISCUSSION: Generally, it is unclear how conclusions can be made on the density of IDU in a particular state because information is not provided about how exhaustive the mapping project was, as stated above.

Reply: We have made every possible effort to make the mapping exhaustive. However, there may be some under-exploration of some locations as the study group is a hidden population, which we have mentioned in our limitation section. We have mentioned the process of mapping in more details (p7 p8)
“Mapping of the locations were carried out by the field teams through extensive field visits in all the five states. All the districts and sub-divisions were covered. Mapping was facilitated by KIs who were closely acquainted with IDUs in the locality such as current IDUs (including peer educators), ex-IDUs; out-reach workers and other persons associated with interventional activities with IDUs (e.g. persons from NGOs working with IDUs).

Snowballing technique (chain of referrals) was used for identifying the locations. The initial KIs were asked to provide further information about other persons who would be able to provide more information about places where IDU congregated. This process of identifying KIs continued till no more further information was being generated. Similarly, IDUs in one identified location were also asked to act as KIs for further identifications of IDU locations. This process continued until we failed to get any new information about IDU locations. The KIs were asked to bring the study teams to the locations during peak time of congregation so that more information regarding the activities and characteristics of study population could be obtained. To ensure quality of the data, at least 10% of identified locations by the field teams were cross-verified by the state coordinators and other authors. The research team involved in the data collection was imparted appropriate training by experienced social scientists who were trained in qualitative research methodology. They were enlightened about various methods and techniques to be adopted for identifying locations and collecting qualitative data from the field. Most of the research team members involved in the data collection for the study had prior experience in this field.”

We have also given limitation of the mapping in the limitation section.(p 24 & 25)

32. DISCUSSION: The authors need to connect their conclusions to the data they collected.

Reply: We have modified the conclusion as per suggestion (p25 & 26). “Despite these limitations, the study was able to provide useful information on injecting drug use problem in the northeastern region of India. The study provided evidences of large presence of injecting drug use problem in the remote and rural areas of the region with difficult terrain underscoring the need to expand the interventional program to rural areas. The study demonstrated that needle/syringe sharing was common practices among IDUs in all the states including in most affected states like Manipur, Nagaland and Mizoram. Needle/syringes were mostly procured from non-NSEP sources such as pharmacy, friends and peddler in these states by the IDUs. It appeared from the study that failure of interventional program to consistently supply sterile needle/syringes to IDUs contributed significantly in sharing behaviours. These findings underline the importance for designing innovative strategy to ensure access of sterile needle/syringes to IDUs in order to contain the epidemic of HIV and other blood borne infections in this region. The findings regarding locations where IDUs congregated may be useful in designing strategy to reach out them. The study also highlighted significant presence of female IDUs across all the states. More innovative strategy will be required to reach out this relatively more hard to reach sub-group of
IDUs as female IDUs may play more important role in HIV transmission dynamics in the region. Other useful insight provided by this study regarding personal network of IDUs, mixing of younger and older IDUs, drug and sex interface and also regarding attitudes of community and health personnel towards IDUs may be taken in to account in further strengthening the interventional program.

33. DISCUSSION: he is no mention of the limitations of the study.

Reply: The section is added now. (p24 & 25)

Minor Essential Revisions

34. While generally well written, some help will be needed with English grammar.

Reply: We have tried to improve the English by showing it our colleagues.

35. Acronyms need to be defined the first time they are used throughout. For example: SACs and KIs (p. 6), RMRC and ICMR (p. 7), OSD and DIC (p. 10).

Reply: We have given the full name abbreviation in the abbreviation section as per journal guidelines. We have deleted OSD from the manuscript. KI has been spelled out first time as per suggestion.

36. INTRODUCTION: When looking at network data, it is important to consider the seroprevalence in the community under study. In the second paragraph, some of the data are 10 to 20 years old (e.g., HIV prevalence in Nagaland and Mizoram). The authors need to provide more recent data, or in the absence of available data, indicate the lack of data and provide and explanation as to why the data is lacking.

Reply: We have added most recent published data regarding prevalence of HIV as per your suggestion. Although declining, Manipur is still reporting 18% prevalence of HIV among drug injecting population in 2007[8]. According to the last published report of HIV sentinel surveillance of India in 2007, HIV prevalence in Nagaland, Mizoram, Meghalaya and Assam among IDUs were 2%, 7.5%, 4.2% and 2.2% respectively (sentinel surveillance). Some recent reports suggest that HIV has been brought under control to some extent but some other blood borne pathogens like HCV is becoming relatively bigger problems in this region [9, 10, 11]. A recent report (2009) indicates 71% prevalence of HCV among IDUs in Mizoram [11]. Similarly, up to 78% prevalence of HCV among IDUs was reported from Manipur in 2008 [9]. (p 4 & 5)

37. RESULTS: Generally, the organization of the results section was hard to follow. It might be more helpful to organize it geographically (e.g., describe the situation in each state).
Reply: We have organized the result section geographically as suggested. (p10 to 20). First we have given results of “Mapping”. Then, we have described findings of in-depth interviews.

38. RESULTS: Page 9, last paragraph: It is unclear what is meant by “injected with different groups.” Need to better describe this set of findings.

Reply: We have already responded to another reviewer regarding this. We collected this information from IDUs during in-depth interview (p9, para2). In order to obtain more insight about sharing networks, IDUs were further asked –“With whom do you share your needle/syringes? Do you share your needle/syringes with same group of injecting partners?”. During our analysis (content analysis), we found that large proportion of IDUs said that they shared needle/syringes other than their usual partners and we considered them as “sharing with different groups”

Reviewer: Amy Bohnert

39. The process by which KIs were recruited and what were exclusion/inclusion criteria for KIs needs clarification (page 6). It wasn’t clear how many of each type of informant (police, health worker, IDU, etc.) was included in the study. It was also not clear how recently an IDU had to have been an active injection drug user to meet inclusion criteria for the study. This last part seems important to know, since someone who hasn’t injected in a long time may be less well-informed as to where current IDUs gather.

Reply:
1. The first group of KIs (police, health worker, IDU, etc.) were interviewed as a part of our pre-survey assessment to have preliminary ideas about the problem which helped in conducting the main survey. Mapping and assessment of IDU locations were not done by them. But, the information provided by them helped in identifying initial KIs from different localities. However, as suggested, we have mentioned in our revised manuscript numbers of such KIs interviewed prior to our main survey. (p6, par2 & p7, par1) and criteria for recruiting them.

“Altogether in all the five states, 118 interviews were conducted (30 each in Manipur & Nagaland, 20 each in Mizoram & Meghalaya and 18 in Assam). ------- ------------------------------- The KIs were selected based on ability to provide vital information on injecting drug users for the state by virtue of their official position or relationship with IDUs due to their professional responsibility.” (p6 to p7)
2. The definition of IDU in this study was: “The definition of IDU in the study was a person, aged 18 years or older who had injected drug for non-medical reason at least once in the last six months.” (p6, par2)

3. Data was collected using two main approaches:

Firstly, we identified the IDU locations and assessed the characteristics of identified locations in terms of types, numbers of IDUs assembled in the locations, demographic characteristics (ages, sex of IDUs assembled in the locations). This process is described in details in page 7 & 8.

“Data Collection:

Mapping of the locations were carried out by the field teams through extensive field visits in all the five states. All the districts and sub-divisions were covered. Mapping was facilitated by KIs who were closely acquainted with IDUs in the locality such as current IDUs (including peer educators), ex-IDUs; outreach workers and other persons associated with interventional activities with IDUs (e.g. persons from NGOs working with IDUs).

Snowballing technique (chain of referrals) was used for identifying the locations. The initial KIs were asked to provide further information about other persons who would be able to provide more information about places where IDU congregated. This process of identifying KIs continued till no more further information was being generated. Similarly, IDUs in one identified location were also asked to act as KIs for further identifications of IDU locations. This process continued until we failed to get any new information about IDU locations. The KIs were asked to bring the study teams to the locations during peak time of congregation so that more information regarding the activities and characteristics of study population could be obtained. To ensure quality of the data, at least 10% of identified locations by the field teams were cross-verified by the state coordinators and other authors. The research team involved in the data collection was imparted appropriate training by experienced social scientists who were trained in qualitative research methodology. They were enlightened about various methods and techniques to be adopted for identifying locations and collecting qualitative data from the field. Most of the research team members involved in the data collection for the study had prior experience in this field.

After identifying the locations, the field teams prepared a hand drawn sketch of the identified location with key landmarks, boundaries and other features. The field teams spent times in the location developing friendship with drug users in the locations and talking to them. The current/ex-IDUs in the team introduced the field teams to IDUs in the locations and helped in creating rapport and trusting relationship of the field teams with the IDUs. The field teams in the process assessed the characteristics of identified locations through direct observations in the locations, interaction with IDUs available in the locations and also by asking KIs. All the information during mapping process was collected using a mapping format. The information collected were geographical description of the identified location (e.g. state, district, urban/rural, name of the village/town,
important landmark by which the location could be identified), types of locations (physical characteristics of locations), nature of the location (drug and sex work site, shooting gallery), demographic information of IDUs (age and gender) and average numbers of IDUs congregated in the locations per day. Based on information obtained during the preliminary exploratory interview with KIs, we pre-coded the types of locations into eight categories (such as home, pharmacy, parks, abandoned building, cemeteries/graveyards, riverside, public toilet, tea stall). However, any new types of locations explored during the survey were also specified in the format apart from those eight categories. To ascertain numbers of IDUs per locations, IDUs available in locations or KIs were asked to tell average numbers of IDUs usually assembled in the locations. Similarly, KIs or IDU were also asked about the age range of IDUs assembled in the locations. A shooting gallery was defined as a place where injecting equipments were readily available and can be purchased, borrowed, rented. A drug and sex work site was defined as an IDU location where male and female IDUs engaged in illicit sex.

Secondly, we conducted in-depth interviews of IDUs selected purposively from IDU location to get better insight about risk behaviours (needle/syringe sharing), procurement of needle/syringes, and attitude of general community/HCPs towards IDUs. This is described in page no 9.

“In-depth interviews with current IDUs were also conducted using a semi-structured interview guide to get better insight about the risk behaviours of IDUs, procurement of needle/syringes, and attitudes of community and health care providers (HCP) towards IDUs. Injecting drug users who were present in the location during study team visit were selected purposively for the in-depth interviews. To be eligible for the in-depth interview, an IDU had to be minimum 18 years of age, injected drug at least once in the last six months. Participants who were under the influence of drug (intoxicating state) and aggressive at the time of interview were excluded from in-depth interview. Except for Nagaland, one IDU was interviewed from each selected locations. In Nagaland, 2-3 IDUs were selected for in-depth interview from each selected locations. The focus of discussion in in-depth interview with IDUs was needle/syringe sharing behaviours, sources of procurement of needles and syringes (such as pharmacy, NSEP/NGO, peddlers, friends), network pattern of IDUs and attitude of community and HCPs towards the IDUs. To establish the network size of IDUs, they were asked-“Tell the number of IDUs that you know personally and in turn they also knew you?” To understand needle/syringe sharing practices, IDUs in in-depth interviews were asked—“Please tell, have you injected with needle and/or syringes previously used by other injecting drug users or have passed on your used needle/syringes to others in the last six months?” In order to obtain more insight about sharing networks, IDUs were further asked—“With whom do you share your needle/syringes? Do you share your needle/syringes with same group of injecting partners?”.”
The eligibility and exclusion criteria of IDUs for in-depth interviews as suggested are also described in the above paragraph. “Injecting drug users who were present in the location during study team visit were selected purposively for the in-depth interviews. To be eligible for the in-depth interview, an IDU had to be minimum 18 years of age, injected drug at least once in the last six months. Participants who were under the influence of drug (intoxicating state) and aggressive at the time of interview were excluded from in-depth interview.”

40. More information is needed on how many KIs were interviewed in each region, and how well the total area of these five states were covered. The authors infer the number of injection sites to be a measure of the extent of the drug use problem (for example, in the discussion on page 11, “In the mapping exercise, It was observed that the magnitude and the extent of [the] injecting drug use problem correspond[s] ...”). Without more information about the number and distribution of KI interviewees, it cannot be determined if a greater number of sites were identified in these regions because they have a worse injection drug use problem or because there were more KI interviews over a larger portion of each state in those regions.

Reply: We have described more detailed methodology adopted for mapping the locations in the revised manuscript (Page No 7 & 8). We made best possible attempt to map the locations. Such kind of methodology is more commonly used for identifying clandestine populations like injecting drug users.

“Mapping of the locations was carried out by the field teams through extensive field visits in all the five states. All the districts and sub-divisions were covered. Mapping was facilitated by KIs who were closely acquainted with IDUs in the locality such as current IDUs (including peer educators), ex-IDUs; out-reach workers and other persons associated with interventional activities with IDUs (e.g. persons from NGOs working with IDUs).

Snowballing technique (chain of referrals) was used for identifying the locations. The initial KIs were asked to provide further information about other persons who would be able to provide more information about places where IDU congregated. This process of identifying KIs continued till no more further information was being generated. Similarly, IDUs in one identified location were also asked to act as KIs for further identifications of IDU locations. This process continued until we failed to get any new information about IDU locations. The KIs were asked to bring the study teams to the locations during peak time of congregation so that more information regarding the activities and characteristics of study population could be obtained. To ensure quality of the data, at least 10% of identified locations by the field teams were cross-verified by the state coordinators and other authors. The research team involved in the data collection was imparted appropriate training by experienced social scientists who were trained in qualitative research methodology. They were enlightened about various methods and techniques to be adopted for identifying locations and collecting qualitative data from the field. Most of the research team members involved in the data collection for the study had prior experience in this field.”
However, we have also mentioned some probable limitations of our mapping exercise in the limitation section (p24 & 25).

Numbers of IDUs included for in-depth interview from each state is given in the beginning of result section of in-depth interviews (page 14, page16, page17, page18 & page19).

We have cited the reference of National AIDS Control Organization (NACO) regarding magnitude of IDU problem in terms of size in this region. NACO’s estimation was also showed that the order of magnitude of drug use problem was similar to that found in this study (p 20). “As expected, the study demonstrated that injecting drug use problem was more extensive in three bordering states of Myanmar i.e. Manipur, Nagaland and Mizoram. Compared to size of land and population, numbers of locations identified were higher in those three states. The size of IDUs estimated by NACO in 2006 also showed that injecting drug use problem was bigger in these three states. According to NACO’s estimates Manipur had the highest numbers of IDUs followed by Nagaland in the entire country and Mizoram had third highest numbers of IDUs in the northeastern region of India [5].” We have omitted from our discussion section the following-“In the mapping exercise, it was observed that the magnitude and the extent of [the] injecting drug use problem correspond[s] ...

41. More information is also needed on the questions and measures used in the semi-structured interviews in order to fully understand and appreciate the results. Please expand the description in the brief paragraph on page 7 (immediately prior to the “Ethical consideration and consent process” section), particularly network measures.

It is also unclear if all questions were asked all of informants, or if some were just asked of IDUs who were KIs. I thought this was important because the answers to questions of whether drug networks were dynamic or stable, injection equipment sharing, and sources of needles would be well known to IDUs who are participating in the drug use, but not well known to police, for example. It is also not clear if IDUs who were interviewed were asked about their own behaviors (such as needle sharing) or asked to generalize for all IDUs at each site. A related question: How was the number of IDUs per site defined? The number at the site at any one time on average, the number who visit on any one day on average, or the number of “regular attenders”?

Reply:

1. We have given more details about questions and measures of semi-structured interviews in the page no 9. The information regarding risk behaviours were collected from IDUs in the in-depth interviews.

“In-depth interviews with current IDUs were also conducted using a semi-structured interview guide to get better insight about the risk behaviours of IDUs, procurement of needle/syringes, and attitudes of community and health care
providers (HCP) towards IDUs. Injecting drug users who were present in the location during study team visit were selected purposively for the in-depth interviews. To be eligible for the in-depth interview, an IDU had to be minimum 18 years of age, injected drug at least once in the last six months. Participants who were under the influence of drug (intoxicating state) and aggressive at the time of interview were excluded from in-depth interview. Except for Nagaland, one IDU was interviewed from each selected locations. In Nagaland, 2-3 IDUs were selected for in-depth interview from each selected locations. The focus of discussion in in-depth interview with IDUs was needle/syringe sharing behaviours, sources of procurement of needles and syringes (such as pharmacy, NSEP/NGO, peddlers, friends), network pattern of IDUs and attitude of community and HCPs towards the IDUs. To establish the network size of IDUs, they were asked—“Tell the number of IDUs that you know personally and in turn they also knew you?”. To understand needle/syringe sharing practices, IDUs in in-depth interviews were asked—“Please tell, have you injected with needle and/or syringes previously used by other injecting drug users or have passed on your used needle/syringes to others in the last six months?”. In order to obtain more insight about sharing networks, IDUs were further asked—“With whom do you share your needle/syringes? Do you share your needle/syringes with same group of injecting partners?”.

2. All the in depth interviews were conducted with IDUs in locations only.
3. The IDUs interviewed were asked to tell own behaviours. However, they were also asked to describe their overall experiences on the issues discussed in the in-depth interviews.

42. There are grammatical and syntax errors and awkward word choices throughout the manuscript. I recommend a thorough edit. 2. On page 6 it is stated that the data collection involved “listing out the current locations where two or more IDUs gathered for injecting or other purposes (purchasing drug and injection equipments)….”. This definition is necessary to understanding the meaning of the data, and should come earlier in the text- it is difficult to understand what is meant by “IDU sites” in the abstract without this explanation. The use of the phrase “locations of injection drug users” in the title and abstract is confusing- it sounds like the physical location of individual people who are IDUs, rather than the location of places where IDUs are known to gather.

Reply: Efforts have been made to improve the English language. As suggested the definition has been put earlier I methodology section just after study design in page no 6. “Mapping was used to identify the locations where two or more IDUs congregated for injecting or other purposes (purchasing drugs and injecting equipments).”

In the abstract the “IDU site” has been written as –“Locations where IDUs congregated for injection and other purposes”.

43. Is the VCTC on page 4 meant to be VCCT, which is defined in the list of abbreviations?
Reply: Yes, that has been corrected.

44. It may aid the readability of the results section to break it into sub-sections, e.g., [results of structured questions, results of qualitative interviews] or [sample description, location of injecting sites, IDU network characteristics, risk behaviors, etc].

Reply: As suggested, we have divided the result section geographically (state-wise). And also, we have described the results into two main sub-sections:
   A. Results of mapping of IDU locations; B. results of in-depth interviews for each states.

45. For the next steps of this line of research, the authors may wish to consider mapping the injections sites that were identified in this study using GIS or other software in order to quantitatively describe clustering of injection sites and regional characteristics associated with greater density of injection sites.

Reply: We have described this in Table 1 showing land area, population size of the state, numbers of IDU locations identified. However, GIS map has not been possible for this time as we are lacking this expertise. We have also added one map to show the study area.