

Guidelines on safe disposal of Used Needles and Syringes in the Context of Targeted Intervention for Injecting Drug Users



**National AIDS Control Organisation
Department of AIDS Control
Ministry of Health and Family Welfare
Government of India**

2009

**Guidelines on safe disposal of Used Needles and Syringes
in the Context of Targeted Intervention for Injecting Drug
Users**

The following documents were referred to during the preparation of the guidelines:

1. Management of waste from injection related activities at the district level: guidelines for district health managers, World Health Organisation, 2006. *(Some images from this document have been reproduced here with kind permission from the World Health Organisation.)*
2. PATH, Training Health Workers in the Management of Sharps Waste. Version 1. Seattle: PATH; 2005.

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The document can be downloaded for free from www.nacoonline.org, the website of the National AIDS Control Organisation, Department of AIDS Control, Ministry of Health and Family Welfare, Government of India

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Foreword

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In the recent years, Injecting Drug Users (IDUs) have emerged as a high risk group with one of the highest prevalence of HIV. To address this group, NACO has been implementing Targeted Interventions (TI) by using the 'harm reduction' strategy. Needle Syringe Exchange Programme (NSEP) forms the backbone of this strategy.

It has often been observed from the field visits that the TI staff involved in outreach do not follow proper procedures for collection and disposal of used Needles and syringes. This puts the staff at a great risk of contracting blood borne virus infections including HIV, Hepatitis B and Hepatitis C. In addition, there is a great danger of reuse of the used needles and syringes, which can lead to a spread of HIV.

This guideline has been prepared by the IDU team in NACO, with feedback from various programme and technical experts, who have been involved in the implementation of Targeted Interventions for IDUs in India. It is hoped that this guideline would be of great help to the programme managers involved in the implementation of TI.

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BACKGROUND

In the recent years, Injecting Drug Users have emerged as a major group with a high prevalence of Human Immunodeficiency Virus (HIV). As per the HIV Sentinel Surveillance in 2007, the prevalence rate amongst Injecting Drug users (IDUs) was 7.23%. In addition, HIV is also transmitted from Injecting drug users (IDUs) to their spouses and general population. To address this growing threat, about 220 Targeted Interventions (TI) have been implemented in various geographical locations of the country. The Needle Syringe Exchange Programme (NSEP) forms a major component of the TI intervention.

NSEP involves distributing a new needle/syringe to the IDU client and taking back the used needle/syringe from the client. It is observed that in many TIs, staff involved in outreach follow a potentially hazardous method of collection of the used injecting equipment which may result in needle stick injury. For example, used N/S are stored in plastic bags or kept in the DIC without being disinfected. In addition, it is also found that sometimes the disposal of used injecting equipment by burning them in open air. Such practices are dangerous not only to the staff of the TI, but also put the whole community in danger.

This document is to be used as a guideline for proper procedures to be followed for collection and disposal of used injecting equipments.

INTRODUCTION

1. Who is this guideline meant for?

This guideline is primarily meant for the **programme managers** working in the TIs. The programme manager is the staff responsible for ensuring that the TI staff adheres to the safe and proper way of disposing needles and syringes. The programme manager should use this guideline to train the outreach staff on a regular basis on various dos and don'ts of disposal. The programme manager should also establish appropriate linkages with the concerned agencies which deal with waste management.

Budgets for purchasing materials and services necessary for proper disposal are provided for in the revised IDU TI costing guidelines.

2. Why this guideline?

It is often observed that in many IDU TIs, used injecting equipments are not being collected properly or being safely disposed. Until now, there has been no detailed guideline given to the TIs on safe disposal of needles and syringes. As outlined later on in this guideline, there are also various hazards and risks associated with improper collection and disposal of N/S. Hence the need of a comprehensive guideline arises.

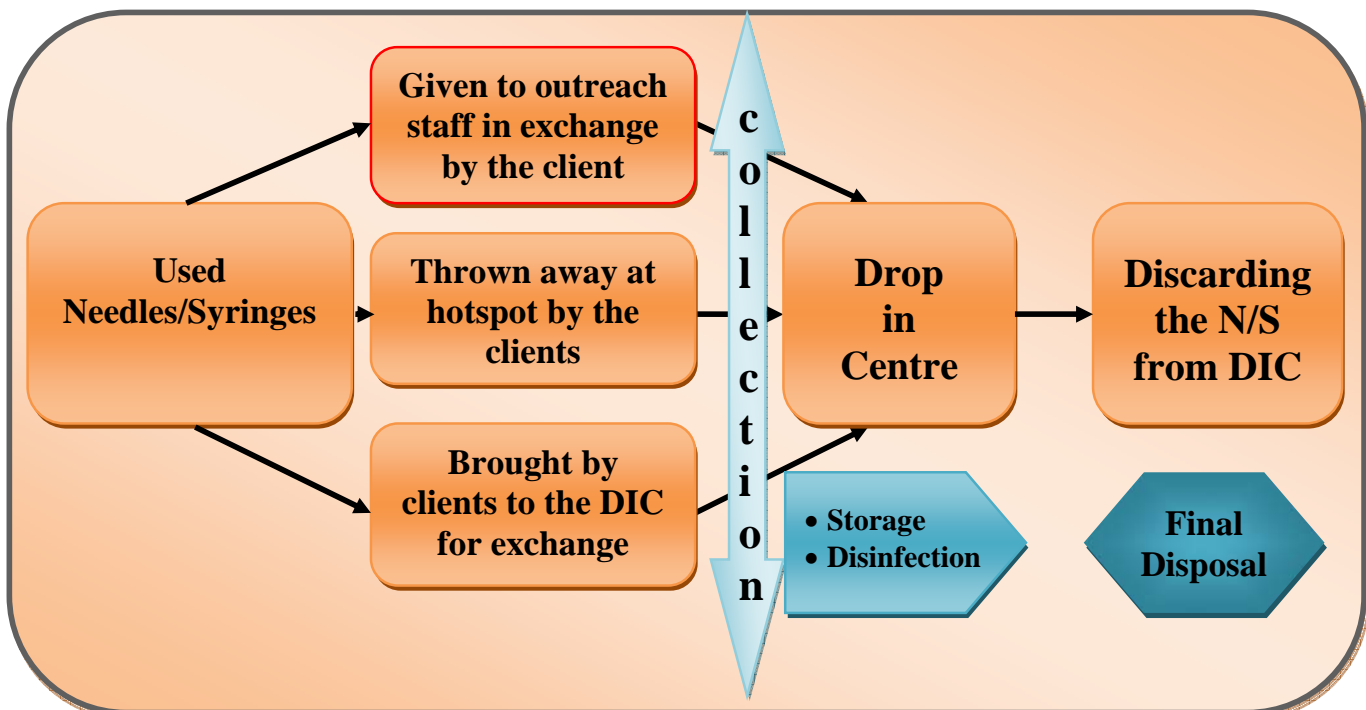
3. What are the hazards if N/S are not collected and disposed off properly?

Improper collection and disposal of N/S may result in the following:

- **Harm to the staff involved in outreach:** If used N/S are not properly collected from the client or field, there is a risk of the ORWs/PEs accidentally pricking themselves with the used sharps. If these N/S are infected, they could pose a risk of transmitting HIV or other blood borne infections to the PE/ORW.
- **Other IDUs re-using them:** If the used sharps are scattered in public places or not properly stored in the DIC, the IDUs might pick them up and reuse them which may lead to transmission of HIV and other blood borne infections. Re-use of contaminated N/S cause infections or disease including HIV/Hepatitis B and C
- **Children accidentally pricking themselves while playing:** If the used sharps are scattered around, children around the area may play with them leading to accidental pricking with the used sharps, thus risking transmission of HIV and/or other blood borne infections.
- **Resale of used N/S resulting in transmission of infections:** Safe disposal of used N/S will also prevent resale of used N/S.
- **Objections/outrage from the local general community:** If the used N/S and other sharps are scattered around, the general community will react and object to the programme.

4. What is the sequence of events that are followed from the time a needle is used by an IDU to the time of its final disposal?

The pathway followed by needles/syringes from the user to the final disposal is outlined below:



The various **stages** involved in waste disposal management are as follows:

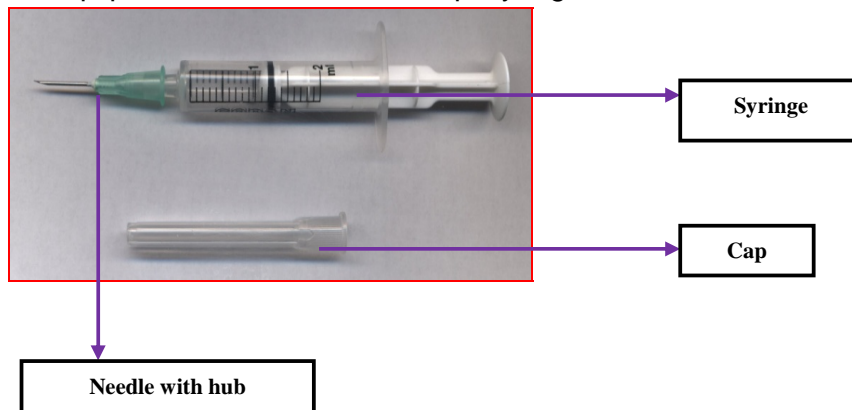
1. **Collection** of the used injecting equipment
2. **Storage** of the used injecting equipment in the centre
3. **Disinfection** of the used injecting equipment
4. **Final disposal** from the centre

5. What are the various components of needles and syringes?

Injecting equipment contains:

- Needle along with hub, and
- Syringe.

In most of the injecting equipment used in India, the syringes can be detached from the needle and its hub, with slight application of pressure. This type of equipment is called as 'leur-slip' syringes.



In some parts of the country, especially in the North-East, clients often use 1 ml insulin syringes to inject. In such cases, the needles cannot be separated from the syringe



COLLECTION OF USED NEEDLES/SYRINGES

1. How do you collect used needles and syringes?

Collection of used N/S should be done in a **puncture proof** or safety box.

2. What is a puncture proof box/safety box

A puncture proof box is any box, wherein the needle deposited in the box is not able to pierce through the box. The used needles/syringes are to be deposited in this box after they are collected from the client/field.

3. How to prepare a local safety/puncture proof box?

- A tin or a plastic box with a small opening at top with a lid for closure of the box. Such a box is easily available from the local shop.
- The size of the box should be decided by two factors:
 - Volume of the returned needles/syringes
 - Bag of the outreach worker/peer educator

A rough guideline is as follows:

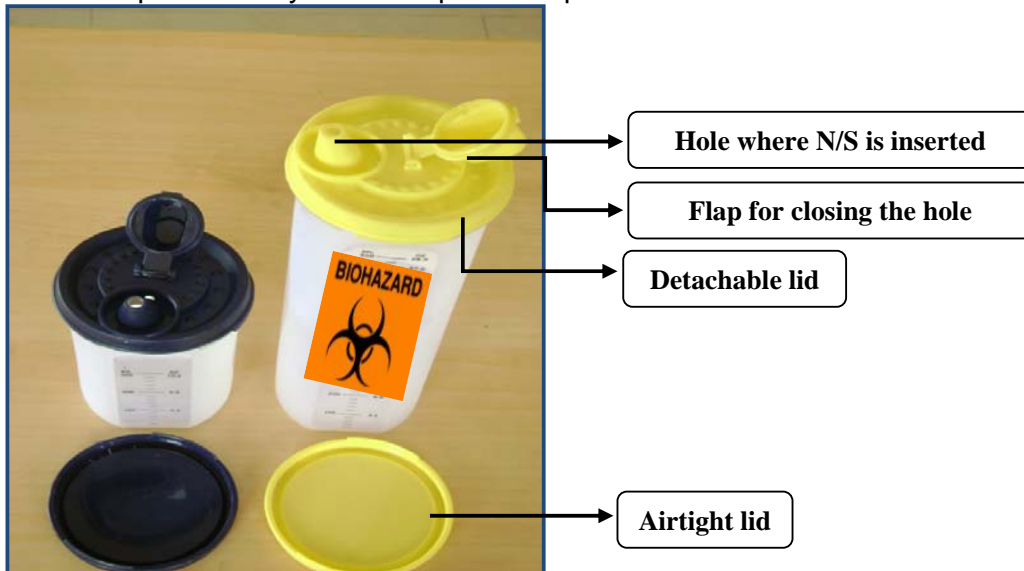
- 25 – 30 needles: 300 ml bottle
- 35 – 40 needles: 500 ml bottle
- 75 – 80 needles: one litre bottle

- Mark such boxes with biohazard sign to denote that they carry infectious sharp materials. The biohazard sign is as follows:



- Alternatively, the word '**Biohazard**' can be written prominently on the box
- A line should be drawn on the box to mark $\frac{3}{4}$ of the volume. Needles should be filled only till this line

An example of locally available puncture proof box:



4. Why should only puncture proof boxes be used? Why should other boxes or materials such as plastic bags not be used?

This is because, if the entire injecting equipment containing both needles and syringes are collected in the puncture proof boxes, they would not pierce the staff collecting used needles/syringes. Thus these boxes help in preventing needle stick injuries to the outreach staff.



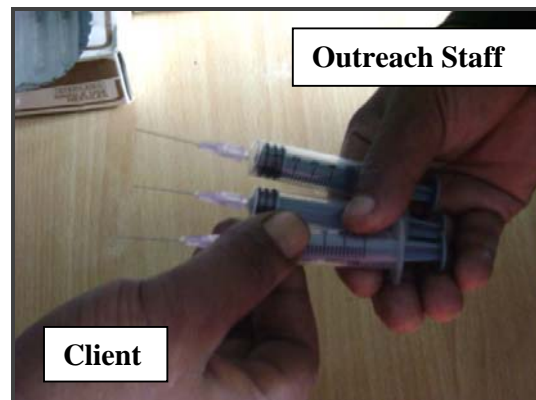
5. How do you collect the N/S into the puncture proof box?

- Pick the N/S given by the client from the syringe end and **NOT FROM THE NEEDLE END**

WRONG METHOD



RIGHT METHOD



- If the N/S has not been recapped, do not attempt to recap the N/S
- Do not attempt to bend/cut the needles before inserting into the box





- Use the opening of the box to separate the needle along with the hub, from the syringe. Thus, **only needle with the hub will be deposited into the box.**

- The syringes which are dismantled from the injecting equipment in the above-described manner can be collected into a thick plastic bag, especially meant for this purpose. The bag should also be marked with biohazard sign or the word '**Biohazard**' should be prominently on the bag.
- Fill the box until it is about $\frac{3}{4}$ full
- Do not force too many needles into the box



Once filled, the box filled with Needles, and the plastic bag filled with syringes should be deposited in the Drop-in-centre.

In case of N/S which cannot be separated such as insulin syringes, the entire equipment should be dropped into the box, and the lid closed at the end of the field day.

6. How do you collect used N/S lying in the community

- At many places, the clients throw away the used N/S in the area where they inject. Collection of used N/S from the community can be done by the outreach worker or peer educator covering the particular area during his visits to the hotspots.
- A one-day event can be organised by the project and clients can be involved in cleaning up the community of the used N/S.
- The following are the **do's and don'ts** during such collection:
 - Wear thick veterinary or electrician gloves (thick gloves, not the thin one used in clinics)
 - Do not recap N/S
 - Do not bend / break N/S manually
 - Always pick up from the barrel-end (syringe-end) - away from the needle
 - Use a tong/long forceps with long handle to pick up the needle/syringe
 - If there are more than one N/S lying together, separate each N/S with a stick and pick up each N/S separately
 - Use puncture/leak proof containers with proper lid for collection and transportation of used N/S
 - Put the N/S into the puncture proof container as described above, with needle and hub into the container, and syringes separately in a thick plastic bag.
 - Secure the lid of the container tightly
 - Avoid manual (direct hand) transfer of needles /sharps waste from one container to another



7. How to collect used N/S at DIC?

- If the clients bring their used injecting equipment at DIC to exchange for the new ones, the same method of separating needles from syringes as described above must be followed.
- A puncture proof container should be placed in the DIC, in which the needles along with hub will be collected,
- Syringes should be kept in a colour coded (**blue/translucent white**) plastic bin.

STEPS TO BE FOLLOWED IN THE DROP-IN-CENTRE

The following steps are to be followed in the DIC:

- a) Storage of puncture proof boxes
- b) Stock management of the puncture proof boxes
- c) Disinfection
- d) Final storage

1. How does one store puncture proof boxes at the DIC?

- At the DIC, the safety box/puncture proof box/containers must be kept securely away from easy access.
- The bins/boxes must not be left under tables, or located at places where someone may trip on them.
- The storage area must be away from storage area of medical supplies and unused N/S
- The storage area should be well lit and easy to clean.
- The safety boxes must be kept dry and away from rain



2. Stock management of puncture proof boxes

The outreach staff/peer educator should deposit both the puncture proof box as well as the thick plastic bag in the DIC. A new/fresh puncture proof box should be issued to the staff when s/he returns one filled box. To avoid possible loss and to ease counting of the boxes, one may number each box given out. The DIC should have enough stock of fresh boxes and thick plastic bags to avoid 'stock-out' position.

A record of the number of safety boxes received, stored and distributed must be kept and tallied through a register maintained specifically for this purpose.

3. Disinfection at DIC

a. Why should one disinfect used N/S?

The N/S used by the clients has blood within them. If the client is infected with HIV or Hep B/C, the used N/S will also contain these viruses and other pathogens as well. Disinfection is the process to kill these micro-organisms.

b. How should one prepare a disinfectant solution?

The disinfectant solution can be prepared by using bleach powder commonly available in local stores. 1% Sodium hypochlorite must be

prepared which will ensure disinfection of the needles/syringes. For this, the following steps must be followed:

- i. Take a 15 gm bleach powder (3 teaspoon full) in the bin which will be used for disinfection;
- ii. Add 10 ml of water initially and make a paste
- iii. Add remaining 990 ml of water slowly with constant stirring to make a one litre solution
- iv. Allow the solution to stand for 30 minutes
- v. The solution should be freshly prepared during every disinfection, as the solution is effective only for 12 – 18 hours

c. How should one carry out disinfection?

At DIC, the needles with hub should be emptied from the puncture proof boxes into a large plastic bin with sieve. Such bins are normally available from local plastic shop. Alternatively, small holes can be bore into large plastic bins. The plastic bins must be appropriately colour coded. For sharp wastes, the colour of the plastic bin must be **translucent white or blue**, as per the Biomedical Waste (Management and Handling) Rules, 1998 (with amendment in the year 2000)



This bin should then be dipped into a larger plastic bin in which disinfectant solution is prepared. The needles must be soaked in the solution for a period of 30 minutes to ensure complete disinfection. Similarly for syringes as well as the non separated insulin syringes, the above procedure must be followed to ensure disinfection of the syringe.

The needles and syringes disinfected in this manner should be stored in a large plastic bin for final disposal.

- **What are the various materials required for proper disposal of sharp wastes**

The following materials should be available with the Targeted Intervention for ensuring that disposal of sharp wastes is proper:

- a. Puncture proof boxes – serially numbered, marked with biohazard symbol
- b. Thick colour coded plastic bags – marked with biohazard symbol
- c. Thick rubber gloves
- d. Tongs/ large forceps
- e. Plastic bin with sieve
- f. Plastic bin without sieve
- g. Disinfectant solution – sodium hypochlorite, bleach
- h. Large plastic bins (translucent white or blue coloured)
- i. Hub Cutter for mutilating disinfected syringes, if syringes are disposed off by burial on-site.

FINAL DISPOSAL FROM THE DROP-IN-CENTRE

The final disposal from DIC depends on the local prevailing waste disposal situation. Wherever possible, the disposal should be tied up with the nearby waste management agency. In places where such a waste management agency is not available, local disposal mechanism as outlined below should be followed.

1. Availability of a waste management agency in the city/town

Waste management agencies are usually available in large/metropolitan cities or towns. In such cases, tie-up with such waste management agencies should be done. The contact details of the waste management agencies would be available with the respective state pollution control boards. These waste management agencies are usually operated by private players, and are authorised by the respective pollution control boards for this purpose. A list of such waste management agencies in the country (available as on March 2007) is available on the website mentioned below. A nominal fee is charged by the waste management agencies depending on the weight of the waste generated. For contact information of the pollution control board in a particular district, the website http://www.cpcb.nic.in/Zonal_Offices.php may be visited.

2. Availability of a Government Medical College / large hospital in the city/town

In the absence of a waste management agency, it has to be explored whether a Medical College or large hospital in the vicinity of the city/town is available. In such cases, it must be explored whether the Medical College/large hospital has a central waste disposal mechanism such as incinerator/autoclave machine/microwave specifically meant for disposal of biomedical waste. If the same is available, tie-up with such facilities must be done. A letter from the respective State AIDS Control Societies (SACS) in this regard addressed to the Medical Superintendent can be obtained, and provided to the hospital authorities. In such cases, the onus of transportation lies with the NGO implementing the TI. For transportation, the bins containing the needles and syringes must be secured safely, and transported on a regular basis (if possible weekly or minimum on a fortnight basis).

3. Non-availability of Waste Management Agency/Medical College/large hospital in the city/town

In this case, the following mechanism must be followed:

a. Disposal of needles

▪ Sharp pits

A sharp pit must be constructed near the DIC premise to dispose the needles. In case of such a disposal, it is not necessary to disinfect needles before disposing into a sharp pit.

Sharp pit must be a 1mt×1mt×1mt concrete lined protected pit with a cemented lid. Disposal is through a plastic or metal pipe.

Needle containers can be discarded in entirety, or contents of the container are emptied directly in the pit.



- **Encapsulation**

Encapsulation is surrounding the material to be discarded with a substance that will harden. This method ensures that needles are stuck in a binding material, thereby preventing reuse.

For this purpose, filled needle containers should be placed in a metal drum or a high-density plastic container upto $3/4^{\text{th}}$ of the capacity of the drum. An immobilising material such as cement or clay is added to the drum. Once dry, the container is sealed and disposed of.

- b. **Disposal of plastic syringes**

- **Shredding**

The disinfected syringes can be shredded in a hand mill or an electric shredder, after which they can be buried on site. (For details on burial on site, see below)



- **Burial on site**

In case this option is followed, the tip of the syringes must be cut by using a hub cutter or a scissor and then buried. This will prevent re-use of the syringe. For burial on site, a pit must be constructed near the premise of the DIC. If the soil is unstable, the pit may be lined with

brick or concrete to prevent collapse of the pit. The syringes must be emptied into the pit, and a 10 – 15 cm layer of earth should be placed on each layer followed by 10 – 15 cm of concrete. This should continue till 50 cm below the ground level. A final layer of concrete must then be placed, and the site marked to prevent future digging into the same area.

c. Disposal of non-separated insulin syringes

In case of non-separated insulin syringes, the entire equipment must be disposed of in sharp pits, as is done for needles described above.

Needle stick injury and Post exposure Prophylaxis

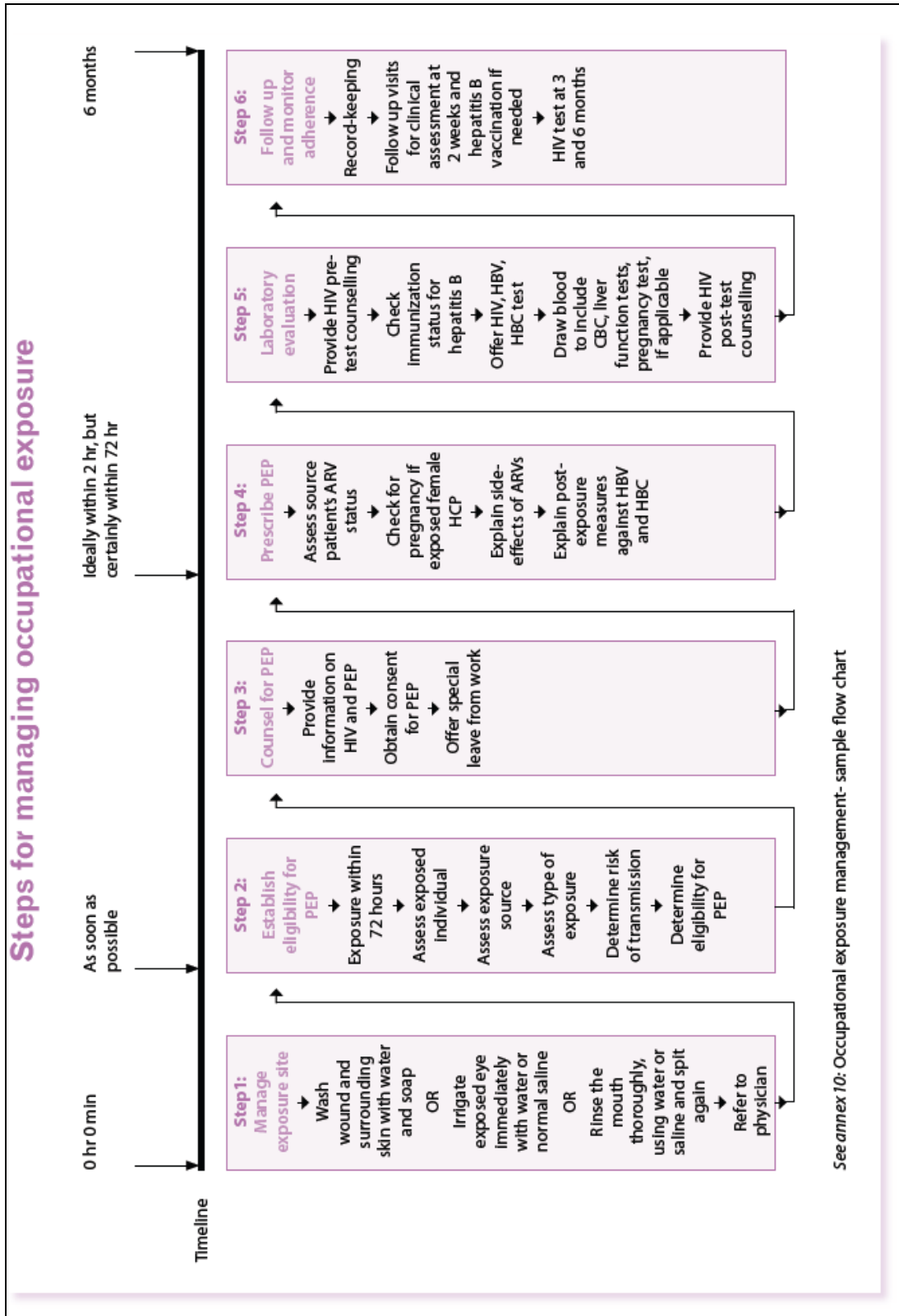
Needle stick injury can be greatly avoided, if the above mentioned guidelines are strictly adhered to. Needle stick injury occurs when collection and disposal activities are carried in a great hurry and when due precautions are not taken.

In case of needle stick injury,

- Do not panic
- Do not put the pricked finger into the mouth
- Do not squeeze the wound to bleed it
- Do not use alcohol, chlorine, bleach, betadine, iodine, or any other antiseptic on the wound
- Wash the wound with running water and soap

The steps to be followed in case of injury and PEP is outlined in the NACO guideline on ART 'Antiretroviral Therapy for HIV-infected Adults and Adolescents Including Post-exposure Prophylaxis' published in May 2007. The step by step management is as follows:

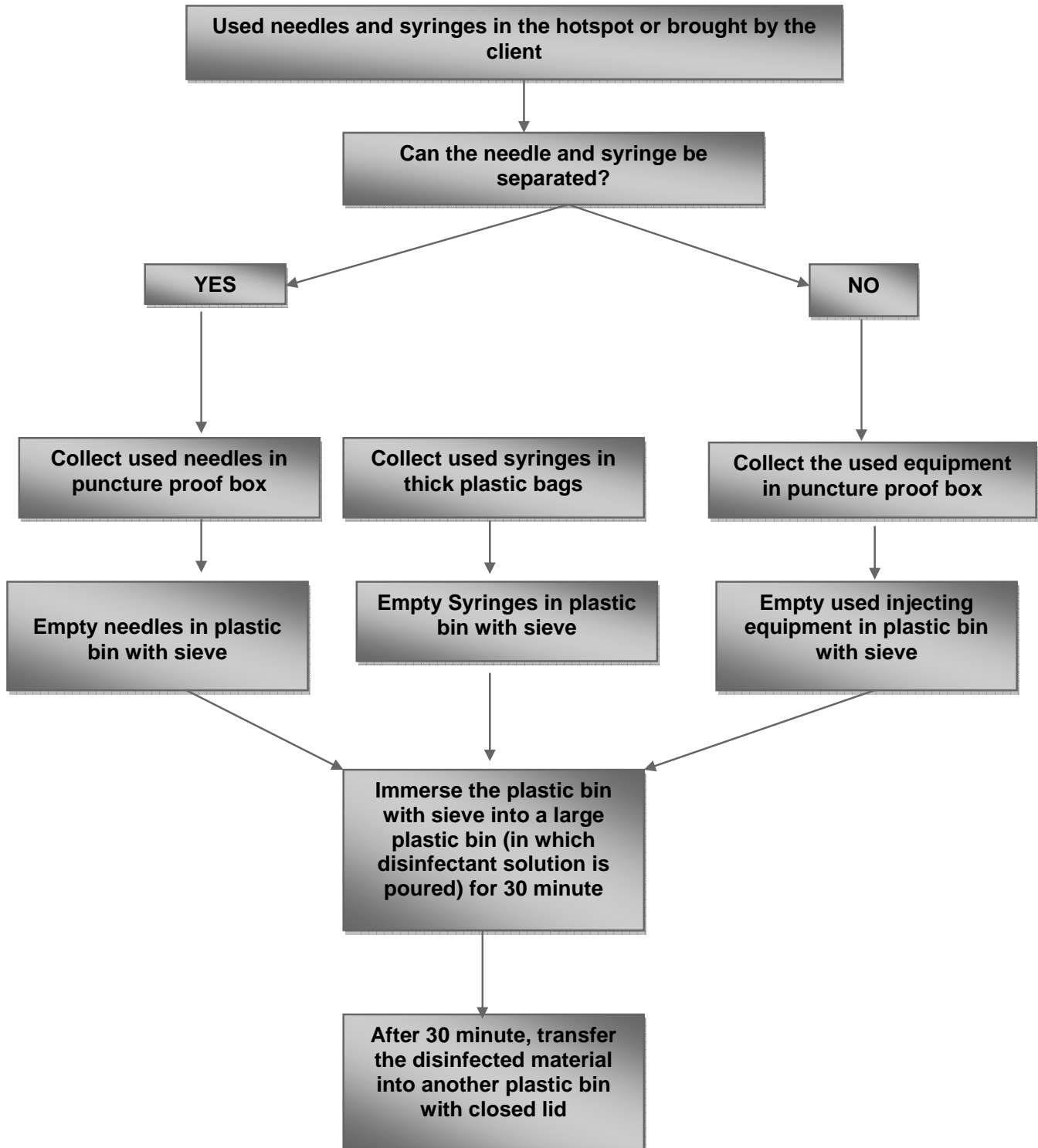
Steps for managing occupational exposure



Ta

ken from the NACO guideline on ART 'Antiretroviral Therapy for HIV-infected Adults and Adolescents Including Post-exposure Prophylaxis', May 2007

FLOW DIAGRAM 1: COLLECTION OF THE INJECTING EQUIPMENT



FLOW DIAGRAM 2: DISPOSAL FROM THE DROP-IN-CENTRE

Disinfected needles and syringes collected in large plastic bins with lids closed

Is a waste management agency (Common Bio-medical Waste Treatment Facility, CBWTF) available in your city/town/area?

YES

Tie-up with the waste-treatment facility and arrange for pick up

NO

Is there a Medical College/Large Hospital with waste disposal system in your city/town/area?

YES

Tie-up with the hospital/College and arrange for transport safely (with bins secured properly)

NO

Is the injecting equipment separated into needles and syringes?

NO

Disposal of Needles

- Sharp Pits
- Encapsulation

Disposal of Syringes

- Shredding
- Mutilation and Burial on-site

Disposal of injecting equipment

- Sharp Pits

SUMMARY

Needle Syringe Exchange Programme (NSEP) is a major component of the harm reduction strategy adopted by NACO. The disposal mechanism of the used Needles and syringes (N/S) in the intervention sites forms a huge challenge to the strategy. If proper disposal mechanism is not followed, there is a risk of transmission of HIV and other blood-borne diseases not only among the IDUs, but also to the general community. In addition to this, chances of re-use of the used N/S also increase.

Collection of the used N/S:

- A *puncture proof or safety box* is to be used.
- A puncture proof box can be prepared locally. It should be made of thick plastic, tin or steel, which should be of such thickness that the needle deposited in the box is not able to pierce through the box.
- The dimensions of the box will depend on the volume being collected by the peer educator. A rough guide is that a 300 ml bottle will be able to hold about 25 – 30 needles, while a 500 ml bottle will be able to hold about 35 – 40 needles, and a one litre bottle will be able to hold 75 – 80 needles comfortably.
- The box should have a lid at the top, with a small opening to enable insertion of the needle with its hub.
- The box should be labelled 'BIOHAZARD' with biohazard sign in permanent ink or a sticker.
- The box should be filled only till 3/4th of its capacity
- '*Dos and Don'ts*' to be followed for collection of used N/S

Do's

- Pick up the N/S by the **syringe end** and not the needle end
- Deposit **ONLY** the needle with the hub into the box through the opening of the lid
- Collect the separated syringes using the above in a *big thick plastic bag*. The bag is to be marked as BIOHAZARD on the bag
- Always separate a bunch of N/S lying on the ground with a stick
- Use a long handled tong to pick up the needles/syringes from the ground

Don'ts

- Never attempt to recap the uncapped N/S
- Never attempt to cut /bend the needle before inserting into the box with bare hands
- Avoid transfer of sharps from one container to another with hands
- Never fill the puncture proof box beyond 3/4th of its capacity

Storage in the DIC

- Store the safety box/ puncture proof box/ containers in well secured place
- Storage area should be well lit, easy to clean and away from rain
- Maintain records of the safety boxes: numbering of the boxes, recording the boxes received, distributed, etc
- Make sure that enough stocks of puncture proof boxes are available to avoid 'stock- out'
- *Disinfection of the Needles and syringes:*
 - Empty the contents of the puncture proof boxes into a large bin with sieve
 - Immerse this bin into a larger plastic bin (without sieve) which has 1% sodium hypochlorite as disinfectant solution
 - Keep the contents immersed in the solution for a period of 30 minutes
- *Final storage:*
 - Store the disinfected needles and syringes in a translucent white or blue coloured bin till final disposal from DIC

Final disposal from DIC

- Link up with waste management agencies (Common Bio-waste Treatment Facility) wherever available
- In case a waste management agency is not available, link with Government Medical College/ large hospital with a proper waste disposal system in the city/ town,. Arrange for transport of the disinfected sharp wastes to the hospital disposal system.
- When the above two linkages are not possible or available, local mechanisms may be adopted for disposal of needles and syringes:
 - For *needles*: Construction of **sharp pits** for disposal of the disinfected needles, or **encapsulation**
 - For *syringes*: **Shredding**, or **mutilation** and **burial on site**



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