MANUAL FOR PARAMEDICS ON HIV/AIDS
INTRODUCTION

In a country where new cases of HIV/AIDS are being detected every day, each one of us must ensure that we take every available precaution against contracting it. While caring for patients, doctors, medical and paramedical staff are themselves exposed to many risks from patients who could be HIV positive.

This booklet is aimed at paramedical and support staff in the medical setting, who play such an integral role in the patients care and recovery. The booklet emphasises the need, and details steps to be taken by these staff members to minimise the risk of contracting HIV in their workspace. Step by step drawings and diagrams are included, and the booklet is designed for ready reference.

This booklet is the outcome of a study conducted in selected hospitals of the Municipal Corporation, Mumbai, Maharashtra. These hospital included KEM, Parel, the TB Hospital at Sewri and Nair Hospital in Central Mumbai. In these and in other hospitals across our country, a heavy workload, crowded wards and budgets on equipment being limited - health care workers face a real risk of coming in contact with body fluids of HIV positive patients. Without taking adequate protection, hospitals can become fertile breeding grounds for the spreading of the AIDS virus from patients to employees and the general public. Statistics from the study are included in the text of this book to emphasise the very real nature of this occupational health hazard.

THE STUDY

Society for Participatory Research in Asia(PRIA) is a NGO based in Delhi that has an active department that deals in the areas of Occupational Health Hazards. This department in collaboration with the American Centre for International Labor Solidarity (ACILS) supported Municipal Mazdoor Union, Mumbai(MMU), who recently conducted a detailed study on AIDS and Health Care Workers. The Municipal Corporation of Mumbai has a large network of hospitals, medical and nursing colleges and dispensaries with a large population of community health workers.

For this study, Municipal Mazdoor Union with PRIA experts selected three hospitals. These were the large crowded institutions of KEM at Parel, the TB Hospital
at Sewri and Nair Hospital at Central Mumbai.

In these hospitals the work loads are heavy and wards are crowded with patients from all over the country. A hospital like KEM caters to over three and a half lakh out patients every year. The infrastructure needed for a safe working environment is immense. It is a known fact that public health strategies in our country are often very minimal, and awareness of the need of taking precautions in work related environments is very low even amongst the authorities, let alone the health care workers.

The study was therefore conducted with the following aims and objectives:

1. to find out the extent of awareness in all relevant health care workers about the precautions to be taken to avoid infections due to their work
2. to find out the possibilities of the spreading of infections arising due to contact with body fluids of the patients
3. to observe and record the work culture from the point of view of occupational health and safety of the health care workers
4. to list out recommendations on the basis of the study with a view to enhance coping strategies and thereby strengthen technical and managerial capabilities

The study was carried out in a scientific manner with solutions that were analyzed and discussed.

Literature from reputed medical journals and known health institutions was consulted, in order to equip the surveyors with a proper understanding of the subject.

Discussions with office bearers of the hospitals and the trade unions were held. Well designed and thought provoking questionnaires were distributed among a sample of the employees of these hospitals. The surveyors observed the work procedures and conducted random personal interviews during the course of the study. Nurses, laboratory technicians, ward boys and even ambulance drivers were included. Their response was enthusiastic and they were co-operative.

The survey showed that over 70% of the employees were in the age group 26-35 years, and still had a long career ahead of them. The gender ratio was more or less equal. Over 70% workers had already worked for over 10 years, were married and had studied till Class-VIII. One third of the workers interviewed were graduates.
Only 10% had housing facilities from the MC, while the others lived in hutments and one room 'chawls' across Mumbai.

During their work, all health care workers came in contact with body fluids. Personal protective equipment was not available as a regular practice, let alone made mandatory. It was also reported during personal interviews that injuries with 'sharps' was a daily feature for these workers. In these cases 'if' the patients have HIV then, without the use of mandatory safeguards, the occupational health hazards level rises considerably.

Proper protective equipment even in the form of gloves and aprons were not enough to go around. Thus, the workers in the wards of indoor patients often went about their work without them, or more often with over-sized, ill-fitting gloves that did not suit the purpose.

This casual attitude combined with wards overcrowded with patients did not lead to a conducive, protective working environment.

The study observed that general protection measures and waste disposable methods were inadequate and not at all standardised. It also highlighted that while employees were aware of the lack of precautionary measures, many felt helpless in having these improved by the authorities.

It is essential that every hospital system sets up an infection control committee. This is to ensure that a practical policy regarding infection control is drawn up. The committee should comprise of staff from the hospital management, doctors, nurses and ward boys. It is only from the participation of all concerned, that an effective system can be evolved and implemented.

So far, the report shows that 50% of the employees are unaware of the existence of such a committee. It is essential that such a program does not remain on paper, but is put into an efficient practice.

**BASIC FACTS ABOUT HIV/AIDS**

AIDS as a disease was first recognised in the United States in 1981. The virus that causes it, now called HIV, was first isolated in 1983 at the Institute Pasteur in France.

**AIDS** : Acquired Immune Deficiency Syndrome
WE CAN PROTECT OURSELVES FROM AIDS BY

Not being promiscuous

Always wearing a condom

Not sharing needles

Having a blood test before marriage and before children

AIDS IS A LIFE-THREATENING COMMUNICABLE DISEASE. AT THE MOMENT THERE IS STILL NO CURE
Acquired: Not genetically inherited but one gets it from somebody.

Immune Deficiency: Weakness or inadequacy of the body's main defence mechanism, the immune system

Syndrome: Not just one disease or symptom but presents as a group of diseases or symptoms

AIDS is a condition caused by a virus called HIV

HIV: Human Immunodeficiency Virus

HIV is a virus which causes impairment to the immune system in humans. There are currently two types of HIV viz. HIV 1 and HIV 2 which are known to cause AIDS.

HIV causes damage to the immune system. The immune system is the means by which our body protects itself from infection and disease. The skin serves as a physical barrier and the white cells in our blood deal with potentially harmful organisms such as viruses and bacteria. HIV is attracted to white blood cells. These cells are among the most important in the working of the body's immune system, as they regulate the immune response of the body in case of an infection.

After being infected with HIV, the body produces the antibodies to HIV in an effort to protect itself, but these antibodies are not effective in neutralising the virus.

Most people with HIV show no symptoms of disease and may be without symptoms for months and even up to four to five years. These people may remain completely healthy and free from symptoms of the disease, but they have the virus in their blood and are at risk of developing AIDS at any time in the future. Once a person is infected with HIV, he/she can transmit the virus to other people even though he/she may appear perfectly healthy and may not even know that he/she has been infected with HIV.

A few weeks after the virus enters the body, some people have flu-like symptoms such as fever, body ache and headache. However every infected person may not experience these. These symptoms disappear after a while, and then there is a long phase of 3 years to 12 years which is asymptomatic and which normally goes undiagnosed. After that, when the immune system starts failing, AIDS sets in. The early symptoms are:

- fatigue
- unexplained loss of weight in a very short time
YOU CAN'T GET AIDS FROM

Eating Together

Washing cloths or sharing them

Mosquitoes

Sharing toilets

Public telephones

Sharing bathroom

EVERYONE, WHETHER INFECTED WITH HIV OR NOT, CAN LIVE TOGETHER
chronic diarrhoea
prolonged fever
cough
night sweats
lymph gland enlargement in more than one site

So when an HIV positive person's specific lymphocytes named CD4 count falls to 450 or less, he/she starts developing symptoms. All persons with AIDS are infected with HIV, but not all persons with HIV infection have AIDS. AIDS is only the end stage of the infection.

The diagnosis of having AIDS, the end stage of the disease, is demonstrated by the presence of one or more of the several opportunistic infections, cancers and other infections like pneumonia, persistent diarrhoea, a skin cancer called Kaposi's Sarcoma and infections of the nervous system leading to deterioration of intellectual capacity (dementia).

There is no way of knowing whether a person is infected with HIV except by having blood test. Even a blood may show the result as HIV negative when actually the patient may be positive or infected because there is a period called 'window period', in which infection does not show up in the blood test. Thus, screening of patients is not feasible method, universal precautions are the only defense.

There are number of test to detect the HIV. Blood tests are done to look for specific antibodies produced by the HIV. These include, the initial screening tests called eliza, rapid or spot test.

If they give a positive result, then second confirmatory tests are also done like Western Blot or Flourescent Antibody Technique or RIA.

Testing should be done only by trained doctors and paramedics, and must be accompanied by pre and post test counselling. The report should be given to the individual only after confirming the result. You can go for a test to any government hospital which provides these facilities or to a recognised private hospital.

Every occupation has some hazard. To name a few, the army jawan, pilot, artisan, bus driver and even the smart computer operator, have occupational hazards.

In any job if care and precautions are taken, the occu-
IF YOU ALREADY HAVE HIV OR AIDS, WHAT WILL YOU DO?

See the doctor whenever necessary

Keep fit and healthy

Have a positive attitude

Eating nutritious foods, stop smoking and stop drinking alcohol

MOST IMPORTANT OF ALL, PROTECT YOURSELF FROM FURTHER INFECTION WITH HIV
pational hazard can be minimised to acceptable levels. In the specific case of health workers and especially where HIV infected persons are being treated, the need for compulsory safeguards and protective equipment must be enforced. While working a health worker must understand and be aware of basic risks and precautions, that he/she must consider.

AIDS is a blood borne disease. Blood borne pathogens such as HIV can be transmitted through contact with infected human blood and other potentially, infectious body fluids such as

- Semen
- Vaginal secretions
- Cerebrospinal fluid
- Pleural fluid
- Peritoneal fluid
- Amniotic fluid
- Saliva (in dental procedures)
- Any body fluid that is visibly contaminated with blood

It is important to know the ways exposure and transmission are most likely to occur in your particular situation, be it providing first aid to a student in the classroom, handling blood samples in the laboratory, or cleaning-up blood from a hallway.

HIV is most commonly transmitted through:

- Sexual contact, both by sex between men and women, and sex between men and other men
- Sharing of hypodermic needle by drug users
- Transfusion of infected blood
- Transplantation of infected organs
- From mothers to their babies at/before birth
- Accidental puncture from contaminated needles, broken glass, or other sharps
- Contact between broken or damaged skin and infected body fluids
- Contact between mucous membrane and infected body fluids

In your regular work, you come in contact with blood and body fluids of patients on a daily basis. Patients are
also at risk due to possibility of transfer of infection from blood transfusion, needles and possibly infected medical practitioners and workers.

In most work or laboratory situations, transmission is most likely to occur because of accidental puncture from contaminated needles, broken glass, or other sharps; contact between broken and damaged skin and infected body fluids; or contact between mucous membranes and infected body fluids (a splash of blood into the health care workers eye or mouth).

In the following pages you will find details of how to minimise risks to yourself in the work place. This is important because nearly all cases of HIV transmission to Health Care Workers have occurred through preventable accidents. These are needlestick injuries, cuts from broken blood collection tubes, and contact with blood on non-intact skin which was not protected by barriers such as gloves.

HEALTH CARE WORKERS HAVE TO BE CAREFUL OF

1 getting a injury with an injection needle or any sharp instrument that has been contaminated.

2 the worker must medically cover all broken skin wounds and cuts. Exposure of these to blood and body fluids of an infected person is not safe.

3 not to allow splashes of infected blood or body fluids into eyes, mouth, etc. Care with protective equipment and wearing glasses over the eyes is a must while dealing with a HIV patient especially during operations

4 to be very strict and careful while disposing of all infected waste including injection needles. Rules of such procedures must not be broken

5 assistance during childbirth, operations, lab-testing has to be strictly conducted, keeping in mind the precautions of gloves, aprons, eye glasses, no open wounds/cuts, and disposing of all waste.

PERSONAL PROTECTIVE EQUIPMENT

Probably the first thing to do in any situation where you may be exposed to blood borne pathogens is to ensure you are wearing the appropriate personal pro-
tective equipment. It is imperative that the hospital management makes personal protective equipment available to all its health care workers. Unfortunately, though the health care workers (including doctors) are the basic building blocks of the hospital, there is lack of investment in their well being. Shortage or complete lack of personal protective equipments is an indication of general attitude of neglect that pervades among the public health care system. Creating an awareness in the workers for the need of such personal protective equipments is the first step towards their articulating demand for such equipment.

To protect yourself it is essential to have a barrier between you and the potentially infectious material. For example, you may have noticed that emergency medical personnel, doctors, nurses, dentists, dental assistants, and other health care professionals always wear latex or protective gloves. This is a simple precaution that they take in order to prevent blood or potentially infectious body fluids from coming in contact with their skin.

The group of individuals who are at greatest risk for blood exposure in uncontrolled or emergent circumstances for whom PPE is a must are as follows:

- Trauma surgeons
- Operating room personnel
- Intensive care unit personnel
- Emergency medicine physicians and nurses
- Labour room and neonatal unit
- Dialysis nurses and technicians
- EMTs and paramedics
- Police and firefighters
- Some laboratory personnel
- Mortuary attendants
- First-aid workers in road accidents and railways

Rules to follow:

- Always wear personal protective equipment in situations of exposure.
- Remove PPE that is torn or punctured, or has lost its ability to function as a barrier to bloodborne pathogens
- Replace PPE that is torn or punctured
- Remove PPE before leaving the work area
If you work in an area where exposure to blood or potentially infectious material is part of the everyday routine, the necessary PPE should be readily accessible.

**UNIVERSAL PRECAUTIONS**

**Application** of Universal Precautions means that the body fluids of all patients should be treated as infectious, since it is not known who is infected with HIV. These are mandatory and should be compiled with for all patients and not for only those who have tested HIV positive. This is because of the 'window' period in which a patient may be HIV positive, even though his/her tests do not indicate this.

The principles of universal precaution are:

- Use of protective barriers
- Prevention of accidents
- Proper use of disinfection and sterilisation techniques

By following these universal precautions very strictly and scientifically, the health care worker can develop a greater confidence in his/her own job. By doing so, they will realise that taking simple precautionary measures are sufficient to prevent the transmission of HIV in their areas of work. However it is the responsibility of the hospital staff to create and enforce systems that include these universal precautions.

- Wash hands before and after all patient or specimen contact.

In the study 91% of the respondents accepted contact with blood is common. 37% reported that they always come into contact with blood without personal protective equipment (PPE) in their work. 23% reported that this happens many times in a week, while only 9% reported that they are not exposed without PPE.

Almost 41% reported contact with other body fluids without PPE many times or always in a week. Contact without PPE with body fluids such as blood poses a real risk for the health worker if this contact takes place in association with prick injuries or scratches.
Handle the blood of all patients as potentially infectious

- Wear gloves for potential contact with blood and body fluids

- Place used syringes immediately in nearby impermeable container; do NOT recap or manipulate needle in any way.

- Wear protective eyewear and mask if splatter with blood or body fluids is possible (e.g., bronchoscopy, oral surgery).

- Wear gowns when splash with blood or body fluids is expected.

- Handle all linen soiled with blood and/or body secretions as potentially infectious

- Process all laboratory specimens as potentially infectious

- Wear mask for TB and other respiratory organisms (HIV is not airborne).

**CONTROL MEASURES**

The outcome of the survey was so alarming that PRIA and ACILS felt the need to prepare this booklet which deals with the necessary safeguards that need to be taken to protect the health care personnel. Read the following text to safeguard yourself.

1) The hands of health care workers are frequently responsible for the transmission of various infections be-

**AREAS COMMONLY MISSED IN HAND WASHING**

- Most frequently missed
- Less frequently missed
tween patients. Microorganisms acquired on the hands by contact with body fluids or from a contaminated surface can be readily removed by washing with soap and water.

Remember, hand washing is essential before and after handling every patient, blood or body fluid and being in contact with contaminated material and also after removing gloves.

Hand washing with soap is the most simple, and cost-effective measure for infection control, because transmission of infection by hands is the most important route.

Wash your hands in running water with soap for at least 30 seconds with thorough rubbing.

Prevent dry skin by applying a few drops of glycerine, or liquid paraffine or oil after completing the work.

The areas that are commonly missed in hand washing and the steps of effective hand washing as shown in the illustration on pg 12. illustrated below.

2) Use gloves when handling blood and body fluids or contaminated material.

Wear gloves while handling blood or body flu-
ids, while performing invasive procedures like giving injections, collection of blood for laboratory investigation or blood transfusion, or performing surgical operations.

HIV cannot pass through intact skin but can enter the body through intact mucous membrane, so always wear gloves while carrying out rectal, vaginal, oral, throat or nose examination and carrying out the delivery of a child.

After completing work, the gloves should be removed, taking care that the exterior surface of the glove does not come in contact with the hands or the body.

The used gloves should be immersed in 1% solution of household bleach or sodium hypochlorite.

Gloves should also be worn when sharps are used. Although gloves will not prevent a sharps injury, wearing gloves has been shown to reduce the volume of the infectious material and may significantly reduce the risk of exposure. For invasive procedures, gloves must be sterile, but for most other procedures non-sterile gloves can be used.

Heavy-duty rubber gloves should be worn for cleaning instruments, handling soiled linen or dealing with spills of blood and body fluid. They can be washed and reused many times.

The use of double gloves is not recommended, because the practice is not more protective than the use of one glove. Moreover, it may even lead to more accidents due to clumsiness.

3) Protection of abrasions and cuts in the skin by waterproof dressings.

The care that needs to be taken against injuries from 'sharps' has to be doubled if a health worker is already suffering from a wound/cut/blist/abrasive skin on his/her hands. Any open wound of a paramedic worker must be covered with a water-tight dressing and preferably this person should not handle specimens of blood and body fluids of known HIV positive patients.

4) Use of apron or gown when soiling is expected.

Aprons should be worn to protect health care workers during procedures where splashing of blood or body fluids is anticipated, e.g. delivery. During surgery, where there is a greater likelihood of splashes with blood, the surgeon should wear a waterproof gown or a sterile cloth gown with a plastic apron underneath.
Among the respondents 77% confirmed the availability of gloves. Around 5% denied having been in need to use them ever but 18% said they are not available at all. 64% of the employees reported that the size of the available gloves is not proper. Loose and large sized gloves are useless for jobs such as washing test tubes and sample bulbs. Fluids enter from the sides of the wrist as the gloves are larger than the wrist size. 77% employees find the quality of gloves below standard. Only in operation theatres proper rubber gloves are provided for the job. While for other jobs plastic gloves or polythene gloves are made available. All of them are of larger size and fit for one time use only. They do not provide full protection against any injury or cut caused by needles and sharp objects in the waste, or whenever used for any other job.

Some employees expressed dissatisfaction over the quality of the surgical gloves too. They complained that surgical gloves too are of lower standard and tear easily. Sometimes the tear is not even noticed until body fluids reach the skin through the gloves.

Normal clothing that becomes contaminated with blood should be removed as soon as possible because fluids can seep through the cloth to come into contact with skin. Contaminated laundry should be handled as little as possible, and it should be placed in an appropriately labeled bag or container until it is decontaminated, disposed of, or laundered.

5) Use a mask when splashing is likely, or use eye protectors when splashing in eyes is expected. Splashing could occur while cleaning up a spill, during laboratory procedures, or while providing first aid or medical assistance.

Anytime there is a risk of splashing or vaporization of contaminated fluids, goggles and/or other eye protection should be used to protect your eyes. Again, blood borne pathogens can be transmitted through the thin memberances of the eyes so it is important to protect them.
Wash your hands and wear these gloves. Please come and help me with patient No.10 bed in ward A.

Yes...Madam...

Look at these gloves—these are too large for my hands.

Come soon. I am taking the trays, swabs and savlon lotion.

At the patient’s bed. Ward boy—picking up a kidney tray full of sputum... Jerks with patient’s bed—it spills right into his hands and enters wrist through the big gloves.

Careful...careful...
What have you done! Run go and wash your hands immediately.

Oh! You have a cut in your hand.
Yes I got it yesterday and the spill is burning the cut.

This is a common problem here. I don't understand why our management can't provide us with gloves of proper size.

What can we do? We have to rely upon whatever is available even though it may not be suitable at all.

This is careless – why is the WB not informed about cuts/precautions/ gloves etc. when he has to deal with patients like me – only then will he do a good job.
6) Management of 'sharp' instruments e.g., needles, blades etc 'Sharps' are the sharp instruments such as injection and suture needles, knife, blades, shaving blades, cutting blades, broken glass, broken ampules, lancets and other sharp material capable of cutting skin.

Injections are widely used for preventive, diagnostic and treatment purposes.

Efforts to prevent infection must focus on preventing injury from contaminated sharp instruments by encouraging safe handling and disposal of sharps. Most sharp injuries associated with bloodborne transmission involve deep injuries with hollow-bore needles. These injuries frequently occur when needles are recapped, cleaned, disposed of, or are inappropriately discarded, e.g., used needles left on trolleys or beds.

In case it is known that the patient is HIV positive special care should be taken that only single-use injection needles are used. These must be destroyed after use to prevent any re-use and then disposed of under careful supervision.

Multiple-use (reusable) instruments should always be disinfected, washed and appropriately sterilised according to existing guidelines. Needles and other sharp instruments should be discarded in puncture-proof containers located as close as possible to the place where they are to be used, and then handled as infected material.

**RECAPPING NEEDLES**

Recapping needles is discouraged. In situations when recapping is unavoidable, the single-handed method should be utilized. Recapping a needle with two hands increase the likelihood of sustaining a sharp injury.

How to recap a needle, by using a single hand is demonstrated below:

a) Place needle cap on a hard flat surface

b) With one hand, hold syringe and use needle to scoop up the cap

c) When the cap covers the tip of the needle, use the other hand to place cap firmly on the needle hub.

All sharps should be handled with extreme care at all time and their use should be kept to the minimum. Puncture proof disposal containers must be available for the disposal of sharps and must be located as close
Oops! I have got a prick in my hand.

Sisterji – this is becoming a daily occurrence. Is it harmful?

Yes we should take ample precautions to prevent these pricks.

But nobody tells us about it. I am getting pricks and cuts quite often, and I always neglect them.
You are right, but for our own safety we have to take precautions even though no one tells us. Try to wear gloves whenever you work with sharps.

But sisterji sometimes I get needle pricks even after wearing gloves.

Wearing a gloves reduces the risk of infection. You should try to keep track of these cuts and pricks and report them.

Sisterji no one listens to us. It is difficult to get a gloves here and the gloves we get are of inferior quality. Who is going to take notice of our cuts and pricks.
to the point of use as possible. Sharps disposal containers can be made of easily available objects, e.g. a tin with a lid, a thick plastic bottle or box. These containers are used to protect the healthcare worker from contaminated equipment. Used plastic syringes, needles and sharps must be placed carefully in the containers, then disinfected by chemicals or physical methods i.e. boiling or autoclaving before disposal. If possible, these disposable items should be incinerated.

These containers should be sent off for disposal by the health-worker when they are three-quarter full, so as to avoid any sharp falling out during transportation to the disposable unit area, where they can be burnt at temperatures sufficient to melt the needles.

Regarding injuries with sharps (sharp edged instruments or broken parts of glassware) without personal protective equipment, nine out of thirty five nurses (25.7%) and five out of sixteen lab technicians (31.2%) report that such injuries are an everyday occurrence. Compared to nurses and lab technicians only two of sixteen coolies (12.5%) reported that without any protection incidents causing such injuries always take place during the working procedures.

Management of blood and body fluid spills

All the body fluids mentioned below are to be handled like blood.

- Semen
- Vaginal/cervical secretions
- Amniotic fluid
- Cerebrospinal fluid
- Peritoneal fluid
- Synovial fluid
- Any body fluid containing visible blood
- Saliva in association with dentistry
- Tissues and organs including cornea
Arre arre sister that disposal box is already almost full. Let's replace it with another.

Here stick this red label on so that the sweeper will know it is to go to the incinerator.

But sisterji – What is the point? Why do we incinerate the waste?

The wonders of new technology - infection is destroyed thru heat and other things.

All these labels and sticker are difficult to remember.
Close the mouth of the bag carefully so that nothing spills over.

Sisterjee, while lifting the bags I take utmost precautions. After all it is a question of life and death.

Shabash taking precautions will save your health and life and that of your dear and near ones.
WASTE DISPOSAL

MAJOR CATEGORIES OF MEDICAL WASTE:

- Non infectious items
  - Domestic/kitchen waste
  - Paper/wrappers
  - Ampoules, vials and IV bottles
- Infectious sharp
- Infectious plastics
- Infectious non-plastics

REGULATED WASTE ALSO REFERS TO:

- Any liquid or semi-liquid blood or other potentially infectious material
- Contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed
- Items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling
- Pathological and microbiological wastes containing blood or other potentially infectious materials

All regulated waste must be disposed in properly labelled containers or red biohazard bags. These must be disposed of at an approved facility.

Non-regulated waste (e.g. does not fit the definitions or regulated waste provided above) that is not generated by a medical facility or human health-related research laboratory may be disposed of in regular plastic trash bags if it has been decontaminated or autoclaved prior to disposal.

 STEPS IN HANDLING MEDICAL WASTE:

- Segregation
- Transport
- Temporary storage
- Final disposal

Segregation

- Takes place at the point of generation of waste
  Colour code to be followed uniformly at all levels
For example,

- **Black** Non Infectious items
- **Yellow** Infectious non-plastic
- **Pink/Red** Infectious plastics

- Sharp are discarded immediately after use in a blue sharps container
- IV bottles, ampoules and vials are not placed inside a plastic cover, but are kept in a cardboard box
- No glass item is put into the plastic cover

However, all bags containing such materials must be labelled, signed, and dated, verifying that the materials inside have been decontaminated according to acceptable procedures and that they pose no health threat. Pre-printed labels designed for this purpose can be easily made, and they must be placed on the bag so that they are readily visible.

Warning labels in fluorescent orange, red or orange-red, and they can be easily produced by institutions. Bags used to dispose of regulated waste must be red or orange-red, and they, too, must have the biohazard symbol readily visible upon them. Regulated waste should be double-bagged to guard against the possibility of leakage if the first bag is punctured. Workers and housekeepers will not remove bags containing any form of blood (human or animal), vials containing blood, bloody towels, rags, biohazards waste, etc. from laboratories unless the bag has one of these labels on it. They have to be given very strict instructions not to handle any non-regulated waste unless it has been properly marked and labelled (including signature).

Workers will not handle regulated waste (unless treated and segregated)

The health worker has to be very conscious of following the rules of universal precaution all the time. The necessity of disposing off all hospital waste especially the items that have come in contact with a HIV positive patient must be understood and all workers educated on this.

It is easy to remove all blood or other body fluids with paper, towels or even old newspapers. Of course gloves must be worn.

All liquids/bloody/body fluids can be flushed into a sanitary sewer or a pit latrine.
Solid waste like dressings, pads, napkins, cloth towels, tissues, placenta specimens must be burned or carefully buried deep in the ground with lime (Choona). Be careful not to bury the waste near any water source or superficially in the ground where it can be dug up by animals. They must also be transported in absolutely leak proof containers.

All disposable sharp instruments must be placed in containers that are puncture proof, made of thick cardboard, heavy plastic, glass or metal immediately after use. When full, the container must be burned or buried. Injection needles must be broken in the gadget available for breaking the needles. Care must be taken by health workers and hospital authorities to ensure that injection needles and syringes don not enter places where they can be re-cycled.

Mechanical pipetting equipment in laboratories must be destroyed after one use. The same applies for bags that should be used for resuscitation of patients.

All personal preventive equipment worn by doctors, nurses and assistants, during an operation of a HIV patient must be burned.

Contaminated gloves, clothing, PPF, or other material should be placed in appropriately

Labelled bags or containers until it is disposed of, de-contaminated, or laundered. It is important to find out where these bags or containers are located in your area before beginning your work.

We can sum up by stressing that the transportation needed for final disposal is very important. It should be regular, efficient and well co-ordinated.

Transport

Within hospital (from the patient care areas to the disposal yard)

- Designated personnel and trolleys are employed
- Plastic covers are tied and removed without spilling the contents
- Offsite transportation
- Separate vehicle (tipper)
- Accompanied by institutional staff
FINAL DISPOSAL

Non infectious items disposed in landfill without further treatment

Infectious non plastic incinerated

Infectious plastic disinfected with bleach and then shredded

Finally it is very important to organise a system of hospital waste management. This can be summarised as follows:

Infrastructure

- Personnel for transport and final disposal
- Designated area for temporary storage and for final disposal
- Equipment: protective gear for workers, trolleys and vehicles, incinerator (double chamber)/shredder/hyderclave/microwave

Education

All categories of health care workers are to be targeted

- Initial: at the launch of the programme, importance of the programme, appropriate instructions and reasons behind the rules
- Ongoing: for new comers and for reinforcement

Supervision

- Must be in a systematic manner so that all areas are covered
- Random visits should also be made
- Administrative action may need to be taken

The system should ensure:

- Segregation at source is the most crucial step
- Safety of the workers is of importance
- All categories of workers should be familiar with the system, especially the colour codes.

Remember to use universal precautions and treat all blood or potentially infectious body fluids if they are
contaminated. Avoid contract whenever possible, and whenever it’s not possible to avoid contract, wear personal protective equipment. If you find yourself in a situation where you have to come in contact with blood or other body fluids and you don’t have any standard personal protective equipment handy, you can improvise. Use a towel, plastic bag, or some other barrier to help avoid direct contract.