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NATIONAL BLOOD BANK SERVICE

SAFETY MANUAL

April 2019



Effective date: *May 15, 2019*
Revision number: 1.1
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ACKNOWLEDGEMENT

The National Blood Bank Services wishes to acknowledge the contribution of all regional blood bank service heads participated in the development of the first version of this Safety manual. The tireless efforts in the preparation and review of this manual are appreciated for their constructive recommendations. National Blood Bank Service would like to appreciate and thank the valuable contributions for the review and hard work put in by the technical experts from the national and regional Blood Banks, Quality Assurance and Safety Division staff.

Dr Helena Hailu Fantaye

Director General
National Blood Bank Service

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ABBREVIATION

AFSBT	African Society Of Blood Transfusion Service
AIDS	Acquired Immunodeficiency Syndrome
BBS	Blood Bank Service
BDS	Blood Donor Service
CO2	Carbondioxid
DG	Director general
FMoH	Federal Ministry of Health
GLP	Good Lab Practice
GMP	Good Manufacturer Practices
GSR	General Safety Rule
HBV	Hepatitis B Virus
HIV	Human immune deficiency virus
HLD	High Level Disinfection
HO	Hemovigilance officer
HVAC	Heating Ventilation and AIR Conditioning
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
LAIS	Laboratory Acquired Infectious
MO	Medical officer
MSDS	Material Safety Data Sheet
Na	Sodium
NBBS	National Blood bank service
PEP	Post Exposure Prophylaxis
PPSI	Pounds Per Sequence Inch
PSI	Pound per square
QO	Quality Officer
RBBS	Regional Blood Bank Services
SO	Safety Officer
SOP	Standard Operating Procedure
WHO	World Health Organization

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DEFINITIONS

Agent: A pathogen that can cause human or animal; disease including bacteria, fungi and viruses

Autoclave: A device that uses high pressure, high temperature steam sterilization for the destruction of bacteria, spores and other infection causing organisms

Blood and Blood Product waste: This consists of human blood and blood products that need to be discarded due to being; overweight, underweight, positive for TTIs, expired and items saturated or dripping with blood.

Decontamination: This is a process that removes microorganisms from an object, rendering it safe for handling.

Disinfection: this is a process that kills most microorganisms but rarely kills spores. The three levels of disinfection are; low, intermediate and high level.

Disinfectants: are substances used to disinfect inanimate objects.

Etiologic agent: Organisms or other agents that cause a particular disease

Hazardous waste : Waste that can have a significant adverse effect on public health and /or the environment due to its infectiousness ,toxicity, corrosiveness ,carcinogenicity or other properties

Infectious waste: waste containing pathogenic organisms like bacteria, viruses, parasites and fungi in sufficient quantities to cause disease in susceptible host

Sharps container: puncture resistant waste container used for disposal of needles and associated syringes

Sharps: all items that pose a risk of injury and infection due to their puncture and cutting properties

Sewage system: A system for the collection, treatment or disposal of any liquid waste containing blood and blood product

Sterilization: This is a process that kills all microorganisms, including bacteria, viruses, spores and fungi.

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1. INTRODUCTION


Blood transfusion is a key part of modern health care system in Ethiopia. It is the responsibility of the Blood Bank Services (BBS) to provide an adequate, safe, and quality assured supply of blood for all health institution requiring transfusion service and to ensure the safety and quality of blood and blood products for clinical use. The most common problems safety and facility of blood bank service include lack of awareness about health hazards related to blood bank service, inadequate training in correctly managing waste, absence of waste management and disposal systems, insufficient financial and human resources and the low priority given to the safety issue. Therefore, an effective system and strategies for implementing BBS safety and facilities in Ethiopia needed to be established.

The goal of the safety manual is to provide a benchmark for safety of blood bank services in Ethiopia.

The safety manual is meant to be a comprehensive document to guide all blood bank safety related activities according to local, national and international regulations.

This safety manual can also be used as reference and source for preparation of standard operating procedures (SOPs) for different levels and types of Blood bank service. The manual also contain information and recommendations made by the National Occupational safety and Health Policy and Strategy and National Infection prevention Guideline of Ethiopia, World Health Organization (WHO), and Bio safety and Waste Management in Blood Transfusion Services, Nepal. It may also serve as a reference for inspection of the different Blood bank services in Ethiopia at all levels and for training of all staff.

It is the responsibility of BBS to ensure the availability and ready accessibility of safety manual to all employees, and to promote the understanding and implementation of safe and secure work environment.

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1.1.Objectives

- Create conducive work environment
- Standardize safe practices in all blood bank service
- Define and implement an effective waste management system

2. SAFETY SYSTEM REQUIREMENTS

The Blood Bank Service shall have the following requirements fulfilled as part of the health and safety system

Safety officer	Blood bank service shall have Safety officer required for the proper functioning of safety program and the implementation of safety manual. The blood bank service shall assign the posts either by recruitment or assignment. As blood bank services workload and need quality and safety officer can be one or separate personnel.
Functions of safety officer	<p>Regular inspection and report: Inspect the workplace daily, weekly, and monthly then submit the report to the blood bank service.</p> <p>Ensuring observation of safety rules: Ensure that all staff and new employees familiarize and understood all safety rules as set out in the blood bank service safety manual.</p> <p>Reporting safety hazards: Ensure that any hazards, unsafe or unhealthy situation are identified and removed or made harmless. If this is not possible, report the situation to the blood bank service for action.</p> <p>Reporting of accidents: Report accidents on the appropriate forms provided (Appendix III) to blood bank service for action.</p>

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Functions of safety officer	<p>Conducting safety audit: Safety officer leads safety audit at least annually and present the audit summary with corrective action to the blood bank service.</p> <p>Conducting and attending safety meetings: Safety officer conduct and attend safety meeting at least annually to address all safety issue in the blood bank service. Conduct and re-evaluate risk assessment: the safety conduct risk assessment.</p>
Keep documents and records:	All monthly inspection reports; minutes of safety meetings; accident report forms; and all reported accidents must be kept on file.
Safety committee	Blood bank service shall have safety committee with clear responsibility and act as set out on the TOR safety committee.
Training	<p>Safety officer should ensure that safe blood bank practices and procedures are integrated into the basic training of employees.</p> <p>Blood bank service shall conduct Safety training a minimum of once year for all staffs and at entry for new staffs. Staff training should always include information on safe methods for hazardous procedures that are commonly encountered in all blood bank services. Measures to assure that employees have read and understood the safety manual, all staff should sign.</p>

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Risk Assessment	<p>The blood bank service shall have risk assessments procedure in order to identify risks .The summary of risk assessments are as follows.</p> <ul style="list-style-type: none">• Assess all hazards in and around the work place.• Introduce measures, where possible, to counteract these hazards.• Compile written policies and procedures (SOPs)• Train the staff and record all training sessions.• Periodically review all policies and procedures and update them, as appropriate.• Monitor and document the measures taken.
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3. BIO SAFETY

The BBS shall have a Bio safety which is combination of blood safety practices, facilities, equipment, and waste management for use in blood collection sites, infectious screening, and ABO serology and component production depending on the increasing danger of microorganisms handled. Blood bank service shall in place a procedure for protection of donors, staff, products and surrounding environment. Personal protective equipment should be used as appropriate and all blood and blood products should be considered infectious unless and until verified tests proven.

Immediately accessible hand-washing facilities with water should be provided in all areas where blood or blood products are handled. Blood bank laboratories must all be designed for Bio safety Level 2 for screening of HIV, HCV, HBV and Syphilis.

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4. BLOOD BANK DESIGN AND FACILITIES

Facility Design	<p>The design of the blood bank service should provide an environment that is attractive and safe to donors, staff and the public. It reflects the requirements described in the facility design, providing appropriate areas and relationships between spaces and departments and clearly defined open and secure areas. Circulation routes should be clear and direct while providing appropriate traffic separation.</p> <p>The blood bank service shall adhere to Good Manufacturing Practice (GMP) guidelines in the design of blood bank service facility to ensure that the collection and manufacturing environment will allow the production of blood and blood products of consistent quality and safety.</p> <p>Design should be utilized to simplify documentation, and to maximize flexibility for future change. Disabled access should be provided in accordance with Ethiopia national regulations.</p> <p>The following requirements should be considered for a blood bank service,</p> <ol style="list-style-type: none">1. The blood bank service shall be easily accessible to the public by public transport and to transport vehicles to and from hospitals.2. The BBS should be easily identified and have unique Mark.3. The BBS shall adequate services including water and power should be available to the site. The site should be large enough
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	<p>to accommodate the proposed blood bank service building, internal roads and parking for centre, staff and donor vehicles.</p> <p>4. Blood bank service shall have a design and maintenance of facilities and organization of work can reduce or eliminate many potential hazards. It provides sufficient space for safe conduct of blood bank work and for cleaning and maintenance.</p> <p>5. Work surfaces and equipment should be regularly cleaned and disinfected. Items that may accumulate dust and debris should not be stored above clean supplies or work surfaces.</p> <p>6. The number and location of eye washes and emergency showers must also be considered. Water sources for all activity must be considered.</p> <p>7. Staff handling hazardous materials must have ready access to hand-washing sinks. Hand-washing access is essential at all section of work. Hazardous areas should be clearly and uniformly identified with warning signs.</p>
<p>Premises</p>	<p>The BBS premises including mobile sites shall be adapted and maintained to suit the activities to be carried out.</p> <p>It shall enable the work to proceed in a logical sequence so as to minimize the risk of errors and allow for effective cleaning and maintenance in order to minimize the risk of contamination.</p>
<p>Donation area</p>	<p>The BBS shall have an area for confidential personal interviews and assessment of individuals to determine their eligibility to donate. This area shall be separated from all processing areas.</p>

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Collection area	<p>The BBS shall have area intended for safe donation, appropriately equipped for the management of donors experiencing adverse reactions or injuries from events associated with donation.</p> <p>It Shall be organized in such a way as to ensure the safety of both donors and personnel as well as to avoid errors in the collection procedure.</p>
Testing and processing areas	<p>The BBS shall have a dedicated laboratory area for testing that is separate from the processing area with access restricted to authorized personnel.</p> <p>The testing and the processing have Reception of Blood, Quarantine place, ABO serology lab, Infectious disease serology lab, Component preparation, labelling and distribution.</p>
Storage areas	<p>The BBS shall have storage areas for properly secure and segregated storage of different categories of blood, blood components including quarantine and released blood and blood components.</p> <p>Provisions shall be in place in the event of equipment or power failure in the main storage area.</p>
Housekeeping	<p>The BBS shall have a cleaning procedure and recording system.</p> <p>It should have separate and dedicated cleaning equipment to prevent the possible contamination of other areas with unverified blood.</p>
Waste disposal area	<p>The BBS shall have designated area for the safe disposal of waste, disposable items used during the collection, testing and processing, and for rejected blood or blood components</p>

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5. BLOOD BANK SAFE PRACTICE AND UNIVERSAL PRECAUTIONS

The blood bank service shall apply standard blood donor management practice, good laboratory and manufacturer practices. The blood bank service is the hub for the collection, storage and distribution of blood and blood products. The blood collection center of the blood bank service must be accessible to donors and public. To carry out these roles effectively, the blood bank service must be open and located close to major public transport routes and population centers. Restrict access to the blood bank laboratory and processing unit is mandatory. Post a biohazard sign on the entrance of the each blood bank laboratories.

The blood bank service shall provide with appropriate immunization to staffs for Hepatitis B vaccine. The blood bank service should ensure that blood bank support personnel receive appropriate training on the potential hazards associated with their work and the necessary precautions to prevent exposure at least annually.

The blood bank personnel shall apply the following safe practice but not limited to:

- Take a high degree of precaution with any contaminated sharp items.
- Disinfect contaminated materials before disposal according to local and national regulations.
- Treat contaminated liquids with chemicals before discharge into the sanitary or disposal sewer.
- Decontaminate blood bank equipment and work surfaces with an effective disinfectant on a routine basis and after spills and splashes.
- Decontaminate blood bank equipments according to standard operation procedures and local regulations before being sent for repair.
- Report all negative events, accidents and spills that result in overt exposure to infectious materials to the blood bank service responsible person immediately.

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- The BBS shall have a process and procedure for safe blood collection.


The BBS shall have an individual assigned on safety to visit the collection site and ensure that hazards are minimized.

- All mobile personnel should be trained to recognize unsafe conditions and understand infection control policies and procedures.
- Blood-contaminated waste must be returned to a central location for disposal
- Mobile staff should decontaminate mobile sites after blood collection with particular attention to clean up of the areas used for work.

5.1. Universal Procedures

Blood bank service shall follow the following universal standard practices for handling infectious substances. Provide a copy of the safety manual for all staff and make sure that its requirements are followed.

- Review and update the manual regularly.
- Advise personnel to read the safety manual and follow standard practices and procedures, and advise on special hazards.
- Prohibit eating, drinking, smoking, and storing of food, applying cosmetics. Wearing jewelry is not recommended in the blood bank laboratory.
- Limit access to the TTI screening, ABO serology, labeling, component production and distribution to authorized personnel only.
- Keep doors to Blood bank laboratory service closed and keep doors to blood bank blood donor service open.
- Cover open wounds, cuts, scratches and grazes with water proof dressings.
- Wear appropriate PPE for all procedures that might involve direct skin contact with bio

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hazardous materials.

- Wash hands after gloves have been removed, before wearing gloves and leaving the blood bank service.
- Do not wear PPE outside working areas
- Do not store PPE in contact with personal belongings
- Perform all procedures carefully to minimize splashes and spill.
- Decontaminate work surfaces before and after work.
- Dispose sharp in puncture-resistant sharps containers.
- Keep Blood bank service clean and tidy.
- Separate paperwork from routine working areas.
- Decontaminate all contaminated materials, before disposal
- Blood and blood product exposure occurs, decontaminate clothing before washing.
- When any exposure happens, act according to local and national standards.
- Report to the blood bank service concerned body immediately during any hazardous event.
- Keep written records of all incidents.

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Universal Precaution standards

Use of Ice Pack	<p>The BBS shall have adequate ice pack used to keep blood and blood component except platelets during transport.</p> <p>Handle ice pack with heavy duty gloves to prevent freeze burns. During packing and transpiration whole blood and concentrate red cell have no direct contact with Ice pack.</p> <p>Care should be taken as sealed containers with ice pack are liable to burst open as the pressure inside increases over time.</p>
Critical Blood bank Equipment	<p>The BBS shall have a procedure for installation, calibration, maintenance and usage of blood bank equipment. The personnel Operating equipments have proper training and follow manufacturer's instructions.</p> <p>The BBS shall have proper documentation system for preventive and curative maintenance.</p>
Surface decontamination	<p>For bench tops, external surfaces and blood bank equipment use a freshly prepared bleach solution according SOP for cleaning and Decontamination.</p>
First Aid and Accidents	<p>The BBS shall have First aid kit that full fill accepted principles of medical treatment at the time and place of an accident.</p> <p>It is the approved method of treating a casualty until the person is placed in the care of a doctor or clinical personnel for definitive treatment of the injury.</p>

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First Aid Kit	<p>The first aid box should be constructed from materials that will keep the contents dust and damp free.</p> <p>The first aid kit should be kept in a prominent position and be easily recognizable.</p> <p>The first aid kit should contain:</p> <ul style="list-style-type: none">• An instruction sheet providing general guidance,• Individually-wrapped sterile adhesive dressings in a variety of sizes,• Sterile eye-pads with attachment bandages• Triangular bandages• Sterile wound coverings• Safety pins• A selection of sterile but un medicated wound dressings, an• An authoritative first aid manual• Additional materials may be added as for different sections of the blood service ,especially for the management of Donor Adverse reactions
Protective equipment for the person rendering first aid	<ul style="list-style-type: none">• A mouthpiece for mouth-to-mouth resuscitation• Gloves and other barrier protections against blood exposures, and• A clean-up kit for blood spills.

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	<ul style="list-style-type: none"> • Eye wash equipment should also be readily available and staff should be trained in its correct use. • The contents of the First Aid kit must be checked monthly by safety officer or quality officer.
<p>First Aid Measures</p>	<p>The BBS shall have an appropriate treatment is given by a medical doctor, or clinical person, some emergency measures should be taken. If the accident is serious, immediate medical help must be sought.</p> <p>The BBS shall have a process and procedure for superficial wounds, donor adverse reaction, major injuries, Burn (thermal, electrical & fire).</p>
<p>Accident and injuries reports</p>	<p>The BBS shall have a procedure for incidents and injures and ensure that as much relevant information as possible should be documented. As per the SOP for Accidents and Incident reporting.</p> <p>A Team leader or Department head ensures that the accidents reporting form is completed in full for any accidents and the documents must be maintained properly according to the BBS document retention rules.</p> <p>The BBS must ensure that accidents and injuries are reported as soon as possible after their occurrence.</p> <p>All logs, summaries, and supplemental records should be preserved according to the retention period.</p>

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6. INFECTION CONTROL POLICIES

Human Immune deficiency virus (HIV)	<p>In the BBS, the major risk for transmission of HIV is associated with blood and blood products. Using standard precautions will avoid these risks.</p> <ul style="list-style-type: none">• Wear PPE when performing vein puncture or other invasive procedures and wash hands using proper techniques before and after handling blood and blood products.
Post-exposure prophylaxis (PEP) policy	<p>The BBS shall follow the national infection prevention manual outlined by the Ministry of Health (January 2005) for the use of antiretroviral drugs in Ethiopia, hospitals will provide PEP to any health institutions staff exposed to potential HIV infection.</p> <p>Blood bank service should provide training to all staff on prevention methods to minimize exposure to HIV and other blood borne diseases and provide them with the necessary safety materials and personal protective equipment.</p>
Hepatitis B Virus (HBV)	<p>The BBS shall provide vaccination against HBV for all Blood bank staff at risk of exposure to blood and blood products.</p>
Hepatitis C virus	<p>The risk of HCV infection due to needle stick exposure to blood from an individual with antibody to HCV is high.</p>
Syphilis	<p><i>T. palladium</i> is present in circulating blood during primary and secondary syphilis. This is transmitted by blood and blood products following exposure and has effective treatment measures.</p>

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Pregnancy	<p>When a blood bank service staff is pregnant, the following procedures should be followed:</p> <ul style="list-style-type: none">• Inform the blood bank service head or Coordinator as soon as possible as the first trimester is the most vital period in the development of the fetus with regard to the detrimental effects resulting from exposure to biological agents or chemicals.• Review the risk assessment of all on Blood bank service to determine whether there is any procedure that could possibly affect the developing fetus and counsel and make the person aware of all possible risks.• If there is a risk, then move the person to another section where the risk is low.
Smoking cigarettes	<p>To prevent the working environment and staff , the personnel's smoking is allowed outside the building of the facility according to national regulation.</p>

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7. WASTE MANAGEMENT

All types of waste generated within the BBS should always follow an appropriate and well-defined process from its point of generation until its final disposal.

These waste generated in BBS should classify based on the level of hazard it presents; hazardous and non-hazardous (Table 2). Each waste should be segregated in an appropriately colour-coded container. (Table 1). Non risk or treated waste can be collected by municipal city administration in each respective BBS.


The BBS avoid poor management of those wastes exposes health care workers, waste handlers, Donor and the community to the risk of infections and injuries.

Table1. Three bin system used in BBS

Segregation category	Colour	Container
Infectious (different type)	Yellow	Biohazard bag and bin
Sharp waste	-	Safety box
Non- risk waste	Black	Biohazard bag and bin

Table 2.Type of infectious hazardous waste

Process	Sharps	Non-sharps	Effluents
Donor selection	Broken glassware, Lancets and needles & Micro-capillary tubes	Glassware Gauze and swabs Glove	Used copper sulphate solution
Blood donation	Broken glassware and ampoules Broken test tubes Needles from blood collection ba	Gauze and swabs Gloves Blood units	Disinfectants

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	gs and other used needles Pairs of scissors		
Post Donation care	-	Phlebotomy dressings, including plaster, bandages and swabs	-
Post counselling	Lancets	Gauze and swabs Gloves	-
Laboratory testing	Broken glassware and ampoules Test tubes Pipette tips	Blood sample tubes ABO testing slide Gloves Micro-plates Used test kit materials Blood unit Segment from blood bags tips	Liquids from cell washers Blood and serum samples Red cell suspensions for or blood group serology testing
Component preparation	-	Blood units Gloves Transfer bags and accessories for component preparation Segments from blood bag tubing	Disinfectant

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Labelling	-	Glove Cotton Blood unit	Disinfectant
Distribution	-	Glove Cotton Blood unit	Disinfectant

7.1. Waste Management process and components

Waste Management Process	<p>Handling of waste generated in BBS poses risk of infection; therefore, BBS should:</p> <ul style="list-style-type: none"> • Assess the risks posed by waste and provide a safe working environment for staff. • Ensure that staff members are aware of the need to manage waste appropriately and are properly trained and supervised. • Provide staff with appropriate PPE. • Develop standard operating procedures for managing waste that meet the requirements for infection control and occupational health and safety.
Waste Minimization	<p>Waste minimization should be “3R” principle i.e. wastes Reduction, Reuse and Recycling.</p> <p>The BBS should investigate whether the amount of waste generated could be minimized in order to reduce efforts in subsequent handling, treatment and disposal operations before producing waste.</p>

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	<p>The BBS should select reusable items over disposable items whenever it is clinically appropriate, environmentally sound and practical. Re-use by enforcing reliable Standards for disinfection and sterilization of equipment and materials.</p> <p>After use, reusable items should be collected separately from non-reusable items and carefully washed and sterilized by approved methods such as autoclaving.</p> <p>The BBS should critically examine current waste streams and determine what products can be separated at the point of generation for effective recycling.</p>
Waste Segregation	<p>Blood bank service waste should be segregated and collected in accordance with the specific treatment or disposal requirements.</p> <p>The BBS should ensure that the correct disposal routes are taken, personnel safety is maintained, environmental harm is minimized and recycling consumes the least resources.</p> <p>Segregation should be carried out under the supervision of the waste producer and as close as possible to the point of generation. Segregation must therefore take place at source, that is, in the Laboratory, in the bleeding and at the mobile session, etc., and must be carried out by the person generating the waste, in order to secure the waste immediately and to avoid dangerous secondary sorting.</p> <p>BBS should prepare and follow a waste plan for proper training and education of employees, supervisors and managers, and policies to ensure a Correct and efficient segregation.</p>

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Waste Segregation	<p>The BBS should ensure that segregation is applied from the point of generation throughout the entire waste stream to the point of final disposal. It should also ensure all storage and transportation methods follow this segregation system.</p> <p>The BBS should segregate wastes of different categories in identifiable containers. Every room should have containers and bags for the types of wastes that are generated.</p> <p>The waste segregation and identification procedure should be placed at each waste collection point to ensure proper procedure.</p> <p>Mobile teams should segregate the waste generated at the mobile site and transport back to the centre blood bank service for further management.</p>
Waste Collection	<p>The BBS should not allow waste accumulation at the point of generation.</p> <p>A programme for collection and transportation of waste should be established as part of the blood bank service waste management plan.</p> <p>All staff should ensure that waste containers are securely closed or sealed when they are about three-quarters full.</p> <p>Waste should be collected daily (or more frequently, as required) and transported to the designated central storage site. No bag should be removed unless it is closed off correctly (and not overfilled)</p> <p>Bags or containers should be replaced immediately with new ones of the same type. Replacement packaging or container stock should be readily available at all locations where waste is produced</p>

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Waste Storage	<p>The BBS shall have storage procedure based on the classification or type of waste being dealt with and the potential risk of infection to BBS staff. Labels on containers should be permanent and legible for the entire storage period.</p> <p>Storage time shall be reduced as much as practicable. Waste must be removed at least once a day.</p> <p>Sharps shall not be manipulated before disposal and needles shall not be recapped before discarding since this is a common cause of puncture injury.</p> <p>Storage containers shall be placed in roofed built-in areas protected from water, rain, wind, animals and pests.</p> <p>The containers used for storage as well as the storage sites should be cleaned, and disinfected frequently.</p> <p>Bio-hazard marks and other warning signs shall be noticeably posted on doors leading to storage sites to prevent people from unnecessarily gaining access to the area.</p> <p>Only authorized persons shall have access to storage area.</p> <p>The BBS waste storage should be removed from working area within the enclosed space and shall be easily accessible to collection vehicles.</p> <p>Storage areas shall have sufficient space to afford easy access or removal of waste.</p> <p>All loading and unloading of waste shall take place within the</p>
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	<p>designated collection area around the storage point.</p> <p>Liquid wastes shall be appropriately treated prior to final disposal and the point of generation and storage area must be drained into septic tanks, soak ways and not allowed to drain off into storm water drainage or streams.</p> <p>The BBS staff shall be trained to understand the principles of segregation and to follow procedures for colour coding, storage and documentation.</p> <p>Records on waste generated and processed including the type of waste, volumes and/or weight, and the persons who processed them should be kept.</p>
Waste Transportation	<p>Transportation of waste within the BBS may involve trolleys, wheeled containers or carts that are dedicated only for this purpose.</p> <p>The BBS waste shall be collected one way to external storage site without returning to the point of generation.</p> <p>Workers transporting the waste should be issued with appropriate PPE.</p>
Waste Treatment	<p>The BBS waste shall be treated through incineration, steam sterilization, thermal inactivation or chemical disinfection as applicable.</p>

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<p>Incineration</p>	<p>The BBS incineration shall be used for treatment of sharp, non-sharp infectious wastes and combustible non-infectious wastes.</p> <p>The temperature used for incineration shall be maintained at least 1000 °C.</p> <p>The BBS incinerators or burning areas shall be fenced.</p> <p>The BBS incinerators shall be inspected and maintained by a qualified person on a regular basis.</p> <p>Persons involved in incineration shall be trained in handling techniques to minimize personal exposure to hazards from infectious wastes.</p>
<p>Steam sterilization</p>	<p>The BBS shall be used Steam sterilization for treating only infectious wastes.</p> <p>The BBS shall be use Steam sterilizer at 30 minutes and 121°C with a pressure of 106 Kilo Pascal.</p> <p>The BBS shall be considered steam sterilizer users' manual or procedure for efficient use.</p> <p>The BBS can use separate autoclaves to waste treatment and instruments.</p>
<p>Chemical Disinfection High Level Disinfection</p>	<p>The BBS shall consider the type waste, materials and disinfectant when using chemical disinfection.</p> <p>Chemical agents should be used at the manufacturers' recommended concentrations and exposure times according to the procedure.</p> <p>The BBS Personnel involved in chemical disinfection shall be</p>

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	trained in handling techniques to minimize personal exposure to hazards from infectious wastes and handling of sterilized materials.
Waste Disposal	<p>The BBS shall be use standardized sewer system for discharge of treated liquids, landfill disposal of treated solids and incinerated ash for final disposal</p> <p>Appropriately treated waste shall be sent to municipal landfill for disposal.</p> <p>Noninfectious liquid waste can be discharged directly into the sewer</p> <p>Non-hazardous waste can be disposed without treatment.</p> <p>Untreated infectious waste shall not be disposed by any method.</p>

8. MATERIAL SAFETY DATA SHEET (MSDS)

The BBS shall have recording system of MSDS which comply with an internationally-recognized document that lists specific information with regards to all chemicals as including:

- Name chemical product and company identification
- Hazard identification
- First aid measures
- Fire fighting measures
- Accidental release measures
- Handling and storage
- Exposure control/Personal protection

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- Physical and chemical properties
- Stability and reactivity
- Toxicological information
- Make MSDS of all the chemicals present in the blood bank service.

9. ERGONOMICS

The BBS shall have a process and procedure for ergonomic risk factors present in the blood bank or office and include awkward posture, frequent repetition, excessive force, contact stresses and vibration. By learning how to prevent or control ergonomic risk factors, employee comfort, productivity and job satisfaction can be improved and the chances of occupational injuries lowered.

10. EMERGENCY EVACUATION PROCEDURE

The BBS shall have emergency evacuation procedure with known and specific assembling point. Since the building structure and design of blood banks in the country are different each blood bank shall develop their own emergency evacuation plan. The plan should include evacuation procedures, escape routes and floor plans ways of reporting and alerting staff, visitors and authorities an emergency.

Blood Bank Service shall make available the resources required for preventing and controlling fire hazards in line with the facility design. Rooms should be fitted with Fire Alarms and Fire extinguishers should be made available and undergo regular checkup.

Blood Bank Service shall conduct an emergency drill at least once a year to ensure staff respond quickly, calmly, and safely in case of fire.

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APPENDIX I : TTIs Exposure Reporting Form

Use this form to report and record an Occupational Blood/blood product and Needle Stick Exposure. Date of Report: _____

Department of Blood bank services: _____

1. Exposed person's name: _____
2. Phone no.: _____
3. Age: _____
4. Sex: _____
10. 5. Incident date & time: ____ Location of exposure: _____ Sites name and address _____
(Please circle the appropriate letter in the following section)

6. Type of injury


- A. Needle deep prick
- B. Needle superficial prick
- C. Splash to the conjunctivae
- D. Splash to the oral cavity
- E. Splash to intact skin
- F. Splash to broken skin (specify: _____)

7. Substance involved

- a. Blood
- b. Blood and blood products

8. Circumstance of injury

- a. When drawing blood from a donor

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- b. Needle stick injury during blood bank manipulation of blood (specify: _____)
 - c. Needle stick while disposing of waste
 - d. Injury with broken glassware contaminated with blood
 - e. Splash with blood and blood products during procedure (specify : _____)
 - f. Other (specify: _____)
9. Does the TTIs status of the source case be determined?
- a. Yes
 - b. No, because source case refused to be tested
 - c. Other (specify: _____)
10. Pack Number _____

Reported to

Safety officer _____ Sign _____ Date _____

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APPENDIX II : Blood Bank Service Safety Inspection Form

Name of BBS: _____

S.No	ITEM	YES	NO
1	LABORATORY SIGNS		
a	Entrance to bio hazardous areas clearly marked		
b	Emergency contacts listed (first aid, fire, etc.)		
c	Emergency signs posted (fire exit, eye wash station, etc.)		
d	Emergency telephone numbers posted (fire, ambulance)		
2	SAFETY EQUIPMENT		
a	Safety manual present / read by all		
b	Material Safety Data Sheet (MSDS) available		
c	Safety Shower (if present)		
d	Unobstructed and labelled		
e	Tested within past one month		
f	Eye wash station present		
g	Unobstructed and labeled		
h	Water changed weekly		
i	First-Aid Kit available and labeled		
j	Fully stocked		
3	PROTECTIVE CLOTHING		
a	PPE present (goggles, gloves, coats, face shield, etc.)		
b	Visitor coats and safety glasses available		
c	Proper heat resistant/cryogenic gloves available		
d	Appropriate personal clothing and footwear		
4	HAZARDS		
a	Walkways, doors and fir escape routes unobstructed		
b	Adequate lighting in all areas		
c	Work benches and floors cleaned daily		
d	Storage areas accessible, clean and dry		

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S.No	ITEM	YES	NO
5	SPILL PROCEDURE		
a)	Spill kits available (biological/chemical)		
b)	Clearly posted with instruction for use		
c)	Chemical spills documentation present		
6	ELECTRICAL		
a)	Power distribution board clearly labeled		
b)	Extension cords only for temporary use		
c)	Multi-plugs used only on computers		
d)	Surge protection (U.S.P.) present		
e)	Electrical cords not frayed		
f)	Electrical plugs in good condition		
g)	Earth leakage system in good working condition		
7	REFRIGERATORS/FREEZERS		
a)	“No Food or Drink” signs posted on doors		
b)	Separate refrigerator for Staff use in tea room		
8	CHEMICAL STORAGE		
a)	Chemicals stored by reactive class (flammables, acids, etc.)		
b)	Incompatible chemicals physically separated		
c)	Chemicals properly labeled		
d)	Chemicals dated on receipt and when opened		
e)	Inspected monthly for leakage, cracked stoppers, etc.		
f)	Storage areas labeled with hazard stickers		
g)	Acids/corrosives/solvents stored in compatible trays		
h)	No chemicals stored on bench tops/in fume hoods/under sinks		
i)	Flammable liquid storage cabinet present and labeled		
j)	List of Chemicals available present with MSDS		
9	FIRE EQUIPMENT		
a)	Fire extinguishers present, clearly labeled in working order		
b)	Fire blankets present and clearly labeled		
c)	Fire hose present, clearly labeled, and in working condition		
d)	Fire alarm system present		
e)	All equipment serviced within the last year		

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S.No	ITEM	YES	NO
10	VENTILATION		
a)	Temperature control (air conditioners/heaters if available) adequate		
b)	Dust and fumes minimized		

Inspected by: _____ Date _____ Signature _____

General observations


.....

Action(s) to be taken:

.....

Safety officer Name _____ Signature _____ Date _____

Team leader Name _____ Signature _____ Date _____

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