

Dissemination of Education for Knowledge, Science and Culture”
- Dr. Bapuji Salunkhe



Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)
PG - Department of Microbiology



CERTIFICATE OF “ON JOB TRAINING”

This is to certify that Mr. Harsh Kishor Bangodi (Exam seat no.
8 3 6 5 5 1) has


satisfactorily carried out the required practical work prescribed by the BoS
Department of Microbiology, Vivekanand College, Kolhapur (Empowered
Autonomous) for M.Sc. - Part- I Semester II course in On Job Training (Sub code
- OJT20MIC21) and this report represents his/her bonafide work in the year
2023-2024.

Place: Kolhapur

Date: 26.05.2024.


Examiner


OJT In charge


HEAD
DEPARTMENT OF MICROBIOLOGY
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

OJT Report, PG Department of Microbiology, Vivekanand College, Kolhapur (Empowered Autonomous)

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Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)
PG - Department of Microbiology



(स्वायत्त) कोल्हापूर

CERTIFICATE OF 'ON JOB TRAINING'

This is to certify that Ms. Liza Naushad Naushad Mujawar (Exam. Seat No. 836580) has satisfactorily carried out the required practical work prescribed by the Department of Microbiology, Vivekanand College, Kolhapur (Empowered Autonomous) for M.Sc. -Part-I, Semester-II course in On-Job-Training (Sub. Code: OJT20MIC21) and this report represents her bonafide work in the year 2023-24.

Date: 26/05/24

Place: Kolhapur


Examiner


OJT in charge


HEAD
DEPARTMENT OF MICROBIOLOGY
VIVEKANAND COLLEGE, KOLHAPUR
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VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)
PG - Department of Microbiology



CERTIFICATE OF 'ON JOB TRAINING'

This is to certify that Mr. Shalom Vishwas Naik (Exam. Seat No. 836559) has satisfactorily carried out the required practical work prescribed by the Department of Microbiology, Vivekanand College, Kolhapur (Empowered Autonomous) for M.Sc. -Part-I, Semester-II course in On-Job-Training (Sub. Code: OJT20MIC21) and this report represents his bonafide work in the year 2023-24.

Date: 01/06/2024

Place: Kolhapur


Examiner


OJT In charge


IIC HEAD
DEPARTMENT OF MICROBIOLOGY
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

Dissemination of Education for Knowledge, Science and Culture"
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VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)



PG - Department of Microbiology

CERTIFICATE OF "ON JOB TRAINING"

This is to certify that Mr. Suyash Dnyandev Zunake (Exam seat no.
8 3 6 5 6 1) has

satisfactorily carried out the required practical work prescribed by the BoS
Department of Microbiology, Vivekanand College, Kolhapur (Empowered
Autonomous) for M.Sc. - Part-I Semester II course in On Job Training (Sub code
- OJT20MIC21) and this report represents his/her bonafide work in the year
2023-2024.

Place: Kolhapur

Date: 26/05/24


Examiner


OJT In charge


VC HEAD
DEPARTMENT OF MICROBIOLOGY
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

A
On Job Training report

In Collaboration with

JEEVANDHARA BLOOD BANK,
(1648, saidarshan heights, near Sarada medicals,
Rajarampuri 7th lane Kolhapur, Maharashtra 416008.)

And

PG Department of Microbiology
Vivekanand College, Kolhapur (Empowered Autonomous)

By
Mr. Suyash Dnyandev Zunake,

M. Sc. Microbioloy

Part I Semester 2

Under the Guidance of
Dr. K. K. Bhise,
PG Department of Microbiology

DECLARATION

I the undersigned hereby declare that the On Job Training Report in Collaboration with **Jeevandhara blood bank**, and PG Department of Microbiology, Vivekanand College, Kolhapur (Empowered Autonomous) is an original work done by me under the guidance of Dr. K. K. Bhise, PG Department of Microbiology, Vivekanand College, Kolhapur (Empowered Autonomous). The matter included in this report is not a reproduction from any other sources.

I also hereby declare that this project has not been submitted to any time to any other university or institution for the award of any degree or diploma.

Date:

Place: Kolhapur.

Mr. Suyash Dnyandev Zunake

ACKNOWLEDGEMENT

At this juncture where the herculean task is nearing its pinnacle, science deems it a pleasure to look back and acknowledge efforts and support of all kith and kin that helped with zeal to turn a distant dream of an industrial training into reality.

We are extremely thankful to Dr. K. K. Bhise, Assistant Professor, PG Department of Microbiology, Vivekanand College, Kolhapur (Empowered Autonomous), project guide for her valuable guidance and mentorship throughout this project work given to us during the study.

We are indeed grateful to Faculty Coordinator (OJT) Dr. G. K. Sontakke, PG Department of Microbiology, Vivekanand College, Kolhapur (Empowered Autonomous) for his kind co-operation and valuable support and we are also thankful to all the staff members of our department for their direct and indirect support.

We are thankful to Principal Dr. R. R. Kumbhar, for his kind co-operation and valuable support.

Also, we sincerely thank our parents for helping us in all aspects to complete the project work. Finally, we would like to appreciate our friends, colleagues for their direct and indirect contribution.

Date:

Place: Kolhapur

Mr. Suyash Dnyandev Zunake

INTERNSHIP UNDERTAKING

1. Student Name	MR. SUYASH DNYANDEV ZUNAKE.
2. Current Address	A/P DATTAWAD, TAL-SHIROL, KOLHAPUR.
3. Residence Address	A/P DATTAWAD, TAL-SHIROL, KOLHAPUR.
4. Email id	Suyashzunke05@gmail.com
5. Mobile Nos.	9673665354
6. Aadhar	6086 1069 9361
7. PAN	ADNPZ0165D
8. Overall GPA	- 8.18
9. Internship /Area (Company/Institute)	JEEVANDHARA BLOOD BANK, RAJARAMPURI 7 TH LANE, KOLHAPUR.

I confirm that I agree with the terms, conditions, and requirements of the Internship Policy

Student Signature:

Date:

I confirm that the student has attended the internship orientation and has met all paperwork and process requirements to participate in the internship program and has received approval from his/her mentor.

Sign of Department Faculty Coordinator

Date:



Lic. No. PD/64

Vandematram Samajh Sanstha's

JEEVANDHARA BLOOD CENTRE

Blood Component & Apheresis Centre

1648, Saidarshan Heights, Opp. Chandrakant Mandre Kala Sangrahalya,
Rajarampuri 7th Lane, Kolhapur. Ph. 0231 3590350, 0231 3550897,
0231 2526363, 0231 2522223 Mob. 78759 22223



Ref. No.

Date: 25/01/2024

CERTIFICATE

This is to certify that Mr. Suyash Dnyandev Zunake a student of M.Sc-I, Sem-II in the Department of Microbiology, Vivekanand College Kolhapur has successfully completed the Blood Centre training in our Jeevandhara Blood Centre for a period of commencing 4th January 2024 to 14th January 2024.

During the training we found him sincere. We wish all the best for her academic career.

Medical Officer
Jeevandhara Blood Centre
Rajarampuri, Kolhapur.

ON JOB TRAINING REPORT

On

BLOOD BANK

With reference to

JEEVANDHARA BLOOD BANK

1648, Sai-Darshan Heights, Near Sarada Medicals, 7th Lane, Rajarampuri

Kolhapur-416008 (Maharashtra)

Submitted by

Mr. Suyash Dnyandev Zunake

M.Sc. part 1 semester 2

Duration of Training

{ 4th January 2024 to 13th January 2024 }

DEPARTMENT OF MICROBIOLOGY

VIVEKANAND COLLEGE, KOLHAPUR

(EMPOWERED AUTONOMOUS)

2023-24

1.1 : INTRODUCTION:

It is an undeniable fact that blood is that magic potion of human body, which gives life to another person. Though we have made tremendous discoveries and inventions in science and technology, we are not yet able to make the blood anywhere in the world. Therefore, human blood has no substitute. Requirement of safe blood is increasing day by day and regular voluntary blood donations are vital for blood transfusion services. Here, the Blood Banks play vital role in society as an important constituent of health industry.

There is a tremendous scope to the aspirants to learn about the right methods not only of collecting and handling of human blood but the process of sterilization, centrifugation and preservation as well. On this background, Jeevandhara Blood Bank, one of the most reputed blood banks in Kolhapur city, was selected for On Job Training.

1.2 : BLOOD BANK:

At a common parlance, the term 'blood bank' refers to a department of a hospital usually within a clinical pathology laboratory, where the storage of blood product occurs and where pre-transfusion and blood compatibility testing is performed. In other words, a blood bank is a centre, where blood gathered as a result of blood donation, is stored and preserved for later use in blood transfusion. However, it sometimes refers to a collection centre, and some hospitals also perform collection. Blood banking includes tasks related to blood collection, processing, testing, separation, and storage.

In short, a blood bank is a facility that collects, separates, tests, and stores blood for later use in transfusions and other medical procedures. Blood banks rely on volunteer donors, and the first step in the process is collection. During a typical blood donation, about one pint of blood is collected, along with a few small tubes for testing. The tubes and donation are labelled with donor's information and sent off for processing and testing.

1.3 : JEEVANDHARA BLOOD BANK:

Jeevandhara Blood Bank is the reliable blood collection centre located in Rajarampuri area of Kolhapur city. It is like a boon for the people in Kolhapur and adjacent rural areas and also for neighbouring district. This blood centre has

been accredited by the National Accreditation Board for Hospitals and Healthcare Providers (NABH) and by the Constituent Board of Quality Council of India. In a very short span of time since its establishment in the year 2012, Jeevandhara Blood Bank has emerged as one of the leading blood banks in Kolhapur.

It provides excellent service to its customers. The staff is highly professional and efficient, ensuring a smooth and hassle-free experience. The facility is well-maintained and equipped with state-of-the-art equipment, guaranteeing the safety and quality of the blood products. Indeed, the staff is very friendly and compassionate, making donors feel comfortable throughout the whole process. On the whole, Jeevandhara Blood Bank offers great service that truly makes a difference in saving lives.

Jeevandhara Blood Bank delivers blood on door delivery basis. The blood bank became leading blood bank of the city. It has spacious areas for blood checking, blood collection, rest room after blood donation etc.

Jeevandhara Blood Bank actively participates in social work in association with NGOs like Umed Foundation. Mr. Prakash Ghungurkar (The President of Jeevandhara Blood Bank) honoured with Certificate of Honor by Bhau Foundation, Sangrul for special contribution in various Social, Educational and Cultural activities in 2018.

Thus, in the realm of healthcare, Jeevandhara Blood Bank has been executing commendable work by not only collecting blood from healthy donors but also proficiently storing it for emergency use. Their commitment to excellence is further demonstrated in providing four beds for blood donors, allowing the concurrent handling of four individuals.

1.4: OBJECTIVES:

The objectives of a blood bank internship typically include:

- 1) To gain practical knowledge about the procedures involved in blood banking, including blood collection, processing, storage and distribution of blood.
- 2) To learn how to perform blood typing tests and crossmatching procedures to ensure compatibility between blood donors and recipients.
- 3) To understand the principles of transfusion medicine, including indications for blood transfusions, transfusion reactions, and appropriate blood product selection.
- 4) To learn about blood safety measures, including screening for infectious diseases, proper handling blood products, and adherence to regulatory guidelines to prevent transfusion-transmitted infections.

- 5) To gain insights into quality control measures and quality assurance practices to maintain the integrity and safety of blood products.
- 6) To understand the importance of inventory management in a blood bank, including maintaining adequate stock levels, monitoring expiration dates, and minimizing wastage.
- 7) To develop skills in communicating with donors and patients, providing education about blood donation, transfusion procedures, and addressing their concerns regarding blood products.
- 8) To learn the importance of accurate documentation and record-keeping in blood banking, including maintaining donor records, transfusion records, and regulatory compliance documentation.
- 9) To work collaboratively with other healthcare professionals, including phlebotomists, nurses, and laboratory technicians, to ensure efficient blood bank operations and patient care.
- 10) To enhance professional skills such as attention to detail, critical thinking, problem-solving, and ethical decision-making in the context of blood banking and transfusion medicine.

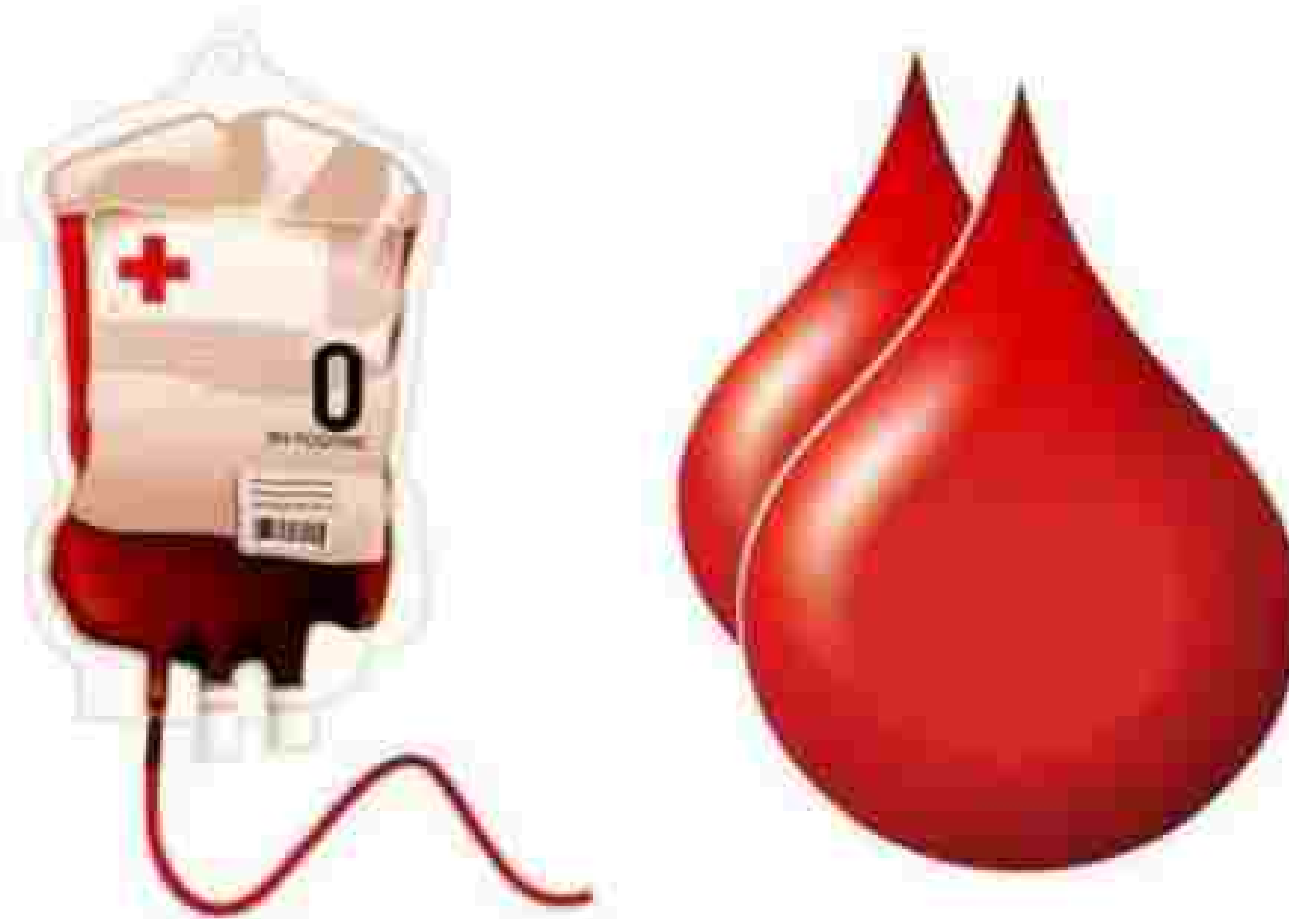
By achieving these objectives, interns can develop a comprehensive understanding of blood bank operations and contribute effectively to the provision of safe and timely blood transfusions to patients in need.

1.5: TASKS INCLUDED BLOOD BANKING:

The blood banking primarily includes the following tasks.

- **Blood Bags:** Preparation and handling
- **Blood Collection Process:** Communicating with donor and collecting blood with utmost care of safety
- **Blood Separation and Centrifugation:** Separating red blood cells and white blood cells from each other as well as from other components, such as platelets, proteins and other molecules from the sample
- **Storage of Blood and Separated Components:** Different methods for storage of blood and the transportation of blood and its products and different types of refrigeration and the maintenance of the temperature inside the blood bank.
- **Single Donor Platelet (SDP):** Obtaining from a single donor by apheresis to treat acute haemorrhage secondary to thrombocytopenia or to provide prophylaxis from haemorrhage in patients with bone marrow aplasia.

- **ELISA Testing:** Detecting and counting certain antibodies, antigens, proteins and hormones in bodily fluid samples.
- **Quality Control:** Identification and selection of prospective blood donors, adequate collection of blood, preparation of blood components, laboratory testing and ensuring the most appropriate use of blood/blood components.
- **Cross Checking of Patient Sample:** Reducing adverse events resulting from medical errors in the emergency department
- **Waste Disposal:** Discarding needles in puncture -proof rigid containers after disinfection in 0.5-1% fresh sodium hypochlorite solution



1.6 : ENGAGEMENT IN LEARNING AT JEEVANDHARA BLOOD BANK DURING OJT PERIOD:

During the course of training, I had been actively involved in and handled the following tasks under Lab Technician.

(I) BLOOD BAGS AND STERILIZATION:

Blood bags are specialized containers designed for the collection, storage, and transfusion of blood and blood products.

(a) Material: Blood bags are typically made from medical-grade plastic materials such as PVC (polyvinyl chloride) or, more recently, from non-PVC materials like polyolefins or polyethylene. These materials are chosen for their compatibility with blood components and their ability to maintain the integrity of the blood during storage.



(b) Components: A blood bag usually consists of several components:

Primary Bag: This is the main compartment where the blood or blood product is collected and stored.

Tubing: Tubing connects the primary bag to other components such as satellite bags or collection devices.

Anticoagulant Solution: Blood bags often contain an anticoagulant solution to prevent blood clotting during storage.

Filters: Some blood bags include filters to remove clots or debris from the blood.

Satellite Bags: These are additional compartments attached to the primary bag, used for storing blood components separated during processing, such as plasma or platelets.

(c) Types: Blood bags come in various types depending on the intended use:

Whole Blood Bags: Used for collection and storage of whole blood.

Component Bags: Used for separating whole blood into its individual components such as red blood cells, plasma, and platelets.

Platelet Bags: Specifically designed for the collection and storage of platelets.

Plasma Bags: Designed for the collection and storage of plasma.

(d) Sterilization: Blood bags are sterilized prior to use to ensure they are free from microorganisms that could contaminate the blood or cause infection in the recipient.

(e) Storage and Transportation: Blood bags need to be stored under specific conditions to maintain their integrity and prevent contamination. They are typically stored in refrigerated conditions to preserve the viability of the blood components. During transportation, blood bags must be handled with care to prevent damage or breakage, as any compromise to the bag's integrity can lead to contamination or loss of blood product.

(f) Safety Features: Blood bags often come equipped with safety features such as tamper-evident seals and barcode labels to ensure traceability and prevent unauthorized access or tampering.

(g) Usage: Blood bags are primarily used in blood banks, hospitals, and healthcare facilities for blood transfusions, medical procedures, and research purposes. They play a crucial role in healthcare systems by providing a safe and efficient means of collecting, storing, and distributing blood and blood products to patients in need.

(II) BLOOD COLLECTION PROCESS:

Blood collection is a crucial procedure for medical diagnostics, blood transfusions, and research purposes. Here's a general overview of the blood collection process:

(a) Preparation:

The phlebotomist (a trained medical professional who specializes in drawing blood) confirms the patient's identity and verifies the requisition form for the specific tests ordered.

They gather the necessary equipment, including sterile needles, collection tubes, alcohol swabs, and adhesive bandages.

(b) Patient Preparation:

The patient may be asked to sit or lie down, depending on their comfort and the specific procedure.

They are often advised to drink water before the procedure to ensure adequate hydration, which can make finding veins easier.

(c) Venipuncture:

The phlebotomist identifies a suitable vein, usually in the inner elbow area, by palpating or feeling for it.



They clean the area with an alcohol swab to reduce the risk of infection.

A tourniquet may be applied above the site to make the vein more prominent and easier to access.

Using a sterile needle attached to a collection tube, the phlebotomist punctures the vein and blood flows into the tube through vacuum pressure.

(d) Blood Collection:

Multiple tubes may be needed to collect different types of samples for various tests.

The tubes are labelled with the patient's information and the type of test being performed.

(e) Post-Collection:

Once an adequate amount of blood is collected, the phlebotomist removes the tourniquet and needle.

They apply pressure to the puncture site with gauze to stop bleeding and reduce the risk of bruising.

An adhesive bandage or sterile dressing may be applied to the site.

(f) Labelling and Transport:

Each blood sample tube is labelled accurately with the patient's information and the type of test.

The samples are then properly stored and transported to the laboratory for analysis.

Proper handling and transportation are critical to maintain the integrity of the samples and ensure accurate test results.

(g) Disposal:

Used needles and other disposable items are disposed of in designated sharps containers according to medical waste disposal guidelines.

Throughout the process, maintaining a sterile environment and ensuring patient comfort and safety is necessary. Additionally, accurate documentation and labelling are essential to avoid errors in sample processing and analysis.

(III) QUALITY CONTROL:

Quality control processes in a blood bank are crucial to ensure the safety and efficacy of blood products. Here's a general outline of the quality control processes typically employed:

(a) Donor Screening: Blood banks conduct thorough screening of potential donors to ensure they meet eligibility criteria and are not at risk of transmitting infectious diseases. This includes questioning about medical history, travel, and lifestyle factors.

(b) Donor Testing: Once blood is collected, it undergoes various tests to detect infectious diseases such as HIV, hepatitis B and C, syphilis, and others. These tests are typically conducted using serological and molecular methods.

(c) Component Preparation: After testing, blood is processed into various components such as red blood cells, platelets, and plasma. Quality control measures are implemented at each step of component preparation to ensure proper processing and labelling.

(d) Storage and Transport: Proper storage conditions are critical to maintaining the integrity of blood products. Quality control processes include monitoring temperature, humidity, and other environmental factors during storage and transportation.

(e) Compatibility Testing: Before transfusion, compatibility testing is performed to ensure that the recipient's blood is compatible with the donor blood. This typically involves crossmatching and antibody screening.

(f) Documentation and Recordkeeping: Blood banks maintain detailed records of all processes, including donor screening, testing results, component preparation, and transfusions. Accurate documentation is essential for traceability and quality assurance.

(g) Equipment Maintenance and Calibration: Blood bank equipment, such as centrifuges, refrigerators, and testing instruments, must be regularly maintained and calibrated to ensure accuracy and reliability of test results.

(h) Staff Training and Competency: Quality control processes include ongoing training and competency assessment for blood bank staff to ensure they are proficient in their roles and adhere to standard operating procedures.

(i) External Quality Assessment: Blood banks often participate in external quality assessment programs to benchmark their performance against other facilities and ensure continuous improvement.

(j) Adverse Event Reporting: Blood banks have protocols for reporting and investigating adverse events related to blood transfusion, such as transfusion reactions or post-transfusion infections. This helps identify areas for improvement and prevent future occurrences.

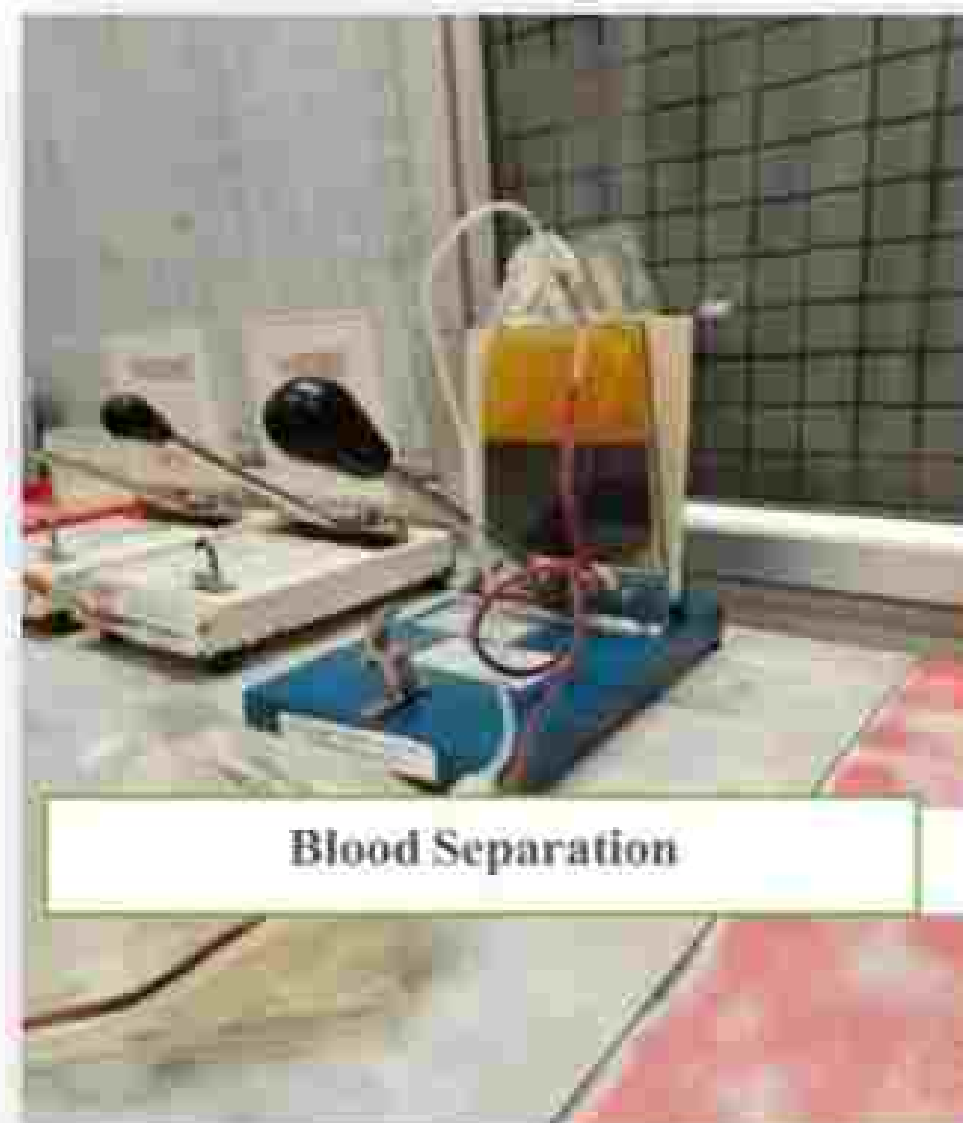
(IV) BLOOD SEPARATION AND CENTRIFUGATION:

Centrifugation of blood is a common laboratory technique used to separate its components based on their density. When blood is placed in a centrifuge, the heavier components, such as red blood cells and platelets, settle at the bottom, while the lighter components, such as plasma, rise to the top. This process allows for the isolation and analysis of different blood components for various diagnostic purposes.

There are several types of centrifugation techniques used in blood analysis:
(a) Whole Blood Centrifugation: This involves spinning whole blood in a tube to separate it into its components. After centrifugation, the blood components can be visually distinguished as layers in the tube.

(b) Plasma Separation: This method separates plasma from cellular components (red blood cells, white blood cells, and platelets). Plasma is the liquid portion of blood that contains proteins, electrolytes, and other substances. After centrifugation, plasma is found at the top layer of the tube.

(c) Serum Separation: Serum is similar to plasma but lacks clotting factors. To obtain serum, blood is allowed to clot before centrifugation. After clotting, the blood is placed to separate the serum from the clot and cellular components. Serum is found above the clot layer after centrifugation.



Centrifugation of blood is essential in various medical and research applications, including blood typing, cell counting, isolation of plasma/serum for biochemical analysis, and purification of specific blood components for therapeutic purposes.

(V) STORAGE:

Storage of blood and the separated components is one of the most important processes in blood bank. This is why the name bank is adopted. Blood,

plasma and serum are separated from the bag and every component is stored in different refrigerator at its specific temperature. We will know them in detail as follows:

(a) Blood: Blood is kept at 4-6 degree Celsius in the refrigerator. Blood are kept separately on the basis of its group. It can be stored for around 42 days and can be given to the patient as per the requirement.

(b) Plasma: Plasma is stored at -20 degree Celsius in a freezer. It can be stored frozen at -18 degree for 1 year or at -65 degree for seven years. For emergency use of plasma, it is kept at 1-6 degree Celsius for 5 days. After 5 days, the protein content, minerals and electrolytes get deactivated and then after plasma is discarded.

(c) Serum: Serum is stored at 2-8 degree Celsius for short term (7 to 8 days) storage and stored at -70 degrees for long term storage (3 to 4 weeks). Serum contains various types of proteins, nutrients, electrolytes, antibodies, hormones etc.

(VI) SINGLE DONOR PLATELET:

(a) Single donor platelets, also known as apheresis platelets, are platelets collected from a single donor using a process called apheresis. During apheresis, blood is drawn from the donor, and platelets are separated from the other blood components using a machine. The remaining blood components are then returned to the donor.

(b) These platelets are often preferred for transfusion in certain medical situations because they come from a single donor, reducing the risk of transfusion reactions and exposure to multiple donors' antigens. Single donor platelets also tend to have a higher platelet count compared to pooled platelets obtained from multiple donors.

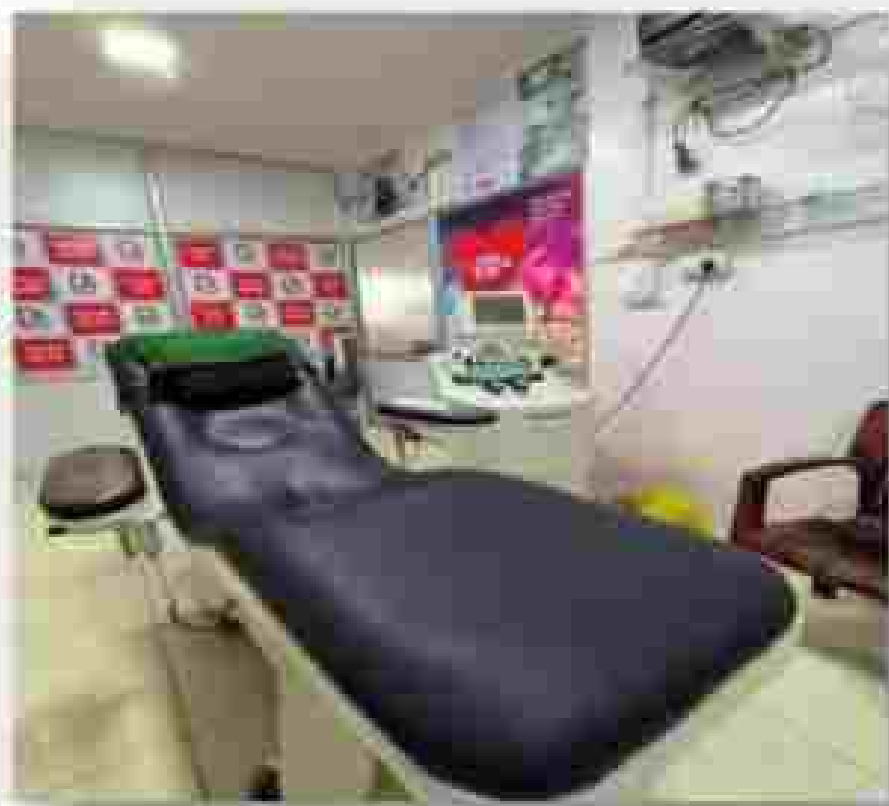
(c) They are particularly important for patients who have conditions that require frequent platelet transfusions, such as those undergoing chemotherapy or bone marrow transplants, as well as those with platelet disorders or undergoing major surgeries.

(d) Approximately 300 millilitres of platelets are collected with SDP method. It takes around 55-90 minutes on average to collect the platelets from the donors



body. As the process is only done with one needle inserted in the vein. Median cubital vein is the vein used for SDP which is considered to be the largest vein in our body. It helps in easy transfer of blood throughout out body.

← Single Donor Platelet Setup in Blood Bank



Understanding the (SDP) setup →

OJT Report, PG Department of Microbiology, Vivekanand College, Kolhapur (Empowered Autonomous)

(VI) ELISA TESTING:

Elisa testing, short for Enzyme-Linked Immunosorbent Assay, is a common laboratory technique used to detect the presence of antibodies, antigens, proteins, or other substances in biological samples. Here are some points which explain ELISA:



(a) Principle: Elisa relies on the interaction between an antigen and an antibody. Typically, the antigen of interest is immobilized on a solid surface, such as a microplate, and then specific antibodies, if present in the sample, bind to the antigen.

(b) Procedure:

Coating: The antigen is coated onto the wells of a microplate.

Blocking: Non-specific binding sites on the plate are blocked to prevent false positive results.

Incubation: The sample containing the target antibodies is added to the wells and allowed to incubate, during which any target antibodies bind to the immobilized antigen.

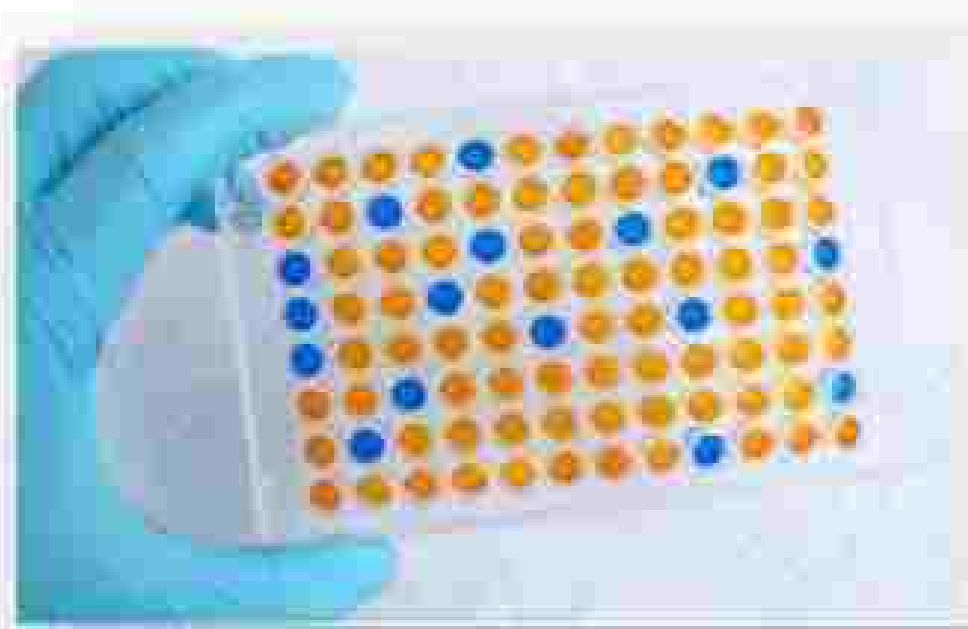
Washing: The plate is washed to remove any unbound substances.

Detection: A secondary antibody, which is linked to an enzyme, is added. This secondary antibody binds to any target antibodies that are already attached to the antigen.

Substrate Addition: A substrate specific to the enzyme is added. If the target antibodies are present, the enzyme will catalyse a reaction with the substrate, producing a detectable signal (e.g., colour change).

Measurement: The intensity of the signal is measured, typically using a spectrophotometer, and is proportional to the amount of target antibody present in the sample.

(c) Types of Elisa:



Direct Elisa: Detects antigens using a labelled primary antibody.

Indirect Elisa: Detects antibodies using a labelled secondary antibody.

Sandwich Elisa: Detects antigens using two antibodies, one to capture the antigen and another to detect it.

(d) Applications: Elisa testing is widely used in medical diagnostics,

research laboratories, and pharmaceutical development. It can be used for various purposes, including disease diagnosis (such as HIV, hepatitis, and autoimmune diseases), detection of allergens, monitoring of immune responses, and drug discovery.

(e) Advantages: Elisa is highly sensitive, specific, and relatively easy to perform, making it a popular choice for many applications.

However, it's worth noting that while Elisa is a powerful tool, it has limitations. False positives or negatives can occur due to various factors such as cross-reactivity, assay interference, or inadequate washing steps. Therefore, careful optimization and validation are crucial for reliable results.

Washing of plate to remove unbound substance

WASHING BEFORE SELLING THE BLOOD BAG:

Blood transfusion is a must step to ensure compatibility

between the donor's blood and the recipient's blood. And its working includes:

(a) Blood Typing: Before cross matching can occur, both the donor and recipient blood types are determined. The ABO blood group system classifies blood into four types: A, B, AB, and O. The Rh factor (positive or negative) is also considered.



(b) Compatibility Testing: Once the blood types are known, compatibility testing is done to ensure that the recipient's antibodies won't react adversely to the donor's blood cells. This is particularly important to prevent transfusion reactions.

(c) Cross Matching: Cross matching involves mixing a small amount of the recipient's serum (the liquid part of the blood) with a sample of the donor's red blood cells. This is done in a laboratory setting. The purpose is to check for any reactions between the recipient's antibodies and the donor's blood cells.

(d) Compatibility Confirmation: If there are no adverse reactions in the cross match, the blood is considered compatible, and the transfusion can proceed.

(e) Transfusion: Once compatibility is confirmed, the blood can be transfused into the recipient.

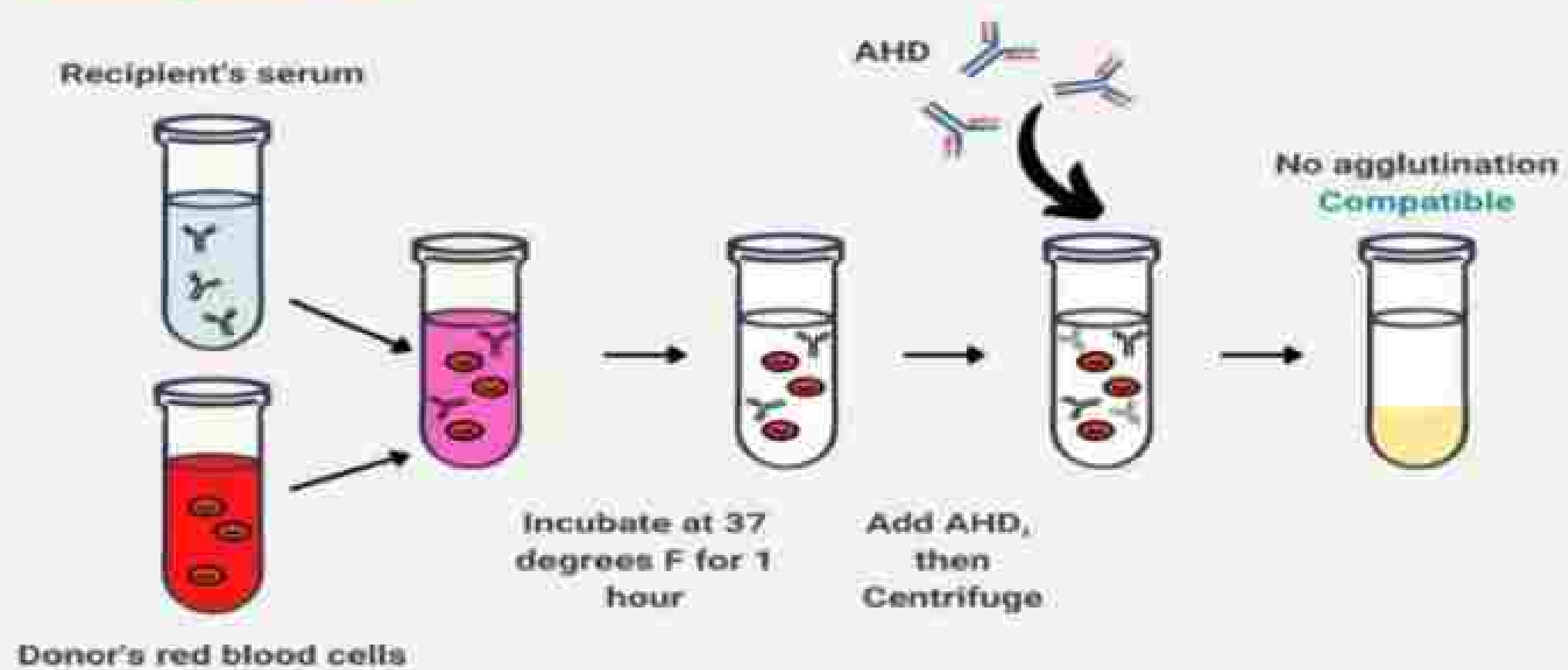
Cross matching helps prevent transfusion reactions, which can range from mild to severe and even life-threatening. These reactions can occur if the recipient's immune system reacts to the donor's blood cells, leading to complications such as fever, chills, shortness of breath, and in severe cases, kidney failure or shock.

By carefully cross matching blood before transfusion, healthcare providers can minimize the risk of these reactions and ensure the safety and effectiveness of the transfusion process.

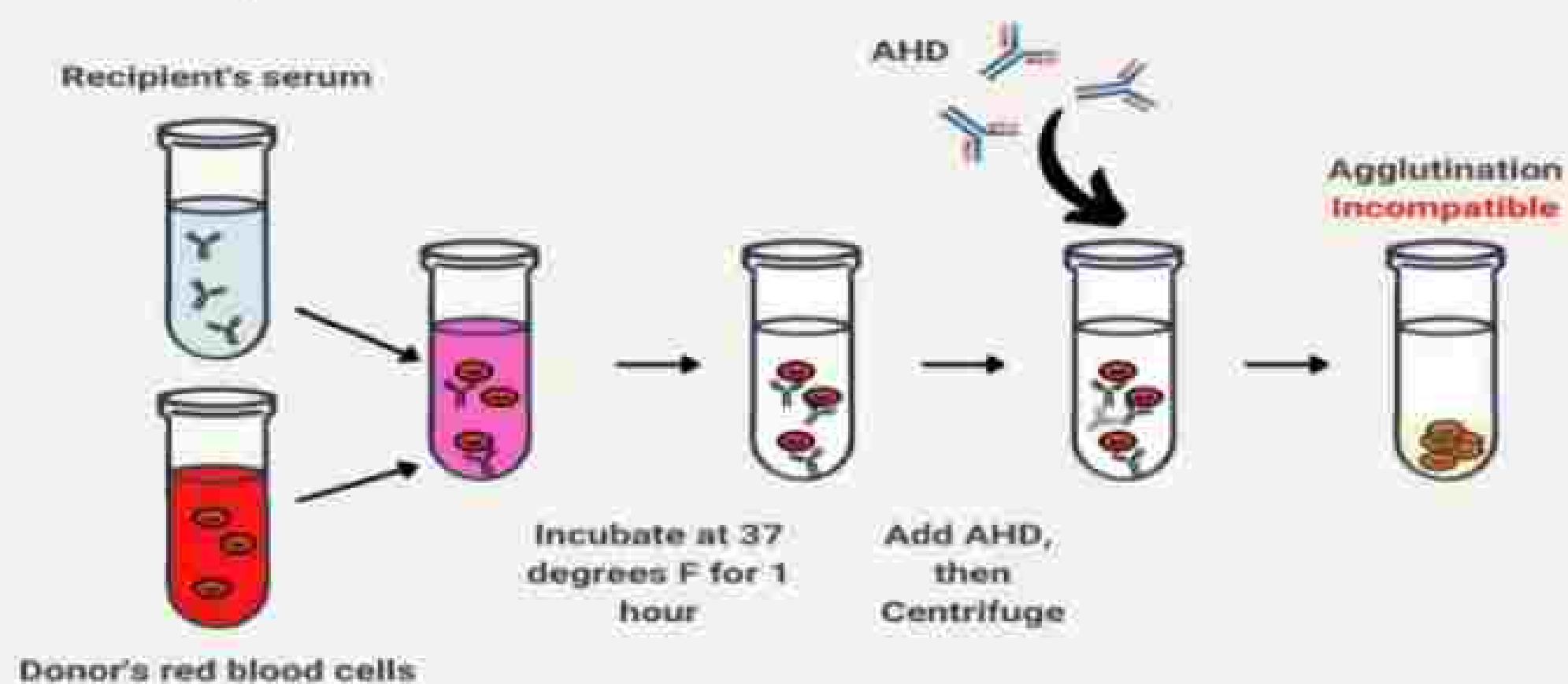


Crossmatch

Compatible



Incompatible



(IX) WASTE DISPOSAL:

Waste disposal method is necessary in blood bank for the safety of people around it and also the environment. It can avoid unnecessary contamination in the environment and in the bank itself. Here are some of the methods need to be practiced for disposal of waste in blood bank.

(a) Segregation: Waste generated in a blood bank is segregated into different categories such as biomedical waste, non-biomedical waste, hazardous waste, and non-hazardous waste. Biomedical waste includes items contaminated with blood or other bodily fluids and must be handled with special care.

(b) Collection Containers: Specialized containers are used for collecting different types of waste. For example, sharps containers are used for disposing of needles and other sharp objects, while biohazard bags are used for blood-soaked items and other potentially infectious waste.

(c) Labelling: All waste containers are clearly labeled with the type of waste they contain and any necessary hazard warnings.

(d) Storage: Waste is stored in designated areas within the blood bank, separated from other areas to prevent cross-contamination. Hazardous waste may require additional safety measures such as locked storage areas or refrigeration.

(e) Transportation: When waste containers are full or at the end of their designated storage period, they are securely sealed and transported to a central waste disposal facility. Transportation follows specific protocols to minimize the risk of spills or exposure.

(f) Disposal: At the disposal facility, biomedical waste undergoes treatment such as autoclaving, incineration, or chemical disinfection to render it safe for final disposal. Non-biomedical waste may be recycled or disposed of according to local regulations.

(g) Documentation: All steps of the waste disposal process are documented, including the type and quantity of waste generated, transportation details, and disposal methods. This documentation is important for regulatory compliance and monitoring waste management practices.

By following these procedures, blood banks can effectively manage waste disposal to protect both staff and the public from potential health risks associated with blood products and related materials.

WASTE SEGREGATION

Segregation of Solid Bio-Medical Waste



1.7: CONCLUSION:

Throughout this on job training, I learnt and gained a lot of knowledge about the working of blood bank.

This OJT has provided me with a detailed study of all procedural aspects of a blood bank.

It also made me realize that blood is an important factor for living organism and blood donation is the primary responsibility of every citizen in the country. I am grateful for the mentorship provided by the staff, who patiently guided me through each step and shared their expertise generously. This training has not only prepared me for a career in healthcare industry but has also reinforced the importance of teamwork, attention to detail and professionalism in any professional setting.

From the bottom of my heart, I am thankful to my friends who shared a teamwork with me in this on job training.