1 INTRODUCTION

Blood is a living tissue that has wide therapeutic benefits when its components are handled and used appropriately. However, it sometimes causes unwanted reactions that range from mild reaction to severe life-threatening haemolytic reaction. Transfusion-related fatalities are caused by ABO haemolytic transfusion reactions, which are due to clerical mistakes when crossmatch samples are taken, or when blood is administered. The safety and efficacy of transfusion practice requires that comprehensive Policies and Procedures be designed to prevent or reduce these errors.

2 PURPOSE

The purpose of this Policy is to provide a standard practice that meets international guidelines and allows for safe and effective transfusions by reducing or eliminating errors. It also defines the procedures to be followed to ensure that blood components are provided in a timely manner, particularly in urgent and life-threatening situations. This Policy also provides guidance on the appropriate use of transfusion sets, blood warmers, and irradiated components.

3 APPLICABILITY

All healthcare providers involved in ordering, preparation and transfusion of blood and blood products.

4 POLICY

4.1 It is the physician's responsibility to prescribe blood and blood products using RABET system which documents and saves the request within the system.

4.2 All requests for blood transfusions must be made through RABET system.

4.3 The validity of a Type & Screen or Cross-match Sample is three days (day of sample collection is day zero EX: sample collected on Sunday at 8:00 the sample will be valid until 23:59 on Wednesday of the same week). Therefore, the cross-matched blood will be reserved for the patient for three days if the patient is not discharged within the sample validity. If discharged and re-admitted, a new sample must be collected.

4.4 Blood bank director should have the education, knowledge, and expertise to oversee the administration of blood and blood product.

4.5 For emergency transfusions, blood and blood products will be supplied as required with the understanding that donors will be provided as soon as possible.

4.6 For elective surgeries, cross-match should only be requested when the Maximum Surgical Blood Order Schedule (MSBOS), as detailed in the PSMMC Maximum Surgical Blood

Order Schedule (MSBOS 1-1-8062-07-026), indicates that this is necessary. If the procedure is not listed, or if there are any unusual circumstances, the Consultant in-Charge of the patient will be responsible for specifying what provisions are made

4.7 Any deviation from this Policy must be authorized by the Transfusion Consultant in-Charge of the Blood Bank.

5 RESPONSIBILITIES

It is the responsibility of the Blood Bank, medical, nursing and operating room staff involved in the ordering, preparation, and transfusion of blood and blood products to ensure adherence to this Policy.

6. PROCEDURES

6.1. The Red Blood Cells Requests

6.1.1. It is the physician's responsibility to prescribe blood and blood products using RABET system. The physician must clearly specify the type and quantity of blood products to be given, the duration of the infusion, and any other special precautions or requirements such as irradiated products, etc.

6.1.2. At time of placing red blood cells or any other blood products, RABET system saves and documents the details of requesting physician, the person who collect the sample, time and date.

6.1.3. **A Consent to Blood Product Transfusion** (Blood Product Transfusion Consent or Refusal Form, Appendix 8.1) must be obtained by the treating physician from patients who are competent to take such decision. If the patient is unable to give consent and no guardian is available, and the need for transfusion is considered a medical emergency, blood and/or blood products may be transfused without consent and the reason for transfusion without consent to be documented in the patient's medical record.

6.1.4. **Blood samples** for cross-matching may be drawn by medical staff, phlebotomists, or registered nurses (RN) / registered midwives as detailed in the Laboratory Specimen Collection Manual 4-3-1008-02-006. Drawing Blood Bank samples from the following patients will be authorised and monitored by the medical staff:

6.1.4.1. PSMMC paediatric and neonatal patients

6.1.4.2. Other patients, after two (2) unsuccessful attempts by a phlebotomist or registered nurses (RN) / registered midwives to access a vein

6.1.5. It is the responsibility of the person drawing the blood sample to identify the patient accurately at the time the sample is taken by comparing the information on RABET with that on the hospital wristband. **At least, two patient identifiers are needed for confirmation of identity**, full name (family name, first name, and middle name) and Medical Record Number (MRN). Whenever possible, the patient should be asked to state his or her family, middle name and first name. Do not rely on a bed tag or on charts/records placed on the bedside. A second staff member, who is a registered nurse/ registered midwife or physician, must confirm the correct identification of the patient.

6.1.6. Immediately after taking the blood sample and before leaving the bedside, the sample must be labelled. This label can be hand printed with the patient's family name, first name, and MRN. The person drawing the sample must sign, date, and attach the label.

6.1.7. For infants who have not yet been named, the request form and sample must be labelled with "Baby of ..... mother's family and first name" and the baby's MRN. When the infant has been re-registered with its proper name a new Blood Bank request form and sample is required with the correct information to cover any further transfusions. Failure to follow the above will result in sample rejection.

6.1.7.1. If multiple pregnancies the request form and sample must be labelled according to the Medical City Wide Policy and Procedure(MCWPP) (1-1-8062-01-011) titled " Patient Identification" section 6.5.3.7 as

6.1.7.1.1. Twin 1 (B1/2)
6.1.7.1.2. Twin 2 (B2/2)
6.1.7.1.3. Triplet 1 (B1/3)
6.1.7.1.4. Triplet 2 (B2/3)
6.1.7.1.5. Triplet 3 (B3/3)

6.1.8. In the case of cardiac or other major surgery, if it becomes necessary to remove the wristband in theatre, it is the responsibility of the nurse-in-charge of the patient to tape it to the white board & re-attach it to the patient wrist.

6.1.9. Blood Bank will only accept 7ml EDTA cross-matching tubes (lavender top). Low volume samples or samples received in any other tube will be rejected. Minimum quantities are as follows:

6.1.9.1. Newborn to 4 months : 1ml
6.1.9.2. 4 months to 3 years : 2ml
6.1.9.3. 3 years to adult : 5ml

6.1.10. The Blood Bank staff will immediately notify the requesting physician of sample rejection by calling the ward charge nurse or nurse responsible for the care of the patient. The rejection/cancellation of the sample and/or the request will be documented in the RABET system.

6.1.11. All Blood Bank samples must be transported in the plastic bags provided. The sample must be sealed in the zip-lock side and the form must be placed in the attached pocket. Contaminated request forms and leaking samples will be rejected and discarded.

6.1.12. The routine and emergency transportation of blood bank samples to the laboratory should be done by the porter. It is advisable that the Blood Bank samples are delivered straight to Blood Bank.

6.1.13. For all Blood Bank inpatient samples with no historical blood group, TWO samples are required, **first** sample is "**Type and Screen**", and a **second** confirmation group sample (**ABOTH only**). The two samples must be collected in two different times and ordered in RABET separate from each other in two Different Accessions. It should be emphasised that **no cross match will be processed on samples without historical group unless a repeat sample for blood group confirmation is sent.**

6.1.14. The physician or designee must inform the Blood Bank of emergency requests by telephone. The degree of urgency must be accurately conveyed.

6.1.15. For elective surgery, it is the responsibility of the head of the surgical team to designate a physician from his team to **check blood availability in the computer BEFORE** the patient is taken to theatre.

6.2. **<u>The Issue, transportation & storage of Red Cell Units at PSMMC & PSCC</u>**

6.2.1. For all PSMMC buildings, crossmatched blood will be issued by the Blood Bank to the porter as soon as testing is completed.

6.2.2. For elective surgeries, cross-matched blood will be stored in the Blood Bank. Medical or registered nurse/ registered midwife will contact the Blood Bank when the blood is needed and the Blood Bank staff will arrange for porters pickup/delivery.

6.2.3. For PSCC, the cross-matched blood for cardiac theatre will be ready for all patients whose samples are available 24 hours before surgery. The PSCC will call blood bank for issuing the blood to cardiac theatre to be available in the morning of surgery.

6.2.4. For the Emergency Department (Bldg. 9), cross-matched blood will be stored in the Blood Bank. The ED registered nurse/ registered midwife will be informed when the blood is ready for collection. It is the responsibility of the ED registered nurse/ registered midwife to arrange for the ED porter to collect the blood when required.

6.2.5. Crossmatched blood will be issued with a computer generated Dispense Report (packing list). Upon receipt of the units in the clinical area this report must be signed and dated by the nurse receiving the blood & filed in the patient's medical record.

6.2.6. Monitoring of the transportation of blood from the Blood Bank to the ward or theatre is documented in the *"The Packing list"*.

6.2.6.01. **Blood ready and Porters informed** upon calling the porter for blood collection, the Blood Bank staff will document the date, time, and signature of the person making the call.

6.2.6.02. **Blood Bank dispensing checks** – Prior to issue, a Blood Bank staff will check the integrity of blood units labelling by the barcode scanning device and then will dispense the blood units through RABET System. Another staff will double check the labelling, and both staff will sign with date and time on the dispense form.

6.2.6.03. **Taken by porter** – Upon blood products issuance, the Blood Bank technologist will document the date, time and name of the porter collecting the blood. The porter will then sign the form. The blood will be issued from Blood Bank in a special transport box with a cool pack.

6.2.6.04. **Received by nurse, physician, anaesthesia technician, or perfusionist** – Upon receipt, the receiver will verify transportation within thirty (30) minutes and then enter the date, time, name and signature.

6.2.7. Below is the transportation temperature for each blood products, which must be strictly followed.

COMPONENT	TRANSPORT TEMPERATURE
Red Blood Cells	<10°C
FFP after thawing	<10°C
Platelets	Room temperature (20°C-24°C)
Cryoprecipitate AHF	Room temperature (20°C-24°C)

6.2.8. The receiving physician or nurse is responsible for verifying that the blood or **blood products arrived within thirty (30) minutes** of leaving the Blood Bank. If transportation takes longer than thirty (30) minutes, Blood Bank must be contacted **immediately.**

6.2.9. The receiver is also responsible for making sure that red cell units are set up for infusion or placed in a monitored satellite blood refrigerator **immediately.**

6.2.10. Blood must be kept refrigerated because of the risk of haemolysis and bacterial proliferation. Because of this, **infusion of red cells must be started within thirty (30) minutes of the unit being removed from the refrigerator**.

6.2.11. For each patient, only one (1) unit of blood should be removed from the blood refrigerator at a time unless extremely rapid transfusion of large quantities of blood is required. If blood is out of the refrigerator for more than thirty (30) minutes and not transfused, it must not go back into stock as it is no longer suitable for further clinical use. Contact the Blood Bank immediately and return the unit labelled "out of fridge". **Do not re-refrigerate.**

6.2.12. Only medical, anaesthetists and registered nurse/ registered midwife are allowed to remove units from the satellite blood refrigerator, and this person is responsible for documenting the exact date and time that units are taken out of the refrigerator on the Dispense Report (Packing list). Porters are **NOT** allowed to remove blood from the satellite refrigerators. The only exception is the return of cross-match-expired blood to the Blood Bank.

6.2.13. Any patient transferring pre or post-operatively from one location to another, the nurse should document on the Dispense Report (Packing list) with name, date and time that blood is removed from the satellite refrigerator and the time when it is placed in another satellite blood refrigerator. Blood must be transferred within thirty (30) minutes.

6.2.14. The Blood Bank staff will check the satellite refrigerators daily for crossmatch expired blood and return them to the Blood Bank.

6.2.15. As satellite fridges are located away from Blood Bank, the registered nurse/ registered midwife should make sure that the fridges are running and maintained as follows:

6.2.16. If the fridge stops working, blood units must be immediately removed and placed in another blood fridge; Maintenance should be contacted immediately on Ext 45656 or Blood Bank on Ext. 47112.

6.2.16.1. If chart recorder is out of service, temperature must be taken manually every four (4) hours.

6.2.16.2. Blood Bank refrigerators must not be used for food, drink and medicine storage.

6.2.16.3. Refrigerators should be labelled for their intended purpose; label's reading "No food, drink & medicine to be stored in this refrigerator".

6.2.16.4. **Location of Blood Bank Satellite Fridges:**

FRIDGE #	CURRENT LOCATION
16	V.I.P. Bldg.2, Burns unit 3rd floor
17	V.I.P. Bldg.2, Theater 1st floor
14	Labor ward, Building 4, 4th floor(4SA)
23	Building 5,Main Theater, Ground floor
11	GICU Bldg. 5, 1st floor.
19	PSCC Bldg. 6, Cardiac theater, ground floor
13	ED, Bldg.9 , Ground floor(RESUS.)
18	Building 4 OR theatre, 2nd floor

Blood must NOT be placed in a domestic refrigerator

6.3. Red Blood Cell Transfusion

6.3.1. Red cell units are labelled with a variety of bar coded information, which includes the unit number, the ABORh (D) blood group, the product details, and the unit expiry date (appendix 8.2)

6.3.2. A **compatibility label** is attached to each red cell unit which gives the following information:

6.3.2.1. Patient's family name and first name
6.3.2.2. Patient's MRN
6.3.2.3. Location
6.3.2.4. Patient's blood group
6.3.2.5. Unit blood group
6.3.2.6. Unit number
6.3.2.7. Component type
6.3.2.8. The cross match expiry date and time.
6.3.2.9. The combined bar code (MRN+ Unit No.)

6.3.3. A **Dispense Report (Packing list)** is issued electronically

6.3.3.1. Blood administration record on the patient chart should include:
6.3.3.1.1. Identity of the transfusionist

6.3.3.1.2. Name of the blood component
6.3.3.1.3. Identification number of donor unit transfused
6.3.3.1.4. Date and time of transfusion
6.3.3.1.5. Evidence of patient monitoring pretransfusion, during and after transfusion
6.3.3.1.6. Amount transfused
6.3.3.1.7. Any transfusion-related adverse effects

6.3.4. The bedside pre-transfusion check is vital for preventing fatal errors. Two patient identifiers with three (3) names plus the patient medical number must be used to confirm the identity of the patient. This confirmation must be carried out by two (2) staff, one of whom is responsible for the care of the patient during transfusion as nurses, midwives, physicians, anaesthesia technicians and perfusionists.

6.3.5. For each unit of blood to be administered, a clerical check must be carried out before infusion by **two (2)** staff, one of whom is the person transfusing the blood:

6.3.5.1. Check the doctor's prescription on the RABET system and verify that all the requirements are met.

6.3.5.2. **Clerical Check:** Two (2) staff members must verify that the unit to be transfused belongs to the right patient. This should performed as follows:

6.3.5.2.1. The unit number and blood group on the unit must match that on the attached compatibility label and the Blood Bank Dispense Report (Packing list).
6.3.5.2.2. The patient and the unit must be ABO and Rh (D) compatible.
6.3.5.2.3. Check the unit expiry date and examine the unit for any signs of discolouration, haemolysis or abnormal appearance.
6.3.5.2.4. Check the crossmatch expiry date and time on the compatibility label.
6.3.5.2.5. Check the unit for leaks by squeezing firmly.
6.3.5.2.6. Check that there are no discrepancies between the information on the compatibility label, the Dispense Report (Packing list), the patient's medical record, and the information on the hospital wristband.
6.3.5.2.7. Patients who can communicate should be asked to state their name.

6.3.6. **Pre-transfusion,** perform a full patient assessment as follows:

6.3.6.1. Note any rashes or complaints of headaches

6.3.6.2. Record the patient's vital signs: temperature, pulse, blood pressure (BP) and respiratory rate (RR).

6.3.6.3. Throughout transfusion, stay with the patient and proceed as follows:

6.3.6.4. Re-check the patient's **vital signs every fifteen (15) minutes** for the first half an hour.

6.3.6.5. Then, **hourly until one (1) hour after completion of transfusion**.

6.3.6.6. For platelet transfusion the observation may be extended until six (6) hours post transfusion.

6.3.6.7. Adjust the flow-rate to achieve infusion over the prescribed time period.

6.3.6.8. The maximum infusion time for red cell units is four (4) hours, with most transfusions being completed within two (2) hours.

6.3.6.9. The first 25-50 ml should be infused slowly under close supervision to detect early signs of an acute transfusion reaction.

6.3.6.10. Throughout the transfusion observe the patient for any sign or symptom of incompatibility or adverse reaction such as :

6.3.6.10.1. shortness of breath,
6.3.6.10.2. severe apprehension,
6.3.6.10.3. flushing,
6.3.6.10.4. urticaria, itching
6.3.6.10.5. vomiting,
6.3.6.10.6. diarrhoea,
6.3.6.10.7. fever, ,
6.3.6.10.8. headache,
6.3.6.10.9. haemoglobinuria,
6.3.6.10.10. severe backache,
6.3.6.10.11. collapse and
6.3.6.10.12. circulatory failure.

6.3.6.11. Should any of these symptoms be observed the transfusion must be stopped immediately and the Physician informed.

6.3.6.12. Until the Physician arrives, the primary nurse will keep the IV line open with a slow infusion of 0.9% Saline.

6.3.6.13. If the Physician decides to proceed with the transfusion, it must still be completed or stopped within four (4) hours of the blood being removed from the fridge.

6.3.6.14. Clinical details and actions taken must be recorded in the Providers Notification in RABET System

6.3.6.15. All transfusion reactions that are serious enough to merit stopping the transfusion completely must be reported to the Blood Bank.

6.3.6.16. **The only infusion you can add to the blood product is 0.9% saline.** Addition of any other infusion to the blood product will cause serious transfusion reaction and haemolysis of the blood.

6.3.6.17. If a crystalloid or colloid solution has to be given at the same time as the blood component, it should be given through a separate IV line.

6.3.7. **Post-transfusion,** the followings must be performed**:**

6.3.7.1. As units are infused, **the date, time and signature of both persons** checking and administering the blood must documented in RABET system electronically by two staff. In this way, this report provides accurate details of units issued, units infused, and units remaining in the refrigerator. This document is kept electronically in RABET system in the patient's file as a permanent record of transfusion.

6.3.7.2. **DO NOT** return the empty unit or compatibility label to Blood Bank. **Empty bags should be kept until one (1) hour post transfusion check has been completed**. If there are no signs of a transfusion reaction, the empty bags should then be disposed off in yellow 'Infected Waste' plastic bags for incineration according to the PSMMC Medical City Wide Policy and Procedure Medical Waste Management (1-1-9415-08-007).

6.3.7.3. Occasionally only part of a unit is transfused. This fact must be documented on the Dispense Report (Packing list) and the remainder of the unit must be disposed off as 6.3.7.2. **It must not be infused later.**

6.4. Urgent Transfusion Requests

6.4.1. The requesting physician or designee must telephone the Blood Bank for **ALL** urgent requests. **It is the responsibility of the requesting physician to clearly communicate the degree of urgency by classifying the request as one of the following:**

- Routine
- Urgent
- Life threatening emergency

This will allow the blood Bank to prioritize work properly and take appropriate action.

Category	Blood Issued	Phone Call To Blood Bank Required	Full Compatibility Testing	Doctor Takes Full Responsibility	Donors Required	Processing Time
Routine	**Fully Compatible**	**NO**	**YES**	**NO**	**YES**	**3 hours**
Urgent	**Fully Compatible**	**YES**	**YES**	**NO**	**NO**	**15 minutes (if Type & Screen done) 1 hour (on new sample)**
Life Threatening Emergency	**Uncrossmatched Group Specific (if sample available) Uncrossmatched O Negative* (if no sample available)**	**YES**	**NO****	**YES*****	**NO**	**15 minutes**

* **If stocks available**

** **Restricted to life threatening emergencies**

*** **WARNING: Risk of severe transfusion reaction is as follow:**

Donor population i.e. general population **0.25%**

General hospital population **1-1.5%**

Multi-transfused patients:

Thalassaemias	**5.1%**
Chronic renal failure	**7%**
Open heart surgery	**10%**
Sickle disease	**10% children and up to & 50% in adults**

6.4.2. The requesting physician or designee must provide the following information which will be documented on the Blood Bank telephone log:

6.4.2.1. Patient family name and given name.
6.4.2.2. Patient MRN
6.4.2.3. The requesting physician's name, code, and contact number (OBI phone or cell phone)
6.4.2.4. The reason for transfusion
6.4.2.5. The degree of urgency e.g. routine, urgent or life threatening emergency.
6.4.2.6. The exact location the blood is to be sent to.

6.4.3. When a physician requests the release of an **emergency blood from Blood Bank without a complete blood compatibility workup**, this blood will be issued under the discretion of the Blood Bank Medical Director, the requesting physician responsibility, and with the consent of the patient if he/she is competent to give consent or with the consent of patient's relative. **An Emergency Blood Release form** (4-2-1007-08-001) (appendix 8.3), which is available in the intranet, must be filled out by the requesting physician and sent to Blood Bank with the porter within twenty-four (24) hours of the blood request time. A pre-transfusion Type and Screen sample must be sent to Blood Bank **IMMEDIATELY.** Whenever un-crossmatched blood is issued, the Blood Bank will continue with routine compatibility tests and notify the requesting physician immediately if any incompatibility is detected.

6.4.4. Uncrossmatched O-negative blood will be issued in a situation when pre-transfusion sample cannot be obtained by Blood Bank before release of blood. Upon receipt of pre-transfusion sample, all subsequent blood will be issued as group-specific to the patient.

6.4.5. The use of uncrossmatched blood carries a significant risk of severe transfusion reaction and should therefore be restricted to **LIFE THREATENING EMERGENCIES.**

6.4.6. In a life-threatening emergency, Bldg.4 (4SA, fourth floor) and Bldg.9 ED Department medical staff may consider using the emergency O-negative blood located in labour ward (4SA) /ED ground floor fridge. The doctor is responsible for calling the Blood Bank before using any of these units and for restricting their use to life-threatening emergencies. The doctor must call the Blood Bank **before** transfusing an O-negative unit. Whilst the doctor is on the phone, the Blood Bank staff must quickly perform the following:

6.4.6.1. Look in RABET system for the blood group and any previously identified clinically significant antibodies that may affect the decision to use the uncrossmatched blood.

6.4.6.2. See if there is an in-date sample already available. If not, instruct the doctor to take a **pre-transfusion** crossmatch sample and send it to Blood Bank **immediately**.

6.4.6.3. Inquire about the nature of the emergency and advise the doctor of options available. Uncrossmatched group compatible blood can be issued within 15 minutes if an in-date sample is available. Previous computer records must **not** be used to determine which blood group to issue.

6.4.6.4. Following transfusion of an O-negative unit, the doctor must fill the emergency blood release form and the emergency O-neg tag that are attached to the blood unit. The USED BLOOD BAG, EMERGENCY FORM & TAG should be sent altogether to Blood Bank ASAP & within 24 hours of using the blood unit.

6.4.7. In case of a life-threatening emergency where no tested blood products (Nucleic Acid Testing (NAT), virology markers and bacteria) are available, the doctor may use untested blood for blood transfusion provided that a consent form has been obtained from the patient/relative (appendix 8.5). If the patient is unconscious and no relatives accompany him/her, then two physicians (one consultant and one registrar) should sign the consent to use the untested blood.

6.5. The Issue of Non-Red Cell Products

6.5.1. It is the physician's responsibility to prescribe blood products and to place an order (Platelet, Fresh Frozen Plasma, Cryoprecipitate) in RABET system.

6.5.2. The requesting physician or designee must telephone the Blood Bank to request FFP, PLTC, and CRYO at least forty-five (45) minutes before they are required.

6.5.3. The requesting physician or designee must provide the following information, which will be documented on the Blood Bank telephone log:

6.5.3.1. Patient family and first name
6.5.3.2. MRN
6.5.3.3. The ordering physician's name, code and bleep number
6.5.3.4. The reason for transfusion and the degree or urgency
6.5.3.5. The exact location the products should be sent to.

6.5.4. Then Blood Bank will advise the requesting physician whether or not a blood sample is required for blood grouping prior to blood product issue.

6.5.5. At PSMMC and PSCC, Blood Bank will call the appropriate porters as follows:

6.5.5.1. The laboratory porters for the PSMMC
6.5.5.2. The PSCC porters for the PSCC
6.5.5.3. For ED, the nurses are called by Blood Bank that the blood products are ready. Then, ED porters collect the blood products when they are instructed by the nurses to do so.

6.5.6. Blood products will be issued with a computer generated Dispense Report (Packing list) that accompany blood products.

6.5.7. The monitoring of the transport of blood products to the ward or theatre is documented on the bottom of the Dispense Report (Packing list).

6.5.8. As with red cell units, blood products are labelled with the unit number, the blood group, the product details, and the expiry date.

6.5.9. A blood product label is attached to each unit, which gives the following information:

6.5.9.1. Patient's family name
6.5.9.2. and first name.
6.5.9.3. MRN
6.5.9.4. Location
6.5.9.5. Patient's blood group
6.5.9.6. Unit blood group
6.5.9.7. Unit number
6.5.9.8. Component number
6.5.9.9. Component preparation time
6.5.9.10. A combined bar code (MRN+ Unit No.)

6.5.10. The bedside pre-transfusion check is vital for preventing fatal errors, **at least two patient identifiers as full name and medical record number** to confirm the identity of the patient. **This confirmation must be carried out and documented by two people,** one of whom is responsible for the care of the patient during the transfusion such as: nurses, midwives, physicians, anaesthesia, technicians and perfusionists

6.5.11. For each unit to be administered, a clerical check must be carried out prior to setting the unit up for infusion by two (2) people one of whom is the person transfusing the blood component:

6.5.11.1. Check the physician's prescription and verify that all the requirements are met.

6.5.11.2. **Clerical Check:** Two (2) staff members must verify that the unit to be transfused belongs to the right patient. This should performed manually as follows:

6.5.11.2.1. The unit number and blood group on the unit must match that on the attached blood product labei and on the Dispense Report (Packing list).

6.5.11.2.2. For platelets, the patient and unit should be ABO and Rh-D compatible. ABO compatibility alone (without Rh-D) is required for FFP and neither is essential for CRYO.

6.5.11.2.3. Check the unit expiry date and examine the unit for any signs of discoloration or abnormal appearance.

6.5.11.2.4. Check the unit for leaks by squeezing firmly.

6.5.11.2.5. Check that there are **NO** discrepancies between information on blood product label, Dispense Report (Packing list), patient's medical record, and hospital wristband.

6.5.11.2.6. Patients who can communicate should be asked to state their name.

6.5.12. Fresh Frozen Plasm (FFP) must be infused within 12 hours of issuance if stored at 1-6°C, or within 4 hours if stored at 20-24°C.

6.5.13. Cryoprecipitated AHG (single Cryo) must be stored at 20-24°C after thawing and must be infused within 6 hour of issuance.

6.5.14. Platelets units must be stored at 20-24°C and transfused as soon as possible after issuance.

6.5.15. Occasionally, when there is an urgent request and platelet stocks are low, the situation may dictate the **use of Rh (D) positive platelets for Rh (D) negative patients**. In these cases, the Blood Bank will automatically issue Anti-D immunoglobulin with the units. This should be administered to prevent sensitization and Anti-D alloantibody production by the patient.

6.5.16. An Anti-D immunoglobulin initial dose of 1500 IU (300ug) is given as per the instructions accompanying the vial (appendix 8.4). Additional immunoglobulin is unnecessary for the next four (4) weeks or until up to four (4) pooled platelet units of Rh (D) incompatible platelets have been infused.

6.6. **The Use of Administration Sets and Filters**

6.6.1. All blood and blood components must be infused through a **standard sterile blood transfusion administration set**. These sets have an in-line filter (170-260 microns) designed to trap blood clots and large aggregates and have drip chambers and tubing in a variety of configurations. Sets should be used and primed according to the manufacturer's instructions.

6.6.2. In general, filters are not required for the infusion of commercial plasma products such as human albumin. However, always consult the manufacturer's instructions.

6.6.3. **Blood transfusion sets must be changed every four (4) hours** to reduce the risks of bacterial contamination. The filter traps cell debris and aggregates, resulting in a high protein concentration which promotes rapid bacterial growth at room temperature. Most standard filters **are designed to filter 2-4 units of blood** as per the manufacturer's instructions. However, if it takes longer than four (4) hours to infuse this number of units, the administration set should be changed unless otherwise stated in the manufacturer's instructions.

6.6.4. **Platelets must not be infused through a set that has already been used for red cells**.

6.6.5. 40-micron micro-aggregate filters are designed to remove small aggregates from red cell units during transfusion. These filters are **NOT** indicated for routine blood transfusion. However, they may be indicated for patients transfused during cardio-pulmonary bypass and for large volume transfusion in patients with pre-existing lung disease.

6.6.6. Leucocytes-reduction filters for bedside filtration are not indicated anymore for use as in lab filtration for the blood products is already implemented in blood bank.

6.7. The use of Blood Warmers

6.7.1. The routine warming of blood is **NOT** necessary.

6.7.2. Blood warmers should only be used when there is a significant **risk of transfusion induced cardiac hypothermia**, i.e. adults receiving rapid and multiple transfusions at >50ml/kg/hour, children receiving volumes >15ml/kg/hour, **exchange transfusions in infants**, and patients with **severe cold autoimmune haemolytic anaemia.**

6.7.3. The requirement to use a blood warmer **must be indicated in the physician's prescription**. When blood warming is clinically indicated, a specifically designed monitored blood warming device must be used.

6.7.3.1. Blood warmers must have a visible thermometer and an audible alarm that ensures that the blood is not warmed above 42°C.

6.7.3.2. Blood warmers must have routine preventative maintenance performed as detailed in the manufacturer's user manual to ensure correct function. This should be done at least every six (6) months and must include temperature and alarm checks.

6.7.3.3. PSCC blood warmers will be checked by the PSCC Department of Clinical Engineering, and PSMMC blood warmers will be checked by the Bio-Engineering Section of the Department of Medical Physics, Clinical Bio-Engineering.

6.7.3.4. Blood warmers are extremely dangerous if they malfunction. If blood warming exceeds 42°C. The blood unit should not be used for transfusion & the Blood Bank should be informed **immediately**. Inform the ordering Physician in case further blood is required and contact the bioengineers to repair the equipment.

6.7.4. Blood **MUST NOT** be warmed by any other method, such as using a warm towel, placing in hot water or under a lamp, in a microwave or on a radiator.

6.8. Management and Reporting of Transfusion side effects and complications

6.8.1. Although clinicians and laboratory staff try to ensure provision of safe blood and blood products, some adverse effects cannot be completely predicted or avoided. It is therefore important that physicians be aware of the transfusion risks when making a decision to transfuse blood or blood products. Furthermore, medical and/or registered nurse/ registered midwife who administer blood components should be well trained to recognise the signs and symptoms of a possible transfusion reaction and take appropriate steps to mitigate the effects of transfusion reactions.

6.8.2. If any side effect/complication is identified, the attending physician and Blood Bank must be notified immediately and an incident report must be submitted to the CQI & PS within 24 hour of its occurrence. If blood transfusion needs to be discontinued, the implicated unit(s) must be returned to Blood Bank.

6.8.3. Blood Bank reports all transfusion reactions periodically to the CQI &PS. In addition, all transfusion reaction reports are discussed during the Hospital Blood

Transfusion Team meetings every three months for analysis, corrective, and preventive actions.

6.8.4. Transfusion complications fall in two major categories, 1-Non-Infectious/bacterial-contamination related complications, 2-Infectious complications.

6.8.5. Non-Infectious/bacterial-contamination related complications of blood transfusion can be further classified into acute and delayed transfusion reactions.

6.8.6. **Management of Acute Transfusion Reactions**: Acute or immediate transfusion reactions occur during a transfusion or within twenty four (24) hours of administration of a blood component. Acute transfusion reactions include haemolytic transfusion reaction (immune- and non-immune–mediated), transfusion-related sepsis, Transfusion-Related Acute Lung injury (TRALI), allergic reactions, circulatory overload, and air embolism, febrile non-hemolytic Transfusion Reaction (FNHTR), hypotension associated with ACE inhibition, hypocalcemia, and hypothermia.

6.8.7. Delayed transfusion reactions occur after 24 hours of blood transfusion and could be even weeks or months after the transfusion. These reactions include alloimmunization to RBC and/or HLA antigens, haemolytic reaction, Graft-vs-host disease, posttransfusion purpura (PTP), and iron overload.

In the event of an acute transfusion reaction:

6.8.7.1. If the transfusion is still in progress, **STOP THE INFUSION IMMEDIATELY,** flush the IV cannula and keep the line open with 0.9% saline.

6.8.7.2. Check vital signs.

6.8.7.3. Verify all documentation to make sure that the correct unit has been given to the correct patient.

6.8.7.4. Notify the responsible Physician and the Blood Bank **immediately.**

6.8.8. The attending physician must assess the patient's condition and take appropriate clinical action. Any action or treatment must be fully documented in RABET system. For mild localized allergic reactions such as hives, or mild febrile reactions, the physician may continue the transfusion after medication is given provided the signs and symptoms subside. Circulatory overload and mild reactions that do **NOT** result in the final termination of the transfusion do **NOT** need to be investigated by the Blood Bank.

6.8.9. For all reactions that result in the transfused unit being discontinued, Blood Bank must receive a request for transfusion reaction investigation:

6.8.9.1. A Transfusion Reaction Investigation Form (appendix 8.7) should be completed by the person who has witnessed the reaction and signed by the attending physician.

6.8.9.2. Send the following, together with the above form, directly to Blood Bank:

6.8.9.2.1. The unit causing the reaction with the administration set still attached.

6.8.9.2.2. All other empty blood bags used immediately before the reaction.

6.8.9.2.3. One labelled 7 ml EDTA crossmatch sample should be collected away from the site of infusion as soon as possible after the reaction. For an infant or small child, a minimum of 2 ml should be collected.

6.8.9.2.4. A correctly labelled urine sample should also be taken as soon as possible after the reaction.

6.8.9.3. The Blood Bank will:

6.8.9.3.1. Perform a clerical check to ensure that the correct blood component was transfused to the right patient.

6.8.9.3.2. Inspect the sample for evidence of haemolysis.

6.8.9.3.3. Perform a Direct Anti-globulin Test.

6.8.9.3.4. Perform additional testing as necessary.

6.8.9.3.5. Report results in RABET system. Any evidence of a red cell haemolytic transfusion reaction will be reported immediately by telephone to the requesting physician and Consultant Transfusionist.

6.8.10. Transfusion-associated sepsis caused by the bacterial contamination of the unit or the administration set are rare, but can be fatal. During or after the transfusion, the patient may develop rigors, high fever, dyspnoea, hypotension and shock. If this type of reaction is suspected the Physician should take the following **additional** steps:

6.8.10.1. Inform Blood Bank immediately since additional components made from the same donation could be infected and must be recalled. Blood Bank will arrange for blood cultures on the unit and the administration set.

6.8.10.2. Take blood cultures from the patient.

6.8.11. **Infectious Complications of blood transfusion**

6.8.11.1. Blood Bank must be notified of all suspected transfusion-transmitted diseases, including Hepatitis B, Hepatitis C, Human Immunodeficiency Virus (HIV 1 and 2), Human T-cell Lymphotropic Virus (HTLV 1 and 2), syphilis and malaria.

6.8.11.2. Blood Bank will perform a "look-back" to identify infectious donors.

6.8.11.3. Blood Bank will report results to the Consultant Transfusionist, who will review the case and discuss it with the patient's Physician.

6.9. **Irradiated Blood Products**

6.9.1. Blood bank has recently replaced the outdated Gamma irradiation machine Elite 1000 by a new X-ray irradiation technology (RS-X-ray irradiator machine). Blood products irradiation is intended for ablating the proliferative potential of lymphocytes which can cause transfusion associated graft-vs.-host disease (TA-GVHD) in patients who are at risk. Patients at the highest risk, with an absolute need for irradiated blood products, include:

6.9.1.1. Immuno-deficient patients (congenital cellular immune deficiency).
6.9.1.2. Patients who are undergoing bone marrow or progenitor cell transplantation.
6.9.1.3. Patients with Hodgkin's disease.
6.9.1.4. Intra-uterine Foetal Blood transfusion (IUFBT) and the subsequent top-up or exchange transfusion (ET) of neonates up to four (4) months old who have previously received an IUFBT. For other ET cases, irradiation is recommended providing this does not unduly delay transfusion.
6.9.1.5. All recipients of platelets selected for HLA or platelet compatibility, even if immuno-competent.
6.9.1.6. All recipients of donor units from first or second-degree relatives, even if immuno-competent.
6.9.1.7. For at-risk patients, all red cell, platelet and granulocyte transfusions should be irradiated. FFP, CRYO and fractionated plasma products do NOT require irradiation.
6.9.1.8. The minimum dose of X-Ray irradiation will be 25 Gy, with no part receiving >50Gy.
6.9.1.9. Because irradiation damages some red cells and reduces the overall viability, red cell units that have been irradiated expire on their originally assigned outdate or twenty-eight (28) days from the date of irradiation, whichever comes first. Platelets sustain minimal damage from irradiation, so the expiration date does not change. Where the patient is

at particular risk from hyperkalaemia e.g. intrauterine or exchange transfusion, red cell units will be given a twenty four (24) hour expiry after irradiation.

6.10. **Blood Accompanying Patients From Other Hospitals**

6.10.1. Occasionally, critically ill patients are received from other hospitals accompanied by units of blood or blood products. As the testing, transport history, and safety of these units has not been verified by the PSMMC Blood Bank, their use must be restricted to the immediate management of the patient in a life-threatening emergency.

6.10.2. A crossmatch request must be sent to Blood Bank **immediately** upon patient arrival. As soon as PSMMC blood and blood products arrive at the patient's location, the units received from outside should be sent to Blood Bank together with any accompanying transport documentation for inspection and possible disposal. They must not be left in a satellite blood refrigerator.

6.10.3. Patients are occasionally brought to PSMMC for a medical procedure and the laboratory investigations have already been completed at the referring hospital. If there is any risk that the patient may require transfusion of blood or blood products, a "Type & Sceen" request must be sent to the Blood Bank before the procedure is carried out unless a delay in obtaining blood products is accepted by the treating physician.

7. **REFERENCES**

7.1. Ooley P.W .(2018). *Standards for blood banks and transfusion services*. 31st Ed. Bethesda, MD: AABB Press

7.2. Fung M.K., Eder A.F., Spitalnik S. L., Westhoff C. M.(2017). *Technical Manual.* 19th Ed. Bethesda, MD: AABB Press

7.3. Bandarenko N., King K.E(2017). Blood Transfusion Therapy: A Physician's Handbook. 12th Ed. Bethesda, MD: AABB Press

7.4. British Committee for Standards in Hematology, Blood Transfusion Task Force. Administration of Blood and Blood Components and the Management of Transfused Patients. *Transfusion Medicine,* 1999; 9:227-238

7.5. British Committee for Standards in Hematology, Blood Transfusion Task Force. Guidelines for Pre-transfusion Compatibility Procedures in Blood Transfusion Laboratories. *Transfusion Medicine,* 1996; 6:273-283

7.6. JCIA Standards Assessment of Patients (AOP) 6 – Laboratory Services

7.7. CBAHI National Hospital standard, 3rd Edition, 2015

8. APPENDICES

8.1. Blood Product Transfusion Consent or Refusal Form (MSD Stock No. 7540 761 0328)

8.2. Blood Products Labels

8.3. Blood Bank Emergency Release Form (4-2-1007-08-001)

8.4. Blood Bank Rh (D) Incompatible Platelet Issue Form (4-1-7019-01-001)

8.5. Consent to transfusion of untested blood products or refusal (4-1-7019-05-001)

8.6. Management of Acute Transfusion Reaction Instruction

8.7. Transfusion Reaction Investigation Form (4-1-7019-01-032)

8.8. Patient Handout Instructions Following Blood Transfusion

9. **ORIGINATING DEPARTMENT/S**

8.1. Central Military Laboratory & Blood Bank
8.2. Hospital Blood Transfusion Team

Compiled by: • **Jassem Al Basri** **CMLSO, Blood Bank Division**	**Signature:**	**Date:** 06/10/2022
• **Chairman of Hospital Blood Transfusion Team**	**Signature:**	**Date:** 09/10/22
• **Executive Nursing Affairs**	**Signature:**	**Date:** 01 NOV 2022
Reviewed by: • **Brig. Gen. Dr. Omar Al Suhaibani** **Head of Hematopathology & Blood Bank**	**Signature:**	**Date:** 09/10/2022
• **Dr. Ali Al Johi** **Head of Pathology TQM**	**Signature:**	**Date:** 09/10/2022
Reviewed by: **Dr. Samir Mohammed Bawazir** **Director, Continuous Quality Improvement & Patient Safety (CQI&PS)**	**Signature:**	**Date:** 26/10/2022
Authorized by: **Brig. Gen. Dr. Omar Al Suhaibani** **Director of CML & BB**	**Signature:**	**Date:** 09/10/2022
Authorized by: **Chairman of Hospital Blood Transfusion Team**	**Signature:**	**Date:** 9/10/22
Authorized by: **Dr. Amr Momtaz Jad** **Director of Medical Administration**	**Signature:**	**Date:** 3.11.2022
Approved by: **Maj. Gen. Khalid Abdullah Al Hadaithi** **PSMMC General Executive Director**	**Signature:**	**Date:** 7.11.2022

وزارة الدفاع
رئاسة هيئة الأركان العامة
الإدارة العامة للخدمات الطبية
برنامج / مستشفى / مستوصف / عيادة
Prog / Hosp / Center / Disp / Clnc

.....

M.S.D.

PATIENT I.D.

موافقة أو رفض نقل دم أو مشتقاته
Consent to Blood Product Transfusion or Refusal

DEPARTMENT/WARD ..... CODE ..... DATE .....

CONSULTANT NAME ..... NUMBER | | | | | BLEEP | | | | |

BLOOD PRODUCTS

مشتقات الدم

1. ACCEPTANCE :

I have been informed that I need or may need blood products transfusion as part of treatment during current admission. The physician has explained to me in general what a blood transfusion is, the procedures that will be used, and the benefits of receiving transfusion. Possible risks involved with this blood transfusion have been explained to me by the physician. these risks may include but are not limited to allergic reactions, fever, volume overload and electrolytes imbalance, which can be treated.

Other risk include exposure to hepatitis and AIDS viruses, but this risk is very remote.

I understand that these risks exist despite the fact that the blood has been carefully tested according to international standards. No assurances or guarantees have been made to me about the outcome of the transfusion.

The physician has also explained to me the alternatives to transfusion, including the risks and consequences of not receiving this therapy.

I have had the opportunity to ask the physician, as well as others, any questions I might have and give my consent to the transfusion.

Printed Names and Signatures

Patient/Relative: .....

Relationship: .....

Physician: .....

Witness : .....

Date: .....

١. موافقة

لقد تم إبلاغي إني سأحتاج أو قد أحتاج إلى نقل دم أو مشتقات دم أثناء فترة دخولي المستشفى للعلاج. وقد شرح لي الطبيب بشكل عام المقصود بنقل الدم والإجراءات التي سيتم اتخاذها وفوائد نقل الدم. كما شرح لي الطبيب، وليس على سبيل الحصر، المخاطر المحتملة من نقل الدم مثل تفاعلات الحساسية والحمى وزيادة حجم الدم واختلال في توازن الأملاح علما أن هذة الأعراض يمكن علاجها. مع العلم إن هناك مخاطر أخرى تشمل التعرض لفيروسات التهاب الكبد والإيدز ولكن هدا الخطر ضئيل جداً. أنني أدرك إن هذة المخاطر موجودة بالرغم من أنة تم فحص الدم بدقة حسب المعايير العالمية. لم أتلق أية تأكيدات أو ضمانات فيما يتعلق بنتيجة نقل الدم.

لقد شرح لي الطبيب أيضا بدائل نقل الدم بما فيها مخاطر وعواقب عدم تلقي هذا العلاج.

لقد أعطيت الفرصة للاستفسار من الطبيب وغيره عن أية أسئلة لدي وبهذا أعطي موافقتي على إجراء نقل دم.

الأسماء والتواقيع

المريض\القريب: .....

القرابة: .....

الطبيب: .....

الشاهد: .....

التاريخ: .....

2. REFUSAL:

I do not consent to transfusion and have been informed of the understand that the risks associated with this refusal may include permanent injury to me or possible death.

I accept full responsibility for these risks.

Printed Names and Signatures

Patient/Relative: .....

Relationship: .....

Physician: .....

Witness : .....

Date: .....

٢. رفض:

لا أوافق على إعطائي دم وقد تم إبلاغي باحتمال حدوث ضرر دائم أو إحتمال الموت بسبب الرفض. أتحمل جميع تبعات هذا القرار.

الأسماء والتواقيع

المريض\القريب: .....

القرابة: .....

الطبيب: .....

الشاهد: .....

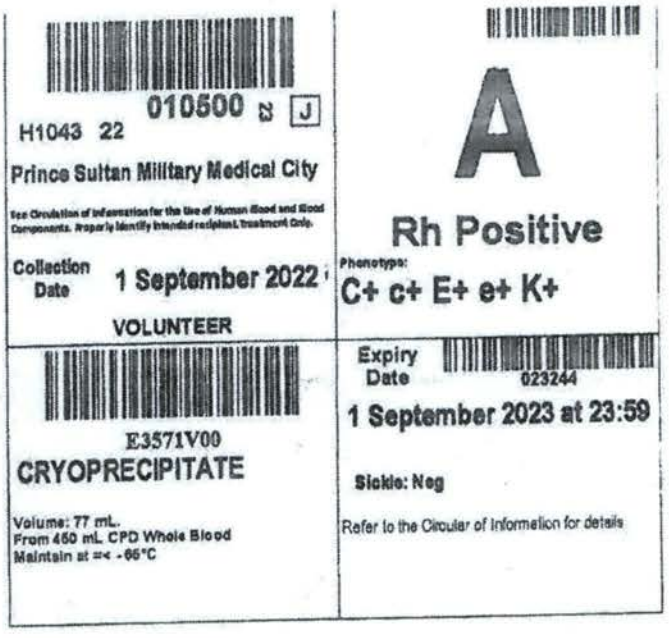
التاريخ: .....

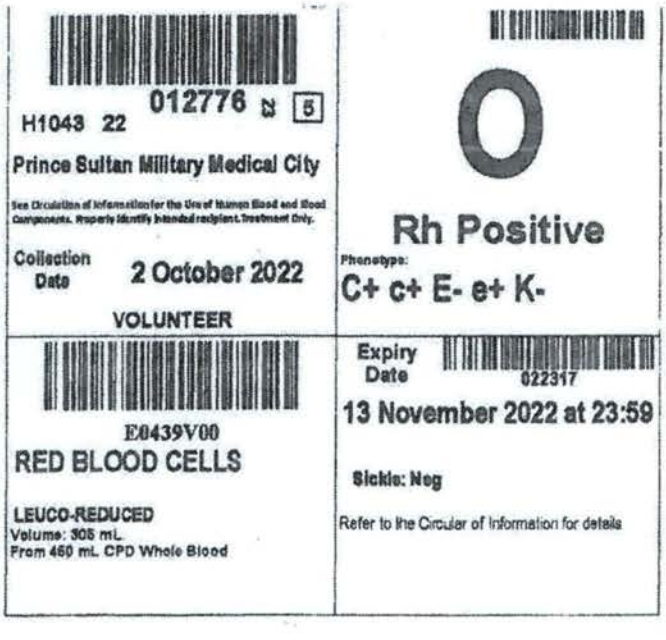
Stock No. 7540-761-0328
MSD-Hemat.F28

HOSPITAL WIDE POLICY PROCEDURE

BLOOD TRANSFUSION

BLOOD COMPONENT UNIT LABELS





Appendix 8.3

وزارة الدفاع
MINISTRY OF DEFENSE

Prince Sultan Military Medical City
Central Military Laboratory & Blood Bank

PATIENT I.D.

Blood Bank
Emergency Blood Release

Department / Ward: _____ Code: _____ Date: _____

Consultant Name: _____ Number: ☐☐☐☐ Bleep: ☐☐☐☐

FOR PHYSICIAN

I request that ☐ units of Group ☐ Rh ☐ packed RBC be provided for the above patient.

I take full responsibility for the above deviation(s) from standard procedures by patient's **URGENT** need for blood.

PHYSICIAN SIGNATURE:	DATE/TIME:	CODE:	BLEEP:

TO BE COMPLETED BY BLOOD BANK

UNIT NO.	EXPIRY DATE	UNIT NO.	EXPIRY DATE

The above units are issued: (Circle the appropriate condition/s).

A. Without the ABO and Rh(D) typing, antibody screening test or cross match.
B. ABO and Rh(D) type specific without the antibody screening test or cross match.
C. Rh(D) positive donor for an Rh(D) negative recipient.
D. Without re-typing the ABO or Rh(D) of the patient(without blood group confirmation).
E. As least incompatible blood-patient has an antibody and no compatible units are found.
F. Other (Please explain).

COMMENTS:

Received In Blood Bank: _____

Issued from Blood Bank: _____

INSPECTED & ISSUED BY:	DATE:	TIME:

Prince Sultan Military Medical City
Central Military Laboratory & Blood Bank Department
Blood Bank Division

وزارة الدفاع
MINISTRY OF DEFENSE

Appendix 8.4

Issue of Rh (D) Incompatibility Platelets with Anti-D Immunoglobulin

DATE / TIME	
PATIENT NAME	
HOSPITAL #	
WARD	

Due to a shortage of Rh (D) Negative platelets, Rh (D) positive units have been issued following instructions from the requesting doctor.

Doctor's Name		**Code**		**Mobile #**	

The accompanying Rh immunoglobulin must be administered for Prophlaxis of Rhesus (D) immunisation.

Always consult the manufacturer's package insert. Unless otherwise stated in the package insert, this immunoglobulin should be given intravenously.

Further prophylaxis is unnecessary for the next 4 weeks or until a maximum of 20 Rh (D) positive platelets concentrates have been infused (assuming an initial dose of 250 Ug or 1250 IU).

WARNING: Failure to administer this immunoglobulin will likely result in Anti-D stimulation, which has very serious implications for furture transfusions and pregnancies.

For further information, contact the Consultant Haematologist or contact the Blood Bank at Ext. 47112 or OBI 60482

Appendix 8.5

وزارة الدفـــاع
MINISTRY OF DEFENSE

Prince Sultan Military Medical City
Central Military Laboratory & Blood Bank

PATIENT I.D.

CONSENT TO TRANSFUSION OF UNTESTED BLOOD PRODUCTS OR REFUSAL

إقرار نقل الدم أو مشتقاته الغير مفحوصه من قبل المختبر

Department / Ward: _____ Code: _____ Date: _____

Consultant Name: _____ Number: ☐☐☐☐ Bleep: ☐☐☐☐

BLOOD PRODUCTS

مشتقات الدم

1) ACCEPTANCE:

I understand that during a life threatening emergency where tested blood products for (NAT, Virology Markers & Bacteria) are not available, the doctor will use untested blood products for the purpose of my blood transfusion.

1- موافقة:

أوافق على إعطائي الدم ومشـــتاقته الغير مفحوصـــة من الفيروسات والبكتيريا في الحالات الطارئة دون أدنى مسؤلية. علماً أني على علم أن الدم ومشـــتقاته المفحوصـــة غير متوفرة.

PRINTED NAMES & SIGNATURES

الأسماء والتواقيع

Patient/Relative:	المريض/القريب:
Relationship	القرابة:
Physician:	الطبيب:
Witness:	الشاهد:
Date:	التاريخ:

2) REFUSAL:

I do not consent to transfusion of untested blood and have been informed of and understand that the risks associated with this refusal may include permanent injury to me or possible death.

I accept full responsibility for these risks.

2 – رفض :

لا أوافق على إعطائي الدم ومشتقاته الغير مفحوصة، وقد تم إبلاغي باحتمال حدوث ضرر دائم أو إحتمال الموت بسبب الرفض.

بناء على ذلك، أتحمل جميع تبعات هذا القرار .

PRINTED NAMES & SIGNATURES

الأسماء والتواقيع

Patient/Relative:	المريض / القريب:
Relationship:	القرابة:
Physician:	الطبيب:
Witness:	الشاهد:
Date:	التاريخ:

Appendix 8.6

TRANSFUSION REACTION INSTRUCTIONS

PATIENT SYMPTOMS	REACTION TYPE	ACTION TO BE TAKEN
Hypotension, chills, fever, dyspnea, chest pain, back pain, headache, abnormal bleeding & hemoglobinuria	Acute hemolytic transfusion reaction (ABO mismatch)	**STOP TRANSFUSION** Maintain IV access, seek medical assistance and medical attention. Complete Blood Bank Transfusion Reaction form
Increase in temperature of 1 degree Celsius or more over baseline during transfusion. Patient may or may not experience chills.	Febrile Non-hemolytic Transfusion Reaction (FNHTR)	**STOP TRANSFUSION** Maintain IV access. Seek assistance and medical advice. Discuss whether to continue transfusion. Paracetamol may be indicated. Alert Blood Bank. Send blood bags to Blood Bank. Send routine bloods/cultures and urine to Pathology. Complete Blood Bank Transfusion Reaction form.
Urticaria (hives) and itching in the absence of other signs or symptoms. Can develop in to anaphylaxis.	Allergic Reaction (most common with plasma products)	**STOP TRANSFUSION** Maintain IV access. Seek assistance and medical advice. Transfusion rate may need to be slowed. Antihistamine regimen may be indicated. Send blood bags to Blood Bank. Send routine bloods and cultures/urine to Pathology. Complete Blood Bank Transfusion Reaction form.
Severe signs and symptoms within 1-45 minutes of transfusion. Mild reactions can be delayed 2-3 hours. Itching, urticarial, erythema, flusing, angioedema, hoarseness, stridor, wheeze, dyspnea, cyanosis, chest tightness, anxiety, hypotension, LOC, tachycardia, shock, arrhythmias, cardiac arrest, nausea, vomiting, diarrhea, abdominal cramps.	Anaphylaxis	**STOP TRANSFUSION** Maintain IV access. Seek immediate assistance and medical advice. Prepare for cardiac arrest symptoms severe. Complete Blood Bank Transfusion Reaction form.
Respiratory distress, dyspnea, cyanosis, tachycardia, fever, hypotension. Within 1-6 hours. CXR – white out.	Transfusion Related Acute Lung Injury (TRALI) (plasma products)	**STOP TRANSFUSION** Maintain IV access. Seek immediate assistance.
Fever, hypothermia, rigors, tachycardia, hypotension, hypertension, hemolysis, shock, multi-organ failure	Bacterial Contamination	**STOP TRANSFUSION** Maintain IV access. Seek assistance and medical advice. Send blood bags to Blood Bank. Send routine bloods and culture/urine to Pathology. Complete Blood Bank Transfusion Reaction form.
Acute pulmonary edema. Dyspnea, chest crackles, peripheral edema, decreased sat O_2, patient may be confused.	Circulatory Overload	**STOP TRANSFUSION.** Maintain IV access. Seek assistance and medical advice. Treat overload. Complete incident form.
Depletion of coagulation factors. Hypothermia, electrolyte imbalance – hyperkalemia, hypocalcemia, DIC. Abnormal bleeding	Massive Transfusion and Metabolic Complications	Monitor electrolytes and vital signs. Seek medical assistance.

References:

1. American Association of Blood Banks (AABB) Technical Manual, 15th Edition, 2005: 523-527
2. Standards for Blood Banks and Transfusion Services 24th Edition, AABB, 2006
3. Circular of Information (COI) for the Use of Human Blood and Blood Components, AABB, July 2002

Appendix 8.7

وزارة الدفـــاع
MINISTRY OF DEFENSE

PATIENT I.D.

Prince Sultan Military Medical City
Central Military Laboratory & Blood Bank

TRANSFUSION REACTION WORK-UP

Department / Ward: _____ Code: _____ Date: _____

Consultant Name: _____ Number: ☐☐☐☐ Bleep: ☐☐☐☐

TO BE COMPLETED BY PHYSICIAN& NURSE

1) INSTRUCTIONS FOR NURSE: (IF TRANSFUSION REACTION OCCUR)

A. **Stop the transfusion.**
B Immediately call the Blood Bank Laboratory. (Ext. 47112)
C. Notify the treating doctor..
D Give treatment specified by doctor.
E Fill out this form immediately.
F. Collect one sample 7 **ml purple top Tube,** send to Blood Bank.
G. Return implicated blood(may be more than one unit) Blood Bank(unless continuing).
H. Collect urine specimen send to laboratory.

2) UNIT INFORMATION

Blood Unit _____
Component _____
Date _____
Time Started _____
Time Stopped _____
Volume Given _____

Was blood warmed before infusion ? ☐ Yes ☐ No If **YES**, how ? _____

Was anything added to the pack or given set ? ☐ Yes ☐ No If **YES**, please specify ? _____

2) PATIENT AND BLOOD COMPONENT/PRODUCT UNIQUE IDENTIFIER VERIFICATION (CLERICAL CHECK) :

Is the information IDENTICAL on all the following : Patient ID Band, Dispense Form, Blood Component label ? ☐ Yes ☐ No

If **NO,** contact Blood Bank IMMEDIATELY. Another patient may be at risk.

Name of Blood Bank Person Notified : _____ DATE : _____ TIME : _____

3) VITAL SIGNS

Pre-transfusion :	Temp		°C		BP	Pulse	Respiratory Rate
Post-transfusion :	Temp		°C		BP	Pulse	Respiratory Rate

4) SYMPTOMS

REPORTED BY : NAME OF NURSE :	SIGNATURE :	DATE	TIME	WARD	EXT:
NOTIFICATION : NAME OF PHYSICIAN :	SIGNATURE	DATE	TIME	CODE :	MOB :

TO BE COMPLETED BY BLOOD BANK

TESTED SAMPLES	HEMOLYSIS		ICTERUS		BROWN/PURPLISH DISCOLORATION		CLOTS OR ABNORMAL MASSES	
	YES	NO	YES	NO	YES	NO	YES	NO
Pre-transfusion								
Post- transfusion								
Donor Unit or tubing (RBC Unit)								

TESTED SAMPLES	FORWARED		REVERSE		RH		INTERP	DCT			INTERP
	-A	-B	A1	B	-D	CTL		POLY	IgG	C3	
Pre-transfusion											
Post- transfusion											

LABORATORY TRANSFUSION REACTION EXTENDED WORK-UP

TESTED SAMPLES	A SCREEN CELL			INTERP.	X-MATCHED	INTERP.	COMMENT
	I	II	III				
Pre-transfusion							
Post- transfusion							

AT THE REQUEST OF PATHOLOGY (PLEASE ATTACH ANY REPORTS)

_____ Urine for free Hemoglobin _____ Creatinine _____ Haptoglobin _____ Hematocrit
_____ BUN _____ Plasma Hemoglobin _____ Bilirubin _____ Others :

Technologist Name : _____ Signature : _____ Date : _____

RESULTS OF INVESTIGATION AND TRANSFUSION HEA CONCLUSION:

TRANSFUSION HEAD

Name : _____ Signature : _____ Date : _____

Appendix 8.8

Patient Handout Instructions Following Blood Transfusion

This handout is to help you understand that following your recent blood transfusion, there is a rare possibility of a reaction to occur. The following instructions will help you to remember after discharge the information that was just explained to you:

1. You should be aware that a delayed transfusion reaction might occur after 24 hours and up to two weeks following blood transfusion.
2. You should keep in mind that most of the delayed transfusion reactions require no treatment, however, very few may need medical intervention.
3. If you have any of the following symptoms: **fever, chills, jaundice, malaise, tachycardia, back pain, chest discomfort, nausea**, please proceed as soon as possible to your treating physician for a medical follow up.

Treating Physician:_____ Extension: _____

إرشادات للمريض بعد تلقي نقل دم

أُعدت هذه النشرة التثقيفية لمُساعدتك على فَهم أنه بعد24ساعة إلى أسبوعين من تلقِي نقل الدم وفي حالات نادرة قد تُصاب ببعض الأعراض الجانبية, مما قد يتطلب استشارة الطبيب المعالج لاتخاذ الإجراءات اللازمة لعلاج هذهِ الأعراض او التخفيف من شِدَّتِها.

سوف تساعدك الإرشادات التالية على التعرفِ على الأعراض الجانبية التي قد تصيبك نتيجة نقل الدم. إذا ماأصبت بأي من الاعراض التالية نرجو المبادرة بالإتصال بالطبيب المعالج أو زيارته في أقرب وقت ممكن.

- الشعور بالتعب والاعياء, إرتفاع في درجة الحرارة, شعور بالبرد ورجفة, الصفار(اليرقان) في بياض العين او الجلد, خفقان أو عدم انتظام نبضات القلب, ألم بالظهر, ضيق بالصدر.

الطبيب المعالج:_____, تحويلة:_____