

# **EMERGENCY AND ROUTINE BLOOD PRODUCT REQUESTS AND RELEASE FOR TRANSFUSION: MLS AND PHYSICIAN'S PERSPECTIVES**



**PRESENTED BY**

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**FROM DFK HAEMATOLOGY TRAINING  
DESK**

# OUTLINE OF PRESENTATION



- ❑ BLOOD: THE UNIQUE CONNECTOR
- ❑ SAFEST BLOOD DONOR RECRUITMENT AND RELEASE IN AN IDEAL SITUATION
- ❑ INDICATIONS FOR EMERGENCY BLOOD PRODUCTS REQUESTS
- ❑ EMERGENCY BLOOD PRODUCTS REQUESTS: CLINICIAN'S PART
- ❑ MEDICAL LABORATORY SCIENTISTS' ROLES IN EMERGENCY SITUATIONS
- ❑ TYPES OF BLOOD PRODUCTS AVAILABLE FOR EMERGENCY TRANSFUSION
- ❑ EMERGENCY BLOOD PRODUCTS REQUESTS: BLOOD TRANSFUSION LABORATORY STAFF EXPERIENCES
- ❑ CHALLENGES FACING EMERGENCY BLOOD & BLOOD PRODUCTS SUPPLY

# OUTLINE OF PRESENTATION

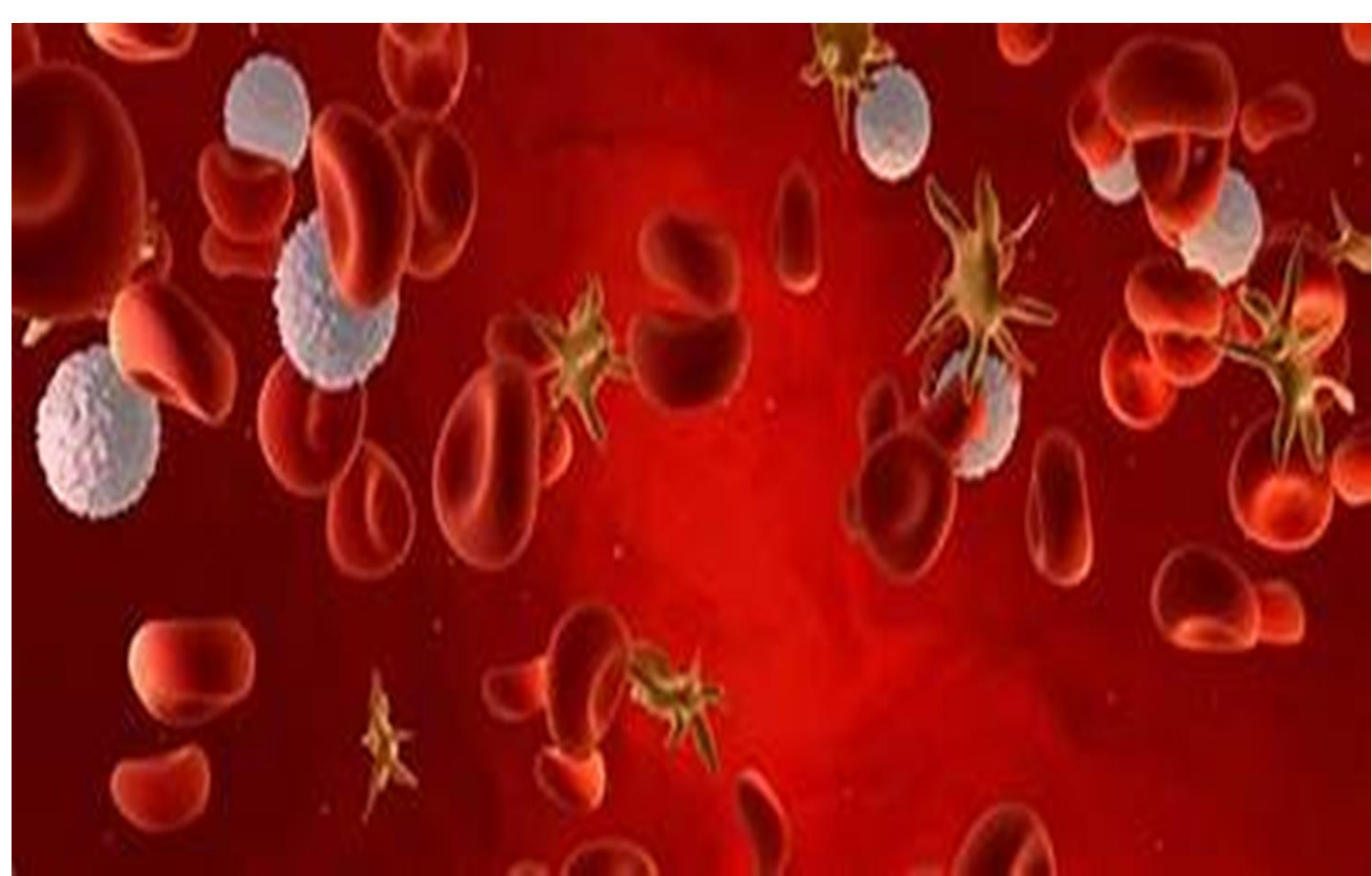


- ❑ REPLACEMENT OF LOANED UNITS USED IN EMERGENCY CASES FOR NHIS PATIENTS: IS IT A MYTH OR FACT
- ❑ PROCEDURES FOR BLOOD PRODUCTS RELEASE FOR ROUTINE USE
- ❑ RETURN OF ISSUED UNITS: BASIS FOR ACCEPTANCE AND REJECTION
- ❑ COMMUNICATION
- ❑ CONCLUSION
- ❑ RECOMMENDATIONS

ONE DROP OF BLOOD IS MORE  
PRECIOUS THAN DIAMOND



**FIG 1: Blood and blood products: Are drugs, and life-saving connectors (Kaur *et al.*, 2011)**



**FIGURE 2: CELLULAR ELEMENTS OF THE BLOOD**

# **SAFEST BLOOD DONOR RECRUITMENT AND RELEASE IN AN IDEAL SITUATION**



- **The World Health Organization recommends 100% voluntary blood donation.**
- **The growth towards achieving this goal is rapid in developed countries but there are still great challenges for developing countries.**
- **For successful satisfaction of any country's need for blood, 1% of the population's blood need must be met.**



# **SAFEST BLOOD DONOR RECRUITMENT & RELEASE IN AN IDEAL SITUATION**



- **For the blood bank to meet emergency and routine blood product release for transfusion, the following criteria are paramount:**
- **Recruitment of blood must be from voluntary, non-remunerated, anonymous blood donors (VNABD) only.**
- **Solid Institutional Blood Transfusion Committee. Where it is dead, it must be resuscitated.**
- **Comprehension of patient's bill of rights.**

# **SAFEST BLOOD DONOR RECRUITMENT & RELEASE IN AN IDEAL SITUATION**



- **Very Functional National Blood Transfusion Service Centers for provision, consultation and coordination.**
- **Government support.**
- **Good inter-laboratory and inter-facility networking and collaboration**
- **Enabling environment and good infrastructures.**
- **Quality equipment procurement and health financing system**



# SAFEST BLOOD DONOR RECRUITMENT AND RELEASE IN AN IDEAL SITUATION



- **Collaboration with international bodies** e.g. American Red Cross Society, Rotary Club International.
- **Involvement and collaboration of blood regulation agencies** (MLSCN and NBSC for accreditation, coordination and sanction of blood transfusion facilities non-compliant with the standard practice. (NBSC, 2021)
- **Implementation of good initiatives** such as Pledge 25 Club where a group of individuals pledge to donate 25 units of blood within their lifetime.

# SAFEST BLOOD DONOR RECRUITMENT AND RELEASE IN AN IDEAL SITUATION



- **Testing Strategies:** Pre-donation or post-donation strategies. Units of donated blood from donor drive are tested for TTIs post-donation while most facility-based recruitment follows pre-donation approach.
- **Minimum TTI testing technology:** Fourth generation ELISA assays for syphilis, HBsAg, HCV Ag-Ab or anti-HCV antibody, and HIV-1/2 Ag-Ab. Higher technology may be used where available.
- **Time Required for ELISA assay:** 4 - 4 ½ hours.

# SAFEST BLOOD DONOR RECRUITMENT AND RELEASE IN AN IDEAL SITUATION



## □ WHO and FMOH Mandate in Nigeria:

- **Emergency and Routine Blood Release: No unit of blood product must be issued that has not been screened with ELISA under whatever circumstances as directed by the NBSC Act and FMOH policy.**
- **The newest group compatible unit that has been ELISA screened must be provided for use.**
- **Where the required unit is not available and cannot be sourced, the patient should be referred to other facility.**

# INDICATIONS FOR EMERGENCY BLOOD PRODUCTS REQUESTS



## ❑ Accident & emergency cases (examples):

- ✓ Road traffic accident/injury
- ✓ Massive gastrointestinal bleeding
- ✓ Haemorrhagic shock

(Aneke and Okocha, 2017; Kaur *et al.*, 2011)

# INDICATIONS FOR EMERGENCY BLOOD PRODUCTS REQUESTS

## □ Emergency paediatric cases (examples):

- ✓ Paediatric trauma
- ✓ Neonatal exsanguination
- ✓ Perinatal haemorrhagic shock
- ✓ Severe anaemia

**(Whyte *et al.*, 2014; Nystrup *et al.*, 2015)**

# INDICATIONS FOR EMERGENCY BLOOD PRODUCTS REQUESTS



- ❑ Obstetric and Gynaecology emergency cases:
  - Massive obstetric haemorrhage
  - Coagulopathy in pregnancy (e.g. DIC)
  - Ectopic pregnancy
  - Intrauterine rupture

# EMERGENCY BLOOD PRODUCTS REQUESTS: CLINICIAN'S PART



- ✓ **Assess how urgently transfusion is required.**
- ✓ **Request the appropriate blood products and indicate emergency on request form.**
- ✓ **Ensure a pre-transfusion sample is taken for subsequent testing and sent to blood transfusion lab.**
- ✓ **Do not give two when one unit is enough.**
- ✓ **Monitor transfusion**



# **EMERGENCY BLOOD PRODUCTS REQUESTS: CLINICIAN'S PART IN CASE OF OBSERVED HTR**



- ✓ **Direct discontinuation of blood transfusion where immediate or delayed HTR is noticed.**
- ✓ **Fill the haemovigilance form.**
- ✓ **Collect post-transfusion samples for blood grouping, DCT and PT/PTTK as well as urine for urobilinogen check.**
- ✓ **Send remnants of the products for further investigations.**
- ✓ **Receive feedback for next action.**

# MEDICAL LABORATORY SCIENTISTS' ROLES IN EMERGENCY SITUATIONS

## □ What we do: MLS

- Attend to requests according to the degree of emergency (including clinical details is very imperative).
- Perform minimum procedure allowable based on emergency especially when sample accompanies request.
- Note bills of patients on their folders with dates where payments are not made.

# MEDICAL LABORATORY SCIENTISTS' ROLES IN EMERGENCY SITUATIONS

- Inform the physician-in-charge of responsibilities he/she must assume where un-crossmatched units are requested or Rh-positive unit is demanded for Rh-negative recipient.
- Due to serious challenges in getting enough VNABD, family replacement donation system seem the alternative route of getting blood to support the few units of blood from VNABD in developing countries.

# MEDICAL LABORATORY SCIENTISTS' ROLES IN EMERGENCY SITUATIONS



- **MLS advances efforts to eliminate paid donation and family replacement approach because possible compromise and risks.**
- **MLS also gives advice on the blood products that will be more beneficial for your patients.**

# TYPES OF BLOOD PRODUCTS AVAILABLE FOR EMERGENCY TRANSFUSION



- O Rh ‘Negative unit uncrossmatched red cells is given in extreme emergencies that give no room for testing.
- A sample for subsequent testing must be collected prior to administration of blood.
- However, the risks and responsibility must be taken note of and documented.

# TYPES OF BLOOD PRODUCTS AVAILABLE FOR EMERGENCY TRANSFUSION



- Group compatible uncrossmatched (type specific) red cells - when transfusion is required urgently before full testing can be completed.
- The laboratory issues red cells based on the blood group from a current sample (historical records should not be used).

# TYPES OF BLOOD PRODUCTS AVAILABLE FOR EMERGENCY TRANSFUSION CONT'D

- **Emergency cross-matched unit (Scientist continues with the full cross-match procedure)**
- **Partially-packed red cells**
- **Group compatible fresh frozen plasma**
- **Group compatible fresh plasma (where freshly collected units are available when requests reach blood transfusion laboratory)**

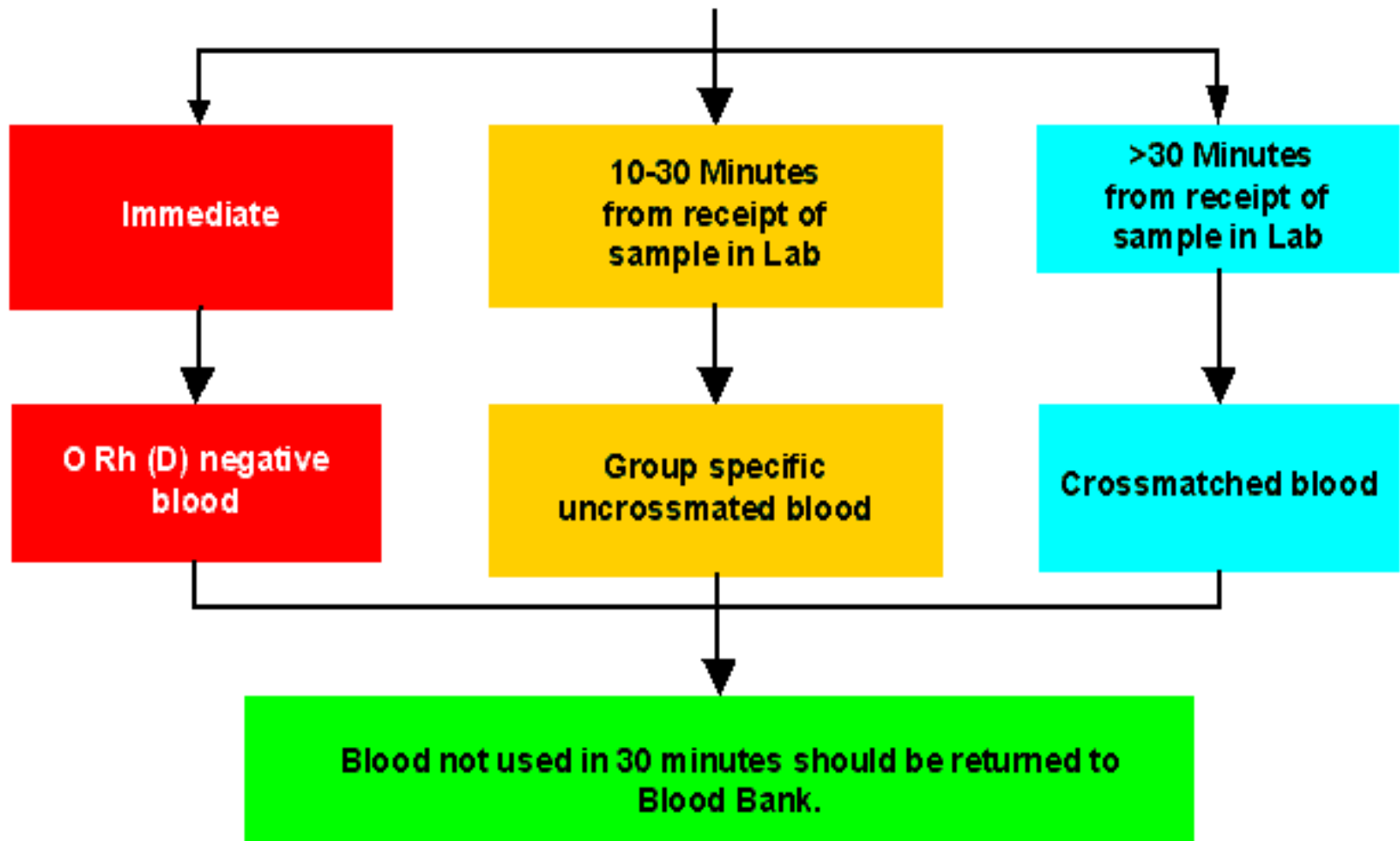




**FIGURE 3: PICTURE OF UNXCROSSMATCHED WHOLE BLOOD IN A FACILITY**



**FIGURE 4: COLD CENTRIFUGE FOR BLOOD COMPONENT SEPARATION**



## FIGURE 5: TIME FOR EMERGENCY BLOOD RELEASE

**NB:** Blood products not required in emergency situations will not be available within these time frames.

# EMERGENCY BLOOD PRODUCTS REQUESTS: MEDICAL LABORATORY SCIENTISTS' EXPERIENCES



- **Sometimes, there are improperly-filled request forms or no correct blood products requests.**
- **In extreme emergency cases**, physicians do request for uncross-matched units but are not ready to assume any responsibility for post-transfusion risks by signing any undertaken for such requests.

# EMERGENCY BLOOD PRODUCTS REQUESTS: MEDICAL LAB. SCIENTISTS' EXPERIENCES



- ❑ **Improper evaluation of patient's emergency needs and associated pressure that gives no room for minimum allowable procedure (e.g. ABO and Rh typing to ascertain the blood group including the Rh. status of recipients prior to giving O Rh. 'D' Negative units).**
- ❑ **Rh. 'D' positive recipient's difficulty in replacing Rh. 'D' Negative unit received where no voluntary non-remunerated units are available.**
- ❑ **Risk of recipient's relatives patronizing paid blood donors who disguise as replacement blood donors.**

# EMERGENCY BLOOD PRODUCTS REQUESTS: MEDICAL LAB. SCIENTISTS' EXPERIENCES



- ❑ **Return of blood products given in emergency situations unused due to:**
  - **Baseline packed cell volume not previously done prior request.**
  - **Improper assessment of patient's needs.**
  - **Incompatibility due to presence of rare antibody (other than ABO) in recipient for which the donor unit has corresponding antigen.**

# EMERGENCY BLOOD PRODUCTS REQUESTS: MEDICAL LAB. SCIENTISTS' EXPERIENCES



- **Attribution of non-blood products related transfusion reactions to blood.**
- **Evidence:** Performance of all procedures for establishing haemolytic transfusion reactions and no associated laboratory findings established.



# EMERGENCY BLOOD PRODUCTS REQUESTS: MEDICAL LAB. SCIENTISTS' EXPERIENCES



- **‘Occult HTR’:** Limited facility in developing countries for full investigation of HTR can constitute laboratory errors and wrong judgment.
- Punctured units still being counted as unused by the recipient of transfusion. Hence, recipient’s misinformation risk.

# CHALLENGES FACING EMERGENCY BLOOD PRODUCTS SUPPLY



- **Non-availability of enough Rh-negative units to attend to Rh-negative recipients.**
- **Shortage of enough group-compatible units required to meet several emergency needs.**
- **Communication barriers**
- **Cultural barriers**

# REPLACEMENT OF LOANED UNITS USED IN EMERGENCY CASES FOR NHIS PATIENTS: IS IT A MYTH OR FACT?

- **In an ideal situation** where voluntary blood donation is the norm in hospital settings, NHIS covers blood.
- **However,** voluntary blood donation constitutes only 3-5% of donated units and WHO recommends 100% voluntary blood donation (WHO, 2015)

# REPLACEMENT OF LOANED UNITS USED IN EMERGENCY CASES FOR NHIS PATIENTS: IS IT A MYTH OR FACT?

- **Most institutions in the developing countries are still finding it difficult to achieve 100% voluntary blood donation.**
- **Larger percentage is from family replacement and some countries and facilities are still far behind and depend on paid donation units (Ahmed *et al.*, 2001; Bashawri, 2002).**
- **In countries with poor health financing programme and non-working health system, NHIS recipients have to replace units loaned while they may be exempted from payments for transfusion services.**

# PROCEDURES FOR BLOOD PRODUCTS RELEASE FOR ROUTINE USE



## ❑ ROUTINE CASES REQUIRING BLOOD TRANSFUSION:

- Patients scheduled for elective surgeries (blood transfusion laboratory should have a copy of such schedule)
- Patients on follow up requiring top up transfusion
- Patients for exchange transfusion

# PROCEDURES FOR BLOOD PRODUCTS RELEASE FOR ROUTINE USE



- **Ethical responsibility:** Patient's counselling & obtainance of informed consent from the patient by the attending physician.
- Clinician must initiate a proper blood products request by filling blood transfusion request form properly & informed consent form.
- Each institution must establish a working payment system protocol.

# PROCEDURES FOR BLOOD PRODUCTS RELEASE FOR ROUTINE USE



- Patient's sample for cross-match accompanies the request and received at the blood transfusion laboratory (BTL) reception.
- Medical lab. Scientist carry out blood grouping procedure on the patient's sample to enable the patient/ patient's relatives seek matched blood donors where fresh unit is requested.



# PROCEDURES FOR BLOOD AND BLOOD PRODUCTS RELEASE FOR ROUTINE USE



- **Unit(s) of blood may be loaned to the patient where matched blood donors are not found yet and stored blood gives maximum benefit.**
- **Cross-match procedure is then performed (usually 1 – 1 ½ hours) and documented.**
- **Blue form is issued to the patient following cross-match procedure (evidence that patient has blood/blood product made ready).**

# PROCEDURES FOR BLOOD AND BLOOD PRODUCTS RELEASE FOR ROUTINE USE



- **Next step is the issuance of the blood (blood /blood products).** BTL will release blood/blood products to ward/theatre where appropriate transport medium is provided (e.g. cooler).
- **In very busy laboratories, cross-matched units are kept for only 48 hour** following which the blood transfusion laboratory has the right to de-tag such and cross-match for other patients.



**FIGURE 6: INCORRECT TRANSPORT MEDIUM FOR BLOOD PRODUCTS**

# PROCEDURES FOR BLOOD AND BLOOD PRODUCTS RELEASE FOR ROUTINE USE



- **Red cell concentrates can only be kept for 24 hours at 2-6°C while partially packed red cells can still be kept for a week for issuance purpose.**
- **Replacement of units loaned within 48 hours of issuance is important to avoid associated challenges at the point discharge.**

# RETURN OF ISSUED UNITS: BASIS FOR ACCEPTANCE AND REJECTION

- ❑ **Issued units of whole blood are acceptable for reception only if:**
  - **The cold chain is maintained.** Blood already exposed to boiled water is unacceptable for return to BTL.
  - **Such unit is returned within stipulated time (30 min) of issuance.**
  - **Such unit is returned non-punctured.** Sterility of punctured units are not guaranteed<sup>37</sup>

# COMMUNICATION: AN INDISPESABLE TOOL



- **Good communication is vital and this facilitates appropriate blood product provision for your patient.**
- **When the emergency blood release procedure is activated, this line of communication is important:**
  - ✓ **Clear communication with the patient/patient's relatives on blood products issue by both the requesting physician and MLS on call.**

# COMMUNICATION: AN INDISPESABLE TOOL



- **Again, MLS on call-requesting physician on call sound relationship is imperative.**
- **MLS on call should contact second or third on call if there were challenges.**
- **Should there be any difficulty in communicating these, MLS on call should contact the head of department.**

# CURRENT ADVANCES



- **The current era has advanced beyond paper system.**
- **What is practiced in developed world or advanced clinical settings is paperless (EHR) system.**
- **From clinician's request, patient's identification and specimen registration to group and compatibility testing, documentation and issuance have been made electronic.**
- **Automated systems are now available for grouping and compatibility testing.**
- **That has eliminated some of the challenges mentioned in the presentation.**




**BLOOD TRANSFUSION LABORATORY,  
FEDERAL TEACHING HOSPITAL, IDO EKITI**

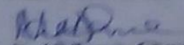
**BLOOD TRANSFUSION LABORATORY POLICY ON MATTERS RELATING TO BLOOD  
DONATION AND ISSUANCE**

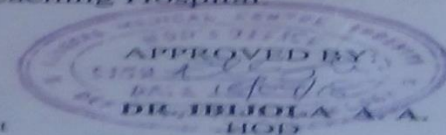
1. Blood donated to the laboratory has an expiry date which is 35<sup>th</sup> day from the date of donation.
2. Blood collected from prospective blood donors for screening is not the same as donated blood. Blood donated for use is collected into 450ml bag after certifying blood donors fit for donation.
3. **Blood is not for sale** but as a patient you will be asked to pay for transfusion service and bring the receipt.
4. Patients have to pay **₦4,000** for blood transfusion service in case of adults and **₦3,000** for paediatrics patients before the procedure is carried out.
5. The first **₦2,000** and **₦1,000** (for adults and neonates/children respectively) are paid for cross-matching procedure while the other **₦2,000** is paid for screening of blood for transfusion transmissible infections.
6. All payments are made at the cash points. No payment should be made to any blood bank staff.
7. Blood donated for patients **is not transferable or reusable once punctured.**
8. **Clinicians should ascertain if indeed the patient requires packed red cells before making request. Once the unit of packed red cells is prepared, it can only be kept for 24 hours.**
9. Units of blood cross-matched for patients by Medical Lab. Scientist with blue form issued for the patients, **if not transfused into the patient within 48 hours, may be de-tagged and be used for another in case there were emergencies.**
10. **List of patients for elective surgery from various departments should be sent** to Blood Transfusion Laboratory 48 hours prior to surgery.
11. The Surgeon-in-charge of any particular **patient with postponed surgery** for whom blood has been prepared **should duly inform the Blood Transfusion Laboratory staff of such postponement.**
12. **To ensure optimal rational use of blood, the Blood Transfusion Lab. will soon begin blood components preparation when double and triple blood bags are available.** Clinicians from all the departments can then begin to make specific request for fractions of blood the patient require.
13. **No Blood Bank staff should be involved in blood vendor activities nor collect money** from patients with respect to blood transfusion.
14. Patients for autologous transfusion should report at the blood bank for screening and bleeding. **If found unfit he/she cannot donate blood.**
15. National Blood Transfusion service is the only recognizable agency that the Blood Transfusion Laboratory receive units of blood from. The Blood Bank staff should be properly carried along should there be any need for such. **Units of blood brought from any institution other than NBTS are not accepted** for transfusion at Federal Teaching Hospital.

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A Typical Blood Transfusion Policy. Each institution must have a working policy

# CONCLUSION



- **Blood products availability especially in emergency situations** can make a whole lot of difference between life and death.
- Proper initiation of requests and availability of blood are important for effective service delivery.
- **For consistent supply of blood products, voluntary, non-remunerated, anonymous blood donation is encouraged** and **loaned units should be replaced within stipulated time.**

# RECOMMENDATIONS



- **Proper feedback is vital for effective blood/ blood products requests and release procedures to be productive. Hence, it is recommended that means of consistent feed back should be initiated to enable the BTL review her activities.**
- **The Blood Transfusion Committee should meet on regular basis where it is non-existent, it should be reactivated for regular updates.**
- **The appropriate transport medium (coolers) should be provided to various wards to prevent unnecessary delay in blood/blood products issuance.**

# RECOMMENDATIONS

- **Correct digital weighing balance should be provided for the blood BTL to enable her provide blood products with optimal component ingredients.**
- **Shortage of blood/blood products has hampered optimal issuance of blood to our numerous patients. The management of the hospital should therefore provide necessary support for feasibility and practice of voluntary blood donation to enhance ease of service delivery.**
- **Blood and blood product request/issuance and recovery require team spirit. All stakeholders should get involved in ensuring patients get matched donors replace loaned units earlier enough before discharge.**

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THANK

THANK

YOU

FOR

FOR

LISTENING.

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