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CHALLENGES OF BLOOD TRANSFUSION SERVICE DELIVERY IN SUB SAHARAN AFRICA

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Statement of the Problem

- **Out of about 80 million units of blood are donated each year worldwide, only an insignificant 2 million units are donated in SSA.**
- **The greatest need for blood is greatest in SSA [malaria, malnutrition, pregnancy-related complications, RTA, Communal clashes, insurgency and a heavy burden of infectious diseases (HIV, TB and Ebola)].**
- **One of the biggest challenges to blood safety particularly in SSA is accessing safe and adequate quantities of blood and blood products.**
- **As a resource, allogenic blood has never been more in demand than it is today in SSA (anaemia especially due to malaria, malnutrition, pregnancy-related complications, RTA, communal conflict, insurgency).**
- **Blood transfusion takes place in sub-optimal conditions in SSA, its life-saving purpose subverted by lack of effective control.**



Challenges of Blood transfusion in SSA

- **Absence of a functional NBTS**
- **Reliance on commercial remunerated and family-replacement donors**
- **High incidence of TTIs**
- **Education, cultural and awareness –related issues**
- **Transfusion of whole blood rather than component therapy.**
- **Absence of red cell alloimmunization testing services**
- **Sub -optimal usage of non- pharmacologic and pharmacologic alternatives**
- **Absence of specially selected products to meet the transfusion reqs of certain patients**
- **Absence of indication coding tool to facilitate effective use of blood products**
- **Absence of evidenced- based approach to the management of major haemorrhages**
- **Absence of uninterrupted power supply and challenge of cold chain management.**
- **Absence of regular stock of emergency group O- negative blood for emergency use.**



Absence of a functional national blood transfusion service

- In most countries in SSA, NBTS is either unavailable or sub-optimal in their performance.
- Lack of political will and open-mindedness to innovative ways to improve supply and safety of blood.
- The effect of this failure in the stewardship is their lack of access to safe and adequate blood.
- Blood transfusions remain a substantial source of TTI'S in SSA (children & pregnant women).
- The primary steps of setting up a national blood transfusion program should include;
 - The enactment of a national policy for the blood transfusion service with time-bound programme,
 - Centrally coordinated structured & organized blood transfusion service under a defined authority.
 - Development of a transfusion service based on an organized voluntary blood donor program.
 - Enactment of a national policy on the screening of blood for TTI'S appropriate to the region.
 - Setting up an appropriate and evidence-based use of available blood and blood products.
 - Employment and retention of qualified personnel to head and manage the service.
- In many countries in SSA, sometimes none of these steps are in place.



Reliance on CR and FR Donors

- Despite WHA resolutions WHA28.72 and WHA58.13 urging member states to develop NBTS based on VNRD, FRD and CRD still persist in most SSA countries.
- Collection of blood from regular & altruistic VNRD is key to ensuring the safety, quality and adequacy of blood.
- No country can meet the blood -related needs of her citizens depending on FRD and CRD.
- SSA countries need to implement innovative & evidenced –based best practices (recruitment and retention of VNRD, celebration of blood donation, increasing public awareness of VNR blood donation, promoting healthy living (nutrition, exercise and lifestyle and provision of non-cash motivation to encourage people to donate blood.



Reliance on CR and FR Donors (Cont.)

- **FRD has several disadvantages (FRDs are under stress & undue pressure to give blood, even when they know that donating blood may affect their own health and that of the recipient or that they are at risk of TTIs).**
- **Transfusion needs of recipient may not be met because blood given may not necessarily be replaced in type or quantity.**
- **Blood donated by certain relatives (spouses of women of child bearing ages) can put them potentially at risk of producing alloantibodies and HDFN.**
- **The prevalence of TTIs is higher among FRD and CRD compared to VNRD.**
- **CRD often come from the poorest sectors of the economy, poor in health, give blood more often than recommended, at a higher risk of being undernourished and having a TTI from high risk behaviours (maintenance of multiple sex partners, intravenous drug abuse and unprotected sexual intercourse).**



HIGH PREVALENCE OF TTI'S

- TTI's (HIV, HBV, HCV, Syphilis, Malaria) are prevalent within the population in SSA.
- Screening for TTI's among blood donors can be a cost-effective approach to monitor the prevalence, distribution and trends of the infections among blood donors.
- It make economic sense to implement a universal screen program for TTI's in SSA .
- Pre-transfusion screening is less costly than providing long-term treatment for a TTI.
- Countries in SSA still rely on rapid testing kits for screening of donors for TT viral infections rather than using the more sensitive and superior ELISA and NAT.
- NAT shortens reduces the risk of transfusion blood from donors in the window phase of viral infection.
- Cost effectiveness has erroneously been a reason put forward why SSA countries cannot incorporate ELISA and NAT detection into screening of donors.
- HIV & HCV prevalence among blood donors in SSA ranges from 0.18 & 0.5% respectively [1, 2].
- Malaria & HBV prevalence among blood donors range from 10.2% [3] to 77.4% and [4] & from 4.98% [5] to 18.6% [6] respectively.



Education, cultural and gender –related challenges

- Replacement donors remain the main source of blood in SSA because it costs less to procure and fits well with the African culture of extended family support.
- The mentality of altruism through the VNRD of blood is not well accepted in SSA as in the West.
- Only an insignificant number of eligible donors actually donate blood in most SSA countries..
- Several prejudices and misconceptions exist in SSA and affect the principle of altruism.
- There are unfounded fears among donors in SSA; fear of knowing one's HIV serologic status, fear of being infected with diseases and erroneous belief that donating blood can decrease one's libido, cause weight loss, cause high blood pressure or even lead to death.
- More effort is required in the drive for education, motivation and recruitment of regular donor.
- Male dominance in blood donation program exist in both Francophone and Anglophone SSA.
- Male predisposition to blood donation is based on the notion that men are healthier than women and the general belief that women make monthly blood donations during their menstrual cycle.
- Factors such as pregnancy and breastfeeding also restrict women from donating blood in SSA.
- Interestingly, this pattern differ significantly from observation in some developed countries where female blood donors represented 40% in Austria, 49.7% in France, 50% in Norway and 55% in UK blood donor populations.



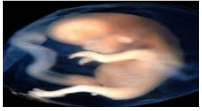
Transfusion of whole blood rather than component

- Blood may be transfused as whole blood or as one of its components (RBC, FFP, Cryoprecipitate and platelets)
- Leukocytes present in whole blood are associated with adverse effects (FTR, GVHD, alloimmunization to leukocyte antigens and the immunomodulatory effects, risk of transmission of infectious agents (CMV, HTLV-I/II, and EBV).
- Whole blood can be centrifuged to produce RBC concentrate, FFP, cryoprecipitate, platelets and fractionated to provide albumin, immunoglobulin (IVIG) and clotting factors.
- American military seems the only group in the West that still use fresh warm whole blood over component therapy during the massive resuscitation of acidotic, hypothermic and coagulopathic trauma patients.
- RBC concentrate is used to manage chronic anaemia (malignancy, haemorrhage from trauma, surgery, obstetrics and chemotherapy –induced anaemia).
- FFP is often used to treat certain bleeding disorders, when a clotting factor or multiple factors are deficient and no factor-specific concentrate is available.
- Cryoprecipitate is used to prevent or control bleeding in individuals with haemophilia and vWD.



Transfusion of whole blood rather than component (Cont.)

- **Platelets are used to treat thrombocytopenia and in patients with abnormal platelet function.**
- **Plasma derivatives are concentrates of specific plasma proteins that are prepared from pools of plasma**
 - **Antihemophilic factor is used for the treatment of patients with inherited VWD.**
 - **PCC is a combination of FII, VII, IX and X, as well as protein C and S. It reverses the effect of warfarin.**
 - **Albumin is a plasma protein used for resuscitation of children with severe malaria and in the emergency treatment of shock , burns and hypoproteinemia).**
 - **Rh immunoglobulin are used in D–negative women after parturition to prevent D+ infants from suffering from HDFN and in the management of ITP.**
 - **Anti-Inhibitor Coagulant Complex is a freeze-dried sterile human plasma fraction with Factor VIII inhibitor bypassing activity in haemophilia A and haemophilia B patients with inhibitors.**
- **Alpha-antitrypsin (AAT) is a serine protease inhibitor, which inhibits the proteolytic enzyme elastase and is used for the management of Alpha (1)-Antitrypsin (AAT) deficiency.**



Absence of red cell alloimmunization testing facilities

- RBC alloimmunization is due to genetic disparity in RBC antigens between donor & recipients.
- Alloimmunizations involving a clinically significant alloantibody can cause HTR and HDFN.
- Alloantibody testing of transfusion recipients is lacking in most settings in SSA.
- Universal access to prophylactic Ig D for the prevention of Rh isoimmunisation is unavailable.
- There is absence of cost - effective means of estimating FMH in many settings in SSA.
- It is vital that alloantibodies are correctly & routinely typed in blood donors & in patients.
- Alloantibodies complicate transfusion therapy particularly in multiply transfused patients.
- Alloantibodies prevalence among pregnant women in SSA range from 1.7% to 3.4 % [7-8].
- ABS commonly detected include; anti-C , E , Js_b, K , c , M , Le(a) , D , Jk(a) and Le(b) [9-10].
- Alloantibody testing is cost-effective way of avoiding laborious and expensive laboratory testing necessary to provide compatible blood for alloimmunized patients.



Sub -optimal usage of non- pharmacologic and pharmacologic alternatives

- **It is not all patient groups that require allogenic blood, some can benefit from alternatives.**
- **Some of the complications associated with allogenic blood are immunological and include; increase in tumour recurrence after surgical resection, increased postoperative infection rates , increased progression of HIV infection and multi-organ failure .**
- **Autologous donation (PAD, ANH & PCS can be an alternative in surgical patients.**
- **Autologous blood transfusion is extremely safe, cross - matching is not required, iso-immunization to foreign protein is excluded and the fear of TTIs can be ignored**
- **Many anaemic patients particularly chemotherapy-induced anaemia being managed with erythropoietin alone thus reducing the need for RBC concentrate.**



Pharmacologic and non- pharmacologic alternatives (Cont.)

- **Intravenous iron and oral iron therapy is safer and more cost effective over RBC transfusion (cross - matching is not required, no risk of iso-immunization to foreign protein and TTIs).**
- **Antifibrinolytics (aprotinin, tranexamic acid, epsilon-aminocaproic acid) can reduce blood loss following orthopaedic surgery and coronary bypass surgery.**
- **PCC (F11, V11, IX X, Protein S and C). It is indicated in the management of bleeding, peri-operative prophylaxis of bleeding & for rapid correction of warfarin overdose.**
- **Artificial oxygen carriers (AOC) (Perflourocarbons (PFC) called Perftoran) developed in Russia & Hemopure developed in South Africa are also potential alternatives despite disappointing results from pre-clinical and clinical research .**
- **Normothermia is also a non-pharmacologic way to reduce blood loss through preservation of haemostasis both during and after surgical operation.**



Absence of specially selected products to meet the transfusion requirements of certain patients

- **The effective management of transfusion - dependent patients & other patient groups may require the transfusion of specialized blood components (irradiated, CMV negative, antigen phenotyped RBCs, HLA and HPA matched platelets, IgA deficient blood products, methylene blue treated plasma FFP.**
- **Often times these specialized blood products are unavailable in SSA.**
- **Irradiated blood is needed to prevent GVHD (histocompatibility differences between donor and recipients) and results when immunocompromised patients receives immunocompetent donors RBCs or marrow.**
- **Pregnant women require ABO & D compatible, K- and CMV- units**
- **Women of child bearing age require ABO& D compatible and K- units**



Examples of specially selected products

- **CMV is a TTD and it can be fatal. It is indicated in patients who have received bone marrow/peripheral blood progenitor cell transplants, pregnant women, intrauterine transfusion , infants and neonates.**
- **In patients with a clinically significant alloantibody, attempts must be made to identify the antibody to facilitate the provision of antigen negative blood products to prevent HTR.**
- **Methylene blue treated plasma are indicated in neonate and children below 16 years. Other photo- inactivation agents (psoralens for RBCs and riboflavin for platelets).**
- **HLA and HPA-matched platelets are indicated in patient with antibodies to HLA antigens and HPA antibody**
- **Blood for intrauterine transfusion should meet certain requirements (CMV negative, irradiated, alloantibodies free and leucodepleted).**
- **IgA deficient patients required washed IgA deficient RBC concentrate.**



Absence of indication coding tool to facilitate effective use of blood products

- **Clinical practice guidelines now recommend restrictive RC transfusion practices, with the goal of minimizing exposure to allogenic blood.**
- **Current evidence indicates that critically ill patients tolerate anaemia.**
- **Restrictive transfusion triggers in patients without any serious cardiac disease is safe.**
- **Blood transfusion can have adverse effect. Potential benefits must be weighed against potential adverse effect.**
- **Transfusion must not be given casually. It must be clinically indicated and possible alternatives must be considered in all cases.**
- **Overall morbidity (including cardiac) and mortality, haemodynamic, pulmonary and oxygen transport variables are not different between restrictive (transfusion threshold between 70 and 80 g/l) and liberal transfusion strategies.**
- **Evidenced now shows that transfusion is rarely indicated when $HB > 100$ and is almost always indicated when $HB < 60$ g/l in healthy & stable patients.**



Absence of stock of emergency group o negative blood for emergency use

- **Evidenced based best practice principles require accessibility to some units of O- (C, D and E negative), HT negative , K- and CMV negative units in for use in emergency situation when blood is required sooner than a compatible unit can be made available.**
- **Type O-negative blood is needed in emergencies before the patient's blood type is known and the time taken to provide crossmatched blood would cause a detrimental delay**
- **The transfusion record form for use of emergency units should however contain the caution that the blood is being released on an emergency basis.**
- **The clinician authorizing the emergency release must sign the emergency request section of the blood bank requisition form and return same to the blood bank.**
- **It is part of GMP principles and a requirement by most regulatory authorities that all hospitals provide a limited supply of uncrossmatched type O negative RBC's to be used for a bleeding patient in a dire emergency.**



Absence of stock of emergency group o blood for emergency use

- Type O- RBC's can be transfused to people of any type with only a slight risk of haemolysis particularly in patients who have previously been transfused or pregnant and have produced alloantibodies.
- Type O blood lacks both the A and B antigens and consequently cannot be haemolysed by anti-A or anti-B antibodies in the recipient's blood.
- Type O blood has been termed the universal donor unit and can be used in emergency transfusion when typing or cross -matching is not available.
- Some type O donors produce high titres of haemolytic IgG, IgM, anti-A, and anti-B antibodies which are capable of causing the destruction of A or B RBCs of recipient.
- O- uncrossmatched RBCs intended for use in emergency must be tested and found free from of haemolytic anti-A and anti-B antibodies.
- Uncrossmatched type-O packed red blood cells (UORBC) are recommended for haemorrhaging trauma patients particularly men and women without child bearing potential.



Challenge of absence of uninterrupted power supply and suboptimal cold chain management of blood product

- Storage and distribution of blood requires a temperature - controlled (cold chain) environment.
- Blood products hold a significant monetary value and has a significant effect on the QOL.
- An unbroken cold chain is required for the storage and distribution of blood and blood products.
- Effective cold chain management help extend and ensure the shelf- life of blood products.
- Strict compliance to cold chain distribution process is a GMP requirement .
- GMP requires that all processes; storage and distribution that might impact the safety, efficacy or quality of a blood product are analyzed, measured, controlled, documented and validated.
- Documentation is critical. Cold chain need to follow established protocols and well documented.
- Administering blood is a difficult task particularly in rural areas in SSA (no electricity).
- One solution to this challenge is the use of a solar powered refrigerator (facilitate cold chain mgt).
- The responsibility for cold chain mgt is from receipt of the blood to time unit is transfused/disposed .
- GDP requires that storage conditions are observed at all times (24 hours a day and 365 days a year).



Challenge of suboptimal cold chain management of blood products

- **Temperature alarms, a defined procedure for responding to alarms & contingency plans for dealing with stock in prolonged alarm situations must be available.**
- **Maximum and minimum temp must be recorded daily using accurate thermometers.**
- **RBC must be stored within the temperature range 2 - 6 °C core temperature, platelets are stored in the platelet storage agitator at 22^{0c} while FFP and cryoprecipitate at - 30^{0c}.**
- **Chart recorder, digital readout, maximum/ minimum thermometer, central monitoring system must be available , calibrated annually with an in - date certificate.**
- **Paperwork/electronic storage records must be kept for several years (litigation involving adverse events associated with transfusion of inappropriately stored blood products).**
- **Blood transfusion safety is dependent on effectively organized, managed, funded , staffed, equipped and a quality management system- driven blood service.**



Poor evidenced - based management of massive haemorrhage

- Haemorrhage is a leading cause of death in most settings in SSA (traumatic injury, intra and post - surgical , APH & PPH).
- More than 536,000 women die every year from pregnancy –related complications (APH, PPH, Ectopic pregnancy)
- In most severely injured patients with an injury severity score > 25, the mortality rate is between 60-70%.
- Haemorrhage accounts for 40% of deaths from trauma and is the most common cause of preventable mortality in SSA .
- There is chronic blood shortages, high prevalence of TTIs, non implementation of component therapy, lack of pharmacologic agent to manage coagulopathy, absence of NBTS, reliance on FRD and CRD rather than VNRD).
- MH is defined as the replacement of > 10 units of packed RBCs within a 24 hours period or loss of 50% of blood volume within a 3 hours period or a loss of 150ml per minute.



Poor evidenced - based management of massive haemorrhage

- The aim of RBC & blood products transfusion in massive haemorrhage includes; to rapidly and effectively restore adequate blood volume (prevent hypovolemic shock), for adequate haemostasis, oxygen carrying capacity and blood biochemistry, for an early and aggressive correction of coagulopathy, for optimal resuscitation and to reduce potentially preventable deaths .
- ICS involves recovering blood lost during surgery and trauma and re-infusing it into the patient can be used in the mgt of haemorrhage(cardiopulmonary bypass surgery , obstetrics , splenectomy & prostatectomy).
- Non –blood product haemorrhage control measures include (application of direct pressure /tourniquet if appropriate, appropriate stabilization of fractures and surgical interventions, damage control surgery, interventional radiology and use of appropriate endoscopic and obstetrics techniques).
- Haemostatic drugs can play a major role in the management of caogulopathy and thus limit the use of blood products.



Poor management of massive haemorrhage

- Haemostatic drugs include; use of antifibrinolytic (aprotinin, tranexamic acid, epsilon-aminocaproic acid) to reduce blood loss.
- Aprotinin and tranexamic acid reduces the proportion of patients requiring RBC.
- Vitamin K and PCC are particularly required for warfarinized patients.
- PCC is a plasma product. It contains FII, VII, IX, X, protein S and protein C, virally inactivated by pasteurization and nanofiltration, less volume, less adverse event compared to FFP.
- Warfarin prevent the production of Vit. K dependent co-factors (II, VII IX and X).
- These effects can be reversed by Vit. K but the onset of action is delayed by 4-6 hours.
- Nova 7 (FV11a) is a vitamin K-dependent recombinant factor for promoting haemostasis by activating the extrinsic pathway of the coagulation cascade.
- Nova 7 is indicated for the clinical management of haemorrhage when other measures (blood product and other pharmacologic option) are ineffective.
- The potential benefit of Novo 7 treatment must always be weighed against the risk of thrombotic event.



Poor management of coagulopathy

- Most (25%) severe trauma patients often present with a triad of hypothermal, acidosis and acute traumatic coagulopathy (ATC).
- Acute traumatic coagulopathy is associated with a 4-fold increase in mortality.
- Damage control resuscitation is required to effectively & urgently address this triad.
- This involves the simultaneous replacement of plasma component & RBCS.
- Evidence indicates that FFP: RBC of 1:1 is effective in management of ATC.
- Treatment is focused on controlling of bleeding and optimizing coagulation.
- Thromboelastometry (TEM) is an established viscoelastic method for haemostatic testing in whole blood.
- TEM investigates the interaction of coagulation factors, their inhibitors, anticoagulant drugs and platelets, during clotting and subsequent fibrinolysis.
- Serve as a guide with regards to component usage in cases of trauma & massive haemorrhage.



Evidenced based management of major haemorrhage

- Patient bleeding/collapses (loss of 150 mls/ minute or in clinical shock).
- There should emergency group O (2 units) located in satellite refrigerator for immediate use in emergency.
- The managing clinical team must inform the lab. once taken to enable immediate replenishment.
- Resuscitate patient (ensure airway is clear, breathing and circulation).
- Alert emergency response team, blood transfusion laboratory and porters of the case.
- Send sample to lab for cross match, FBC, PT, APTT and Fibrinogen, urea and creatinine, calcium and BG.
- Request MHP 1 is required or tailored therapy depending on extent of haemorrhage.
- Major haemorrhage pack (4 units of red cells, 4units of FFP and 2 doses of platelet).
- If tailored therapy request optimum number of RBCS, FFP and platelets required.
- Depending on urgency (emergency group O Neg, O Pos , group specific blood or cross - matched blood).
- Emergency O positive blood is indicated in men & women >60 who are Neg. for alloantibodies.
- Unlimited issue of group O positive RBCS can continue until a sample & secure group is obtained.
- Group specific unit (ABO/D matched) is indicated once a sample/secure group is obtained.
- Full crossmatch (ABO/D group, ABS screen & matching of patient's plasma against donor's RBCS.



Management of massive Haemorrhage (Cont)

- Give ordered units and send post – transfusion samples to the lab for repeat FBC, PT, APTT, FIBC, urea and creatinine, calcium and blood gas.
- The aim of further intervention is to maintain ; HB between 8-10g/dl, PLC > above $75 \times 10^9/L$, INR < 1.5, APTT ratio < 1.5, FIBC > 1g/L and calcium > 1mmol/l.
- Immediate remedial action is required if Calcium is < 1mmol/l (give 10 mls of 10% Cacl₂ over 10 minutes). Temperature maintained > 36^oc. If not met, use warm fluid device or forced air warming blanket and ph must be kept above 7.35.
- If the above aim is not achieved and patient continues to bleed, order MHP 2 (4 red cells, 4 FFP, 1 platelet and 2 units of cryoprecipitate if FIBC is <1g/l or <2g/l in case of obstetric haemorrhage).
- Give blood products in MHP 2/tailored therapy and reassess patient for suspected continuing haemorrhage.
- Send post transfusion blood samples to the lab for repeat FBC, PT, APTT, FIBC, urea and creatinine, calcium and BG.
- If a further blood product is required inform the transfusion lab. At this point if the patient continues to bleed, you can decide in consultation with the managing clinicians to consider the use of Novo 7.
- Once bleeding ceases, send a stand down call to the transfusion lab, return all unused blood component to the blood bank and complete all transfusion-related documentation.
- Complete an audit of the management and identify any non-conformances
- Determine root causes, identify the preventive and corrective action as well as lessons learned that can be used to improve the mgt. of future haemorrhage.



Prevalent use of less sensitive tube method for blood grouping, antibody detection and identification and crossmatching.

- In most settings in SSA, the conventional tube method is still prevalent for grouping and crossmatching.
- CA technology (using gel and glass bead cards) has significantly improved transfusion service in the West.
- The procedures are standardized and provide clear and stable reactions that improve result interpretation.
- Principle involves the differential passage of unagglutinated RBCs through the gel or glass beads column.
- The results are stable, may be read even after many hours, easy to perform, sensitive and reproducible.
- Introduction of CA indicated a startling 65 fold rise in the number of incompatible units.
- In a previous report, the incompatible units recorded rose from a paltry 4 (0.02%) seen during the period of implementation of the conventional tube method to 260 (1.6%) with the implementation of the CA.
- Clinically significant antibodies are missed by tube method (anti-D, anti-E, anti-Cw, anti-Lea and anti-K).
- 68% of these false Neg with tube method involve clinically significant antibodies with low titres.
- Advantages of the CA (shorter incubation time, requires no washing procedure and reduces the time in making compatible blood available).
- Detection of Ig, C3b & C3d bound to RBCs is key in the diagnosis of immune haemolytic anaemia.
- DAT is performed by tube agglutination in SSA (anti-IgG or anti-C3d). CA is more likely to detect IgG on RBCs.



Poor restrictive use of red cells transfusion in ICU patients

- Blood transfusion is not a zero-risk procedure. it must only be prescribed for patients when no alternative therapy is possible.
- The past two decades have witnessed an extensive re-evaluation of transfusion therapy in the ICU.
- RBC transfusions should only be given to maintain oxygen delivery to vital organs and tissues.
- Blood transfusion in life saving in the management of anaemia & haemorrhage.
- Use of component therapy has facilitated many surgical and medical advances, allowing the support of patients who hitherto may not have survived invasive therapies.
- Balancing the risks and benefits of transfusion has becoming increasingly complex.
- Restricting transfusion reduces unwanted effects and cost
- There is need to determine critical thresholds at which the risks of poor oxygen carriage outweigh restrictive use of RBCS.
- Evidence has exposed previously under-recognized transfusion risks and suggests a lack of efficacy & clinical indication for RBC in majority of critically ill patients.



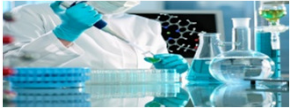
Poor restrictive use of red cells transfusion in ICU

- Safety concerns and findings that ICU patients tolerate anaemia than previously thought has resulted in recommendations for more restrictive RBC transfusion strategies .
- An important exception to restrictive RBC transfusion strategy is in major trauma and life-threatening bleeding.
- Study in the US has shown that anaemia is common in the critically ill & that the number of RBC transfused is an independent predictor of worse clinical outcome .
- International clinical practice has recently changed, with a decrease in the "trigger" of HB concentration used for red blood cell transfusions in critically ill patients.
- This change has been driven by increasing awareness of the infectious and non-infectious complications of allogeneic RBC transfusion and blood supply shortages.
- TRICC study recommend a restrictive transfusion strategy (trigger of 70 g/L and a post-transfusion goal of 70-90 g/L) over the liberal strategy (trigger of 100 g/L and a post transfusion goal of 100-120 g/L) in non-shocked ICU patients.
- However, patients with ischemic heart disease may benefit from RBC transfusion at a HB trigger level higher than advocated in the restrictive strategy.
- In determining the trigger, the physician and the lab scientist will need to weigh the risk-benefit profile for each individual patient & for each unit administered.



Details about my reserch work

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Conclusion

- **Effective blood transfusion is the provision of safe blood and blood products in the right quantity, quality, for the right indication that is collected from a safe donor effectively screened and cross matched by qualified, trained, competent MLS in a document-controlled lab using equipment that are effectively maintained, validated and quality controlled, using appropriately stored reagents, that is effectively stored and transported in a closely monitored temperature controlled condition and transfused by trained and competent nursing and medical staff.**
- **Blood transfusion is an essential component of effective healthcare delivery and has life saving potential.**
- **Timely assess to the right quantity and quality of blood and blood products is key to preventing mortality in patients requiring transfusion.**
- **Blood transfusion in SSA face daunting challenges.**
- **Addressing these challenges should be a central priority of most blood**



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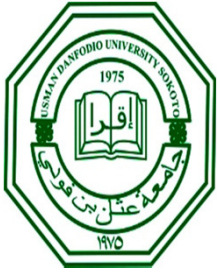


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Questions

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